URBIS REVIEW OF THE INDIGENOUS PHARMACY PROGRAMS

FINAL REPORT

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URBIS

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ACRONYMS

Acronym	Meaning
'the Department'	The Commonwealth Department of Health
'the Guild'	The Pharmacy Guild of Australia
'the Review'	The Review of Indigenous Pharmacy Programs
4CPA	Fourth Community Pharmacy Agreement
6CPA	Sixth Community Pharmacy Agreement
ACCHO	Aboriginal Community Controlled Health Organisation
ACCHS	Aboriginal Community Controlled Health Services
ACP	The Australian College of Pharmacy
ACRRM	Australian College of Rural and Remote Medicine
AHMAC	The Australian Health Ministers' Advisory Council
AHRC	Australian Human Rights Commission
AHS	Aboriginal Health Service
AHW	Aboriginal Health Worker
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographic Classification
ATC	Anatomical Therapeutic Chemical
ATSIOW	Aboriginal and Torres Strait Islander Outreach Worker
COAG	Council of Australian Governments
CPA	Community Pharmacy Agreement
CTG	Closing the Gap
CTG Co-payment	Closing the Gap (CTG) PBS Co-payment Measure
CVD	Cardiovascular Disease
DAA	Dose Administration Aid
DHS	Department of Human Services
DoHA	Department of Health and Aging
DVA	Department of Veterans' Affairs
ERP	Estimated Resident Population
GP	General Practitioner
HMR	Home Medicines Review

Acronym	Meaning
IAHP	Indigenous Australians Health Program
ICDP	Indigenous Chronic Disease Package
MBS	Medicare Benefit Schedule
NACCHO	National Aboriginal Community Controlled Health Organisation
NDSS	National Diabetes Services Scheme
NMP	Australia's National Medicines Policy
PBAC	Pharmaceutical Benefit Advisory Committee
PBS	Pharmaceutical Benefits Scheme
PIP	Practice Incentives Programme
PSA	Pharmaceutical Society of Australia
QUM	Quality Use of Medicines
QUMAX	Quality Use of Medicines Maximised for Aboriginal & Torres Strait Islander People (QUMAX) Program
RACGP	Royal Australian College of General Practitioners
RPBS	Repatriation Pharmaceutical Benefits Scheme
RRMA	Rural, Remote and Metropolitan Areas
s100 RAAHS	Section 100 Remote Area Aboriginal Health Services
s100 Support Allowance	Section 100 Support Allowance Program
SHPA	The Society of Hospital Pharmacists of Australia
WHO	World Health Organization

EXECUTIVE SUMMARY

This is the Final Report of the Review of Indigenous Pharmacy Programs (the Review), conducted by Urbis and key partners between November 2016 and June 2017. The Review was commissioned by the Department of Health (the Department) to inform future policy development and program enhancements relating to supply and quality use of Pharmaceutical Benefits Scheme (PBS) medicines for Indigenous people.

The Review examined the achievements, effectiveness and gaps associated with implementation of four specific programs. These were:

- **Closing the Gap (CTG) PBS Co-payment Measure**, which is designed to address financial barriers experienced by Aboriginal and Torres Strait Islander people with or at risk of chronic disease, in rural and urban areas and who wouldn't manage their condition without this program. The Measure provides PBS co-payment relief to eligible consumers.
- **6CPA Quality Use of Medicines Maximised for Aboriginal and Torres Strait Islander People (QUMAX) Program**, which aims to improve health outcomes for Aboriginal and Torres Strait Islander people in rural and urban areas and complements the CTG Measure. The QUMAX Program provides funding for a range of QUM support services, pharmacy services and education for consumers and staff of approximately 75 Aboriginal Community Controlled Health Services (ACCHSs).
- **s100 Remote Area Aboriginal Health Services Special Supply (s100 RAAHS Program)** provides access to PBS medicines under special supply arrangements for all people living in remote areas at no cost. Under this Program, community pharmacies and approved hospital authorities supply PBS medicines in bulk to remote Aboriginal Health Services (AHSs) which are then supplied to patients when they present.
- **6CPA s100 Support Allowance Program (s100 Support Allowance)** pays an allowance to community pharmacies and approved hospital authorities for providing targeted QUM and medication management support services to AHSs participating in the RAAHS program. Services provided to AHSs include administrative procedures and protocols for managing PBS medicines as well as educational services to clinical staff.

Each of these programs has been subject to prior inquiries, reviews and evaluation, and we sought to build on and integrate these prior reports within the Review. Our approach integrated a review of previous reports into the programs, surveys of pharmacists involved in the programs, engagement with key stakeholders nationally, and analysis of PBS data. We also visited 21 Aboriginal Health Services (AHS) located in a variety of geographic and community contexts, interviewing service leaders, health workers, prescribers and pharmacists to understand their perspectives on the operation of the programs in focus.

Key findings

Previous reviews and evaluations have found that the four programs have improved access to low or no-cost medications for Aboriginal and Torres Strait Islander people with or at risk of a chronic disease. In particular, the CTG Measure has shown a five-fold increase in uptake since its inception in 2010, with the national coverage rates of the Measure increasing from 6.1 percent in 2010 to 29.3 percent in 2015.

Where the s100 programs have worked well, review participants reported that this is due to constructive relationships between the AHS and local pharmacists, with each demonstrating a commitment to the ultimate outcome of ensuring that people are able to access the medication they require.

At the same time, there is a lack of robust quantifiable data to demonstrate the impact of the Commonwealth's investment on the use of medicines by the eligible population. Further, gaps have been identified previously, and remain, between the four programs; these gaps are geographical (eg when patients move outside of their region) and service-based (eg when patients move between primary and acute care settings).

The eligibility rules for the programs have made it difficult for patients to access their medications in many circumstances, and have prompted a number of alternative processes being established by hospitals, AHSs and pharmacists to ensure that individuals are able to access their medication and to understand its use. In many instances this has resulted in costs being absorbed by hospitals, AHSs or pharmacists so that patients can receive their medications at no cost to themselves.

An overwhelming majority of Review participants believe that eligibility for subsidised medication should follow the patient rather than the provider, and that the processes for registering and participating in the programs should be simplified. This would improve the experience of the patient in eliminating the need to navigate different programs which seek to achieve the same goal.

Other principles identified by Review participants include the following:

- **Local decision-making** – in order to ensure that service delivery is as effective for patients as possible, decisions regarding the purchase of pharmacy supply and support services should be made by the funded AHS
- **Ease of program participation** - eligibility should be determined once and then recorded centrally so that individuals do not have to continually prove their eligibility
- **System efficiency** - systems should be streamlined to pose minimal burden on pharmacists and AHSs, linked with existing electronic ordering processes as much as possible
- **Data effectiveness** – systems need to be integrated to provide a platform for greater information sharing and monitoring across jurisdictions, including the priority to ensure that most data is collected through existing national systems such as Medicare Benefits Scheme (MBS) and PBS to minimise the burden on pharmacists and AHSs.

Review participants largely favoured increasing the level of pharmacist expertise located within the AHS, whether by employing pharmacists or by contracting local pharmacists to provide support directly in the AHS. Participants also favoured increasing the level of Home Medicine Reviews (HMRs) and medicine checks as a means of improving patients' understanding of their medicines.

Future considerations

Based on the weight of previous evidence as well as the findings of the current Review, the Review team recommends that the Department integrate the four programs into one overarching Indigenous Pharmacy Program, with two separate but linked initiatives within that Program: a supply program incorporating s100 RAAHS with CTG, and a support program incorporating s100 Support Allowance with QUMAX. Both supply and support programs should be nationally consistent, with the supply program available to all eligible Aboriginal and Torres Strait Islander people regardless of where they live, and the support program available to all AHSs regardless of location.

A model for the proposed expanded CTG program already exists through the Department of Veterans' Affairs (DVA) Gold Card, which provides the card holder with DVA-funded access to all necessary health services. The Review team recommends a once-only registration as eligible for the CTG concession, after which eligibility for CTG benefits would be noted through Medicare and accessible for the patient through both hospitals and primary care facilities.

An expanded QUMAX program would have a focus on outcomes with accountability resting with the AHS to achieve the following:

- improved HMR coordination and uptake, with the potential to fund a coordination role within AHSs to ensure that HMRs are arranged and conducted in ways that are culturally appropriate
- increased staff confidence in QUM, so that General Practitioners (GPs), nurses, Aboriginal health workers (AHWs), and others are able to assist patients to understand their medications and to use them effectively
- integration of pharmacy expertise within the AHS, through the employment of pharmacists or contracting with local pharmacists for regular participation in team meetings and discussions.

The Review team recommends that the integrated Indigenous Pharmacy Program is managed by the Department with governance supported by a reference group of key stakeholders, including but not limited to National Aboriginal Community Controlled Health Organisation (NACCHO), the Pharmacy Guild of Australia (the Guild), the Society of Hospital Pharmacists Australia (SHPA), the Pharmaceutical Society (PSA), and the Royal Australian College of General Practitioners (RACGP).

Given the paucity of data regarding the use of medicines (as opposed to the supply of medicines), the Review team recommends that the new integrated program have a focus on robust data collection and monitoring, ideally through alignment with existing national data sets such as MBS and PBS.

The Indigenous Pharmacy Programs have contributed in improving the supply of medicines to people living with or at risk of a chronic disease. Integrating the four programs into two linked programs has the potential to improve efficiency and effectiveness as well as making a greater contribution to the national goal of closing the gap in health outcomes for Aboriginal and Torres Strait Islander people in Australia.

1. INTRODUCTION

This section provides an overview of the purpose of the Review, and outlines the data sources that have informed this report.

1.1. SCOPE AND PURPOSE OF THE REVIEW

This Review has focused on four Indigenous Pharmacy Programs designed to enhance access to and quality use of medicines for Aboriginal and Torres Strait Islander people. The **programs in scope** for the Review are:

- Closing the Gap (CTG) Pharmaceutical Benefits Scheme (PBS) Co-payment Measure
- 6CPA Quality Use of Medicines Maximised for Aboriginal and Torres Strait Islander People (QUMAX) Program
- s100 Remote Area Aboriginal Health Services Special Supply (s100 RAAHS Program), and
- 6CPA s100 Support Allowance Program (s100 Support Allowance).

The **objectives of the Review** are to:

- determine whether program objectives have been achieved in relation to improving access to and quality use of PBS medicines
- assess the effectiveness of each program
- identify gaps or overlap across all four programs and assess the individual merits of each program.

Specific issues that are within the remit of the review include attention to access to PBS medicines, QUM and pharmacy services; quality of services provided; and equity of access to and expenditure on PBS medicines for Aboriginal and Torres Strait Islander people compared to the general public.

The **intended use** for the Review is to inform:

- future improvements to the re-design and administration of the Indigenous Pharmacy Programs
- policy development to improve targeting of resources arising from these arrangements; and/or maximise health gains by consumers.

Urbis was commissioned by the Department of Health in late 2016 to undertake the review, in partnership with three Indigenous organisations: Cox Inall Ridgeway, Side by Side Consulting, and Karen Milward Consulting. Professor s47F joined the review team to provide specialised analysis of PBS data.

1.2. THIS DOCUMENT

This is the draft Final Report of the Review of Indigenous Pharmacy Programs (‘the Review’) undertaken by Urbis and partner organisations. It incorporates and builds on preliminary findings documented in two earlier interim reports which focused on the QUMAX Program and the s100 Support Allowance Program (Urbis, 2017a, 2017b).

1.3. REVIEW METHOD

1.3.1. Our approach

A review framework was developed to guide data collection and analysis, and is informed by the RE-AIM model (Table 1 – Review questions (RE-AIM framework). The RE-AIM model (reach, effectiveness, adoption, implementation, and maintenance) was first designed as an approach for evaluating the effectiveness of public-health programs (Glasgow et al., 1999). and the framework has since been used to design and evaluate programs and activities in a range of contexts. The five components of the acronym combine both individual-level impact (reach, effectiveness) and institutional-level impact (adoption, implementation,

maintenance)[1]. The RE-AIM framework identifies the key questions associated with each element and the qualitative and quantitative data indicators for addressing each review question.

The review questions were developed based on those included in the Request for Quotation issued by the Department, which provided the terms of reference for the Review. Some questions were revised for clarity and focus. These original questions have been supplemented by additional questions designed to ensure that the review can provide a comprehensive picture of the operation of the programs and identify opportunities for improvement and enhancement for the future.

Where the framework uses the term 'service providers' this refers to all individuals or services involved in the prescribing or supply of PBS medicines and QUM support for Aboriginal and Torres Strait Islander people, including but not limited to the following: AHSs and Aboriginal Community-Controlled Health Services (ACCHSs), GPs and other health professionals, community pharmacists, hospital pharmacists, service managers.

Table 1 – Review questions (RE-AIM framework)

RE-AIM Component	Review questions	Review response
Reach (individual /population level)	To what degree have the current eligibility criteria facilitated or hindered access to PBS medicines and QUM for Aboriginal and Torres Strait Islander people? How is this experienced by service users?	The evidence is clear that the lack of consistent eligibility criteria across programs hinders access to PBS medicines and QUM for Aboriginal and Torres Strait Islander people.
	What issues, if any, are experienced by Aboriginal and Torres Strait Islander people in accessing PBS medicines? In particular, what issues, if any, are experienced by people who move between remote, rural and urban areas and between hospitals and communities?	People who move out of s100 areas find it difficult to continue receiving their medicines. People who require prescriptions to be filled outside of their QUMAX location find it difficult to access their medications and DAAs. People who receive CTG scripts in primary care find it difficult to access medications when discharged from hospitals without a CTG-annotated script. A consistent quality use of medicine approach is lacking, which has reportedly, on occasion, proven fatal to individuals who have not received their medicines or have not been assisted to understand their medication regimen.
	To what extent have health outcomes improved for Aboriginal and Torres Strait Islander people after participating in these programs? In what ways?	There is evidence to indicate that more people are accessing medications through CTG. There is no rigorous evidence relating the supply of medicines through these programs to health outcomes of service users.

[1] See also www.re-aim.org

RE-AIM Component	Review questions	Review response
Effectiveness (individual/ population level)	To what extent are the Indigenous Pharmacy Programs achieving their objectives in: • facilitating access to PBS medicines • providing QUM support services to improve health outcomes for Aboriginal and Torres Strait Islander people?	The four programs have contributed to increased access to PBS medicines, and have improved the availability of QUM support services. However, these improvements are not consistent due to the different rules of the four programs.
	In what ways has the quality use of medicines and medication management and adherence improved? What is the impact of this for service users?	A primary improvement is the increased use of dose administration aids, primarily Webster packs, which have assisted people to know how and when to take their medications. In a number of locations, AHSs and local pharmacists have developed models of care which include pharmacists being employed by the AHS or contracting to spend one day a week in the AHS. These models have been reported to improve QUM understanding within the AHS and to assist in ensuring that patients understand their medication requirements.
	What parts of the QUMAX Program's interventions, e.g. QUM devices, transport support and education activities, have had the greatest benefits for service users? What, if anything, could be improved?	Of the seven components of QUM, most funding is being used for the provision of dose administration aids, followed by transport. Both of these are primarily supply issues to improve medication adherence. Improvements to the program are discussed in section 4.
Adoption (institutional/whole of sector level)	What is the average government expenditure per consumer on PBS medicines for Indigenous Australians? [NOTE: for CTG and RAAHS only, if data available] How has this changed over time? What factors might account for any changes?	Please see section 2 and Appendix B.
	To what extent are the participating state/territory, AHSs, ACCHSs, (GPs), practices, prescribers, pharmacists, (AHWs), and other health professionals aware of and adhering to the eligibility	AHS staff and pharmacists were generally aware of the eligibility criteria, although locum GPs in s100 practices appeared to be less familiar with the rules.

RE-AIM Component	Review questions	Review response
	criteria? What have been the challenges in adhering to the criteria? What, if anything, could be improved with regard to the eligibility criteria?	A variety of processes have been developed by AHSs and pharmacists to maximise access. These are discussed in section 3 of the report.
	Have any changes to program rules (as stated in the Legislative Instruments and Program Specific Guidelines) been made by participating State/Territory, AHSs, ACCHSs, GPs, practices, prescribers, pharmacists and other health professionals? What has been the impact of these changes, if any?	A variety of processes have been developed by AHSs and pharmacists to circumvent the limitations of the programs. These are discussed in section 3 of the report. In general, AHSs, hospitals and pharmacists made independent decisions to absorb the costs associated with ensuring that individuals could access the medicines they required even when the programs did not allow for this (eg, a hospital providing medications or paying for a Webster pack rather than allow a patient to leave with a non-CTG script).
	How effectively are participating pharmacists/pharmacies supporting remote area AHSs to manage PBS medicines? What factors enable pharmacists to support remote area AHSs most effectively? What, if anything, could be improved?	Effective support from pharmacists varies widely and is influenced by a number of factors, including the quality of the relationship with the AHS, the demand on services, cultural awareness and sensitivity within the pharmacy, and extent of pharmacist interaction with AHS staff, for instance co-locating or spending time weekly within the AHS. Please see section 3.
Implementation (institutional level)	What factors are enabling or hindering the implementation of the individual programs? What, if anything, could be improved?	There are several factors which have hindered effective implementation of the programs. These are discussed in sections 2, 3 and 4 of the report.
	How effectively and efficiently are the four Programs operating?	Effectiveness cannot currently be measured due to lack of outcome data. The factors hindering optimum efficiency are discussed in section 3.
	How effective are the RAAHS arrangements for bulk supply, transport, storage, recording and reporting of PBS medicines in remote areas?	In general, arrangements for bulk supply, transport and storage are working reasonably well, although issues regarding the costs of transport have been noted elsewhere. In many

RE-AIM Component	Review questions	Review response
	What, if anything, could be improved?	locations, pharmacists have worked closely with AHSs to ensure that there is proper storage of medications within the AHS. There is a large gap in the reporting of PBS medicines through the very nature of bulk supply, with stock recording available at the local level but no national reporting available as to dispensing of medications. The NT model of dispensing s100 medications on 'rural scripts' where the system enables cross-checking of individuals' medicine history has merit, and should be considered for application nationally.
	What aspects of the Support Allowance services provided to AHSs are considered of greatest benefit? Why? What, if anything, could be improved?	The Support Allowance is generating the greatest value when pharmacists and AHS have developed a tailored model of support, beyond the guidelines of the Allowance. Please see section 3.
	To what extent has the travel allowance under the Support Allowance been comparable with actual costs incurred by pharmacists? What has been the impact of the travel allowance on the ability of pharmacists to provide adequate support to remote AHSs?	This review was conducted at the same time as the Review of Pharmacy Remuneration. Consequently, less emphasis was placed on this question within the review. It is broadly addressed in section 3.
Maintenance (institutional level)	To what extent is the geographic focus for each Program, as determined by the Rural, Remote and Metropolitan Areas (RRMA) Classification, 1991, efficient in meeting the needs, and in targeting resources and expenditures? What, if anything, could be improved?	The program design based on geography limits the ability of individuals to access their medications wherever they might be, and has hindered medication adherence in many cases. A universal approach with program eligibility based on the patient rather than the provider has been identified as a preferred approach. Please see section 4.
	Is there any wastage of PBS medicines at AHSs? If so, why? What could be improved with regard to minimising wastage of PBS medicines at	The extent of wastage varies, and is minimised by good ordering and storage practices. Wastage could be improved through ensuring that medication reaches the patient rather than the

RE-AIM Component	Review questions	Review response
	AHSs?	practice, and through increasing the capacity to undertake QUM activities. Currently the program supply chain effectively ends when the medication reaches the AHS, rather than the patient.
	In what ways, if any, could the Indigenous Pharmacy Programs be improved to ensure that Aboriginal and Torres Strait Islander people are able to access PBS medicines and QUM support services?	Please see section 4 for a proposed model.
	What factors may influence the future performance of these programs? What do program managers need to consider in order to ensure that the programs continue to facilitate access to PBS medicines and QUM support?	Please see section 4 for a proposed model.

1.3.2. Data collection

The overall approach to the Review is documented in the review framework provided at Appendix E. The methodology behind the review comprises six key elements (see Figure 1 and Table 2).

Figure 1 – Approach and timeline

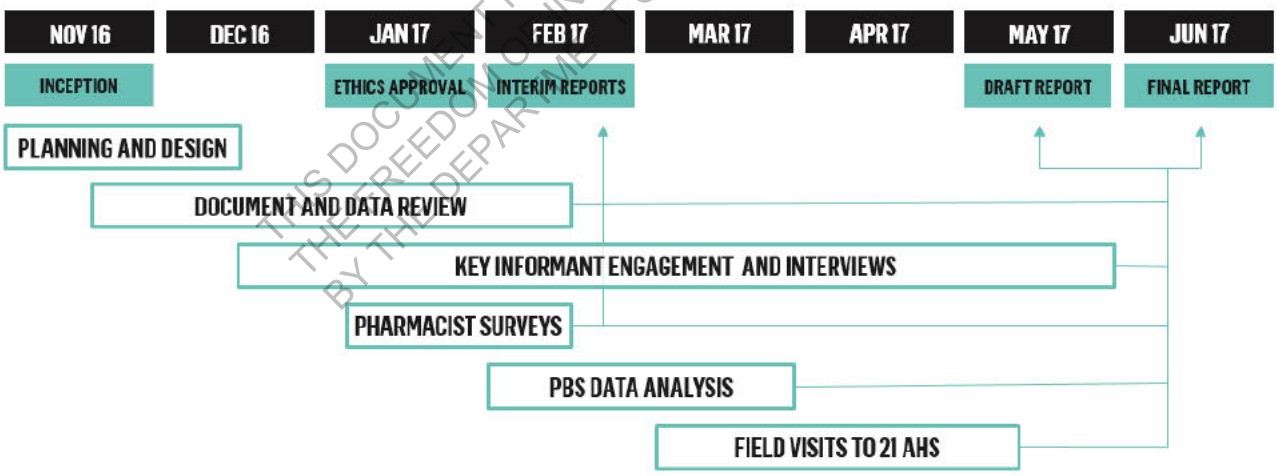


Table 2 – Review Indigenous Pharmacy Programs: methodology summary

Review element	Timing
Our team completed a **desktop analysis** of program documentation, prior reviews and other relevant publications was undertaken to inform planning for the Review, and subsequently updated to provide relevant context for this report.	Nov-Feb 2016
We undertook a **telephone survey** targeting all pharmacists engaged in the s100 RAAHS, and/or s100 Support Allowance programs, focusing on eliciting pharmacists' views on the strengths and shortcomings of the programs.	Jan-Feb 2017
An **online survey** was conducted targeting all pharmacists participating in the QUMAX program, distributed by the Pharmacy Guild of Australia (the Guild); this focused on soliciting pharmacists' perspectives on the QUMAX program.	Jan-Feb 2017
We undertook **analysis of PBS data** focused on CTG scripts and s100 RAAHS supply data, focused on exploring the volume and reach of these programs.	Feb 2017
We interviewed **key informants** from a range of identified stakeholder bodies, including those representing the Indigenous primary health sector, prescribers, pharmacists, and state and territory departments of health.	Jan-May 2017
Our field teams **engaged directly with 21 AHSs** in NSW, Queensland, Western Australia, South Australia, and the Northern Territory, along with pharmacies, prescribers and hospitals in each region.	Mar-May 2017

1.3.3. Data sources

A range of data sources has informed the Review. The scope of each and our approach to collection is set out in the sections following.

1.3.3.1. Documentary evidence

There have been several formal inquiries, reviews and evaluations of the programs in focus over the past ten years, and substantial commentary on the effectiveness of the programs. To ensure that this Review builds on and extends the current state of knowledge, a rapid review of literature was undertaken. This included consideration of all major reports published in relation to the programs over the past ten years as well as relevant commentary and analysis published by key stakeholder groups (notably NACCHO and the Guild) and contained within the wider peer reviewed literature.

The rapid review has primarily informed the contextual material presented in Section 0 of this report. A full list of the references that our review identified is provided at Appendix A.

1.3.3.2. Program data

The Review team was provided with the locations of 75 AHS participating in QUMAX, 164 AHS engaged in the s100 RAAHS program (and the pharmacies supplying them), and locations of 24 pharmacies holding s100 Support Allowance contracts. This data enabled consideration of the geographic distribution of program centres relative to population, and supported site selection for fieldwork.

In addition, we were able to access CTG script and s100 supply data to support analysis of trends in both scripts and expenditure over time across these programs. The detailed analysis is provided as a technical appendix to this report (Appendix B).

1.3.3.3. Target site fieldwork

Our field teams of an Aboriginal researcher and a non-Aboriginal researcher engaged with 21 individual AHS across Australia, along with pharmacists, doctors and tertiary health services in their region. The purpose of the field consultations was to supplement review of the existing documentation and data with the diverse perspectives on the operation of the Indigenous Pharmacy Programs from stakeholders who observe their

implementation in a wide variety of contexts on a daily basis. The interview guides used to engage with local stakeholders are provided in Appendix G.

We sought to purposefully select AHSs that would provide different viewpoints, and worked with NACCHO state and territory affiliates to validate a shortlist of potential locations. The selection was based on a mix of metropolitan, regional and remote AHSs, and a balance of exposure to different programs. We then wrote to 36 services, with 21 ultimately able and willing to take part in the timeframe of the review. The full list of AHSs with which we engaged through field work is set out in Appendix C.

1.3.3.4. Survey of pharmacists (QUMAX)

Urbis released a brief, self-complete survey via an online platform to nearly 250 pharmacists nationally who are providers of QUMAX services. The focus of the survey was to explore the strengths and shortcomings of the QUMAX Program and its intersections with the other Indigenous Pharmacy Programs.

The survey was disseminated by the Guild in January 2017, and remained open for just under three weeks. A total of 37 responses were received, a response rate of 15 per cent. Nearly all of the pharmacists who undertook the online survey (95 per cent) indicated they were currently a provider for the QUMAX Program, while five per cent had previously been a provider. Most pharmacists had been registered as a QUMAX provider for five or more years (73 per cent). Based on the postcodes provided by 35 of the respondents, the survey was completed by pharmacists from 29 postal areas across Australia.

The summary survey results are provided at Appendix D.1.

1.3.3.5. Survey of pharmacists (s100)

We conducted a telephone survey of s100 pharmacists to gauge views on the operation of the s100 RAAHS and s100 Support Allowance Programs, including effectiveness of the programs to date.

Following an initial email from the Guild to its members who are s100 registered, Urbis contacted all pharmacists known to be engaged in either or both the s100 RAAHS and s100 Support Allowance Programs to undertake a telephone interview. Pharmacists were provided with information statements and their consent to voluntary participation confirmed.

Of the 45 pharmacists identified, 44 were able to be contacted and 26 agreed to be interviewed, a response rate of 59 per cent. Fourteen of the interviewees were currently involved in the s100 Support Allowance Program, while 12 were attached to s100 RAAHS supply pharmacies but did not provide support.

The structured interview guide utilised to undertake the telephone surveys is provided at Appendix G.1.

1.3.3.6. Key informant interviews

We engaged with key informants at the national and state level through direct approach, having identified a range of relevant stakeholder organisations in consultation with the Department. Senior members of the review team engaged with stakeholders from:

- the Aboriginal and Torres Strait Islander community controlled health services sector (including NACCHO along with state and territory affiliates)
- bodies representing pharmacists (the Guild, the SHPA, the PSA)
- bodies representing community prescribers (the RACGP, the Australian College of Rural and Remote Medicine [ACRRM] and the Australian Indigenous Doctors Association)
- state and territory departments of health (with an emphasis on the pharmacy teams).

Our approach to engaging these groups was largely through small group discussion and interview, while two organisations (NACCHO and the NT Department of Health) elected to also make a written submission.

1.3.4. Analysis and findings generation

Our approach to analysis has been sequenced and iterative, with the implications of data explored as it has become available to the Review. We prepared two interim reports in February 2016, each focused on one of the four programs: QUMAX and s100 Support Allowance. These reports drew on the document review, the surveys completed with pharmacists, and some early stakeholder conversations. The reports provided our field teams with context in support of their engagement with AHSs, pharmacists and prescribers at the local level.

This Final Report has been developed through a structured process where our field teams (for AHS visits) and interviewers (key informant interviews) completed an initial analysis of data 'in field' (i.e. close to the collection point), before aggregating key themes and observations upwards for consideration at whole-team level, and integration with other desktop-based analysis. At the conclusion of the primary data collection period, our teams debriefed in small groups to elicit any further major themes and reflections, and to begin testing preliminary findings.

We held exploratory conversations with key stakeholders in the Review, including the Department, NACCHO and the Guild (scheduled for 5 June) to test the preliminary findings. The purpose of these conversations was to ensure that our recommendations are practical and actionable.

Finally, our senior team (who also led fieldwork and analysis) undertook an internal workshop to review all data, sense-check findings and develop a clear picture of implications and recommendations. This process has shaped the structure and content of this report.

1.3.5. Ethics

Ethics approval for conduct of the review was sought and granted from:

- Department of Health Human Research Ethics Committee
- For NSW sites, the Aboriginal Health and Medical Research Council Ethics Committee (NSW)
- For South Australian sites, the Aboriginal Health Research Ethics Committee (SA)

Copies of the approvals from each committee are provided at Appendix H.

1.4. CAVEATS

The scope of this Review has been the operation and impact of the current programs, as well as how this impact could be strengthened. With this dual emphasis and the extensive history of evaluations within the programs, the reviewers opted to leave it to the discretion of each AHS to decide who was best-placed to contribute to the Review from each location. Each service elected to contribute through face to face interviews with members of staff. Therefore, community members have not directly contributed to the review.

The scope of the Review included the question: Is the remuneration to pharmacists supplying medicines appropriate? The Review was undertaken in parallel to the Pharmacy Remuneration Review, and as such this question was not probed in detail during our consultations.

2. THE INDIGENOUS PHARMACY PROGRAMS

SUMMARY

- This section provides a summary of the context of Indigenous health within which the programs operate and describes the operation of each program.
- The 'state of knowledge' prior to this Review is also captured through synthesis of observations and findings made within prior reviews and evaluations.

2.1. ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH

Despite improvements against a number of health measures, notable inequities still exist in the health outcomes of Aboriginal and Torres Strait Islander Australians, when compared to non-Indigenous Australians (AIHW, 2016). In particular, chronic diseases have emerged as a major contributor to the poor health outcomes experienced by Aboriginal and Torres Strait Islander people (AIHW, 2011).

In 2012-13 two-thirds of Indigenous people (67 per cent) reported at least one chronic health condition, while around one-third (33 per cent) reported three or more (AIHW, 2016 p. 230). Indigenous Australians are 1.5 times more likely to die from cardiovascular disease (AIHW, 2014, 2015) and 3.5 times more likely to experience diabetes than their non-Indigenous counterparts (AIHW, 2016 p. 95). The extent of the chronic disease burden was highlighted in research released by the Australian Institute of Health and Welfare (AIHW) in 2011, which found chronic diseases contribute to about 80 per cent of the mortality gap between Indigenous and non-Indigenous Australians aged 35-74 years (AIHW, 2011 p. v).

Unlike acute diseases, which are defined by distinct and episodic symptoms, chronic diseases are often complex conditions with long-lasting and persistent effects (WHO, 2004). It is widely recognised that effective care at the primary level can prevent or delay conditions from progressing, and can lead to improved health outcomes in populations with high levels of chronic disease (Davy et al., 2016). Effective care for chronic disease includes ensuring equitable access to essential medicines, as well as education regarding quality use of medicines and medicine adherence.

2.1.1. Access to medicine

Although Indigenous cohorts have been found to experience a high burden of disease, data from the PBS shows lower levels of medicine utilisation, when compared to non-Indigenous Australians. In 2010-11, total expenditure on pharmaceuticals per Aboriginal and Torres Strait Islander person was around 44 per cent that of non-Indigenous Australians (AHMAC 2015 p.160). Across this same period the average per person PBS expenditure for Indigenous Australians ($291) was 0.8 times that of non-Indigenous Australians ($366) (AHMAC, 2015 p160). While this marked an improvement from 2001-02, when the average per person PBS expenditure for Indigenous Australians ($75) was 0.3 that of non-Indigenous Australians ($228), it has been noted that these changes should be read with caution due to changes in the methodology between the two periods (AHMAC, 2015; AIHW, 2013).

2.1.1.1. Barriers to access

Good health is shaped by a broad range of 'political, social, economic, and cultural forces' (AIHW, 2016; Commission on Social Determinants of Health, 2008). These factors, generally referred to as the social determinants of health, can contribute to inequities in health outcomes by influencing the extent to which individuals are able to access quality healthcare. The difficulties experienced by many Aboriginal and Torres Strait Islanders in accessing health services and medicines are well documented (Davy et al., 2016; Stoneman & Taylor, 2007; Swain & Barclay, 2013). A review of existing literature identified a broad range of multi-factorial barriers specific to the access of medications, including:

- **Financial constraints**, e.g. the cost of medicines (Hayman, 2011; KPMG, 2014; Stoneman & Taylor, 2007; Swain & Barclay, 2013)
- **Geographical isolation,** e.g. distance to services and pharmacies (Hamrosi et al., 2006; Stoneman & Taylor, 2007; Swain & Barclay, 2013)
- **Cultural appropriateness,** e.g. experiences or perceptions that the health system is unwelcoming (Davidson et al., 2010; Larson et al., 2007; Stoneman & Taylor, 2007)

- **Acceptability,** e.g. the perceived value of medication, health literacy and knowledge and failed patient-clinician interactions (Swain & Barclay, 2013)
- Poor health care **delivery systems** (Swain & Barclay, 2013).

The breadth of the barriers identified highlights the complexity of the issue and the need for a multi-faceted approach to achieving equitable access. In view of the Indigenous Pharmacy Programs discussed below, it is relevant to note that the cost of medicine was identified as a significant barrier in several studies and reviews. Additionally, it has been estimated that between 2013-14, 34 per cent of 'Indigenous Australians who did not fill a prescription gave cost as a reason' (AHMAC, 2015 p 160).

2.1.2. Medicine adherence

Increased access to medicines is only part of the management of chronic disease, as medicines are only of value if they are taken regularly. Medicine adherence has been defined 'as the extent to which patients take medications as prescribed by their health care provider' (Davidson et al., 2010). While medicine adherence is not a unique issue for Aboriginal and Torres Strait Islander people, adherence has been found to be important for achieving optimal health outcomes for Indigenous populations, 'including the prevention of adverse health outcomes' (Davidson et al., 2010). Medicine adherence is often associated with QUM, which has been identified as a central focus of Australia's National Medicines Policy. QUM is broader than adherence and includes:

- selecting management options wisely
- choosing suitable medicines
- using medicines safely and effectively to get the best possible results (Department of Health and Ageing, 2002 p. 3).

Medicine adherence is driven by a broad range of complex factors, suggesting that a systems approach is needed to address issues of adherence (WHO, 2003). In a 2003 report into adherence to long-term therapies, the World Health Organization (WHO) outlined a framework for considering the range of factors impacting adherence to long-term therapies – social and economic factors, the health care team and health system, and condition-, patient- and therapy-related factors (WHO, 2003). Notably, adherence in this context was viewed broadly to encompass both medicine adherence, as well as 'numerous health-related behaviours' (WHO, 2003 p. 3).

2.1.2.1. Barriers to adherence

In their 2010 study into the factors influencing medicine adherence, Davidson et al. (2010) identified the unique barriers faced by Aboriginal and Torres Strait Islander Australians, as well as enablers for improved adherence. These are outlined in Figure 2.

Figure 2 – Barriers to medicine adherence in Aboriginal and Torres Strait Islander people (Davidson et al., 2010)

- Greater levels of poverty and social disadvantage compared to other Australians
- Challenges in accessing medication supply and refilling prescriptions in a timely manner
- Actual and perceived racism
- Low awareness among Indigenous Australians of the national safety-net scheme
- Increased patient mobility due to social obligations
- Non-listing of children on guardians' concession cards
- Perceived 'shame' involved in accessing subsidised prescriptions
- Inadequate support for adherence to medication
- Large expenditure of Aboriginal Health Organisations in providing medications.

Recognising the complexity of the issue, the study concluded that improving adherence requires multi-pronged 'interventions at the system, provider and patient level' (Davidson et al., 2010 p. 374). Proposed strategies at each level included:

- **System level** – providing welcoming and culturally safe settings, ensuring medicines are affordable and accessible and fostering continuity of care, particularly when transitioning through different health care settings
- **Provider level** – providing training in culturally competent care, responding to racism within organisations and ensuring capacity in the Indigenous workforce
- **Patient level** – acknowledging the influence of an individual's country, values and belief, reducing stigma attached to accessing care and introducing strategies to increase patients' self-efficacy and ability to manage conditions (Davidson et al., 2010 p. 375).

In a recent qualitative study, Swain and Barclay (2013) conducted semi-structured interviews with 101 Aboriginal and Torres Strait Islander patients who attended AHSs and used multiple medications. The aim of the study was to better understand Aboriginal and Torres Strait Islander patients' 'experiences with medicines and the barriers and facilitators to their effective use of medicines' (Swain & Barclay, 2013). Swain and Barclay identified consistent themes from the patient interviews, including:

- the difficulty of managing multiple medicines
- the need for more information, written and verbal, about medicines, to inform patient choices
- disempowerment to ask doctors and pharmacists for information about medicines
- lack of satisfaction of interactions with doctors and pharmacists about medicines
- the difficulty of negotiating the health system (Swain & Barclay, 2013 p 219).

There was limited variation in people's experiences across different health settings, which was considered to 'add validity to the findings' (Swain & Barclay, 2013 p. 219). The authors concluded that medicine adherance would likely be improved through measures that increase patients' health literacy and empower them to play a more active role when it comes to making decisions about their treatment and medicine choices (Swain & Barclay, 2013 p. 219). The importance of these patient-centred strategies is also a central feature of the Guide to Providing Pharmacy Services to Aboriginal and Torres Strait Islander People, which observes that '[g]reater understanding and empowerment about medicine choices seem to be likely to improve medicine adherence' (PSA, 2014 p. 32).

Importantly, as is noted by Davidson et al. (2010), Aboriginal and Torres Strait Islanders are not a homogenous group, and both the barriers to access and the solutions to improving medicine adherence may differ depending on community norms, geography and cultural understandings of health and wellbeing (Davidson et al., 2010 p. 373).

2.2. NATIONAL POLICY

Policy developments in Australia over the past two decades have demonstrated the Government's commitment to improving Indigenous health outcomes through increased access to affordable medicine, as well as improved medicine adherence.

2.2.1. National Medicines Policy

In 1986, the 39th World Health Assembly adopted the Revised Drug Strategy. The strategy builds on the WHO Medicines Strategy, which aims to 'save lives and to improve health by closing the huge gap between the potential that essential drugs have to offer and the reality for millions of people that medicines are unavailable, unaffordable, unsafe, of poor quality or improperly used' (WHO, 2001). Institutions and WHO Members who contributed to the development of the strategy were exhorted to implement their own national frameworks.

The National Medicines Policy 1999 is Australia's response to this call (Department of Health, 2014b). It aims to 'improve positive health outcomes for all Australians through their access to and wise use of medicines' (Department of Health, 2014b) and outlines a shared intention to work towards:

- timely access to the medicines that Australians need, at a cost individuals and the community can afford
- medicines meeting appropriate standards of quality, safety and efficacy
- quality use of medicines

- maintaining a responsible and viable medicines industry (Department of Health, 2014 p.1).

This policy is significant as it demonstrates a commitment in Australia to promoting equitable access and quality use of medicines for all Australians. As has been noted by the Department of Health, 'Governments - Commonwealth, States and Territories - health educators, health practitioners, and other healthcare providers and suppliers, the medicines industry, healthcare consumers, and the media recognise the benefits of a National Medicines Policy' and resolve to work together to achieve its objectives (Department of Health, 2014).

2.2.2. Closing the Gap Initiative and the Indigenous Australians Health Programme (IAHP)

In 2007, the Council of Australian Governments (COAG) committed $1.6 billion to a *National Partnership Agreement* on Closing the Gap in Indigenous Disadvantage. The initiative included a commitment to improving Indigenous health outcomes across Australia and to 'closing the gap' in life expectancy between Aboriginal and Torres Strait Islander and non-Indigenous Australians. The IAHP (previously the Indigenous Chronic Disease Package (ICDP)) signifies the Commonwealth's $805.5 million contribution to the partnership (Urbis, 2010). It was designed to support the prevention and effective management of chronic diseases for Aboriginal and Torres Strait Islander people and includes a focus on three core objectives:

- tackling chronic disease factors
- improving chronic disease management and follow-up care
- expanding and support the Indigenous health workforce (Urbis, 2010).

In response to the complexity surrounding the prevalence of chronic diseases in Aboriginal and Torres Strait Islander communities, the IAHP adopted a 'multi-faceted' approach that includes fourteen key measures (KPMG, 2014). One such measure is the Closing the Gap (CTG) PBS Co-payment, which seeks to address the financial barriers faced by Aboriginal and Torres Strait Islander people in metropolitan and rural areas when accessing PBS medicines required for the prevention or management of chronic conditions (Department of Health, 2016a).

2.2.3. Community Pharmacy Agreements

The Community Pharmacy Agreements (CPAs) are five year agreements between the Australian Government and the Pharmacy Guild of Australia. The agreements recognise the valuable role pharmacists play in delivering healthcare in Australia and govern the supply of medicines and related services under the PBS and the Repatriation Pharmaceutical Benefits Scheme (RPBS) (The Guild, 2015). A central tenet underpinning all six of the successive CPAs in Australia has been the importance of ensuring equitable access to medicines for all Australians. Since the first CPA was signed in 1991, each agreement has included a particular focus on promoting access to and quality use of medicines by Aboriginal and Torres Strait Islander people. This includes the most recent Sixth CPA (6CPA).

2.2.4. Sixth Community Pharmacy Agreement (2015-2020)

As part of a wider package of reforms, the 6CPA outlines the Commonwealth's commitment to maintaining an effective community pharmacy sector, pledging up to $1.26 billion for 'evidence-based, patient-focused professional pharmacy programmes and services' across the five years to 2020 (Commonwealth of Australia & The Guild, 2015). Of significance to this Review, the 6CPA indicates that the Pharmacy Trial Program component of the agreement is intended to place a particular focus on improving the health outcomes of Aboriginal and Torres Strait Islander people (Commonwealth of Australia & The Guild, 2015).

This includes continued investment in both QUMAX and the s100 Support Allowance for an additional year, after which it was intended that the programs will be subject to a cost-effectiveness review (Commonwealth of Australia & The Guild, 2015). Ultimately, the available data was not able to support a full cost-effectiveness review and the scope was reframed as set out in this report.

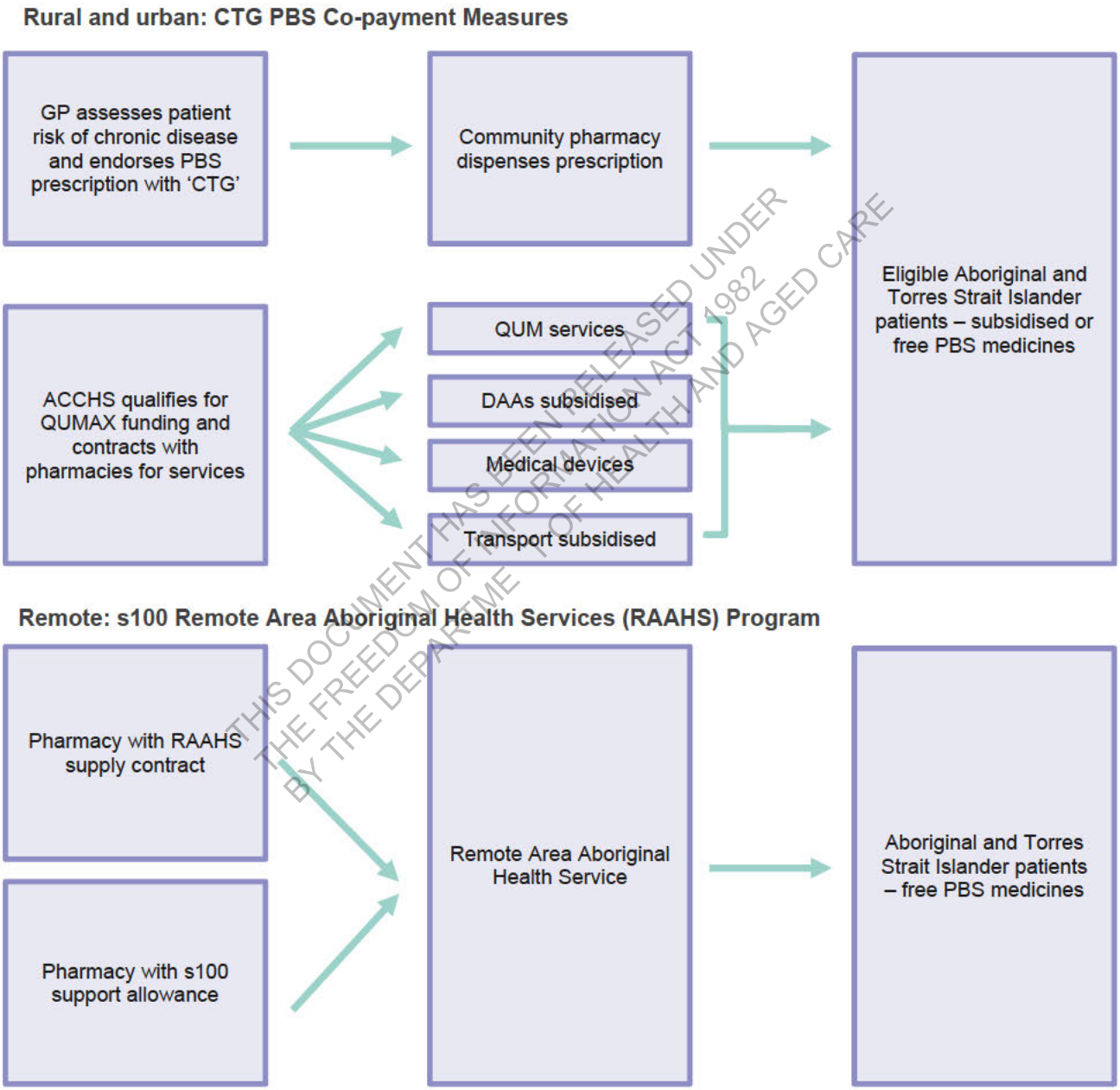
2.3. OVERVIEW OF THE FOUR INDIGENOUS PHARMACY PROGRAMS

Since the first CPA was signed in 1991, successive Governments have committed to increasing equitable access and uptake of high quality medicines in Indigenous communities. Several programs have been progressively introduced under the CPAs, as well as more recently under the Closing the Gap Initiative. Four of the current Indigenous Pharmacy Programs funded by the Commonwealth are:

- s100 Remote Area Aboriginal Health Services Special Supply (s100 RAAHS Program)
- 6CPA s100 Support Allowance Program (s100 Support Allowance)
- 6CPA Quality Use of Medicines Maximised for Aboriginal and Torres Strait Islander People (QUMAX) Program
- Closing the Gap (CTG) PBS Co-payment Measure.

Collectively, these programs seek to improve Indigenous health outcomes by not only increasing supply and access to essential PBS medicines in Indigenous communities, but also improving uptake and quality use of medicines. A high-level overview of the programs, which are split according to location, is outlined in Figure 3 below (PSA, 2014).

Figure 3 – Medicine Access Schemes for Aboriginal and Torres Strait Islander people



2.4. SECTION 100 REMOTE AREA ABORIGINAL HEALTH SERVICES (S100 RAAHS) PROGRAM)

SUMMARY

- The s100 RAAHS program was introduced in 1999 to address the 'financial, geographical and cultural' barriers that Indigenous people living in remote communities face when accessing essential medicines (Department of Health and Ageing, 2011).
- The program is widely believed to have achieved its primary objective of increasing supply and affordable access to PBS medicines in these remote communities.
- While the s100 RAAHS program was designed to increase supply and access, it has been suggested that the absence of clinical outcome reporting under the program is a 'missed opportunity' (The Senate Community Affairs References Committee, 2011).
- Some stakeholders have also questioned whether the program is optimised to deliver the best possible health outcomes for patients; specifically, whether 'medicines are being used as effectively as possible to improve health outcomes' (Department of Health, 2016b p. 36).
- An additional concern is that the s100 RAAHS Program 'currently only provides for the limited involvement of pharmacists in a wholesaling role' (Department of Health, 2016b p. 36).

2.4.1. Program overview

The s100 RAAHS program was established in 1999 in response to the barriers faced by people accessing PBS medicines in remote areas. The program, which was implemented by special arrangements under s100 of the *National Health Act 1953,* allows eligible patients to access PBS medicines from a remote area AHS free of charge, and without the need for a normal prescription (Department of Health, 2014a). The program's main objectives are to:

- improve access to PBS medicine in remote areas
- maintain compliance with existing State and Territory statutory requirements
- minimise administrative complexity, within the context of appropriate accountability.

Under the s100 RAAHS special supply arrangements, approved pharmacists and approved hospital authorities provide AHSs with bulk supplies of all s85 PBS medicines, based on the AHS' specific needs. The AHS is then able to dispense these medicines directly to their clients as needed, under the supervision of a qualified health professional and in accordance with relevant state/territory law. Significantly, patients are not required to have a prescription or to pay the PBS co-payment, and DHS reimburses the pharmacy directly (PSA, 2014). This arrangement not only leverages the existing health infrastructure by working with AHSs and community pharmacists (NACCHO & The Pharmacy Guild of Australia, 2012), but also allows the AHS to deliver a more comprehensive and complete service. That is, eligible patients are able to access medical advice and treatment in the one culturally appropriate setting.

Importantly, the s100 RAAHS Program does not require community and hospital pharmacists to be involved in the dispensing process. For this reason, pharmacists approved by the Department of Health under the scheme are effectively remunerated by DHS as wholesalers (Department of Health, 2016b p. 36). Reimbursement for medicine is determined by calculating the sum of:

- the approved price to pharmacists for the PBS item
- a mark-up (as appropriate for the cost of the item)
- a bulk handling fee of $2.96 as at 1 July 2016 (Department of Human Services, 2017).

This calculation is inclusive of the cost of transport and any cold chain maintenance implemented as part of the delivery process (Department of Human Services, 2017).

To participate in the program, an AHS must seek approval from the Department of Health. This involves meeting the program's eligibility requirements which are outlined under section 4 of the *National Health*

(Remote Aboriginal Health Services Program) Special Arrangements Instrument 2010. Specifically, an AHS must:

- meet health care needs of Aboriginal and Torres Strait Islander Australians
- operate a clinic or health care facility where medicines are supplied to patients in a remote zone as defined in the Rural, Remote and Metropolitan Areas Classification, 1991 Census Edition
- not be part of an arrangement, such as a coordinated care trial, for which PBS funds have already been provided
- employ or be in a contractual relationship with health professionals who are qualified to supply all medicines covered by these arrangements
- make sure all medicines supplied under the direction of those health professionals have storage facilities that:
    - prevent access by unauthorised people
    - maintain the quality of the medicine, for example, chemical and biological stability and sterility
    - comply with any special conditions specified by the manufacturer of the medicine (Department of Human Services, 2017).

The DHS indicates that there are currently 166 AHSs participating in the program (Department of Human Services, 2017). As outlined in Table 3 below, the total expenditure on PBS medicines supplied to participating AHSs in 2015-16 was $27,857,571, comprising 1,165,205 PBS Items (Department of Health, 2016c).

Table 3 – Total Expenditure for Medicines and Number of PBS Items Supplied to Participating Aboriginal Health Services2015-16

	NSW/TAS	NT	QLD	SA	WA	TOTAL
TOTAL ($)	$110,514	$14,110,429	$4,479,916	$1,191,324	$7,965,387	$27,857,571
PBS Items Supplied	4,391	589,572	190,318	46,946	333,978	1,165,205

2.4.2. Impact

The s100 RAAHS Program is widely believed to have achieved its primary objective of increasing supply and access to PBS medicines in remote communities, with the Guild and NACCHO suggesting that the program 'represents one of the most substantial positive developments in remote area Aboriginal health service delivery' (NACCHO & The Pharmacy Guild of Australia, 2012 p. 1; The Senate Community Affairs References Committee, 2011).

In an early evaluation, Kelaher et al. (2004) found that the s100 RAAHS Program had resulted 'in an increase of $36,448,145 expenditure on Aboriginal and Torres Strait Islander people through the PBS system since 2000/01,' and was potentially benefiting 36 per cent of the Indigenous population (Kelaher et al., 2004 p. 1). Increased access had been achieved in each jurisdiction and all respondents supported the continued funding of the program (Kelaher et al., 2004 p. 21; Kelaher et al., 2006). The success of the program in this area was further confirmed in the 2011 Senate Inquiry into the effectiveness of the special arrangements. The Inquiry concluded,

> *'... the section 100 supply program has been very successful in providing an increased amount of PBS medicines to patients of AHSs.* ***To the extent that the program is a supply arrangement, it has certainly met its objectives****.' (The Senate Community Affairs References Committee, 2011).*

Kelaher et al.'s 2004 review also found that the program had strengthened working relationships between participating pharmacists and AHSs. This was seen to have led to improvements in QUM, as well as the ability of the AHS to deliver more integrated care (Kelaher et al., 2004 p. 173; Kelaher et al., 2006).

The 2011 Senate Inquiry did however reveal concerns about the extent of access among some Aboriginal and Torres Strait Islander communities, including those who do not have an approved AHS in their locality or

who live in areas where there is a shortage of general practitioners (The Senate Community Affairs References Committee, 2011 p. 14). Kelaher et al.'s review (2004) similarly pointed to the example of a town that fell outside the program's 'remote' zone, despite being located 35 kilometres from the nearest pharmacy (Kelaher et al., 2004 p. 101). The Northern Territory Government has also called for the AHS eligibility requirements to be reviewed, noting that ambiguity was resulting in disparities in access between similar health centres (Northern Territory Department of Health, 2016; The Senate Community Affairs References Committee, 2011 p. 14).

While it has been acknowledged that the s100 RAAHS Program is a supply program, some organisations have also called for the introduction of data collection relating to the impact of the supply program on health outcomes (The Senate Community Affairs References Committee, 2011 p. 5, citing the Centre for Remote Health, Submission 10). Based on the Senate Inquiry submissions, the Committee leading the review recommended that the Government conduct an evaluation to determine whether the program is leading to improved clinical outcomes. Specifically, it recommended that 'the Commonwealth Government should develop a clear plan to test the assumption that more medicines equals better health outcomes for patients of remote area AHSs' (The Senate Community Affairs References Committee, 2011 p. 19).

Others have suggested that the causal link between medicine supply and health outcomes is too tenuous to provide meaningful insights, and that the program's success is better measured against medicine utilisation data (Kelaher et al., 2004; The Guild, 2011). That is, '[h]ealth outcomes associated with increased medicine use will depend on the effectiveness of the medicine and QUM. The Program in its current form does not directly influence these factors so it would be inappropriate to evaluate the success of the program on this basis' (Kelaher et al., 2004 p 104).

Notably, in its submission to the 2011 Senate Inquiry, the Department of Health noted that this would require 'careful design within the constraints of the data and the need to maintain individuals' consent and privacy…. [and that] Such research is outside the scope and resourcing of the RAAHS Program'.

Despite broad agreement that the s100 RAAHS Program has been successful in meeting its primary objective, recommendations have been made for strengthening and enhancing the program. Kelaher et al.'s evaluation outlined a range of policy and operational recommendations, including a greater focus on QUM activities as well as legislative compliance (Kelaher et al., 2004; The Senate Community Affairs References Committee, 2011). In its submission The Department of Health has confirmed that it has implemented several of these recommendations, including:

- medication needs in Indigenous health settings which are unmet by medicines available through the PBS
- developing guidance for sponsors and the Pharmaceutical Benefits Advisory Committee for use in the development and assessment of applications for inclusion of medicines on the PBS to treat conditions particular to Aboriginal and Torres Strait Islander health needs
- the development of data which provide guidance on the effectiveness of medicines in treating conditions particular to Aboriginal and Torres Strait Islander health needs
- aspects of proposed applications to list medicines on the PBS, where the sponsor seeks a listing based on a medicine's use in Aboriginal and Torres Strait Islander health settings
- the provision of medicines to treat conditions particular to Indigenous health
- the ramifications of the potential withdrawal from the market of medicines relevant to Aboriginal and Torres Strait Islander health needs, and provision of advice to the Department on mechanisms to address these potential gaps in therapy
- the utilisation of future listings included in the Schedule of Pharmaceutical Benefits (Department of Health and Ageing, 2011).

However, a number of the recommendations outlined in Kelaher's major review of the program are yet to be implemented, including funding for Dose Administration Aids (DAAs) and improved mechanisms for information collection (The Senate Community Affairs References Committee, 2011 p. 41). Overall, the Committee expressed concern that recommendations from several reviews of the program had not been adopted, suggesting that the Government should publish a clear list outlining 'which recommendations will be implemented, timeframes and responsibility for implementation' (The Senate Community Affairs References Committee, 2011 p. 45).

Finally, it should be noted the 2016 Discussion Paper for the Review of Pharmacy Remuneration and Regulation suggests that some stakeholders have questioned whether the program is optimised to deliver the best possible health outcomes for patients and, specifically, whether 'medicines are being used as effectively as possible to improve health outcomes' (Department of Health, 2016b p. 36). An additional concern is that the s100 RAAHS Program 'currently only provides for the limited involvement of pharmacists in a wholesaling role' (Department of Health, 2016b p. 36). Recommendations such as these may be seen to reveal a 'tension' between whether the program should maintain its focus on medicine supply, or expand to address the additional challenges and health barriers faced by Indigenous communities (Kelaher et al., 2004 p. 22). This decision is further influenced by additional programs that have been introduced to complement the s100 RAAHS Program, including the s100 Support Allowance.

2.5. 6CPA S100 SUPPORT ALLOWANCE PROGRAM (S100 SUPPORT ALLOWANCE)

SUMMARY

- While the s100 Support Allowance Program is focused on enabling AHSs to receive support from pharmacists, the ultimate intention is to facilitate quality use of medicines.
- Although there is evidence that the allowance is facilitating a significant level of QUM support to the participating AHSs, there have been calls for pharmacists to play a greater role in the AHS primary health care teams. This includes allowing funding to be used for the direct employment of pharmacists in an AHS.
- At the same time, barriers have been identified that restrict pharmacists' full engagement in the patients' primary health care team, and constrain the potential impact of the program. These include travelling costs incurred by pharmacists, capacity limitations, workforce shortages and the program's minimum requirement for two annual site visits.
- Past reviews and inquiries have proposed increasing the flexibility of funding delivery in recognition of the significant variation in implementation contexts.
- There have also been calls to expand the program to include funding for DAAs, which are believed to contribute to improved medicine adherence.

2.5.1. Program overview

While the s100 RAAHS Program has contributed to improved supply of and access to PBS medicines in remote areas, as noted above, the program was not designed specifically to address QUM and medicine adherence. Recognising that both of these challenges need to be addressed if health outcomes are to improve in remote Indigenous communities, the s100 Support Allowance was introduced in 2001 under the Third CPA, and has received continued support under successive CPAs. The program is designed to provide professional support to the AHSs taking part in s100 RAAHS Program, with a particular focus on QUM activities.

The role of the pharmacist or hospital authority is to be defined in an annual Workplan, which is to be mutually agreed with the participating AHS and approved by the Department. The Workplan aims to introduce flexibility into the program, so that support can be tailored to the individual needs of each AHS (Department of Health and Ageing, 2011; The Senate Community Affairs References Committee, 2011).

Approved pharmacists and approved hospital authorities are paid an annual allowance from the Australian Government to provide a range of support services. This allowance ranges between $6,000 and $10,500 per annum. If an Outstation[2] is attached to the AHS and serviced by a pharmacist under the program, a flat rate of $6,000 per Outstation per annum is also available (Department of Health & The Guild, 2017). Travel loading and additional loading may also be available to pharmacists and hospital authorities offering support services.

[2] An Outstation is "a remote permanent health service of a primary AHS that participates in the s100 supply arrangements, staffed by at least one permanent healthcare worker, where prescription-only medicines are stored in compliance with an approval issued by the relevant State/Territory health authority".

Subject to the 6CPA Program Specific Guidelines and payment rules, the annual allowance is broken down into three separate instalments. An initial 50 per cent instalment is paid on completion of the initial or renewal application form, including an agreed Workplan. Two 25 per cent instalments are subsequently paid once the Department of Health has accepted the Certification of Continued Support Service Form after the first six-months and second six-months, including acceptance of the Progress Reports (Department of Health & The Guild, 2017).

In line with the Program Specific Guidelines, s100 Support Allowance activities should include, but are not limited to:

- developing and implementing a Workplan for the s100 supply arrangements within the AHS
- providing assistance in the implementation and ongoing administration of appropriate procedures and protocols for managing s100 supply arrangements, including the establishment of a medicine store
- developing a range of other appropriate measures to enhance the QUM, which may include assistance with dose administration aids (DAAs), participation in regular meetings with health staff, and review of patient medication
- implementing agreed measures which aim to enhance QUM
- providing a range of other education services to AHS clinical and support staff relating to medicines and their management (Department of Health & The Guild, 2017).

Additionally, pharmacists and hospital authorities are required to visit the AHS **at least twice** during the annual report cycle (Department of Health & Australia., 2015 p. 6).

2.5.2. Impact

NOVA Public Policy's 2010 evaluation of the s100 Support Allowance provides an insight into the effectiveness of the program. The review noted that the key services provided by pharmacists were (NOVA Public Policy P/L, 2010 pp. 23-24):

- the introduction of audit procedures
- education (utilising NPS MedicineWise) resources
- getting medicine storage functional
- improving security particularly with respect to medicines that are subject to abuse
- checking of stock levels and currency
- examination of storage and handling facilities
- support for appropriate prescribing practices including checking and labelling of products.

Stakeholder interviews revealed that the s100 Support Allowance was providing an 'important level of professional support' to the participating AHSs (NOVA Public Policy P/L, 2010 p. 2). All twenty-five AHSs surveyed by NOVA reported the program was meeting their professional support needs at a 'high' or 'very high' level (NOVA Public Policy P/L, 2010 p. 2). Similarly, the majority of pharmacists agreed the program was providing significant professional support, 'without which there would be serious safety and quality issues in the provision of medications' (NOVA Public Policy P/L, 2010 p. 27). The evaluation identified a number of key areas where the program had 'addressed some significant QUM issues, particularly with regard to the safe storage, handling and dispensing of medicines' (NOVA Public Policy P/L, 2010 p. 2).

The positive role pharmacists can play under the arrangements had previously been highlighted in Kelaher et al.'s 2004 review, which revealed that '[t]he presence of visiting pharmacists was associated with greater increases in medicine utilisation, suggesting that such visits may foster more complete implementation of s100' (Kelaher et al., 2004 p. 138). In response, Kelaher et al. (2004) provided policy recommendations directed at increasing uptake of the s100 Support Allowance.

However, without 'undervaluing' these QUM improvements, NOVA Public Policy's evaluation did note that the program had had a limited impact on the engagement of pharmacists in the primary care activities undertaken by AHSs (NOVA Public Policy P/L, 2010). Three areas identified as a priority included increasing pharmacist participation in 'primary care team meetings and case conferences, medication chart reviews, and Home Medicine Reviews' (NOVA Public Policy P/L, 2010 p. 2).

A number of submissions to the 2011 Senate Inquiry echoed this view, with the Committee concluding that 'more direct access to a pharmacist is required by both the AHSs and their patients in order to support better use of PBS medicines' (The Senate Community Affairs References Committee, 2011). The Inquiry noted that several organisations, including the PSA and the Guild, expressed concerns that a minimum of two visits to a AHS per year is 'usually insufficient to provide effective QUM services to the AHSs and their Outstations' (The Senate Community Affairs References Committee, 2011). The Guild recommended that a review should be undertaken to determine the minimum number of days required to provide effective support and QUM services to AHSs (The Guild, 2011).

It was noted in the 2010 evaluation that some pharmacists had been employed directly by the AHS. The evaluation identified a broad consensus that this would be a preferred model as it facilitates improved integration, promotes continuity of care, allows pharmacists to play an increased role in the primary care team and strengthens the relationship between pharmacists and the AHS and its patients (NOVA Public Policy P/L, 2010 p. 25). This view was further reiterated in the 2011 Senate Inquiry, with submissions drawing attention to a variety of models for locating pharmacists within participating AHSs (The Senate Community Affairs References Committee, 2011).

Despite some pharmacists wanting to play an enhanced role, many commentators have identified barriers and capacity limitations, including a lack of time, low levels of funding and workforce shortages (NOVA Public Policy P/L, 2010; The Senate Community Affairs References Committee, 2011). Travelling long distances to reach remote communities (and securing accommodation) is expensive and travel by road is often hampered by floods or other weather conditions. Security and safety were also noted as issues for pharmacists travelling alone. Limited capacity on the part of pharmacists themselves also presents a barrier to successful implementation. In particular, a lack of (or competition for) time and workforce shortages in remote locations makes it difficult for pharmacists to leave their primary workplace to travel to AHSs (NOVA Public Policy P/L, 2010).

While the 2010 evaluation recommended exploring flexible funding options that would allow AHSs to cash out their support allowance and directly employ pharmacists, the evaluation also noted that 'at this time, the direct employment of pharmacists within AHSs is not feasible given current workforce levels' (NOVA Public Policy P/L, 2010 p. 25). The Department has similarly observed that whilst 'from a QUM perspective it may be desirable to have a pharmacist employed at all AHSs, given current rural workforce levels across all areas of the health workforce, it is not practical to expect that this would occur at all participating AHSs and their outstations/outreach clinics' (Department of Health and Ageing, 2011 p. 9).

Significantly, while the Senate Committee acknowledged these limitations, it ultimately recommended that 'program flexibility be implemented to give remote area AHSs increased and direct access to the services of a pharmacist' (The Senate Community Affairs References Committee, 2011 p. 30). The Committee suggested that, 'this could be done by AHSs engaging a pharmacist directly or in collaboration with other stakeholders or service providers' (The Senate Community Affairs References Committee, 2011 p. 30). Proposed options for funding the program included:

- cashing-out existing program funding
- utilising alternative funding measures
- expanding the Practice Nurse Incentive Program to include pharmacists
- remunerating remote pharmacists for services though the MBS
- removal of legislative barriers that prevent the operation of pharmacy businesses in remote areas (The Senate Community Affairs References Committee, 2011 p. 30).

The committee went on to recommend that a consultative body of stakeholders should be established to develop proposals and explore options for better facilitating and increasing direct access to pharmacists (The Senate Community Affairs References Committee, 2011 p. 30).

Another core theme to emerge in the Senate Inquiry was the lack of specific funding under the s100 Support Allowance for DAAs, such as 'blisterpacks' and 'Websterpacks' (The Senate Community Affairs References Committee, 2011). This was also raised in consultations for the 2010 evaluation, with stakeholders noting that Aboriginal and Torres Strait Islander patients 'are heavily dependent upon DAAs and these take a considerable amount of time and pharmacists are not reimbursed for them' (NOVA Public Policy P/L, 2010

p. 25). This concern assumes added significance in light of the high levels of usage and success of DAAs under other Indigenous pharmacy programs, specifically QUMAX which operates in rural and urban areas.

2.5.3. Limitations of the s100 arrangements

While both the s100 programs were seen to have increased access and quality use of PBS medicines in remote areas, there was a growing recognition that a significant portion of the Indigenous population were not benefiting from these improvements. In 2001, approximately 27 per cent of the Indigenous population resided in remote areas of Australia (Stoneman & Taylor, 2007 p. 2). Only four of the 153 AHSs approved under the s100 arrangements were located in NSW, despite the largest Indigenous population residing in this jurisdiction (29 per cent) (Stoneman & Taylor, 2007 p. 2). Data from the Australian Bureau of Statistics and Australian Institute of Health and Welfare confirmed that in 2001-2002 Indigenous per capita spending under the PBS was one-third of the non-Indigenous population (Stoneman & Taylor, 2007 pp. 2-3). Combined, these figures were seen to highlight a significant gap that still existed in Indigenous access and uptake of medicines across Australia.

2.6. 6CPA QUALITY USE OF MEDICINES MAXIMISED FOR ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE (QUMAX) PROGRAM

SUMMARY

- QUMAX was introduced as a two year pilot under the Fourth CPA with the aim to improve health outcomes for Indigenous patients who attend AHSs in rural and urban Australia. This was to be achieved by trialling activities that would increase access to PBS medicines and improve QUM and medication compliance (Urbis, 2011 p. i).
- A 2011 evaluation of the program found evidence that it was improving QUM at the participating AHSs and community pharmacies (Urbis, 2011). Stakeholders participating in the evaluation reported QUMAX had been effective in increasing medicine compliance, helping to overcome known barriers to medical care by providing transport assistance, increasing the frequency of consultations, and improving patients' understanding and capacity to self-manage their care (Urbis, 2011).
- Notably, during the initial pilot period from 2008 - 2010, QUMAX included a co-payment relief for eligible patients in non-remote AHSs. Following the pilot, this aspect of QUMAX came to be subsumed by the CTG PBS Co-payment measure.
- A recent report from NACCHO indicates that pharmacists believe the QUMAX program is having a positive effect on their patients' health outcomes.
- Funding for QUMAX activities has attracted co-investment from AHSs; the sustainability of ongoing contributions by AHSs is not clear.
- While QUMAX has been found to improve QUM activities, prior evaluations have identified opportunities to strengthen the impact of the program.
- Additionally, although stakeholders have high confidence that QUMAX supports better health, there is little data to validate this. In this context there are opportunities to reorientate reporting toward program outcomes.
- Some sector stakeholders have identified opportunities to improve integration of QUMAX efforts with other medicines access and supply programs (including the CTG PBS co-payment).

2.6.1. Program overview

In response to a perceived gap in pharmaceutical support for Indigenous people living in rural and urban areas, the QUMAX program was introduced in 2008 under the Fourth CPA. The program was designed to improve the health outcomes of Aboriginal and Torres Strait Islander people that attend AHSs in rural and urban Australia, by trialling interventions that aim to:

- improve QUM and medication compliance
- support improved access to medicines under the PBS by addressing cultural, transport and financial barriers to access (Urbis, 2011).

The QUMAX Program was originally funded as a two-year pilot from 2008-10, with a capped budget of $10.9 million. After the success of the initial pilot, the program was extended to include a transition year, as well as

a further four years under the Fifth CPA. Funding of up to $11 million was allocated across this five-year period. Notably, during the initial pilot period, QUMAX included co-payment relief for eligible patients in non-remote AHSs. Following the pilot, this aspect of QUMAX was subsumed into the CTG PBS Co-payment measure (The Senate Community Affairs References Committee, 2011 citing NACCHO, Sumission 13, pp. 12-13). The 6CPA included a further $2.5 million to fund QUMAX for an additional year (2015-16) (Commonwealth of Australia & The Guild, 2015) and $2.5 million for 2016-17.

Eligible AHSs approved to take part in the program are allocated an annual QUMAX budget.[3] The total amount of funding is determined using a set formula that considers the total number of AHSs and eligible clients taking part in the arrangements. The specific formula used is outlined in Table 4 (Department of Health, 2017).

Table 4 – Formula for identifying the annual QUMAX budget

QUMAX Budget per ACCHO = $10,000 + [a/b x ($d – c10,000)]
Where: a = number of current QUMAX registered clients attending ACCHO (i.e. total number QUMAX clients in previous 12 months). b = total number of QUMAX registered clients across all participating ACCHOs. c = number of ACCHOs registered to participate in the QUMAX Program. d = total annual QUMAX budget allocated to QUMAX Work Plan support.

With the exception of funding for DAAs, QUMAX funding is delivered to AHSs in six-monthly instalments, with the first upfront payment allocated after the contract is signed. Funding for DAAs is delivered to eligible community pharmacists on a four-monthly basis.

In its current form, QUMAX comprises seven support categories, summarised in Table 5 (Department of Health., 2017).

Table 5 – QUMAX support categories

Support category:	**Aim:**
DAA arrangements	Reduce the financial barriers to access a comprehensive DAA service provided by Community Pharmacy to improve medication adherence and medication management for AHS clients.
QUM pharmacy support	To facilitate additional Community Pharmacy involvement and support in areas such as QUM planning, policies, protocol development, medicine quality assurance and appropriate Safety Net utilisation.
HMR models of support	Reduce cultural and logistical barriers to access Home Medicines Review (HMRs) by AHS clients.
QUM devices	Reduce the financial barriers of access to QUM devices to improve overall delivery of medicines and management of chronic diseases i.e. asthma and diabetes.
QUM education	Reduce financial barriers of access to QUM education and health promotion for AHS employees and their clients. This category may also help AHSs to access current medicine resources, promoting suitable, safe and effective medication management for AHS clients.

[3] Eligible AHS are ACCHOs, and do not include state and territory operated services.

Support category:	Aim:
Cultural awareness	Improve access and delivery of cultural awareness resources and training for Community Pharmacy to promote a culturally aware pharmacy environment.
Transport	Reduce barriers of access to medicines and Community Pharmacy services by providing transport support.

AHSs are required to submit an annual QUMAX Work Plan outlining how the budget will be allocated across these seven categories. All Work Plans require approval from NACCHO, the Guild and the Department of Health, after which the AHS will enter into a formal contract with the Guild. AHS are responsible for negotiating with their preferred Community Pharmacy for the provision of DAA arrangements, as well as any QUM support services. Community pharmacists must be approved under s90 of the *National Health Act 1953* and agree to the QUMAX Program Specific Guidelines (Department of Health et al., 2017).

Data presented in a recent report by NACCHO (2016) reveals that across 2010-2015, the number of eligible clients for QUMAX increased by 76 per cent to 218,549 people (NACCHO, 2016), representing around 40 per cent of the Estimated Resident Population (ERP) of 527,000 Indigenous people living in urban and regional areas.

These figures point to a high level of uptake by AHS clients, but as not all Indigenous people have access to or choose to use AHSs (or attend non QUMAX-participating AHSs), there are clear gaps in extending the benefits to Indigenous people who are not AHS clients. This group is estimated to exceed 300,000 people (ERP less currently QUMAX eligible). The needs profile and potential available gains from QUMAX of this group and whether it differs significantly from that of the AHS client group is not known. As a consequence, the cost-effectiveness of extending the program reach cannot be assessed.

Clients of the QUMAX Program are relatively evenly spread across urban, inner regional and outer regional areas, with a third of clients coming from each of these areas (NACCHO, 2016). When the population distribution is taken into account, a greater proportion of Indigenous people in outer regional areas are QUMAX clients (NACCHO, 2016).

Table 6 – QUMAX uptake by region

Area	per cent of pop.	per cent of QUMAX clients
Cities	34 per cent	29 per cent
Inner Regional	23 per cent	35 per cent
Outer Regional	21 per cent	36 per cent
Source: NACCHO (2016, p. 13)		

Additionally, 81 AHSs were found to have participated in the program at some point within the period covered by the report, while the total number of participating AHSs in any given year rose to 68 in 2010-11 and 75 in 2016 (NACCHO, 2016, p. 4). NACCHO reports that 508 community pharmacies have participated in QUMAX over this period (NACCHO, 2016, p. 4).

The proportion of Indigenous people using AHSs varies considerably by region, with estimates ranging from below 50 per cent to close to 100 per cent in some areas (Panaretto et al., 2014). In urban areas, where there are alternative services available, rates of utilisation are generally lower than in more remote locations.

2.6.2. Impact

In December 2007, Urbis was commissioned by the Department of Health to undertake an evaluation of the initial QUMAX Program (Urbis, 2011). At the time, QUMAX included a co-payment relief for eligible clients, which was seen to be the main focus of the program. As a direct result, the key findings of the evaluation included evidence of increased access to PBS medicines in non-remote areas. Applying a conservative methodology, the report found a 14 per cent increase in PBS utilisation for AHS clients, compared to the

baseline year prior to the program's commencement. The evaluation also found that the program had been effective in improving QUM activities. Indicators of improved QUM included:

- AHSs and Community Pharmacists 'regularly reported that DAAs had been a very effective instrument in increasing medication compliance and ensuring patient QUM', noting that prior to QUMAX the additional cost of dispensing DAAs made them 'highly prohibitive'
- AHSs regularly reported that transport assistance had been 'significant factor' contributing to the program's success, particularly given that transport was 'a known barrier to both regular medical care and medication compliance'
- The doctors, pharmacists and clients who took part in consultations consistently reported that QUMAX had 'led to an increase in the regularity and quality of contact between AHSs and their clients'. Specifically, 81 per cent of the AHSs surveyed believed patient visits had increased in frequency and become more regular
- Stakeholders also consistently reported that the program had 'increased patients' understanding and self-management of their own conditions'. Specifically, 71 per cent of AHSs surveyed reported improvements in patients' confidence in disease self-management (Urbis, 2011)

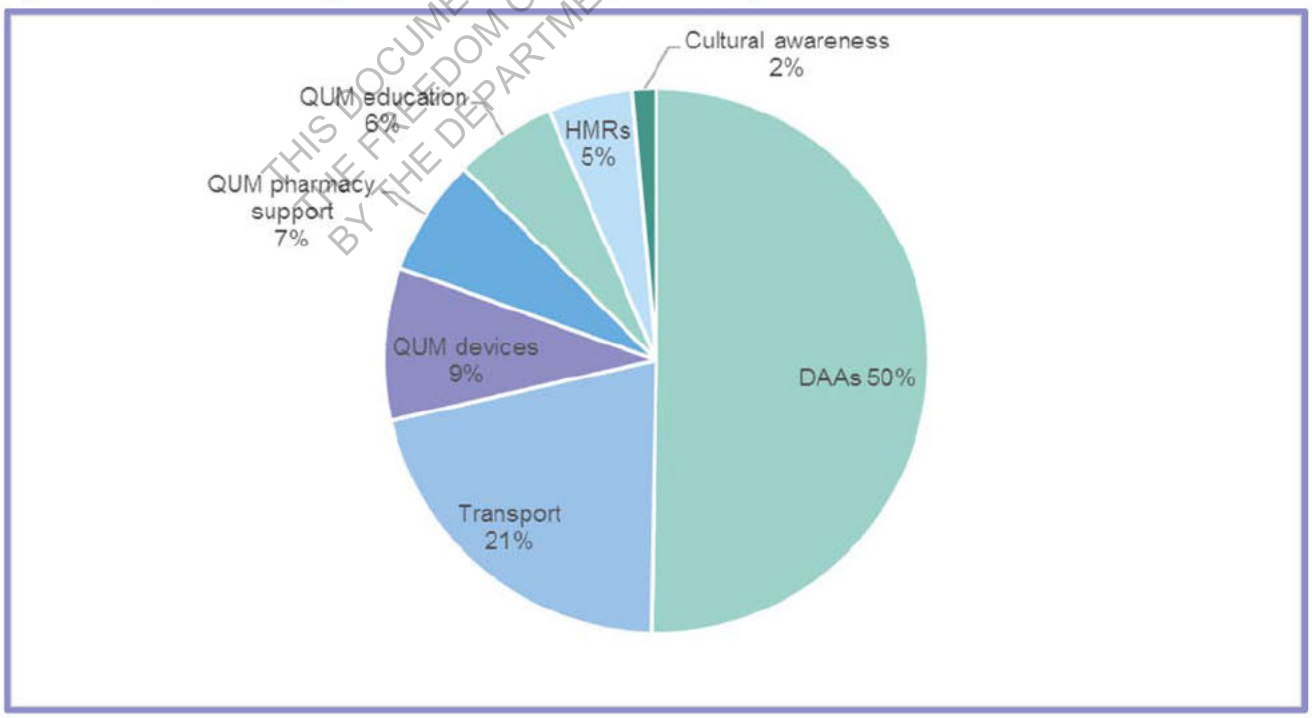
In March 2016, NACCHO released a report to its members on QUMAX for the years 2010-2015. The report calls for continued funding to ensure the ongoing sustainability of QUMAX and to maintain the 'valuable contribution to health outcomes for Aboriginal and Torres Strait Islander people in major cities and outer regional areas for when s100 support is not available' (NACCHO, 2016).

Data presented in the report reveals the number of AHSs and clients participating in the program from 2010-2015, as well as the average allocation of funds underneath each of the program's categories (Figure 4). Key insights for the report indicate that:

- DAAs comprised the largest portion of QUMAX funding (50 per cent)
- the second largest portion of QUMAX funding was expended on transport (21 per cent)
- funding for HMRs was highest in regional towns and lowest in cities (NACCHO, 2016).

This breakdown of funding affirms earlier findings by Urbis that DAA and transport assistance were perceived to be particularly valuable aspects of QUMAX.

Figure 4 – Proportion of funding allocated to each of the QUMAX Categories in 2010-2015



Adapted from NACCHO (2016)

Urbis' prior evaluation of QUMAX found 'almost universal reporting' that the program had positively impacted the health outcomes of the Indigenous patients taking part (Urbis, 2011, p. 73). The AHSs commonly attributed positive benefits to the increase in 'consistent treatment of conditions' (Urbis, 2011, p. 73). Improvements were anecdotally reported such as lowered levels of glycated haemoglobin (HbA1c), and reductions in blood pressure, blood glucose or cholesterol levels (Urbis, 2011, p. 73).

However, it is important to note that AHSs were not required to monitor or report on patient's health outcomes as part of the QUMAX Program. While Urbis sought this information at the time of the prior evaluation, most AHSs data systems did not allow them to 'extract and analyse clinical information in relation to people who had received QUMAX assistance and to make comparisons with some control groups' (Urbis, 2011, p. 73). Some AHSs voluntarily undertook this analysis independent from Urbis' research team. Four out of the five services contributing to this area of the 2011 evaluation reported improvements in health outcomes (Urbis, 2011, p. 73). Significantly, at the time of Urbis' reporting in 2011, QUMAX included the support allowance, which is no longer a feature of the program.

A more recent report by NACCHO (2016) suggests that QUMAX program data and feedback from AHSs and community pharmacy staff indicates the program 'is a valued and effective pharmacy service for Aboriginal and Torres Strait Islander people' (NACCHO, 2016, p. 4). The report provides evidence of AHSs co-investing in the program. NACCHO notes that the decision to co-invest was driven by two key reasons, including 'the positive outcomes being realised by their clients' (NACCHO, 2016, p. 28). However limited evidence is provided in the report to demonstrate these improvements.

While evidence suggests that the QUMAX Program is improving QUM activities and, anecdotally, having a positive impact on patients' health outcomes, several reviews and reports have also made recommendations focused on strengthening the program's impact. In our 2011 evaluation of QUMAX we recommended:

- exploring ways to make HMRs 'more useful to AHSs in the management of chronic disease clients'. While hard data was not available, stakeholders reported that QUMAX was associated with increased uptake of HMRs, and was believed to have 'enhanced promotion of the value of HMRs'
- developing new models for providing community pharmacists with cultural awareness training. Throughout Urbis' consultations, AHSs often noted the importance of cultural awareness and safety
- providing ongoing administrative and practical support for individuals 'who can drive change and help AHSs and their clients strive for better QUM'. Our report noted that the administrative and practical QUM support offered to AHSs by the NACCHO, Guild Program Managers, QUM Support Pharmacists and state NACCHO Affiliates was a positive aspect of the program that should 'not be undervalued' (Urbis, 2011, pp. 78-79).

NACCHO has also proposed that the impact of QUMAX might be further enhanced through reviewing funding models to ensure that access to new technologies (e.g. 'wearables' that collect health data) are appropriately supported. NACCHO also suggest that the platform that QUMAX has established creates opportunities to deliver or support other health and medicines programs (NACCHO, 2016, pp. 29-30).

NACCHO has highlighted gaps between QUMAX demand and available funds, noting that 57 AHSs co-invested over $420,000 in the program between FY 2014-15 alone (NACCHO, 2016). A majority of funds were allocated to DAAs, and NACCHO observed that the decision to co-invest was driven by two key factors:

- the positive outcomes being realised by their clients
- the inadequacy of the levels of QUMAX Program funding overall (NACCHO, 2016).

The report further notes that in the face of negotiation delays regarding the 6CPA and uncertainty of QUMAX funding, several AHSs continued the program, confident that funding would eventually materialise. This decision was again attributed to participants' 'strong support' for the program (NACCHO, 2016).

2.7. CLOSING THE GAP (CTG) PBS CO-PAYMENT MEASURE

SUMMARY

- The Closing the Gap (CTG) PBS Co-payment Measure is one of fourteen measures in Indigenous Australians Health Programme (IAHP)
- The program aims to improve the management and prevention of chronic disease among Indigenous cohorts, by providing registered patients with partial or full financial relief from the co-payment attached to PBS medicines.
- Past evaluations have suggested that the program has met its primary objectives, by both reducing the financial barriers that limit access to medicines and increasing utilisation of PBS medicines required for chronic disease management (KPMG, 2014).
- Some sector stakeholders have however noted structural gaps in the program's coverage that interfere with the continuity of patients' care. Key gaps have been found to occur when patients are discharged form hospital, or attend a health service or medical specialist that is either unaware, unable or has decided not to register in the scheme.
- Stakeholders have also identified several opportunities for further strengthening the program's impact.

2.7.1. Program overview

The Closing the Gap (CTG) PBS Co-payment Measure is one of fourteen measures in Indigenous Australians Health Programme (IAHP). It seeks to contribute to improved management and prevention of chronic diseases by addressing the financial barriers limiting access to PBS medicines by Aboriginal and Torres Strait Islander people compared to non-Indigenous cohorts. This is achieved by providing either partial or complete financial relief from the patient co-payment attached to PBS medicines in Australia.

The CTG PBS Co-payment is available to Aboriginal and Torres Strait Islander people of any age who present with an existing chronic disease or are at risk of chronic disease and, in the opinion of the prescriber:

- would experience setbacks in the prevention or ongoing management of chronic disease if the person did not take the prescribed medicine, and
- are unlikely to adhere to their medicines regimen without assistance through the program (Department of Health, 2016a).

Eligible patients must be registered at either a general practice participating in the Indigenous Health Incentive under the Practice Incentives Programme (PIP), or at an AHS located in an urban or rural setting (Department of Health, 2016a). Once registered, prescribers in a selection of approved settings are able to annotate the patient's prescription with the letters 'CTG'. On presenting to a pharmacy with a CTG script, eligible patients already entitled to PBS at the concessional rate (currently $6.10 per item) are not required to pay the PBS co-payment, while non-concessional patients who would usually pay the full PBS-co-payment (currently $37.70 per item) are required to pay the concessional rate (Department of Health, 2016a). Patients are however still required to pay premiums for a small number of specialised medicines.

Importantly, although the measure is focused on chronic diseases, the co-payment covers all of the PBS medicines required by eligible patients, regardless of whether these are prescribed for a chronic condition or not (KPMG, 2014 p. 230; The Guild and NACCHO, 2015). Hospital prescriptions, highly specialised drugs and other drugs subject to alternate arrangements under s100 of the *National Health Act 1953* are not however included (Department of Health, 2016a).

Under the measure, prescribers wanting to take part in the program must be a 'member, employee or contractor at a GP participating in the Indigenous Health Incentive under the PIP or at an approved Indigenous Health Service in urban and rural settings' (Department of Health, 2016a). Medical specialists are also eligible to participate in the scheme and annotate prescriptions when they are:

- providing services at a non-remote Indigenous Health Service, or
- treating an eligible patient that has been referred by a GP from a PIP Indigenous Health Incentive practice or participating Indigenous Health Incentive (Department of Health, 2016a).

The inclusion of medical specialists aims to 'ensure continuity of a patient's care' (Department of Health, 2016a).

The CTG PBS Co-payment extends to Aboriginal and Torres Strait Islander people residing in remote areas, provided the patient is registered with and accesses medicines through GPs 'participating in PIP where there is a pharmacy available to dispense the prescription' (Department of Health, 2016a). In these areas, the CTG Co-payment is complemented by s100 RAAHS, with the Department 'recognising that there may not be pharmacies available to dispense in some remote areas' (Department of Health, 2016a).

Data in a Joint Position Paper from the Guild and NACCHO for the period 1 July 2010 to 31 June 2014 is outlined in Figure 5 (The Guild and NACCHO, 2015 p. 5).

Figure 5 – Cumulative CTG PBS Co-payment Measure statistics for the period 1 July 2010 to 31 June 2014

- 258,316 patients have benefited by accessing more affordable PBS medicines through the Measure
- in March 2014, 4,121 community pharmacies dispensed a 'CTG' annotated prescription
- over 99 per cent of community pharmacies have participated in the Measure since implementation
- 7,555,676 'CTG' annotated prescriptions have been dispensed under the Measure
- uptake is highest in NSW with 39.82 per cent of CTG prescriptions dispensed, followed by QLD with 27.96 per cent, WA with 10.89 per cent, SA with 8.25 per cent, VIC with 7.95 per cent, TAS with 2.45 per cent, NT with 1.92 per cent and ACT with 0.77 per cent
- the top 10 medicines dispensed under the Measure are: atorvastatin, metformin hydrochloride, salbutamol sulphate, perindopril, codeine phosphate with paracetamol, paracetamol, amoxycillin, cephalexin, esomeprazole magnesium trihydrate and amoxycillin with clavulanic acid.

2.7.2. Impact

Following the development of a monitoring and evaluation framework in 2009-10 (Urbis, 2010), the Department of Health commissioned two evaluations of the ICPD, both comprising an assessment of the CTG PBS Co-payment. These include *The Indigenous Chronic Disease Package Sentinel Sites Project*, a place-based evaluation at 24 sites that implemented the ICDP (Menzies School of Health Research, 2013), and *The Indigenous Chronic Disease Package National Monitoring and Evaluation project*, a whole-of-program evaluation to examine the ICPD's performance over its first four years (KPMG, 2014).

Both evaluations found that there had been a rapid and very strong uptake of the CTG PBS Co-payment, with higher than expected levels of participation by Aboriginal and Torres Strait Islander people (KPMG, 2014; Menzies School of Health Research, 2013). Initial models for the CTG Co-payment estimated that 70,000 Aboriginal and Torres Strait Islander people would benefit from the measure by the end of 2012-13 (Department of Prime Minister and Cabinet, 2014). This forecast was exceeded by June 2011 (Menzies School of Health Research, 2013), with 125,028 receiving at least one CTG script during the six month period ending June 2012 (KPMG, 2014 p. 254). More recent data presented by the Guild and NACCHO for the period 1 July 2010 to 31 June 2014 indicates that 258,316 patients 'are benefiting by accessing more affordable PBS medicines through the measure' (The Guild and NACCHO, 2015 p. 5).

Additionally, the CTG PBS Co-payment was found to be reaching patients in the two identified categories of disadvantage-concession card holders and those who had higher health costs:

- 70 per cent of the participants at both the Sentinel Sites and across Australia were in the concessional category – this includes 'low-income people who qualify for a health care card, pensioners and people who are eligible for a national senior's card,' and

- three per cent of the participants in Sentinel Sites and six per cent across Australia were eligible for the PBS safety net – this covers people who 'have exceeded the threshold for expenditure on medicines and are, therefore, likely to be in worse health than other people' (Menzies School of Health Research, 2013 p. 129).

Patients participating in the CTG PBS Co-payment measure were found to be accessing a broad range of medicines. This was reflected in data collected for the KPMG evaluation, which found that GPs were annotating 'all or the majority of a patient's scripts', and patients were accessing a 'broad range of medicines through CTG scripts' (KPMG, 2014 p. 246). Data from the last available quarter in the Sentinel Sites Evaluation (March – May 2012) revealed that cardiac medicines (50 out of 100 people) and anti-psychotic medicines (20 out of 50 people) were the two most common categories of medication dispensed under the CTG Co-payment (Menzies School of Health Research, 2013 p. 122). Sixty per cent of all the medications prescribed under the measure were linked to four chronic diseases: mental health, diabetes, cardiac conditions and obstructive airways diseases (Menzies School of Health Research, 2013 p. 124).

Overall the Measure was found to have met its primary objectives, by both reducing the financial barriers that limit access to medicines and increasing utilisation of PBS medicines required for chronic disease management (KPMG, 2014). There is evidence that the CTG Co-payment not only increased access to medicines, but also contributed to a number of other improvements and flow on benefits for patients (KPMG, 2014). Community focus groups, for example, indicated that the removal of financial barriers was found to have several positive impacts for patients, including 'reduced financial stress, increased ability to prioritise health care, improved engagement with preventative medicines and increased engagement with providers (GPs and pharmacists)' (KPMG, 2014 pp. 259-260). The Sentinel Sites evaluation also noted the following key findings:

- cost barriers were a significant influence on medication adherence, and removal or reduction of cost appeared to increase adherence
- access to the Measure resulted in greater willingness to attend for care, since patients realised that recommended care was not going to be a cost burden
- supportive systems in AHSs, communities and pharmacies were critical to the Measure achieving greater medication adherence at a population level (Menzies School of Health Research, 2013 p. 138).

Similar to the s100 RAAHS Program, KPMG's evaluation observes that there is 'no empirical evidence to link increased access to PBS medicines through the CTG scripts measure to improved medicine compliance or health outcomes' (KPMG, 2014 p. 273). However, there is qualitative feedback that the Measure may have led to improvements in this area. Specifically, the report notes that the majority of stakeholders felt the Measure had contributed to improved adherence (KPMG, 2014 p. 274). Similarly, qualitative feedback obtained from interviews and focus groups in the Sentinel Site Evaluation indicated that the removal of cost barriers 'appears to have contributed to greater adherence to recommended care for some patients' (Menzies School of Health Research, 2013 p. 138). Both evaluations recommended that this could be an area for increased focus moving forward. That is, KPMG indicated that 'a greater focus on adherence to medicine regiment and QUM' (KPMG, 2014 p. 279) was a key opportunity for program enhancement, while the Sentinel Sites Evaluation suggested that consideration should be given to how the program can enhance the 'appropriate and safe use of medications, including through synergies with other ICD measures and other more general initiatives' (Menzies School of Health Research, 2013 p. 157).

Linked to this were specific recommendations on how quality use of medicines could be improved, including (KPMG, 2014 p. 279-280):

- encouraging pharmacists to undertake Home Medicine Reviews and other forms of patient education in order to improve patient's health literacy and understanding
- including funding within the CTG Co-payment measure for DAAs, the lack of which was consistently viewed as a 'significant gap related to quality use of medicines' (KPMG, 2014 p. 279-280).

The Guild and NAACHO have also called for the CTG Co-payment to include a greater emphasis on improving QUM support services, including funding for DAAs using a model similar to the Department of Veteran Affairs' DAA package, improved integration with other programs such as QUMAX, and the use of pictograms and plain language on medicine labels and drug information sheets (The Guild and NACCHO, 2015 p. 4).

Despite higher than expected levels of participation, the limited coverage of the program in certain circumstances emerged as a core theme in both evaluations. Both the KPMG and Sentinel Site evaluations

identified scenarios where the program's structure has created gaps for Indigenous cohorts. Some of these are outlined and expanded in

Table 7 (KPMG, 2014 pp. 235-237).

Table 7 – CTG Co-payment Program gaps

Program gaps	Overview
Patients who are seen at public hospitals, where doctors cannot annotate CTG scripts[4]	The CTG Co-payment measure was primarily targeted at the primary health care system and, as such, a decision was made to exclude public hospitals from the scheme (KPMG, 2014 p. 235-236). As a result of this shortfall, KPMG observed that some Aboriginal and Torres Strait Islander Outreach Workers (ATSIOWs) were found to be arranging for 'patients to be picked up at discharge and taken to a GP to have scripts re-issued' (KPMG, 2014 p. 236) as the hospital scripts could not be annotated as CTG. This leads to duplication of health services and costs; specifically, it was noted that 'such a CTG script results in extra cost to the Commonwealth as a result of additional Medicare Benefits Schedule (MBS) billing and cost of the organised transport (funded through the ATSIOW role, or Care Coordination and Supplementary Services (CCSS) Program) and leads to burden for the patient and the GP' (KPMG, 2014 p. 26). While many AHSs have traditionally 'covered gap payments as part of their operating budgets' for Indigenous patients discharged from hospital, the Sentinel Sites evaluation similarly observed that there were increased reports of GPs and AHS workers re-issuing hospital scripts under the CTG Co-payment measure (Menzies School of Health Research, 2013 p. 133). This concern has recently been reiterated in AHRC (2016), as well as the Guild and NACCHO (2015), who note that including hospital scripts 'would assist with the continuity of care for patients regardless of location or health care setting' (The Guild and NACCHO, 2015 p. 3).
Patients living in remote locations who travel to non-remote locations	It was noted in both evaluations that patients from remote areas experience difficulties accessing affordable medicine when travelling outside of their s100 regions. The KPMG evaluation pointed to inconsistencies in the CTG Co-payment measure; mainly, while general practices in remote areas that are registered under the PIP Indigenous Health Incentive can issue CTG annotated scripts, remote area AHSs registered under s100 RAAHS are unable to issue these scripts. The decision to exclude these AHSs was grounded in the fact that they are already able to provide financial relief under the s100 RAAHS program, however it has created gaps when their patients travel to non-remote areas (KPMG, 2014 p. 236) Participants in focus groups held as part of the Sentinel Sites evaluation also noted difficulties identifying providers approved under the CTG Co-payment measure when travelling (Menzies School of Health Research, 2013 p. 136). This can lead to delays or lack of access, impacting patient's ability to access the timely and affordable care they require. These concerns are particularly relevant given the high mobility of Aboriginal and Torres Strait Islander people living in remote areas and have recently been reiterated by a number of leading organisations including the AHRC, NACCHO and the Guild (AHRC, 2016; The Guild and NACCHO, 2015).

[4] Note: KPMG points to the one exception of medical specialists, who may write a script using their private number, if the patient has a referral from a General Practice participating in the Indigenous Health Incentive under the Practice Incentives Programme (PIP) or at an Indigenous Health Service located in an urban or rural setting. However, "this practice was not reported by any stakeholders" in their evaluation.

Program gaps	Overview
Patients attending medical specialists who are unaware of the PBS Co-payment measure	The Sentinel Site evaluation noted that not all medical specialists were aware of the CTG Co-payment, with some GPs failing to highlight the patient's eligibility in their referrals – while others reportedly relied on patients to pass on this information to their specialists (Menzies School of Health Research, 2013 p. 134). The evaluation revealed that in some sites patients were returning to their AHS to have scripts re-issued. In other instances, pharmacists were processing the unannotated scripts where the patient was known to be registered in the measure. Although this process does not strictly adhere to the Guidelines, it eliminated the need for patients to have scripts re-issued and was viewed as a 'workable solution in some sites' (Menzies School of Health Research, 2013 p. 134).
Patients who normally attend a practice that is unable, or has decided not to, register under the PIP Indigenous Health Incentive	Equity issues were identified where a patient's preferred practice is not currently registered under the PIP Indigenous Health Incentive and/or has decided not to participate, such as when they have a limited number of Indigenous patients and registration was not thought to be worthwhile to the practice (KPMG, 2014). In such a situation, patients wanting to access the financial relief afforded by the CTG Co-payment must either attend a new practice, or two practices, in order to have the script annotated. This can again lead to duplication and interfere with a patient's continuity of care (KPMG, 2014 p. 237). As was noted in the Sentinel Sites Evaluation, it may also 'inadvertently have led to greater numbers of people fragmenting their care between different providers, some duplication of care and duplication of registrations' (Menzies School of Health Research, 2013 p.132-133). KPMG also pointed to potential inequities where 'GPs do not operate in a practice environment' and are unable to register under the PIP Indigenous Health Incentive, with patients required to attend another registered GP to have their scripts re-issued (KPMG, 2014 p. 237).
Patients attending pharmacies where there is a lack of cultural security	The Sentinel Sites evaluation reported that while many community pharmacies were supportive of the CTG Co-payment measure, there were incidents when Aboriginal and Torres Strait Islander patients experienced a lack of cultural security. In some instances this was linked to pharmacists questioning a patient's eligibility, possibly due to concerns around inappropriate access (Menzies School of Health Research, 2013 p. 136). The experience of a lack of cultural security was seen to restrict access to the measure and was noted to be a particular issue in urban areas (Menzies School of Health Research, 2013 p. 136). In response, a range of interviewees highlighted the need for cultural awareness and safety training. Those taking part in QUMAX further expressed 'challenges finding people to deliver the training and to get pharmacists to undertake the training, even though the training is a requirement of QUMAX participation' (Menzies School of Health Research, 2013 p. 137).

A further theme that emerged in both the evaluations and the broader literature related to the decision to link registration in the CTG Co-payment measure to approved general practices and AHSs, as distinct from individual patients. There appears to be a broad consensus that the program would achieve better outcomes if eligibility was tied to the patient, as the change would mean that patients can visit any doctor, whether in a general practice or an AHS to access CTG annotated scripts.

Further recommendations have been made to register patients using their Medicare number (KPMG, 2014; The Guild and NACCHO, 2015). Currently there is no central database for checking CTG status. Registering patients through Medicare would allow pharmacists to check eligibility through the patient's Medicare card as well as through the Medicare helpline (KPMG, 2014; The Guild and NACCHO, 2015). Electronic registration

would also help to overcome the barriers faced by Aboriginal and Torres Strait Islander people when travelling and promote cultural security in community pharmacies, as it would eliminate the need for patients to self-identify for eligibility (The Guild and NACCHO, 2015 p. 4). An alternate solution would be to develop a specific CTG registration card (KPMG, 2014 p. 281).

Other suggestions that have been made for improving the measure include:

- allowing pharmacists to apply the co-payment relief for patients without an annotated script, when the patient is known to the pharmacy and their eligibility for the scheme has previously been verified (The Guild and NACCHO, 2015 p.3)
- expanding the list of PBS medicines under the CTG co-payment measure to include other commonly used medicines by Aboriginal and Torres Strait Islanders, such as vitamin C tablets and iron pills, and potentially some Highly Specialised Drugs such as Clozapine (The Guild and NACCHO, 2015 p.4).

Finally, both evaluations have suggested that there is an opportunity for the eligibility criteria to be reviewed and to potentially 'better target those most in need' (KPMG, 2014 p. 281). Based on consultations with prescribers, the KPMG evaluation notes that there was a perception amongst some GPs 'that all Aboriginal and Torres Strait Islander people are eligible for CTG at all times' (KPMG, 2014 p. 281). This view also emerged in the Sentinel Sites evaluation (Menzies School of Health Research, 2013 p. 156) and was seen to demonstrate a lack of understanding around the specific eligibility requirements. It was also noted that reporting by AHSs on the steps taken to verify patients' eligibility reduced as the evaluation progressed, although the reasons for this were not known.

Although it is a minor occurrence in the overall Program, the Sentinel Sites evaluation did report that a precedent had been set by the QUMAX 'subsidising medicines for non-Aboriginal and Torres Strait Islander family members and the reluctance of pharmacists of Aboriginal and Torres Strait Islander patients, and the reluctance of some providers to take this benefit away from those in need, may have resulted in some non-Aboriginal and Torres Strait Islander people accessing the measure' (Menzies School of Health Research, 2013 p. 156). The potential opportunity to review the eligibility requirements assumes additional significance in light of the Program's much higher than expected registration numbers.

2.8. INTERSECTIONS BETWEEN THE INDIGENOUS PHARMACY PROGRAMS

> "… there seems to be a high level of frustration that each of the programs do not integrate with each other when they are specifically designed to target a highly mobile population."
>
> (The Senate Community Affairs References Committee, 2011 p.11)

While the Indigenous Pharmacy Programs have led to positive outcomes, there are increased calls for the programs to achieve greater integration and facilitate a more seamless journey for patients (AHRC, 2016; KPMG, 2014; Menzies School of Health Research, 2013; The Guild and NACCHO, 2015). A number of leading organisations have highlighted the 'artificial barriers' faced by patients when travelling from remote to urban and rural areas, as well as from hospital to community settings (AHRC, 2016; NACCHO & The Pharmacy Guild of Australia, 2015).

Gaps in the programs' integration have been seen to prevent continuity and, at times, access to care (AHRC, 2016). As was noted in the 2011 Senate Inquiry Committee 'there seems to be a high level of frustration that each of the programs do not integrate with each other when they are specifically designed to target a highly mobile population' (The Senate Community Affairs References Committee, 2011 p.11).

There is further evidence that these views are shared by patients benefiting from the programs. In Swain and Barclay's study (2013) involving semi-structured interviews with 101 Indigenous patients attending AHSs, most participants reported difficulties managing multiple medicines while travelling (Swain & Barclay, 2013). This was particularly the case where patients were required to navigate access between s100 RAAHS and the CTG PBS Co-payment (Swain & Barclay, 2013).

Several strategies have been identified for overcoming these barriers, such as allowing hospitals to annotate CTG scripts, ensuring patients eligible for s100 RAAHS are automatically registered in the CTG Co-payment measure, and allowing RAAHS to provide CTG annotated scripts to patients eligible under CTG Co-payment measure (The Guild and NACCHO, 2015).

The other main area where calls for increased integration have emerged is in relation to the greater role that QUMAX and the s100 Support Allowance could potentially play in strengthening the QUM activities that surround s100 RAAHS and the CTG PBS Co-payment measure. As an example, a number of organisations have called for DAAs to be more readily available to patients accessing medicines (KPMG, 2014; NOVA Public Policy P/L, 2010; The Senate Community Affairs References Committee, 2011). Presently, specific funding for DAAs is only provided under QUMAX, which is limited to patients attending ACCHOs.

In light of these opportunities for improved integration the Senate Inquiry Committee ultimately recommended that the Department of Health 'develop a process for integrating existing programs, and that a clear policy and program logic is published to show how these programs will work together' (The Senate Community Affairs References Committee, 2011 p. 50). This would help to fill an identified gap at the system level, by creating an overarching governance structure across the programs (The Senate Community Affairs References Committee, 2011).

3. RESULTS AND FINDINGS

3.1. SUMMARY

- The supply programs under the current design have achieved a significant increase in access to PBS medicines
- The support programs have provided the platform for pharmacists' active contribution to primary health care teams in Aboriginal services
- There is no program data collected that would enable quantification of the contribution the programs make to the quality use of medicines
- The geographic basis for eligibility to the programs, combined with the restrictions on CTG prescribing hinders the programs from contributing optimally to close the gap in health outcomes.
- Risks arise for continuity of care when patients move between acute settings (where programs do not apply) and community care (where they do).

3.2. MEDICATION SUPPLY (CTG AND S100 RAAHS)

3.2.1. What is working well

The review included a focus on the benefits each program delivers, including the exploration of any gaps between the intended and actual benefits, and any unintended positive or negative effects.

The range of desired outcomes explored with stakeholders included any improvements in adherence and quality use of medicines, improvement in health outcomes, and the degree to which the operation of the programs is effective.

Reach

Both CTG PBS co-payment measure and s100 RAAHS program address the well-documented cost barrier to access to medicines. The s100 RAAHS Program is well known in remote areas, and there is confidence that the program directly benefits the target population. Many examples were provided by stakeholders of the difference in access before and after the program was introduced. In some settings, this was reflected in observed improvements in measures such as blood sugar levels for individual patients.

Similar benefits have been reported for CTG, where people previously unable to afford medicine have more streamlined access to what they and family members need, at an affordable cost. Under the CTG PBS Co-payment Measure, 218,524 patients are accessing affordable medications. From its inception in 2010-11 to 2015-16 the number of Aboriginal and Torres Strait Islander people signing up to the scheme has increased five-fold (this is detailed in Appendix B). Based on census counts, the national coverage rates of the CTG Co-payment measure increased from 6.1percent in 2010-11 to 29.3percent in 2015-16.

It is interesting to note that less than a third of Aboriginal and Torres Strait Islander people in the 15-64 year age group are covered under the CTG PBS Co-payment Measure. Many Aboriginal and Torres Strait Islander people in the 15-64 year group are at elevated risk for modifiable chronic conditions such as diabetes, hypertension and depression, and could benefit from improved access.

Effectiveness

The contribution pharmacy makes to primary care is well-recognised among stakeholders, and is evidenced by the number of sites that have moved to a model that incorporates a pharmacist on site. While a few sites have embedded pharmacy for many years, new arrangements continue to emerge. In all cases, it is reported to be adding substantial value to patients, other AHS staff, AHS GPs, and to the dispensing pharmacist - whether living and operating locally, or part of a long-distance supply approach.

In some models the pharmacist is part of routine clinic work, much as AHWs are often the first step in a clinic prior to seeing the doctor. In one site, the patient now sees the AHW, the doctor and then the pharmacist for an individualised conversation about medication. Sites described the role of the in-house pharmacist as listening, informing and further assuring quality use.

In other locations, hospital or non-dispensing pharmacists are spending time in services, providing support to the AHW or other staff who provide medications from the service's imprest. (It was noted that while under the Pharmacy Location Rules, the pharmacist cannot dispense from the AHS if it is located in close proximity (1.5km) to a community pharmacy, the ability to dispense from the AHS would be the preferred approach in some locations.)

Also on the positive side, both pharmacists and AHSs provided examples of how remote supply has become more efficient over time. The development and use of standard drug lists for a cluster of remote clinics was one effective tool; another was the sharing of stock information electronically between a clinic and the supplying pharmacist. Where waste continued to be a problem, it was reported to be a consequence of ineffective control over what was supplied, multiple brands of the same medications based on doctor preferences, and poor stock control systems leading to oversupply.

In locations with dedicated medicines staff, whether a registered nurse, pharmacy assistant, Aboriginal health practitioner/worker or an in-house pharmacist, wastage was consistently reported to be minimal. The close management and tracking of dispensing, ordering and stock management were all important factors in minimising wastage.

3.2.2. What could be improved

Reach

The supply programs have been designed to ensure PBS medication is available to people wherever they live. The s100 RAAHS Program ensures medication reaches remote health clinics, while the CTG Co-payment measure ensures medication can be sourced from a community pharmacy when presenting an eligible (CTG annotated) script, prescribed from a general practice where an eligible person is registered. While people remain in their remote community, or remain in proximity to the general practice where they are registered for CTG, the objective of facilitating access to PBS medicines has broadly been achieved.

However, eligibility for either the s100 RAAHS Program or the CTG PBS Co-payment Measure does not take into account the everyday experiences which might impact individuals' abilities to access medicines; for example: travel between remote and non-remote areas; travel away from the local GP; use of hospital Emergency Departments for primary care; continuity of care in transition from acute to primary care. To this extent, the programs are designed to accommodate providers rather than service users.

The s100 Supply program has been assessed as effective in ensuring the safe supply of medication to remote health clinics (Kelaher et al. 2004; NOVA Public Policy, 2010; Urbis, 2011). The supply chain in this program starts at the supplying pharmacy, and finishes at the remote health service medication imprest. The supply chain is the responsibility of the s100 pharmacist. Once received, the safe storage and safe management of medications rests with the remote health clinic, with oversight built in through the s100 RAAHS program. The program guidelines do not currently address the question of where responsibility lays for ensuring medication reaches the individual. Currently, the rules and the payments reflect the supply-centred design of the program, rather than the intended outcome of access by individuals to required medicines.

Where medicines do reach the individual, it is due to cooperation between the supplying pharmacist and the remote health service, and is often facilitated by a pharmacist who is physically located in the AHS. As described above, non-dispensing pharmacists have become a feature of a handful of AHSs. Notwithstanding these positive examples, the programs, as currently designed, do not close the gap in supply to individuals. When pressed to consider the options that would address this, the common response was that in resource constrained health services, dedicated roles were the most effective means of assuring outcomes.

Transition from acute to primary settings

In addition to the gaps generated by the different programs' rules, interviewees most frequently cited the transition from the acute system back to the primary health system as the most disruptive to patient well-being, as time-consuming for health professionals, and, at times, dangerous for patients due to lack of continuity in medication consumption.

While the CTG PBS Co-payment Measure is a national system, only GPs in accredited clinics or Indigenous health services can endorse patient eligibility for the co-payment, and write CTG scripts. Hospital doctors are not eligible to write CTG scripts, despite providing care to people with chronic illness. The exclusion of hospital doctors from the program means patients who are otherwise eligible cannot access the intended benefit of reduced or no-cost medication once they enter the hospital system. If a hospital does dispense medicine under a PBS Hospital Agreement, the patient will be charged the full co-payment discounted, if they hold a Healthcare Card.

In some contexts, people leave hospital with a small supply of medicines, and with a PBS script that is not annotated for CTG. For some, this means then having to find a GP who will re-write the script with the CTG annotation, requiring considerable time and adding to the demands on GPs. In other places, the hospital absorbs the costs of ensuring that the patient is discharged with their required medications, in liaison with their primary GP who will ensure continuity of care. In many contexts, however, the process is far from seamless, and the patient experience varies between states, and between hospitals in the same state.

The discharge planning process, which has the potential to ensure access to medication, also varied significantly across the sites visited for this review. In some settings, Aboriginal and Torres Strait islander patients meet the criteria for a case planning approach to discharge, in which case all the relevant clinicians and practitioners, including the hospital pharmacist, contribute to the plan. In some instances, this includes the local AHS. One benefit of including the AHS is maintaining consistency in how medication is supplied, thereby overcoming the risk of a patient having a partly-used DAA at home, while updated or new medicines are provided or prescribed on discharge. Continuity in packaging and messaging is being trialled in at least one location, with the aim of alleviating confusion and the risks that can result for patients.

Examples were provided to the reviewers of both regional and tertiary hospitals opting to dispense a full PBS script, that is, a month of medication, and foregoing the co-payment from the patient. In these examples the co-payment was absorbed by the hospitals. In some instances, this was described as both a pragmatic and a philosophical solution to ensuring access to medication.

In the context of a tertiary hospital, the pragmatism also reflected the focus on efficiency, where it was noted that the time spent explaining to a patient and resolving confusion over the different rules from community based care, was time not spent with other patients. In one remote setting, the practice of dispensing from the hospital reflected the pharmacist's belief that bedside education about the medication was the most effective way of promoting understanding and quality use. In addition to the patient having another family member present with good English and good health literacy increased the likely positive effect of the bedside briefing. However, even where this practice occurred, one regional centre hospital pharmacist estimated that around forty per cent of patients left hospital without a good understanding of their medication. Language was identified as a key barrier in this location, where there are more than 20 languages spoken across communities.

On leaving hospital, access to medication under the programs requires a multi-step process. A patient can spend some days traveling back to their community, where they can attend their usual clinic and have their hospital script provided under the s100 RAAHS Program. If the doctor isn't present, or an appointment isn't available, this may take some days. Alternatively, if a patient is well-informed, they may attend a CTG registered general practice nearer the hospital, establish their CTG eligibility and request a CTG script in place of the hospital script.

Beyond the small amounts of medication supplied variously at discharge, patients leaving hospital must either reach their remote home before any small supply runs out, to access medicines under the s100 scheme; attend their usual general practice to have a CTG script written in place of the hospital script, which results in an MBS fee paid to the GP; or attend a clinic near the hospital, either a CTG registered general practice or an AHS to have the prescription provided under CTG, again attracting an MBS item fee.

In circumstances where 'home' is located a great distance from the hospital, it often falls to the AHS located near the hospital to respond. This requires confirmation that the patient is registered for the CTG PBS Co-payment Measure, and if not, registration at the clinic as a patient, and then registration for the Measure. The same script is then provided, with the addition of the CTG annotation. Medicare is charged for the GP appointment, which is a duplication of the costs already incurred by the hospital in preparing scripts for discharge. The implications are duplication of cost and effort at all levels: in the state-funded system by the hospital doctor, and for the GP who repeats a medical activity already undertaken and then charges the Commonwealth through the MBS; the individual who may be recuperating from their stay in hospital and confused by the process, who is then required to navigate the system further to obtain a CTG annotated script. In addition, each stage of the process adds risk to the patient and the health system: the risk of delay in access to medication; the risk of variation between hospital script and GP script (referred to by some hospital pharmacists as 'drift'); and risk of the patient not pursuing free or reduced price script due to the complexity of the system, and ultimately foregoing medication.

3.3. QUALITY USE OF MEDICINE SUPPORT (QUMAX AND S100 SUPPORT ALLOWANCE)

3.3.1 What is working well

Many AHSs have developed constructive and positive relationships with local pharmacies, and community pharmacists report increased understanding regarding how to provide culturally competent professional services.

Pharmacists were asked to identify which aspects of the QUMAX program they found to be most and least helpful in their role. There was strong support for the relationships built with local AHSs, with over half of the respondents (57 per cent) reporting this was the 'most helpful' aspect of the program. AHSs also value the proactive approach taken in some locations, where the engagement is highly collegial and patient focused.

Under the s100 Support Allowance, AHSs valued pharmacists' contribution to medicine audit procedures, as well as advice on storage, security and stock tracking. Where the remote pharmacy support was highly valued by AHS, it was in contexts where pharmacists were providing significantly more support than is funded under the s100 Support Allowance. In these instances, the pharmacist reported personal motivation to contribute to QUM in AHSs.

Some pharmacies are working in a group and funding a visiting pharmacist to provide more frequent holistic services to several remote AHSs. They described how increased contact between the pharmacist and the AHS patients leads to better medicine compliance and health outcomes, and is likely to lead to less dependence on medicines. Other pharmacies have contracted a pharmacist to physically work out of an AHS, and reported substantial flow-on benefits from this arrangement. This model was more likely to occur when the pharmacist and AHS were in the same town.

Other pharmacists are utilising an AHW from the local AHS to provide culturally appropriate medicine care within the pharmacy, and in some cases an AHW accompanies patients to the pharmacy. Other pharmacists want to have AHWs working in the pharmacy but can't identify the flexible funding structures to support this. In another setting s100 Support Allowance funds are combined with HMR MBS fees to part-fund a pharmacist within the AHS. Another example of contributing beyond the requirements of the allowance is where the community pharmacist has established a pharmacy committee with the AHS staff, meeting monthly. This was said to be making a difference to patient medicine management and use. Another site indicated they planned to establish a pharmacy 'portfolio' as a means of streamlining the supply and QUM work.

Through each of these examples, an important outcome is the increased visibility of pharmacy as part of the primary health care team. While the role of health workers, nurses and GPs are familiar to community members, a point commonly made to the reviewers was that in remote areas particularly, people do not conceptually understand pharmacy, and don't associate a pharmacy shop or a pharmacist with their health care.

3.3.2 What could be improved

Unfortunately, there is no data collected to test the extent to which QUMAX or the S100 Support Allowance contribute to the quality use of medicines. Equally, there is no data to link QUM support activity with better health outcomes. Medication management is likely to have been enhanced by the provision of DAAs under QUMAX, but there is no data on the effect this has on adherence. QUMAX data does, however, indicate the ongoing need to address the known barriers to access – culture, cost and transport.

Reach

It is common for AHSs to transport medication to individuals, and this is generally a service prioritised for patients who would struggle to pick up medication from a clinic or a community pharmacy. Where QUMAX is available, transport is funded through the QUMAX program funds, and ensures supply reaches the prioritised individuals. For people not requiring home delivery, a common practice is for packaged medicines to be collected from the clinic or a nearby pharmacy. In this review, the question of collection and its link to wastage was explored with health services.

Supply

In all remote clinics visited for this review, medication is ordered in both bulk supply and in dose administration aids for specific patients. There is however, variation in the management of packaged medicines, and this variation influences whether medicines reach the individual for whom they are

prescribed, and subsequently the amount of waste. There were clinics and pharmacies that reported very little waste through the non-collection of dose aids, because their model included attention to collection or delivery to patients. In another remote setting, non-collection was common. In one location, it was reported that between one third and one half of packaged medicine (from a total of approximately 600 packages each month) were not collected, and subsequently destroyed each month.

Another source of reported waste is when a medication change requires a new dose package to be prepared, replacing whatever remaining medication the patient has on hand. In isolated examples, services had resolved this through communication between the prescribing doctor and the supplying pharmacy by synchronising medication changes with the packaging cycle. The exception to this was when a change was required immediately.

In exploring the issue of quality use, stakeholders frequently defaulted to the issue of access, rather than quality use, or observed that there is currently little focus on adherence.

A critical component in supporting the quality use of medicines is the HMR. However, HMRs were consistently reported to be under-utilised in remote areas. Reasons were an absence of HMR-qualified pharmacists, which could suggest that not all s100 Support pharmacists have qualified people on staff, and questions of the cultural appropriateness of entering a person's home. In AHS with pharmacists on staff or regularly based in-house, HMRs were reported to be done effectively in partnership with an AHW. Both s100 pharmacists and AHSs frequently reflected that a better approach would be to start the medicine review process within the AHS, rather than within a home. However, the administrative approval from the Department of Health in Canberra for an exemption to the in-home rule was said to be impractical and time consuming to obtain. A similar picture emerged in non-remote settings, under QUMAX, and is discussed below.

Effectiveness

The funding by QUAMX category is reported by NACCHO in their 2016 Report Back to Members. Funding is primarily supporting the provision of the dose administration aids (50 per cent) and devices (9 per cent), and the transport required to close the gap in the supply chain by delivering medication to patients (21 per cent). The balance of funds is invested in cultural awareness activities between AHSs and pharmacists (15 per cent); pharmacist's education to patients (6 per cent), and finally, in AHSs supporting pharmacists to undertake HMRs (5 per cent).

Pharmacists who undertook the survey for this review were asked to identify which aspects of the QUMAX Program they found to be most and least helpful in completing their job. There was strong support for the relationships built with local AHSs, with over half of the 37 respondents (57 per cent) reporting this was the 'most helpful' aspect of the program. In contrast, the work plan developed by AHSs under the QUMAX Program was seen to be the 'least helpful' aspect of the program (65 per cent). A third of pharmacists reported they had valued the access to cultural awareness activity available under QUMAX.

The administration of the program was reported to hamper the effectiveness of QUMAX. Neither pharmacists nor services reported value in the development of the local workplan, primarily because the majority of the plan addressed fixed items such as the DAAs, devices and transport. The reporting process was generally considered burdensome, and would benefit from alignment with the Commonwealth's commitment to cutting red tape in the health sector. Of particular note, participants reported that QUMAX reporting requires the collection of data items that are not otherwise routinely collected, and were focused on detailed accounting for outputs from a relatively small amount of funding.

Community pharmacists and AHSs agreed that two visits a year is not adequate to contribute to QUM. The capability within AHSs was noted to vary, but the limit of funding to two visits doesn't allow for flexibility. Staff turnover can mean a whole new team is in place between visits, and the pharmacist focus is necessarily on monitoring of the imprest records, storage etc. The limited time available to spend in AHSs meant the focus was generally limited to quality assurance activity which, while critical, underutilises the contribution pharmacists could be making to QUM in remote AHSs.

In general, pharmacists covering particularly remote areas noted the inadequacy of travel reimbursement, and some supplement travel costs by sharing transport with other fly-in-fly-out health professionals, or they visited less frequently. Technology-based solutions were put forward by some pharmacists, as a means of facilitating closer relationships between the pharmacists and AHSs. As an example, it was suggested that telemedicine services should be established. This would have the additional benefit of minimising travel costs to the most remote AHSs.

Shared access to patient dispensing records and health records was identified as an important factor to provide better patient health care and more efficient pharmacy services. Some pharmacists and AHSs have arrangements for this, but there are different dispensing or patient information systems across jurisdictions or AHSs.

AHSs and pharmacists consulted for this review identified QUM activities they believe would contribute to patient outcomes, but which are not currently funded under QUMAX. Equally it is noted that with continuing demand for DAAs, devices and transport, the majority of QUMAX funding is effectively locked into routine costs, leaving little flexibility to plan and deliver a program of QUM activity that can be evaluated for impact.

The additional activities stakeholders identified include:

- addressing drug dependency - prescribed medicines and pain killers
- raising literacy regarding the relationship between illness and medicines
- internally focused activity bringing together pharmacists with all members of the pharmacy care team
- developing an approach to the role of traditional medicine, the use of complementary medicine and western medicines
- in-house patient reviews with pharmacist
- developing and/or training in the use of communication aids in explaining QUM
- aligning pharmacy education to the patient with specialist consultations, where the focus is on disease management.

A challenge identified by both pharmacists and AHSs to embedding QUM capability in health services is the turnover of staff. For example, in the space of one year, a large AHS in a regional city advised they had 60 locum doctors, 10 registrars, four new doctors, 15 new nurses, 15 pharmacists and 10 technicians. In contexts such as this, momentum can only come from consistent delivery of education and quality assurance that is built into the service system. The resources in QUMAX available after the supply chain is completed are not in proportion to the challenge.

It is the relationship between pharmacists and AHSs that is valued and where trust is developed, and which forms the basis for the AHS ensuring quality services for their community. The recent interviews confirm that pharmacists would like to build closer relationships with the AHS patients so they can address QUM more effectively, and provide HMRs. A closer relationship between pharmacists and the participating AHSs was believed to not only build trust, but also made it more likely that patient dispensing data is shared, leading to improved compliance monitoring and patient medicine management.

Question of waste

The question of wastage was explored with pharmacists and AHSs. The review scope posed the question of wastage from the perspective of waste within AHSs, but this is only one component of the issue. The other is waste through medications not reaching or being unused by the intended recipient.

The waste of pre-packaged medication is a feature of all locations whether remote, rural or urban, with the exception of the few services that have resourced delivery tracking, which is feasible only when the community is near the clinic. In other locations, AHSs reported that a third to a half of all pre-packaged medications may not be collected each month. In locations with 600 patients using DAAs each month, the extent of waste could be significant, apart from the clinical risk of supply not reaching the patient.

Some locations reported progress on reducing waste by improved coordination between prescribing doctors in AHSs and the dispensing cycle. In these examples, doctors were aware of the packaging cycle, and made non-urgent changes to medication in line with that cycle, thereby avoiding waste of a current package, but also reducing the chance of confusion for the patient who would otherwise have two packages at the same time.

Once medication is with the patient, there are further factors that contribute to waste. For some people, living conditions including overcrowding, intermittent electricity, and lack of a refrigerator all contribute to unsafe storage and increased likelihood of waste. Most services reported packaged medicines were frequently underused, through non-completion of the full package, or selective use of medicines. This latter point was reported to be linked to patient concerns about the value of a medication, a concern about a side effect,

confusion about direction for use, or personal circumstances that hindered taking medication at a particular time of day. A combination of these factors can also be at play.

3.4. IMPLICATIONS

The lack of integration between the four supply and support programs reflects their progressive introduction over time. The consequence of this staged implementation is that there is not a single, nationally coherent approach to access to and quality use of medicines (QUM) for the eligible population. By linking eligibility to a geography (s100 RAAHS) or to a registration process at a single general practice (CTG), the programs' design cumulatively has created a more complex system environment for a population who are in higher need by virtue of poorer health, combined with other QUM barriers.

Taken together, the findings from this review indicate that, although the four programs have each contributed to improved supply of medications and improved QUM support in AHSs, there are a number of significant gaps which must be addressed in order to demonstrate improved outcomes for Aboriginal and Torres Strait Islander people who are living with or are at risk of a chronic disease.

These gaps have been identified in previous reviews, evaluations, submissions and research documents, and can be summarised as follows:

- people moving from one location to another lose the benefits of the program which was supplying their medicines
- people moving into or out of hospital have to navigate a different medication system, which may not recognise their eligibility for reduced cost medicine supply
- medicines effectively reach a location but there is an absence of attention to collection and use by patients
- the high level of variation in support services between locations leads to inequities
- the gap in both supply data and QUM outcome data means that important monitoring activity cannot contribute to system improvements.

In the next chapter, we outline considerations for the future design of the programs, in order to address these system gaps.

4. CONSIDERATIONS FOR THE FUTURE

SUMMARY

- This section outlines principles for an integrated supply and support program to improve the uptake and use of medications by eligible Aboriginal and Torres Strait Islander people with or at risk of chronic disease.
- A proposed investment logic is presented to provide a foundation for the programs, focussed on intended outcomes.
- Proposed structures are outlined for two integrated supply and support programs: a supply program which incorporates the s100 RAAHS Program with the CTG Co-payment Measure, and a support program which incorporates thes100 Support Allowance with QUMAX.

4.1. PRINCIPLES FOR PHARMACY SUPPLY AND SUPPORT PROGRAMS

The four programs under review have been shown, through previous evaluations and reviews as well as this current project, to have increased the access to medications for Aboriginal and Torres Strait Islander people. The evidence highlights both the success of the programs as well as their limitations, primarily the need to address gaps between the programs, and the need for greater quantitative evidence regarding medication adherence and improved health outcomes. The evidence and the findings of previous reviews also point to the critical need to simplify and integrate the four programs to improve the experience for individuals in navigating the health system as well as health outcomes.

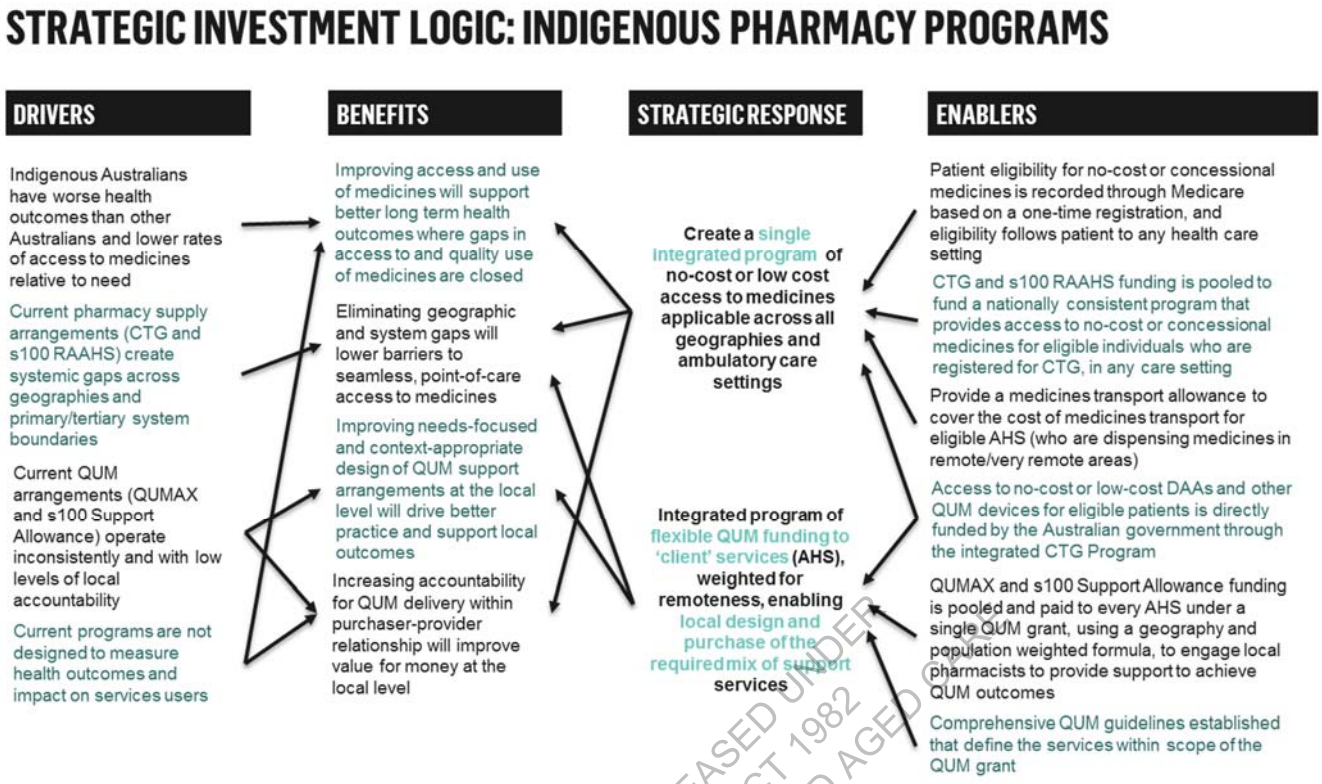
The research team considers that there are a number of guiding principles that have emerged from consultation with AHS leadership and staff, pharmacists, and other stakeholders, which should guide the improvement of pharmacy supply and support programs for Aboriginal and Torres Strait Islander people:

- **Equity of access** – eligibility for low or no-cost medications should lie with the patient, not the provider, in order to ensure equitable and consistent access for all eligible individuals
- **Local decision-making** – in order to ensure that service delivery is as effective for patients as possible, decisions regarding the purchase of pharmacy supply and support services should be made by the funded AHS
- **Ease of program participation** - eligibility should be determined once and then recorded centrally so that individuals do not have to continually prove their eligibility
- **System efficiency** - systems should be streamlined to pose minimal burden on pharmacists and AHSs, linked with existing electronic ordering processes as much as possible
- **Data effectiveness** – systems need to be integrated to provide a platform for greater information sharing and monitoring across jurisdictions, including the priority to ensure that most data is collected through existing national systems such as MBS and PBS to minimise the burden on pharmacists and AHSs.

4.2. PROPOSED INVESTMENT LOGIC

As noted in section 2.8 above, the 2011 Senate Inquiry Committee recommended that a program or policy logic be developed to guide the integration of the existing programs to improve effectiveness (The Senate Community Affairs References Committee, 2011 p. 50). Based on the findings of the current review, the Review team has developed a strategic investment logic to articulate the key findings that have emerged from consultation and from the documented evidence. This logic is provided below in figure 6.

Figure 6 – Strategic Investment Logic: Indigenous Pharmacy Programs



4.3. PROPOSED PROGRAM INTEGRATION

Each of the four programs was established with the goal of improving health and wellbeing of Aboriginal and Torres Strait Islander people by providing access to medications and medicine aids, and support for quality use of medicine. Each of the programs has contributed to this goal, and the data indicate that access has indeed increased significantly over time.

The Review team considers that the four programs have probably reached the extent of their ability to contribute to the overall goal, given the limitations of their current structures, which impose restrictions on access to people who move across program boundaries. As noted in previous reviews and in the findings of this review, structural gaps between the programs mean that there is differential access to supply and support depending on geography as well as inconsistent access to medications between primary and acute care settings. In addition, with particular reference to s100 RAAHS Program, while availability of medications has improved dramatically through providing pharmaceuticals directly to AHSs for dispensing to patients, there is no data available as to what happens to the medicines once they are delivered to the AHS, and therefore no data regarding utilisation, wastage, and impact on health indicators.

Having considered both previous evidence and the data from the current review, ***the Review team recommends that the existing four programs are integrated under one umbrella program to be administered by the Department***. This Indigenous Pharmacy Program would manage two specific initiatives: an expanded CTG Co-payment Measure incorporating the s100 RAAHS Program, and an expanded QUMAX program incorporating the s100 Support Allowance.

This integrated program design would ensure that there is one national supply program which provides the same benefits to all eligible participants regardless of location, and one national support program specifically for AHSs which will have a more targeted approach to QUM. Both programs should benefit from shared management which has the potential to realise synergies between the two programs may be realised. The two program components could potentially be structured as outlined in Table 8 below:

Table 8 – Proposed Program Structure

	SUPPLY – potentially called CTG	SUPPORT - potentially called QUMAX
Existing programs included	s100 RAAHS, CTG	QUMAX, s100 support allowance
Funding focus	1. PBS reimbursement of dispensed script to any nationally registered patient in any location at any health service (primary, tertiary) 2. Funding provided to AHS for transport of medications in remote locations	1. PBS reimbursement for provision of HMRs as prescribed by health professionals 2. Funding provided to AHSs for purchase of pharmacy support services through employment or contracts as most appropriate to the service
Eligibility	All Aboriginal and Torres Strait Islander individuals with or at risk of a chronic disease	All Aboriginal Health Services, state/territory run or Aboriginal community-controlled
Geographical reach	Universal – covers urban, rural and remote individuals Eligibility would follow the patient; includes hospital access as well as primary care; once determined to be eligible, patients would be registered as eligible for CTG benefits through a national system such as Medicare A payment would be available to the GP who initially assesses and registers the patient for CTG, potentially through existing Medicare items 715 or 721 The registration system would be online through Medicare and be linked to a national register The CTG program funding would include DAAs and other QUM devices s100 bulk supply would continue for remote AHSs - preferably to move over time (eg by 2021) to the NT model to enable tracking of medication supply to individuals and support the availability of national data on access to medicines by eligible patients The facility for bulk supply of certain medications to AHSs would continue.	Universal – covers urban, rural and remote AHSs Funding would be available to participating AHSs for the following outcomes: 1. Integration of pharmacy expertise within the AHS. 2. Improved medical review coordination and uptake 3. Increased staff confidence in QUM Funding would be provided to AHSs to allow for purchasing pharmacist expertise on the model appropriate for that location, eg employing a pharmacist in the AHS team, contracting a hospital or community pharmacist to provide support, and/or use of telehealth to involve pharmacists more in AHS team. AHSs would be able to purchase medicine reviews/ checks as required (uncapped, within AHS funding allocation) based on referral from an AHS GP claiming MB5900. An outcomes-based plan for increasing pharmacy expertise, staff knowledge of QUM, and improved patient adherence would be developed annually by the AHS and the pharmacist, and reported to NACCHO and the Department.
Logistical support	Funding provided to AHSs to provide for transport of medications where required in remote locations	Funding provided to AHSs where required to provide for travel for pharmacists in remote locations
Accountability and reporting	Program administered by the Department Reporting through MBS for registration and PBS medication uptake	Program administered by the Department AHS is accountable for contracting/delivering QUM support, reporting six-monthly to NACCHO and through NACCHO to the Department

4.3.1. An expanded Close the Gap (CTG) Program

The proposed expanded Close the Gap Program would incorporate both the existing CTG and the s100 supply programs, and would provide for universal access for all eligible Aboriginal and Torres Strait Islander patients to low or no-cost medications. The proposed changes to the program are based on the principle that the ***funding should be attached to the patient rather than the provider***. This change would address the identified service gaps between geographical locations (eg s100 patients travelling out of an s100 location) and between primary and acute health settings (eg patients discharged from hospitals without CTG scripts).

Ideally, eligible patients could be registered electronically by any GP, or medical practitioner working for an Indigenous Health Service in the course of a health assessment (MBS item 715, or 721) and, once registered through Medicare, would be eligible for low or no-cost medications (and other benefits such as DAAs) wherever they receive care, whether in rural or urban locations, or in primary or acute settings. A single national system that includes DAAs will address the current disparity between s100 and CTG participants, for whom DAAs are not available, and QUMAX participants, for whom DAAs may be provided free of charge.

A model for this proposed program already exists through the Department of Veterans' Affairs Gold Card, which provides the card holder with DVA-funded access to all necessary health services[5].

As eligibility would be registered within the universal Medicare system, pharmacists should be able to claim the co-payment as they currently do for CTG scripts. Aligning the reimbursement process as much as possible with existing electronic processes would minimise burden for pharmacists.

To the extent possible, the supply process for s100 RAAHS Program should also be aligned with existing electronic processes, as pharmacists have almost universally reported that the current s100 RAAHS Program process is still paper-based and cumbersome.

An awareness campaign would be required to ensure that prescribers, pharmacists, and community members are aware of the expanded program.

AHSs located in remote locations that were eligible for the s100 RAAHS Program should still be eligible to order bulk supply. We recommend that over time (for instance, by 2021) the remote supply process adopts the requirement already in place in the NT, in which the data collection is enabled through the prescribing system. We note, however, that the solution is not requiring the use of PBS scripts, but rather a system that enables the tracking of chronic disease prescribing patterns in remote locations.

A pool of funding should be available for transport of medications where required. This funding is currently available under QUMAX but not under s100, as transport is essential to ensure supply, the Review team suggests removing it from the support programs and including transport within the supply program. The funding could be held by the Department and provided as reimbursement for documented transport expenditure.

In line with an increasing focus in national health policy on outcomes-based funding, outcomes for this expanded CTG program would need to be monitored to ensure that the funding is leading to improved outcomes. A universal CTG program aligned with existing national prescribing structures would allow data collection and analysis through Medicare, as happens with the current CTG program. Incorporating scripts written under the current s100 program into this expanded CTG program would allow greater consistency of reporting on the uptake of medications in remote locations, in both the primary and acute settings, and should provide evidence over time of changes and increases in medication usage, measurable at regional as well as patient level.

4.3.2. An expanded QUMAX Initiative

The expanded QUMAX initiative would include both the existing QUMAX Program and the s100 Support Allowance. The intended participants of QUMAX would be Aboriginal Health Services, both community-controlled and territory/state-run services. The expanded QUMAX would provide funding for QUM support to any eligible AHS, whether remote, rural or urban. As there is a lack of rigorous evidence of impact of the current QUMAX and s100 programs on improved medicine adherence or increased quality use of medicine, the expanded QUMAX should focus on monitoring program outcomes.

[5] See https://www.dva.gov.au/providers/dva-health-cards#goldcard

Specifically, the expanded QUMAX initiative would provide funding to AHSs to achieve the following outcomes:

- integration of pharmacy expertise within the AHS, through the employment of pharmacists or contracting with local or other pharmacists for regular participation in team meetings and discussions, noting in very remote areas the use of technology (videocalls) would be a practicable option.
- improved coordination and uptake, with the potential to fund a coordination role within AHSs to ensure that are arranged and conducted in ways that are culturally appropriate
- increased staff confidence in QUM, so that GPs, nurses, AHWs, and others (including locums) are able to assist patients to understand their medications and to use them effectively

Other elements of the current QUMAX, such as DAAs, QUM devices, and transport, would be relocated to the supply (CTG) program as they are essentially components of the supply chain. Cultural awareness training, an element of the existing QUMAX Program, has been inconsistently undertaken across QUMAX sites. The Review team considers that in giving AHSs the responsibility for managing the implementation of QUMAX, the AHS should have the power to determine the need for the local pharmacist(s) to undertake cultural awareness training and the best way to provide this.

These three program elements, staff confidence and knowledge, and integration of pharmacists within the AHS primary health care team – would provide the basis for outcome-based reporting from AHSs through NACCHO to the Department, with a focus on nationally consistent data collection to support monitoring and evaluation.

Improved coordination and uptake

Funding is currently provided through QUMAX for pharmacists to conduct. Pharmacists are required to be accredited to conduct HMRs, with payment claimed through the Guild. Pharmacists may conduct up to 20 HMRs each month.

The Review team recommends that ***funding is allocated to AHSs to purchase for their patients as required, on referral from a health professional.*** By providing funding directly to the AHS, the health service has the responsibility and the ability to determine how many and how often are required, and how these can be provided within their budget.

One of the frequent comments regarding was that they could be difficult to arrange either because the pharmacist was uncomfortable visiting a patient's home, or because the patient was uncomfortable with the pharmacist visiting their home. A successful model for, reported by many AHSs, included a joint visit to a patient's home by a pharmacist and an Aboriginal health worker. Locating the decision to undertake within the AHS will also allow AHS staff to coordinate the home visit, with the potential for a coordination role to be established within the AHS (for instance, an Aboriginal health worker with additional pharmacy training) to ensure that information and recommendations arising from the HMR are shared within the primary health care team.

Increased staff confidence in QUM

Education and support for QUM are two of the seven pillars of the existing QUMAX Program. The Review team considers that these elements should be extended to all AHSs, given their importance. Evidence from this review as well as from previous evaluations indicates that current funding for QUMAX is being used primarily for supply activities – DAAs, QUM devices, transport – and that education and support activities are under-utilised.

AHSs should be provided with funding to purchase QUM education and support from local pharmacists as is required and appropriate for their needs. This could take many forms, such as monthly QUM meetings, specific training courses, or an on-call arrangement with a local pharmacist. AHSs would be required to report on the type and number of funded activities as well as the outcomes for staff.

Depending on the model chosen by the AHS, an annual contract (or workplan, where the pharmacist is employed within the AHS) should be agreed with the pharmacist which specifies the extent of activities to be funded, identifies the intended outputs and outcomes, and defines measures of progress.

Review participants reported that close engagement with local pharmacists, for instance when a pharmacist is employed by the AHS or spends one day a week in the AHS as part of the s100 Support Allowance, facilitates greater information sharing with other AHS health professionals and fosters a QUM culture.

Perhaps the best facilitator of increased staff knowledge and confidence would be the integration of pharmacists into the primary health care team, as discussed below.

Integration of pharmacy expertise within the AHS

Funding should be made available to AHSs for the purchase of pharmacy support services as most appropriate to the service, for instance contracting either a community pharmacist or an accredited pharmacist to bring pharmacy expertise into the AHS.

Depending on the model chosen by the AHS, an annual contract (or workplan, where the pharmacist is employed within the AHS) should be agreed with the pharmacist which specifies the activities to be conducted as part of the AHS primary health care team, identifies the intended outputs and outcomes, and defines measures of progress.

4.3.3. Governance

The governance for the expanded CTG and QUMAX Programs would rest with the Department, with the potential for an expert reference group to include representatives of key stakeholders, for instance the NACCHO, RACGP, ACRRM, the Guild, SHPA, and the PSA. This reference group could provide advice to the Department to ensure that program challenges are addressed, program outcomes are monitored and successful models are shared. There is also merit in convening a panel with expertise in specific aspects of the program to provide advice as the revised programs are implemented, to ensure any changes are tested through an operational lens, for practicability.

The accountability for the delivery of the expanded QUMAX Program should lie with the AHSs, with NACCHO leading in the development of common resources where this supports expanded QUM activity, and providing a coordinating role for monitoring and reporting.

There is an urgent need to improve the level of monitoring and data collection to ensure that there are measurable outcomes that indicate the success or otherwise of the Government's investment. As much as possible, data collection should make use of existing data sets (e.g. MBS, PBS) or create new systems that do not increase burden on frontline staff such as GPs and pharmacists.

Accountability for the delivery of elements of the CTG program outside of the dispensing of prescriptions, for instance the use of funds for transport and for devices, should be through financial reporting systems to be managed by the Department.

4.4. CONCLUSION

This Review has found evidence to support the consistent findings of previous evaluations and reviews, namely that the four programs have contributed to improvements in uptake and quality use of medicines but that there are gaps between the programs which hinder a consistent experience for the service user and which increase the risks of medicine misadventure.

In order to ensure that the Indigenous Pharmacy Programs contribute effectively to closing the health gap, the Review team recommends that the Department consider the integration of the four programs as outlined in this report.

Appendix A REFERENCES

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Appendix B PBS ANALYSIS: TECHNICAL REPORT

This appendix contains the technical report on analysis of PBS data relating to CTG scripts and s100 RAAHS supply.

B.1 BACKGROUND

This section provides a summary of Pharmaceutical Benefits Scheme (PBS) data collected and provided by the Pharmaceutical Policy Branch at the Department of Health for the period 2010-11 to 2015-16. In particular, it presents a descriptive analysis of the s100 RAAHS Program and CTG PBS Co-payment Measure. The s100 RAAHS Program relates to a provision in the *National Health Act 1953*, that allows for Remote Area Aboriginal Health Services (RAAHS) to provide free PBS medicines without prescription. The CTG PBS Co-payment Measure, introduced in 2010 reduces or removes the Co-payment cost for PBS eligible pharmaceuticals for Aboriginal and Torres Strait Islander people with or at risk of chronic disease. Both of these schemes have been implemented with the end goal of increasing accessibility to pharmaceuticals for Aboriginal and Torres Strait Islander people.

This report seeks to assess the extent to which the s100 RAAHS Program and the CTG PBS Co-payment Measure have achieved their objectives in facilitating access to PBS medicines. It will also present the level of expenditure associated with these two schemes over time.

B.2 WHO IS BENEFITING FROM THE CTG PBS CO-PAYMENT MEASURE?

In total, 218,524 patients are benefiting by accessing affordable medications through the CTG PBS Co-payment Measure. Since its inception in 2010-11, to 2015-16 the number of Aboriginal and Torres Strait Islander people signing up to the scheme has increased five-fold (Table 9). Based on census counts the national coverage rates of the CTGPBS Co-payment measure increased from 6.1 per cent in 2010-11 to 29.3 per cent in 2015-16. By 2015-16, three in every ten Aboriginal people were signed up to the CTG PBS Co-payment Measure.

Table 9 – CTG PBS Co-payment Measure coverage rate by year

Financial Year	Number of patients	CTG Co-payment coverage rate* (per 1000 people)
2010-11	41267	61.6
2011-12	94606	138.3
2012-13	124929	178.8
2013-14	156774	219.7
2014-15	189386	259.8
2015-16	218524	293.3

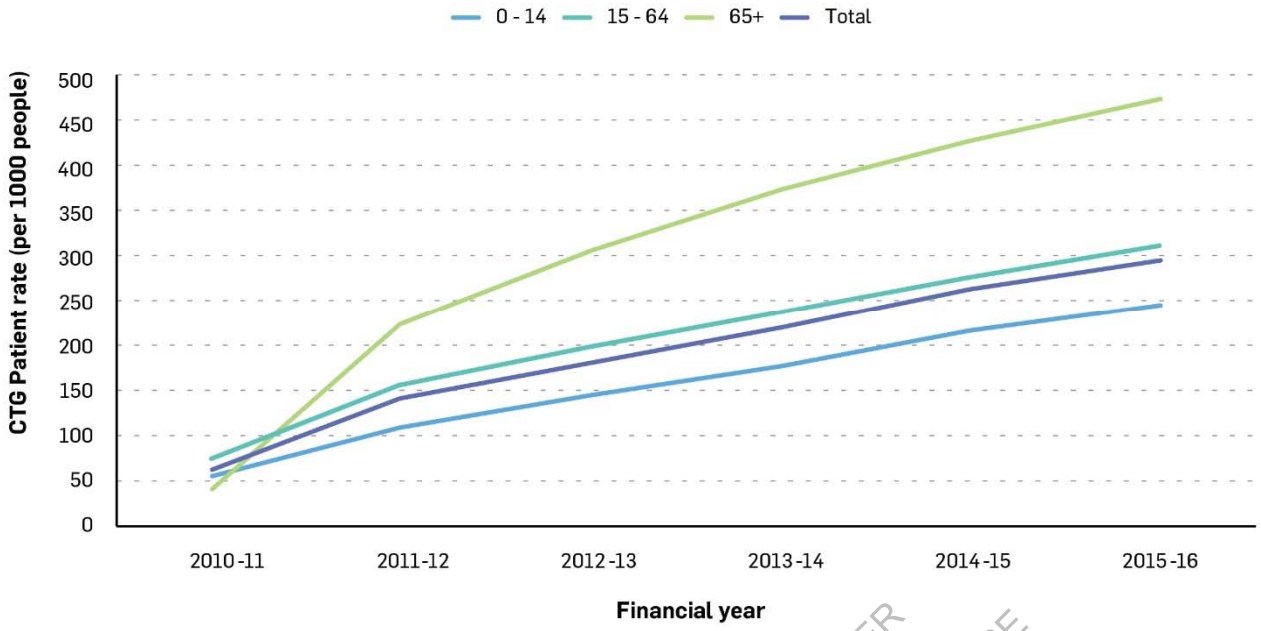
*Rates calculated using ABS census projections (Reference Table 17)

The greatest increase in coverage under the CTG PBS Co-payment Measure was in its initial year from 2010-11 to 2011-12, with coverage steadily increasing at a rate of 31 per 1000 people a year.

B.3 WHAT AGE GROUP IS BENEFITING MOST FROM THE CTG PBS CO-PAYMENT MEASURE?

Coverage under the CTG PBS Co-payment Measure has been increasing across all age groups over time (Figure 7).

Figure 7 – Annual CTG PBS Co-payment Measure participation rate* (per 1000 people) by age group



*Rates calculated using ABS census projections (Reference Table 17)

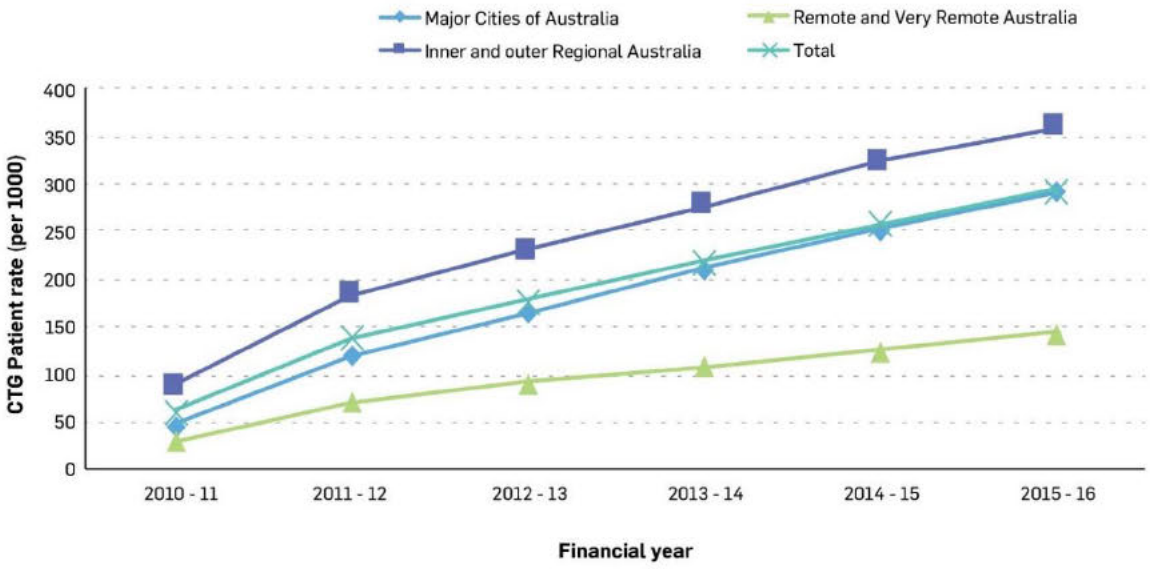
Those over 65 years are benefiting the most from the CTG PBS Co-payment Measure, with nearly half of all Aboriginal and Torres Strait Islander people over 65 years covered by the measure. Greater coverage among those over 65 years would likely be a consequence of greater chronic disease amongst older populations. Lower coverage in the 0-14 (24.4 per cent) and 15-64 (30.8 per cent) year age groups may be reflective of eligibility criteria that is dependent on prescribers assessing a patient's eligibility. Eligibility is dependent on a person having chronic disease or being considered at 'risk' of chronic disease, and subject to prescribers determining whether a patient could access the medicines without the measure.

It is interesting that less than a third of Aboriginal and Torres Strait Islander people in the 15-64 year age group are covered under the PBS Co-payment measure. We know that many Aboriginal and Torres Strait Islander people in the 15-64 year group are at elevated risk for modifiable chronic conditions such as diabetes, hypertension and depression, and could benefit greatly with improved access to pharmaceutical therapy. The greatest incidence of Cardiovascular Disease (CVD) is also seen in this group under 65 years. Adequate coverage within the 15-64 year age group requires prescribers adequately determining risk for chronic disease.

B.4 WHERE IS COVERAGE OF THE CTG PBS CO-PAYMENT MEASURE GREATEST?

The CTG PBS Co-payment Measure coverage is greatest for Aboriginal and Torres Strait Islander people in inner and outer regional areas (36.0 per cent), followed by those in major cities (29.2 per cent) (Figure 8). In these areas coverage has increased 45 people per 1000 and 41 people per 1000 annually over the six years respectively.

Figure 8 – Annual CTG Patient participation rate* (per 1000 people) by remoteness



*Rates calculated using ABS census projections (Reference Table 19)

Theoretically, we would expect to see parity in sign-up to the CTG PBS Co-payment Measure across inner and outer regional areas and major cities given that chronic disease risk and chronic disease are prominent across both populations. Certainly the Australian Aboriginal and Torres Strait Islander Health Survey (2012-13) demonstrates no difference in reporting of long-term health conditions (ABS, 2014). This perhaps highlights issues around practitioners identifying Aboriginal and Torres Strait Islander patients eligible for the PBS Co-payment in major cities where Aboriginal people are a less visible population.

Above we also see that coverage under the CTG PBS Co-payment Measure is lowest in remote and very remote areas. This is likely a consequence of Aboriginal and Torres Strait Islander people in these areas being provided for under the s100 RAAHS program.

B.5 HOW MANY PRESCRIPTIONS ARE PROVIDED UNDER THE CTG PBS CO-PAYMENT MEASURE?

Since the inception of the CTG PBS Co-payment Measure in 2010-11, just over 18 million prescriptions have been dispensed in the six-year period to 2015-16. This represented 1.2 per cent of all prescriptions in Australia over this period. Amongst Aboriginal and Torre Strait Islander people most (80.9 per cent) of CTG prescriptions were provided to people under 65 years, while this was only 48.0 per cent for all Australians (Table 10). However, on a per person basis, those over 75 received more prescriptions.

Table 10 – Number of prescriptions dispensed by age, 2010-11 to 2015-16

	All Australians				CTG Aboriginal			
age group	number of prescriptions (million)	per cent	number of prescriptions (per person)	per cent	number of prescriptions (million)	per cent	number of prescriptions (per person)	per cent
0-14	46.9	3.1	11.1	4.9	1.1	6.3	4.7	3.1
15-64	683.0	45.7	45.5	20.1	13.4	74.6	32.9	21.5
65+	764.9	51.2	170.2	75.1	3.4	19.1	115.1	75.4
Total	1494.9		226.8		17.9		153	

*Prescriptions/Number of people signed up to CTG (Table 15)** Prescriptions/All Australian Census projections (Reference Table 17)

Table 11 shows the extent to which the number of prescriptions dispensed per person under the CTG PBS Co-payment Measure has increased over the six-year period. This increase in prescriptions was also seen for prescriptions dispensed for the whole population more generally. However, the rate of increase in prescriptions was higher for Aboriginal and Torres Strait Islander people accessing CTG Co-payment prescriptions (increase of 0.72 prescriptions per year) than for the whole population (increase of 0.52 prescriptions per year).

When considering all Aboriginal and Torres Strait Islander people in Australia in 2015-16, an average of 6.4 prescriptions were dispensed under the CTG PBS Co-payment Measure per person, while for all Australians prescriptions were 11.7 per person. Adjusting for the fact that the Aboriginal and Torres Strait Islander population profile is younger and we would expect to see fewer medications dispensed, the rate of prescriptions for the whole population versus those dispensed to Aboriginal and Torres Strait Islander people under the CTG PBS Co-payment Measure was 16 per cent less. However, these comparisons rely on full coverage under the CTG PBS Co-payment Measure which we know not to be the case.

We are mindful that only 29.3 per cent of all Aboriginal and Torres Strait Islander people received CTG Co-payment prescriptions so this is a gross underestimate of actual prescriptions per Aboriginal and Torres Strait Islander person. Our data analysis reveals that the average person accessing CTG Co-payment prescriptions received 22 prescriptions in 2015-16. This higher number of prescriptions may reflect the CTG-Co-payment eligibility requirement effectively selecting for a population with higher risk for and prevalence of chronic disease. This also suggests that those with the greatest medication needs are accessing the CTG Co-payment initiative.

Table 11 – Number of prescriptions dispensed per person 2010-11 to 2015-16

Financial Year	Aboriginal CTG prescriptions per population*	All Australians prescriptions per population**	Rate ratio	Adjusted for Age#	Aboriginal CTG prescriptions per person signed up to CTG^
2010-11	1.5	8.3	0.18	0.29	25
2011-12	2.9	9.3	0.32	0.50	21
2012-13	3.9	11.4	0.34	0.54	22
2013-14	4.8	11.6	0.41	0.65	22
2014-15	5.6	11.7	0.48	0.75	22
2015-16	6.4	11.7	0.54	0.84	22
	4.3	10.8	0.40	0.69	22

*Prescriptions dispensed/census projection counts (Reference Table 17)

**Prescriptions dispensed/census projection counts (Reference Table 20)

Adjusted for age using Aboriginal population as standard using ABS Census population projections (Reference Table 17).

^CTG prescriptions dispensed/Number of people signed up to CTG (Reference Table 15).

B.6 WHAT IS THE BENEFIT AMOUNT ASSOCIATED WITH THE CTG CO-PAYMENT

Total benefits associated with the CTG PBS Co-payment Measure for the six year period totalled nearly $130 million. This value represented 0.3 per cent of total PBS benefit amounts in Australia. Most benefit under CTG was being spent on people under 65 years (86.4 per cent) while for all Australians 48.0 per cent of spending was on those under 65 years. However, for both groups the greatest cost per person was in the 65 year old groups.

Table 12 – Benefit amount by age group 2010-11 to 2015-16

	All Australians				CTG Aboriginal			
Age group	Benefit ($million)	per cent	Benefit ($million) per person	per cent	Benefit ($million)	per cent	Benefit ($million) per person	per cent
0-14	739.3	1.7	174.6	2.7	7.9	6.1	32.6	3.7
15-64	20,106.4	46.3	1338.8	20.4	103.3	80.3	254.0	29.0
65+	22,623.8	52.0	5034.3	76.9	17.5	13.6	590.3	67.3
Total	43,469.5		6547.8		128.7		877	

*Benefit/Number of people signed up to CTG (Reference Table 15)** Benefit/All Australian Census projections (Reference Table 17)

Table 13 reveals that as more Aboriginal and Torres Strait Islander people were covered under the CTG PBS Co-payment Measure over time, the annual CTG Co-payment benefit amount has increased from $11.2 to $45.9 per Aboriginal and Torres Strait Islander person in Australia from 2010-11 to 2015-16. However, the actual benefit amounts per person signed up to the CTG Co-payment has decreased over this period from $182 to $157 per person. This lower benefit amount per person in 2015-16 may be due to people with more costly complex chronic disease engaging with the CTG PBS Co-payment Measure earlier. However, we are also mindful that a few pharmaceuticals for prevention and management of chronic disease came off patent and this would also have coincided with a reduction in benefit amount. The fact that a similar trend is seen for all Australians supports the notion that reduction in medication costs is driving this trend.

Total benefits amounts for all prescriptions for the sic year period were $43,735 million. For the year 2015-16, the benefit amount was $325 per person for all Australians compared to only $46 for the CTG Co-payment per Aboriginal and Torres Strait Islander person in Australia. Adjusting for age, the benefit amount was 95percent less for Aboriginal and Torres Strait Islander people for the 2010-11 year and 80 per cent less in 2015-16.

However, we need to account for the fact that CTG Co-payment did not have complete coverage. So, when we consider coverage was 29.3 per cent by 2015-16 and the CTG Co-payment was $157 per person, we can still see that this is half the benefit amount of all Australians. This lower cost is despite Aboriginal people under the CTG Co-payment measure having double the number of prescriptions, as demonstrated in Table 13.

Table 13 – Benefit amount per person, 2010-11 to 2015-16

Financial Year	Aboriginal CTG benefits per population*	All Australians benefit per population**	Rate ratio	Adjusted for Age#	Aboriginal CTG benefit per person signed up to CTG^
2010-11	11.2	336.1	0.03	0.05	182
2011-12	21.6	330.6	0.07	0.09	156
2012-13	28.5	305.5	0.09	0.13	160
2013-14	34.6	296.9	0.12	0.17	158
2014-15	39.2	282.3	0.14	0.20	151
2015-16	45.9	324.7	0.14	0.20	157
	30.6	312.4	0.10	0.15	157

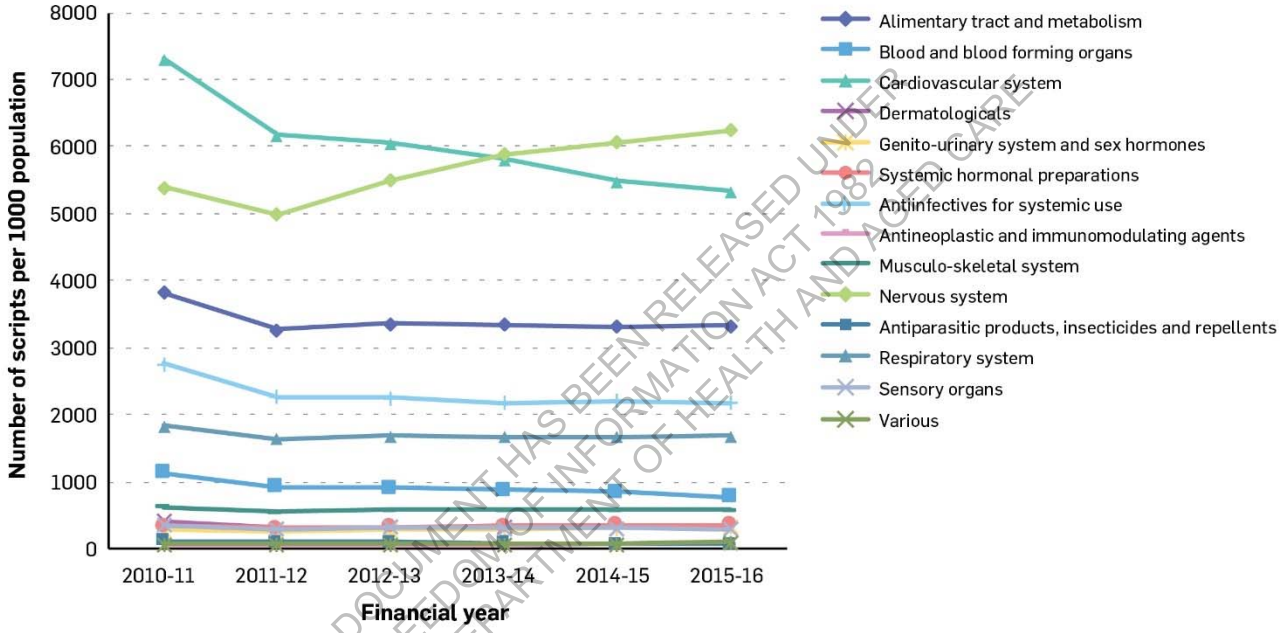
*Total benefit/census projection counts (Reference Table 17)** Total benefit/census projection counts (Reference Table 20)
#Adjusted for age using Aboriginal population as standard using ABS Census population projections (Reference Table 17).
^CTG total benefit/Number of people signed up to CTG (Reference Table 15).

B.7 WHAT MEDICATIONS ARE PEOPLE ACCESSING UNDER THE CTG CO-PAYMENT?

The pharmaceuticals most commonly accessed under the CTG Co-payment include those classified as for the cardiovascular system, nervous system, alimentary tract and metabolism and anti-infective for systemic use in accordance with the Anatomical Therapeutic Chemical (ATC) classification system. Pharmaceuticals falling within the first three categories include pharmaceuticals that are largely used for chronic disease prevention and management suggesting that intended beneficiaries of the CTG Co-payment are being reached (ie Aboriginal and Torres Strait Islander people with or at risk of chronic disease).

The number of prescriptions per persons accessed under the CTG PBS Co-payment Measure remained constant across most ATC categories over time (Figure 9). However, there was a drop in the number of prescriptions across all medications from 2010-11 to 2011-12. This may be explained by persons with more complicated medication regimes being first to sign on to the measure in 2010-11. There was also a trend for the number of prescriptions for cardiovascular pharmaceuticals to decrease (7.3 to 5.3 prescriptions per person per year) and conversely a trend for the number of prescriptions for the nervous system to increase (5.4 to 6.2 per person per year).

Figure 9 – Number of prescriptions per 1000 people signed to CTG Co-payment measure, 2010-11 to 2015-16



*Rates calculated using number of people signed up to CTG Co-payment as denominator (Reference Table 15).

B.8 HOW DO CTG CO-PAYMENT PRESCRIPTIONS DIFFER TO PRESCRIPTIONS FOR ALL AUSTRALIANS?

Notwithstanding that the CTG Co-payment selects for a population with greater prevalence of chronic disease and risk for chronic disease, prescriptions per 1000 people were greater across all ATC prescription categories, except those classified in the ATC class antineoplastic and immunomodulating agents and for sensory organs (Table 14).

Interestingly, the greatest difference between the CTG Co-payment group and all Australians are for infectious diseases. Prescription rates for both anti-infective for systematic use, and anti-parasitic products, insecticides and repellents were respectively twofold and 17-fold higher for Aboriginal and Torres Strait Islander Australians compared to all Australians. This might reflect greater susceptibility and rigorous treatment of infectious disease amongst those with chronic disease as well as some infectious diseases (e.g. hepatitis C) being classified as chronic disease. It might also be indicative of the CTG Co-payment initiative having greater reach and benefit beyond chronic disease prevention and management.

Table 14 – ATC Pharmaceutical prescription comparison, CTG Co-payment relative to all Australians, 2015-16

	Aboriginal CTG Co-payment		All Australians		
	Number of prescriptions	Rate per 1000*	Number of prescriptions	Rate per 1000**	Ratio (CTG/all)
Alimentary tract and metabolism	727,098	3327	39,984,782	1641	2.03
Blood and blood forming organs	169,917	778	10,189,856	418	1.86
Cardiovascular system	1,166,136	5336	88,304,228	3625	1.47
Dermatologicals	68,566	314	4,463,379	183	1.71
Genito-urinary system and sex hormones	70,989	325	6,646,691	273	1.19
Systemic hormonal preparations	79,119	362	6001,251	246	1.47
Anti-infective for systemic use	475,591	2176	28,574,382	1173	1.86
Antineoplastic and immunomodulating agents	17,619	81	2,496,640	102	0.79
Musculo-skeletal system	128,370	587	11,355,547	466	1.26
Nervous system	1,365,591	6249	63,545,023	2609	2.40
Anti-parasitic products, insecticides and repellents	16,499	76	106,452	4	17.28
Respiratory system	370,620	1696	12,960754	532	3.19
Sensory organs	64,479	295	9,601,657	394	0.75
Various	21,361	98	572,824	24	4.16

*Benefit/Number of people signed up to CTG (Reference Table 15)
**Benefit/All Australian Census projections (Reference Table 20)

B.8.1 FURTHER INFORMATION REGARDING THE CHANGE IN TRENDS IN USE OF MEDICATIONS ACTING ON THE CARDIOVASCULAR SYSTEM AND NERVOUS SYSTEM

For pharmaceuticals acting on the cardiovascular system:

- Most prescriptions were for agents acting on the renin-angiotensin system (37.8 per cent) and lipid modifying agents (32.9 per cent). These are used for management of hypertension and hypercholesterolemia respectively.
- For the period 2010-11 to 2015-16 the use of pharmaceuticals classified as being for the cardiovascular system dropped across most classes of CVD medications for people signed up to the CTG Co-payment measure.

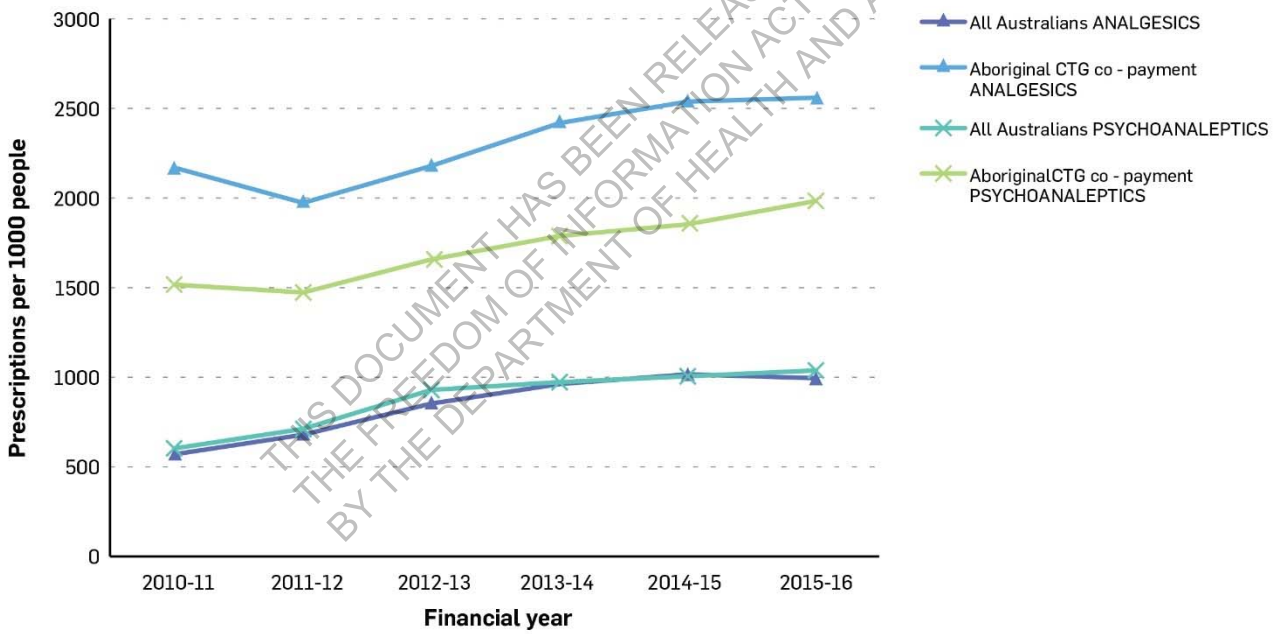
- Amongst those signed up to the CTG Co-payment measure there was a 38.5 per cent decrease in calcium channel blockers, 33.7 per cent in cardiac therapy pharmaceuticals, 30.4 per cent decrease in both diuretics and agents acting on the renin-angiotensin system, 25.7 per cent decrease in beta blocking agents and 20.8 per cent decrease in lipid modifying agents.

These trends may be a consequence of people on CVD mediations, who consequently have regular and frequent contacts with health services and pharmacies, being identified early for sign up to the CTG Co-payment.

For pharmaceuticals acting on the nervous system:

- For all Australians, there was a six-year increase in prescriptions for the nervous system. This trend was driven by an increase in use of analgesics (pharmaceuticals for pain relief) and psychoanaleptics (this includes medications for depression, dementia and psychostimulants). For all Australians, there was an 80 per cent increase in analgesics use and 70 per cent increase in psychoanaleptics use.
- This increase in prescriptions for both these pharmaceutical classes was also seen for those who accessed pharmaceuticals via the CTG Co-payment.
- Despite this increase in use occurring for Aboriginal and Torres Strait Islander people accessing the CTG Co-payment and all Australians, the rate of psychoanaleptics prescriptions were around 2.5 fold greater and analgesics 2 fold greater for Aboriginal and Torres Strait Islander people signed up to the CTG Co-payment measure (Figure 10). However, we are mindful that this is not reflective of all Aboriginal and Torres Strait Islander people as the CTG Co-payment selects for a population with chronic disease and at risk of chronic disease.

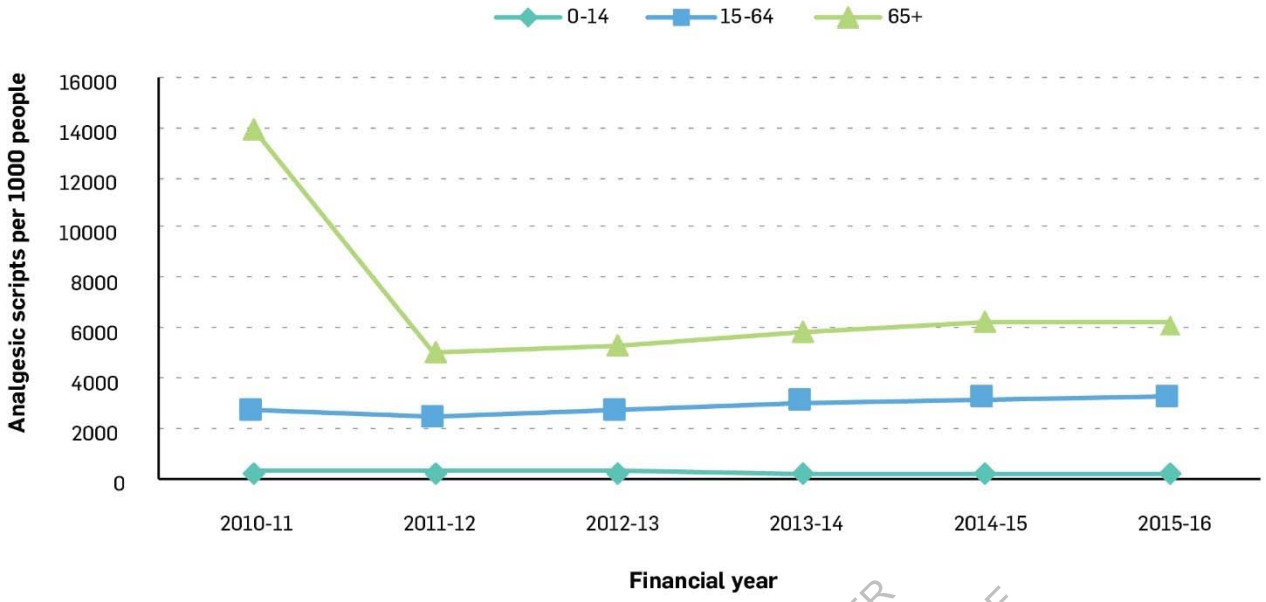
Figure 10 – Trends for analgesics (pain relief medication) and psychoanaleptics (depression/dementia/psychostimulants) for All Australians and CTG Co-payment prescriptions for the period 2010-11 to 2015-16.



*All Australia Rates calculated using census projections (Reference Table 20)
**Aboriginal CTG Co-payment rates calculated using the number of people signed up to the CTG Co-payment initiative (Reference Table 15)

Further investigation into prescriptions for pharmaceuticals acting on the nervous system by age group revealed that use of analgesics was highest amongst those age 65 years and over (Figure 11). We note that the high number of prescriptions in 2010-11 amongst those 65+ years may be explained by the small number of people signed up early under the CTG PBS Co-payment Measure (876 people in 2010-11 versus 14659 in 2015-16). The increase in analgesics over time appears to be driven by an increase in prescriptions among both the 15-64 year and the 65 years and over CTG Co-payment groups. Use of analgesics was not increasing in the 0-14 year group.

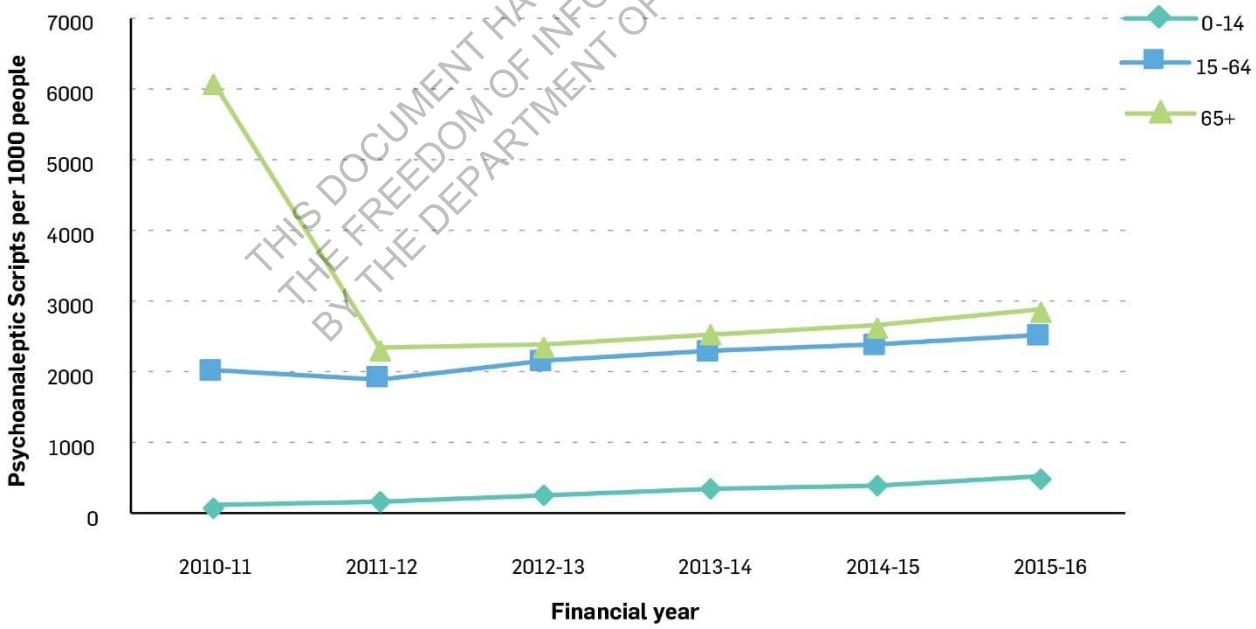
Figure 11 – Trends for analgesics CTG Co-payment prescriptions by age, 2010-11 to 2015-16



*Aboriginal CTG Co-payment rates calculated using the number of people signed up to the CTG Co-payment initiative (Reference Table 15).

For psychoanaleptics (medications for depression/dementia/psychostimulants), prescriptions were highest in the 15-64 year and 65+ year age groups (Figure 12). Again, a small population denominator in 2010-11 may explain the high number of prescriptions in the first year for those 65 years and over. Prescriptions for psychoanaleptics increased across all age groups including for Aboriginal and Torres Strait Islander people 0-14years. For the 0-14 year age group, CTG Co-payment prescriptions for psychoanaleptics increased 4 fold in the six year period from 118 per 1000 people in 2010-11 to 515 per 1000 people in 2015-16.

Figure 12 – Trends for psychoanaleptic CTG Co-payment prescriptions by age, 2010-11 to 2015-16



*Aboriginal CTG Co-payment rates calculated using the number of people signed up to the CTG Co-payment initiative (Reference Table 15).

B.9 S100 RAAHS PROGRAM

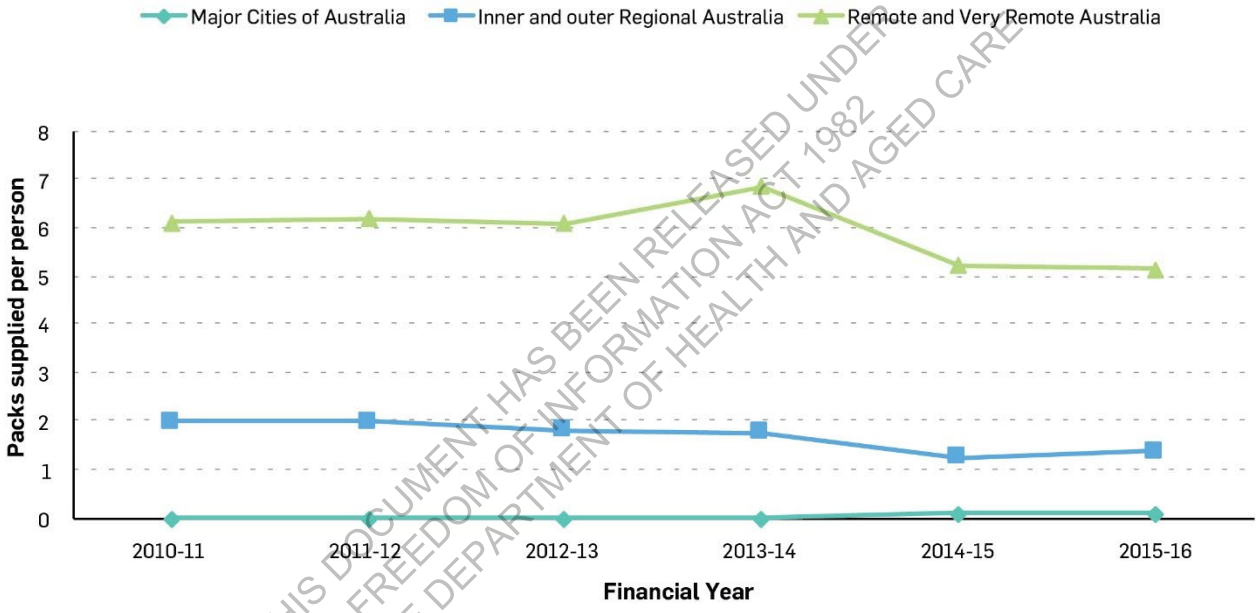
B.9.1 WHO IS BENEFITING FROM THE S100 RAAHS PROGRAM?

In total 8.4 million pharmaceutical packs were accessed under the S100 RAAHS Program for the period 2010-11 to 2015-16. Over six years, the cost was $235 million dollars. This value represents 0.5 per cent of the total PBS benefit spending.

The greatest beneficiaries of medications under the s100 RAAHS Program were Aboriginal and Torres Strait Islander people from areas classified as very remote and remote. In total, 61.8 per cent of all medications supplied were to remote (39.5 per cent) and very remote (22.3 per cent) areas, with the remaining supplied to outer regional (36.8 per cent)' inner regional (0.9 per cent) and major cities (0.6 per cent). This is not surprising given that the intended beneficiaries of the S100 RAAHS Program provision are those serviced by Remote Area Aboriginal Health Services.

Based on population counts, the S100 RAAHS Program incentive had greatest reach in remote and very remote areas (Figure 13**)** The average annual supply of pharmaceuticals to remote and very remote areas was 5.9 packs per person, in inner and outer regional areas this was 1.7 packs per person and 0.3 per person in major cities.

Figure 13 – Quantity of packs supplied per person by remoteness under S100 RAAHS Program, 2010-11 to 2015-16

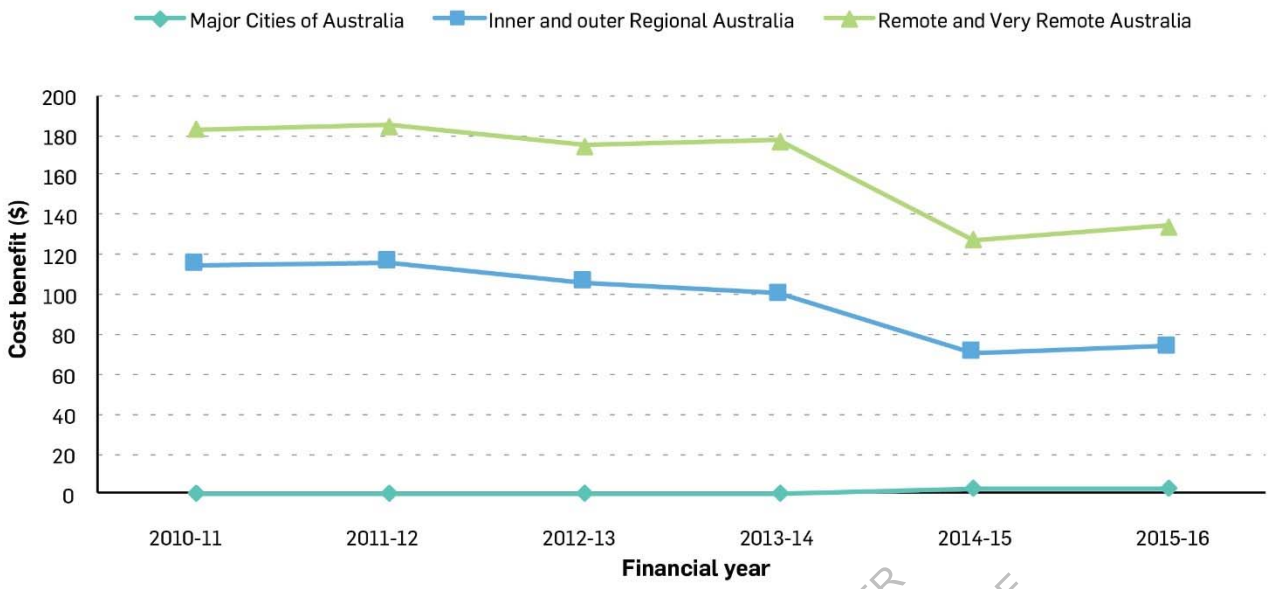


*Adjusted based on census projections (Reference Table 19).

B.9.2 WHAT ARE THE COSTS ASSOCIATED WITH THE S100 RAAHS PROGRAM?

The costs associated with the S100 RAAHS Program steadily decreased over the six-year period from $43.8 million in 2010-11 to $33.0 million in 2015-16. The average cost of supplying medications under S100 RAAHS Program for the six-year period was $55.81 per Aboriginal and Torres Strait Islander person in Australia (Figure 8). The greatest cost was in very remote and remote areas (Figure 14).

Figure 14 – Cost benefit per patient by remoteness under the S100 RAAHS Program, 2010-11 to 2015-16

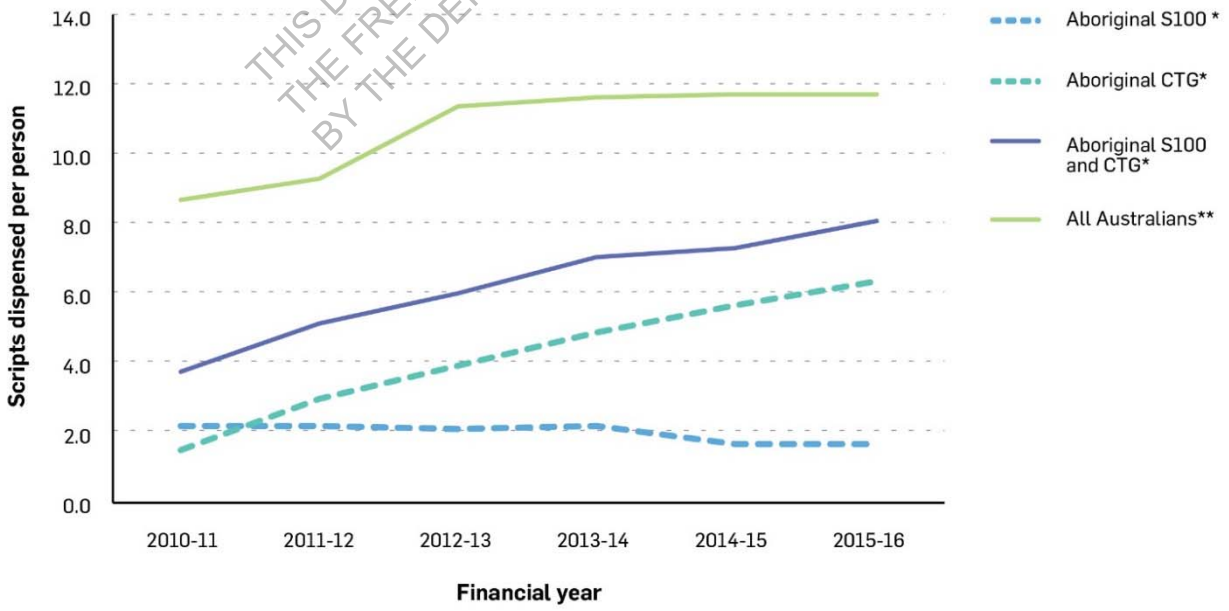


**Adjusted based on census projections (Reference Table 19).*

B.9.3 PRESCRIPTIONS/ PACKETS DISPENSED UNDER THE SECTION100 AND CTG SCHEMES

Figure 15 compares the number of packs dispensed under the S100 RAAHS Program and the number of prescriptions under the CTG PBS Co-payment Measure relative to all Australians. Each year, fewer Aboriginal and Torres Strait Islander people were accessing medications via the S100 RAAHS Program and more were doing so under the CTG initiative. The CTG Co-payment is driving this upward trend, so it may be that those who were previously getting medications under S100 RAAHS Program were accessing them through the CTG PBS Co-payment Measure. However, overall the number of prescriptions/packets dispensed to Aboriginal and Torres Strait Islander people through both schemes remains lower than it does for all Australians. We are mindful that the CTG PBS Co-payment Measure only has 29.3 per cent coverage, and the S100 RAAHS Program is a remote incentive and this is likely to explain lower prescriptions as the whole population is not picked up.

Figure 15 – Number of prescriptions/pharmaceuticals dispensed per person by scheme, 2010-11 to 2015-16

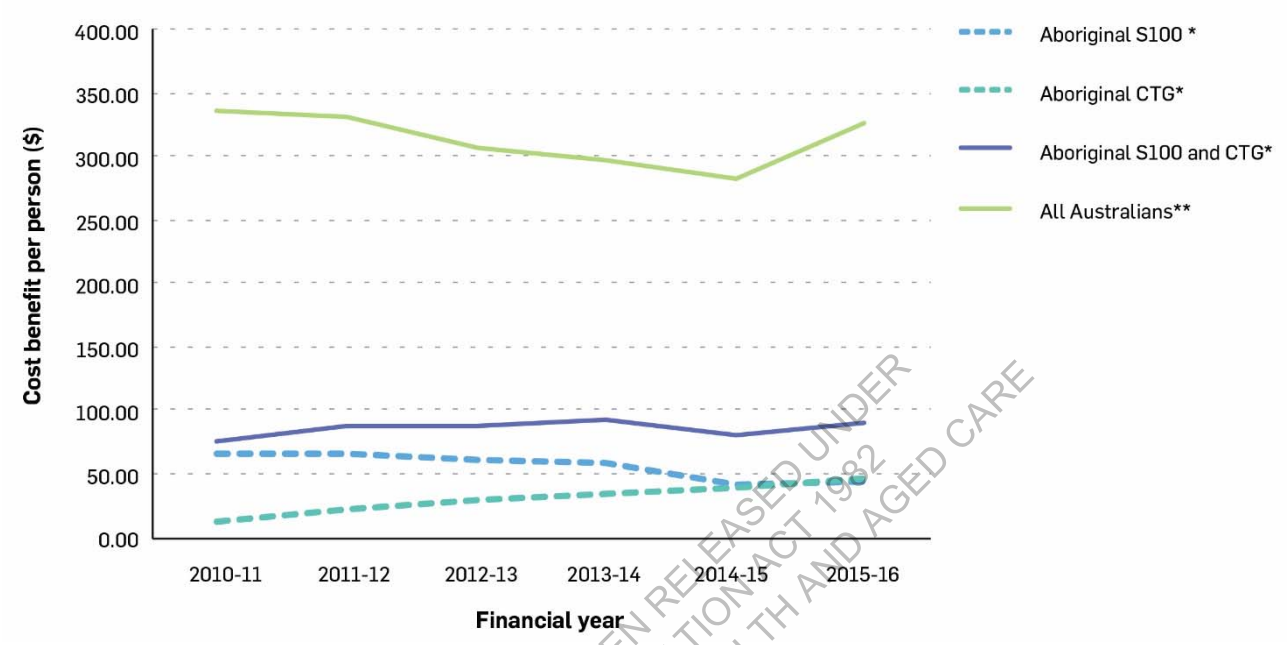


** Aboriginal rates calculated using census projections (Reference Table 17)*
***All Australia Rates calculated using census projections (Reference Table 20).*

B.9.4 COSTS OF THE S100 RAAHS PROGRAM AND CTG MEASURE

In total, the costs for the CTG Co-payment were $130 million and the S100 RAAHS Program were $235 million. Together these equated to 0.83 per cent of the total PBS pharmaceutical spending. Per Aboriginal and Torres Strait Islander person in Australia the cost of these two schemes was $516.58 (Figure 16), while for all Australians PBS costs were $1855.64 per person. Notwithstanding the fact that S100 RAAHS Program and CTG Co-payment initiatives don't have complete coverage, the spending on Aboriginal people through Aboriginal specific PBS schemes is less than it is for all Australians.

Figure 16 – Cost benefit per person of the S100 RAAHS Program and CTG Co-payment measure, 2010-11 to 2015-16

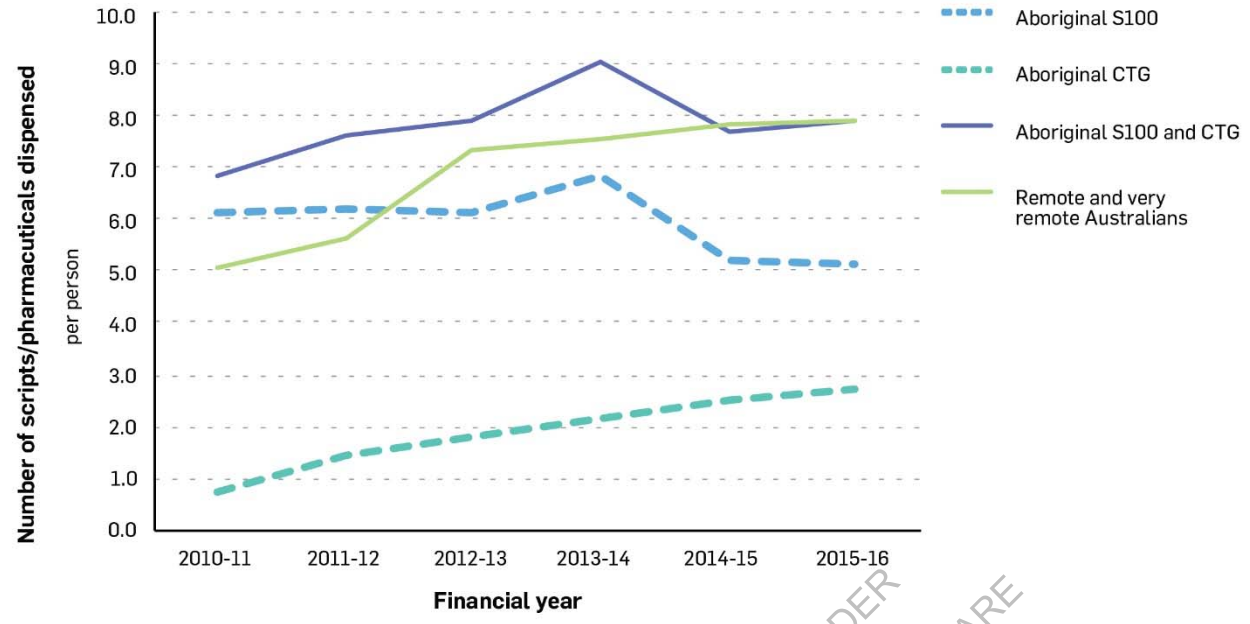


** Aboriginal rates calculated using census projections (Reference Table 17)*
***All Australia Rates calculated using census projections (Reference Table 20).*

B.10 PRESCRIPTIONS/ PACKETS DISPENSED UNDER THE S100 RAAHS PROGRAM AND CTG MEASURE IN REMOTE AND VERY REMOTE AUSTRALIA

For remote and very remote areas, medications dispensed through S100 RAAHS Program have decreased, while those prescribed through the CTG-Co-payment have increased (Figure 17). However, more packs have consistently been distributed through the S100 RAAHS Program. Combining data for both incentives there was an upward trend for more prescriptions/ number of pharmaceuticals to be dispensed over time for the remote/very remote Aboriginal and Torres Strait Islander population as well as all remote/very remote Australians.

Figure 17 – Number of prescriptions /pharmaceuticals dispensed per person under the S100 RAAHS Program and CTG Co-payment measure in remote and very remote Australia, 2010-11 to 2015-16



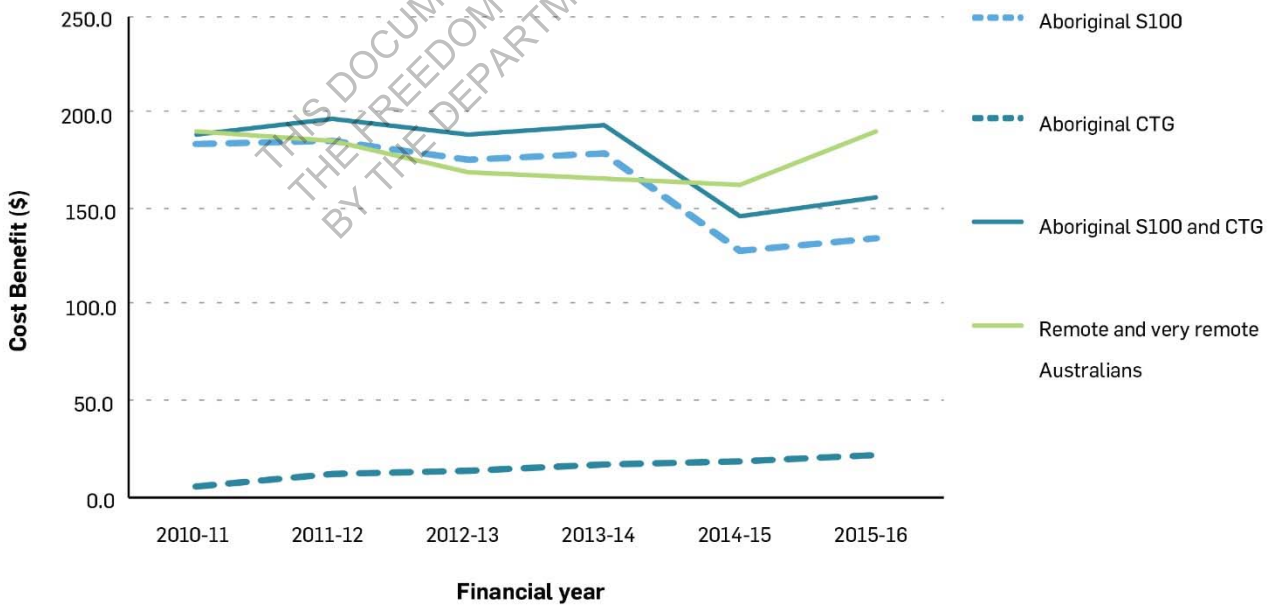
*Aboriginal rates calculated using census projections (Reference Table 17)

**All Australia Rates calculated using census projections (Reference Table 20).

B.11 COSTS OF THE S100 RAAHS PROGRAM AND CTG MEASURE IN REMOTE AND VERY REMOTE AUSTRALIA

In remote areas, the total cost of pharmaceuticals per person under the S100 RAAHS Program and CTG PBS Co-payment Measure was relatively consistent with those for all Australians living in remote and very remote areas (Figure 18).

Figure 18 – Costs per person under the S100 RAAHS Program measure and CTG Co-payment measure in remote and very remote Australia, 2010-11 to 2015-16



** Aboriginal rates calculated using census projections (Reference Table 17)*
***All Australia Rates calculated using census projections (Reference Table 20).*

B.12 REFERENCE TABLES

Table 15 – CTG Co-payment coverage, 2010-11 to 2015-16

Financial Year	Number of patients
2010-11	41,267
2011-12	94,606
2012-13	124,929
2013-14	156,774
2014-15	189,386
2015-16	218,524

Table 16 – CTG Co-payment coverage by age group, 2010-11 to 2015-16

Financial year	Number of patients			
	0-14 years	15-64 years	65+ years	Total
2010-11	12,998	27,322	876	41,196
2011-12	25,585	63,613	5303	94,501
2012-13	34,531	82,566	7717	124,814
2013-14	43,234	103,361	10,024	156,619
2014-15	53,268	123,729	12,232	189,229
2015-16	61,083	142,782	14,659	218,524

Table 17 – Census estimates for Aboriginal and Torres Strait Islander people by age, 2010-11 to 2015-16

CENSUS PROJECTIONS*				
	Census projection counts			
Year	0-14 years	15-64 years	65+ years	Total
2011	240,620	406,579	22,682	669,881
2012	241,657	418,301	24,059	684,017
2013	243,162	429,933	25,488	698,583
2014	245,221	441,315	27,053	713,589
2015	247,720	452,494	28,834	729,048
2016	250,457	463,504	30,995	744,956

* ABS (2014) 3238.0 Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001-2026, Australian Bureau of Statistics Canberra.

Table 18 – Closing the gap counts by remoteness, 2010-11 to 2015-16

Financial year	Number of patients					
	Major Cities of Australia	Inner Regional Australia	Outer Regional Australia	Remote Australia	Very Remote Australia	Total
2010-11	11,172	11,927	13,795	2746	1541	41,180
2011-12	28,591	25,748	29,696	6367	4043	94,446
2012-13	40,236	33,427	37,762	7799	5495	124,719
2013-14	52,750	41,810	46,082	9323	6527	156,492
2014-15	64,903	50,886	54,509	10,999	7680	188,977
2015-16	76,715	58,248	61,672	12,535	9009	218,179

Table 19 – Census estimates for Aboriginal and Torres Strait Islander people by remoteness, 2010-11 to 2015-16

CENSUS PROJECTIONS*				
Year	Census projection counts			
	Major Cities of Australia	Inner and outer Regional Australia	Remote and Very Remote Australia	Total
2011	233,146	293,812	142,923	669,881
2012	238,576	301,250	144,191	684,017
2013	244,198	308,903	145,482	698,583
2014	250,022	316,777	146,790	713,589
2015	256,056	324,886	148,106	729,048
2016	262,297	333,238	149,421	744,956

* ABS (2014) 3238.0 Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001-2026, Australian Bureau of Statistics Canberra.

Table 20 – Census estimates for all Australians by age, 2010-11 to 2015-16

CENSUS PROJECTIONS*				
Year	Census projection counts			
	0-14	15-64	65+	Total
2011 census	4,144,025	14,351,405	3,012,289	21,507,719
Jun-2012	4,299,878	15,204,062	3,218,055	22,721,995
Jun-2013	4,372,394	15,409,857	3,337,006	23,119,257
Jun-2014	4,447,803	15,625,737	3,450,515	23,524,055
Jun-2015	4,527,877	15,845,156	3,567,519	23,940,552
Jun-2016	4,610,715	16,062,963	3,686,083	24,359,761

*ABS (2013) 3222.0 Population Projections, Australia 2012 (base) to 2021, Australian Bureau of Statistics Canberra.

Appendix C STAKEHOLDERS CONSULTED

This appendix lists organisational stakeholders consulted as part of this review.

C.1 KEY INFORMANTS

Organisations approved to participate in this Review through key informant interviews include:

- Aboriginal Health and Medical Research Council (NSW)
- NSW Ministry of Health
- Chief Pharmacists Network (WA)
- Australian College of Rural and Remote Medicine
- Royal Australian College of General Practitioners
- Queensland Aboriginal and Indigenous Health Council
- National Aboriginal Community Controlled Health Organisation
- Victorian Aboriginal Community Controlled Health Organisation
- Queensland Department of Health
- Victorian Department of Health
- Aboriginal Medical Services Alliance Northern Territory
- Northern Territory Department of Health
- Aboriginal Health Council of South Australia
- SA Health
- Tasmanian Department of Health and Human Services
- Canberra Hospital & Health Services
- WA Department of Health
- Pharmaceutical Society of Australia
- Society of Hospital Pharmacists Australia
- WA ACCHO Affiliate Australian Indigenous Doctors Association
- Central Australian Aboriginal Congress

C.2 ABORIGINAL MEDICAL SERVICES

Over 40 Aboriginal Medical Services (including community controlled services) were approached to participate in the Review, which meant a field visit from the Review team to interview key staff, or in a few cases where a physical visit could not be arranged, engagement via telephone interview. Those that chose to participate included:

- Apunipima Aurukum Primary Health Care Clinic (Aurukun, Qld)
- Apunipima Napranum Primary Health Care Clinic (Napranum, Qld)
- Awabakal Aboriginal Cooperative (Newcastle, NSW)
- Bagot Health Clinic (Darwin, NT)
- Broome Regional Aboriginal Medical Service (Broome, WA)
- Bulgarr Ngaru Medical Aboriginal Corporation (Grafton, NSW)
- Bullinah Aboriginal Health Service (Ballina, NSW)
- Central Australian Aboriginal Congress (Alice Springs, NT)

- Danila Dilba Health Service (Darwin, NT)
- Derbarl Yerrigan Health Service (Perth, WA)
- Galambila Aboriginal Health Service Incorporated (Coffs Harbour, NSW)
- Institute for Urban Indigenous Health (Brisbane, Qld)
- Kambu Aboriginal and Torres Strait Islander Corporation for Health (Ipswich, Qld)
- Kimberley Aboriginal Medical Services Council (Broome, WA)
- Marngarr Health Service (Nhulunbuy, NT)
- Marwarnkarra Health Service Aboriginal Corporation (Roebourne, WA)
- Mulungu Aboriginal Corporation Medical Centre (Mareeba, Qld)
- Ngaanyatjarra Health Service (Alice Springs, NT)
- Nganampa Health Council (Alice Sprints, NT)
- Nunkuwarrin Yunti of South Australia (Adelaide, SA)
- Nunyara Wellbeing Centre (Whyalla, WA)
- Pika Wiya Health Service Aboriginal Corporation (Port Augusta, WA)
- Puntukurnu Aboriginal Medical Service (Newman, WA)
- South West Aboriginal Medical Service Aboriginal Corporation (Bunbury, WA)
- Wuchopperen Health Service Ltd (Manoora, Qld)
- Wurli-Wurlinjang Aboriginal Health Service (Katherine, NT)
- Yerin Aboriginal Health Service (Wyong, NSW)
- Yirrkala Community Health Centre (Yirrkala, NT)

Three community controlled services located in Victoria were also approached to participate but declined to do so. Flooding in Queensland also meant that planned visits to Gladstone and Woorabinda were not able to proceed.

Appendix D SUPPLEMENTARY DATA ANALYSIS

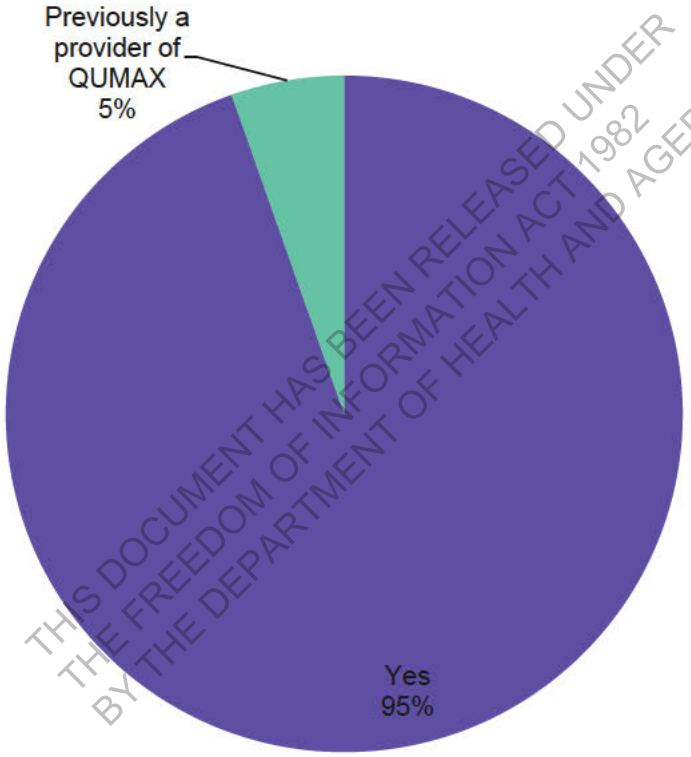
D.1 PHARMACIST SURVEY (QUMAX)

This section provides the results of the online survey conducted of pharmacists engaged in the QUMAX program.

Response Statistics

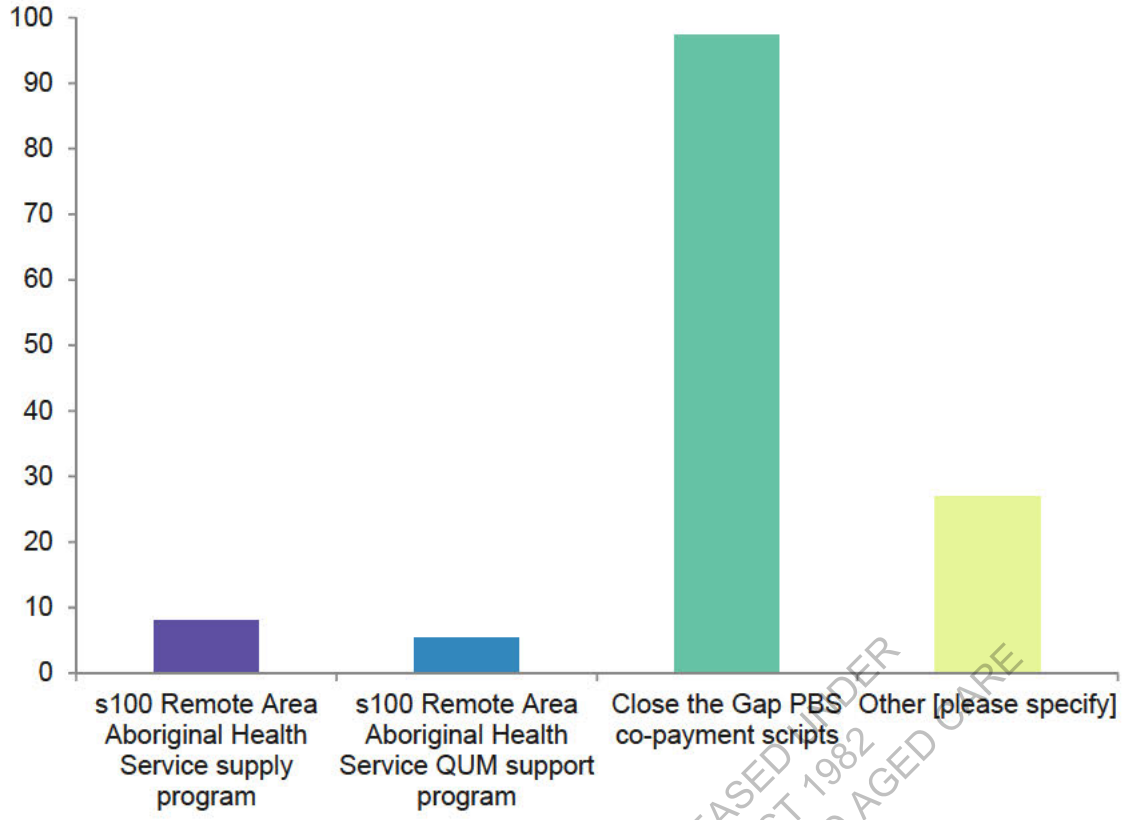
	Count	Percent
Complete	37	100
Partial	0	0
Disqualified	0	0
Total	37	

I am a current provider for the QUMAX Program



Value	Percent	Count
Yes	94.6 per cent	35
Previously a provider of QUMAX	5.4 per cent	2
	Total	37

Please indicate which, if any, other Indigenous Pharmacy programs you deliver



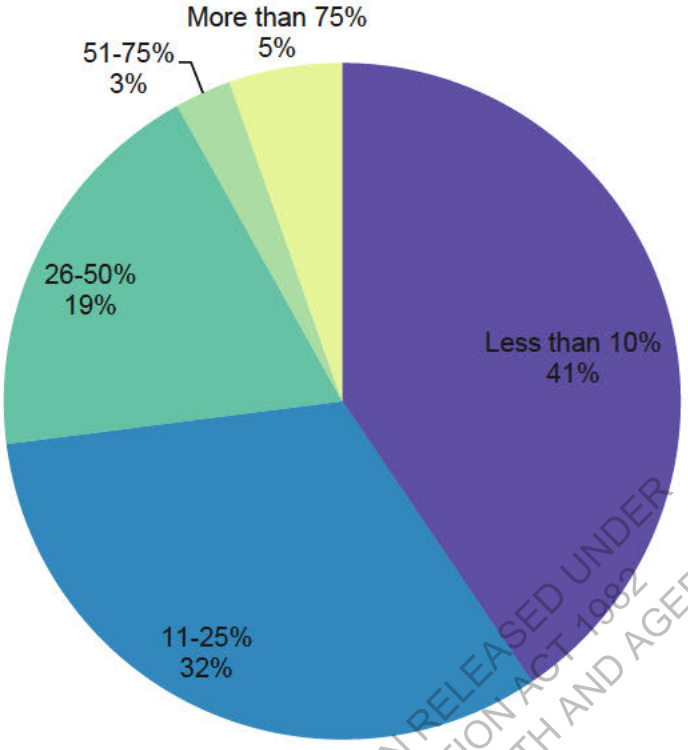
The above should read s100 RAAHS Program, QUMAX Program, CTG PBS Co-payment scripts

Value	Percent	Count
s100 Remote Area Aboriginal Health Service supply program	8.1 per cent	3
s100 Remote Area Aboriginal Health Service QUM support program	5.4 per cent	2
Close the Gap PBS co-payment scripts	97.3 per cent	36
Other [please specify]	27.0 per cent	10

Responses provided to 'Other':

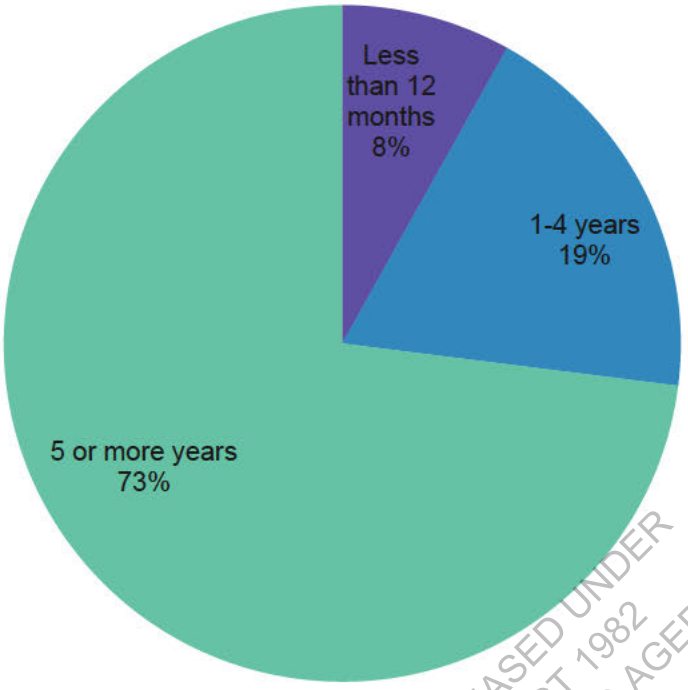
- Aboriginal Nursing Home Webster Pack Service
- QUMAX DAA
- QUM subsidised DAAs
- QMAX Webster packing
- QMAX Webster program
- Webster pack dose administration aids
- Weekly blister packing service
- facilitate DAA supply through Clinic
- free medication packing service
- webster packs

What proportion of your pharmacy patients are Aboriginal and/or Torres Strait Islander?



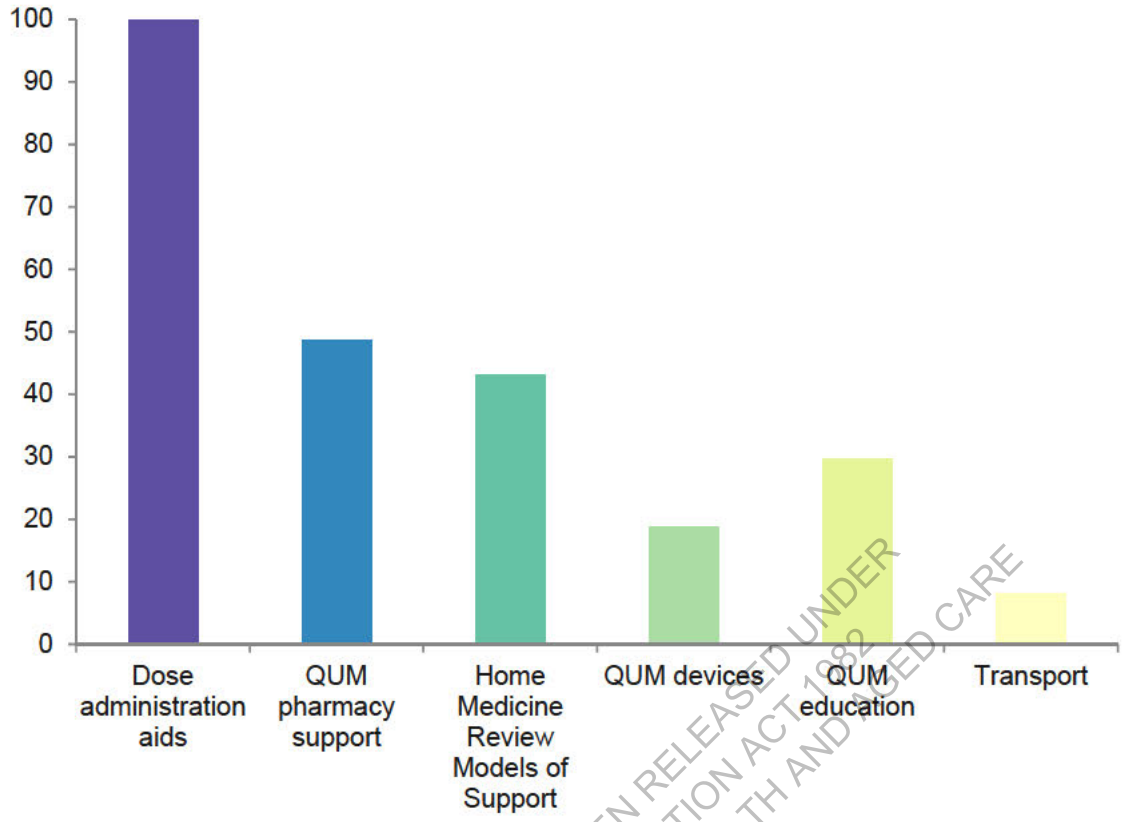
Value	Percent	Count
Less than 10 per cent	40.5 per cent	15
11-25 per cent	32.4 per cent	12
26-50 per cent	18.9 per cent	7
51-75 per cent	2.7 per cent	1
More than 75 per cent	5.4 per cent	2
	Total	37

How long have you been registered as a QUMAX provider?



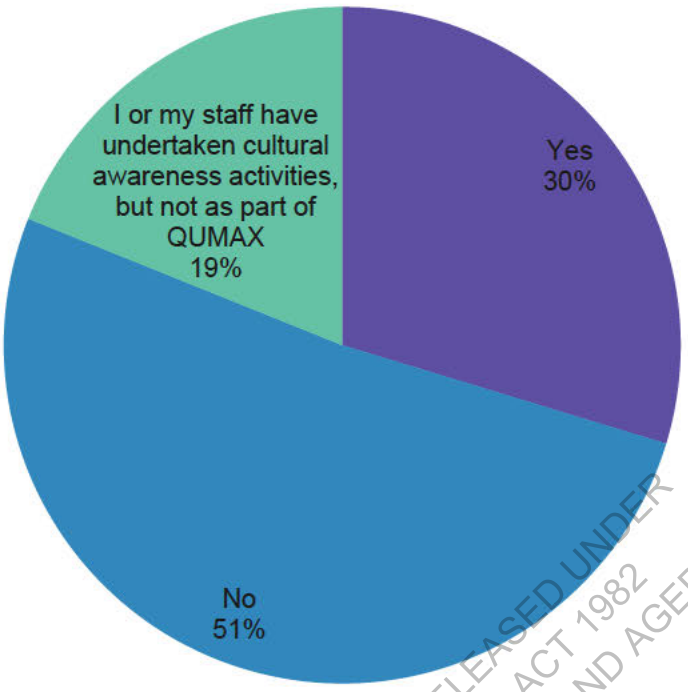
Value	Percent	Count
Less than 12 months	8.1 per cent	3
1-4 years	18.9 per cent	7
5 or more years	73.0 per cent	27
	Total	37

Which categories of support have you been engaged to provide? (select as many as apply)



Value	Percent	Count
Dose administration aids	100.0 per cent	37
QUM pharmacy support	48.6 per cent	18
Home Medicine Review Models of Support	43.2 per cent	16
QUM devices	18.9 per cent	7
QUM education	29.7 per cent	11
Transport	8.1 per cent	3

Have you or your staff undertaken cultural awareness activities, through the Aboriginal Health Service, as a part of QUMAX?



The wording in the green section of the above pie chart needs to be fixed.

Value	Percent	Count
Yes	29.7 per cent	11
No	51.4 per cent	19
I or my staff have undertaken cultural awareness activities, but not as part of QUMAX	18.9 per cent	7
	Total	37

What impact has cultural awareness training had on the ability of your pharmacy to support Aboriginal and Torres Strait Islander patients?

Free text responses
A greater level of understanding of the cultural requirements of the Indigenous community
Allowed for more understanding when dealing with patients.
At university as part of our pharmacy course
Has assisted our staff in understanding relevant cultural factors when engaging with ATSI patients
Helped me to communicate better
I found it really interesting anyway, but it really helped with understanding some of the general issues with aboriginal perceptions about medication & health care providers, and allowed me to adjust our pharmacy practices to take these into account and encourage questions from our indigenous customers.
Identifying cultural needs
Increased ability to engage with patients to increase their knowledge of their conditions and treatment
It help our team to understand our customers better and assists us to effectively communicate in a more culturally safe way.
It made an enormous difference on my understanding of cultural issues and the pain faced by people, but living here and knowing a lot of aboriginal patients has deepened it further.
Nil
Not much as I was brought up in the Torres Straits
Understand their culture make us more friendly and easier to talk to them
Very important. It impacts how effective my services are to aboriginal people, therefore how it impacts their health.
greater understanding of reasons behind the need for CTG
none - growing up in the area has been more helpful

What aspects of the QUMAX program have you found most helpful to you in doing your job? 1= least helpful and 4 = most helpful

	1	2	3	4
Building a relationship with the local Aboriginal Health Service	0	4	12	21
Cultural awareness training or education provided by the Aboriginal Health Service	8	15	9	5
The opportunity to provide direct pharmacy education to Aboriginal Health Service staff	2	14	14	7
The workplan developed by the Aboriginal Health Service	10	14	11	2

Below are statements about the objectives of QUMAX. Please indicate your level of agreement with each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
The support I provide under QUMAX enables people to effectively self-manage their medicines and QUM devices	0	0	0	19	18
The support I provide under QUMAX improves clinician knowledge regarding medication management	0	0	9	19	9
The support I provide under QUMAX leads to people using medicines safely	0	0	1	17	19
The support I provide under QUMAX reduces the financial barriers for patients accessing medicines and QUM activities	0	0	1	10	26

What is the most significant change you feel the QUMAX program has generated for Aboriginal Health Services in your region?

Free text responses
Access to pharmacy services
Access to programs and services that would otherwise be unobtainable.
Being able to offer extended help to the community
Better access to medication and pharmacy services
Better health support for members of the community who need it most
Better medication compliance, less incidences of hospitalisation
Encouraged quality and proper use of medications for our patients. Let's them have a better understanding of their medicines and makes it easier for them to keep track of their medications.
Enhances compliance and makes medications and webster paks affordable.
Greater likelihood of getting prescriptions dispensed, improved compliance with packs
Has enabled ATSI to access DAAs. Our involvement has provided ATSI patients with access to a pharmacy with culturally aware staff
Helps us support the patients and understand there needs better
Improve compliance of medication taking
Increased access to medication and therefore increasing compliance
Increased medication compliance
Making medications and webster packing affordable, ensuring optimal use of medications
Patients are motivated to take medication regularly and increased concordance has improved health outcomes. By providing the weekly dose administration aids it also enables the pharmacist to interact with the patient on a weekly basis
Patients taking medication regularly means a better chance for it to work
Probably the CTG co-payment issue.
Safer and easier access to medication
Some AHS services have been productive and worthwhile for the local community, but not all.
Taking medications correctly by using DAAs is made more affordable by subsidising the cost of this service
The Webster packing enables me to have constant interaction with the patient therefore monitoring their health and being in a position to intervene or provide health information when needed.
The ability to help people properly manage their health with targeted and frequent (usually weekly) contact and intervention. We have observed significant improvements in compliance with medication regimes, communication between health care providers and the motivation of patients to participate in their health needs.
Unsure - I have only been at this pharmacy for 12 months and have not had a Huge involvement with the Aboriginal Health Services other than occasional phone calls.

Free text responses
We have seen a dramatic increase in patient compliance and adherence to medications.
accessing necessary medicines
greater availability of health services to ATSI patients
increased compliance
medication compliance
regular use of required medicines, without any financial barrier
safe supply and consistent controls of medications
willingness and benefits to stay engaged with our pharmacy

In what ways do activities under QUMAX complement or overlap with your activities under other Indigenous pharmacy programs (e.g. CTG)? How can this be improved?

Free text responses
Access to pharmacy services
Allows a free medication service to be provided at no charge
An increased awareness and education of generic medications toward the CTG eligible patients would be beneficial due to some pricing issues.
By providing ctg scripts it ensures there is no financial barrier to having their script filled. This enables me to give appropriate health information about the disease or the clinical information about the drug dispensed.
CTG is about the base cost of medicines. Once people are on more complex med regimen, they require additional appropriate support.
Complements the CTG program
Greater integration, prescription for DAA similar to DVA program would be easier to manage and increase patient access to DAA's in appropriate patients
It does complement the CTG, so our indigenous customers can be confident that they can collect their meds each week or fortnight without worrying too much about money. We also deliver the weekly packs to some patients.
More information to current service providers about changes to QUMAX program. Further support in this respect.
Our QUMAX Webster patients are all CTG. However the prescribers are not always consistent in endorsing the prescriptions as CTG. Program could be extended at all CTG patients even if they are not patients of the Aboriginal Medical Centre in town
Patient should be registered as CTG and not require doctor to write appropriate, maybe pbs online validation similar to concession cards
QUMAX DAAs complement the CTG program as it enables no out of pocket costs for ATSI patients who are taking PBS medicines

Free text responses
QUMAX contributes to the webster pak cost and the CTG pays for prescriptions so the medication is effectively free to the customer and it removes a significant barrier to compliance.
QUMAX provides for free DAA packing and repacking CTG scripts provide free medication but I think it needs to be extended to cover a wider range. Also hospital scripts should be CTG
QUMAX allows for DAA's to be prepared with no out of pocket expense for patients.
Ready access to culturally sensitive medical advice is a really good thing
Removes the financial barrier to taking medications regularly. Further education of health professionals including doctors about CTG is needed. Also increased monitoring of patients who claim CTG status as there are some who are being prescribed CTG scripts who are not aboriginal
The CTG is effective as a cost saving measure for the indigenous community, but it proving to be a system that can be high abused and no real long term benefit has been shown yet.
We offer programs for smoking cessation and diabetes management. Accessing products such as glucometers and training for diabetes is difficult.
only customers who go the aboriginal service can get the subsidies packs and sometimes patients who would deserve and would benefit from this service are unable to obtain it.
packing availability improves compliance but greater access to more patients would assist
QUMAX works perfectly with ctg to relieve the financial burden of medication provision, thereby removing a significant barrier to compliance
webster packs and ctg go hand in hand

What, if any, QUMAX program improvements would you suggest to make your work with Aboriginal Health Services and community members most effective?

Free text responses
CTG scripts from hospitals
Delivery to remote communities as well as the planned program for HMMR and other instructions for new delivery systems. Also including NDSS.
Easier setup and room to add more patients. I have reached quota and can add no more.
Increase communication between all parties and increased funding for further programs that the pharmacist can provide
Increased communication. Cultural training and education days would be good.
It would be good if more of our customers were given webster paks. Without them, compliance is very sporadic.
Liaising between Aboriginal services and pharmacies more often to review medications effectively
Make the process of accessing funding simpler and work directly with the pharmacy, not via other third party suppliers.
Making the program available to all Aboriginal and Torres Straight islanders, not just those that visit the local Aboriginal medical and dental centre.
None. Working really well for the pharmacy and our patients so far
Not an easy question to answer.
Online claiming for services provided
Possibly fund pharmacists to treat diseases eg diabetes because we have more contact and are better at communicating than many general practitioners.
Rolling it into Medicare/pbs to enable simpler reporting
We don't do much with the local AMS, and I would like to do more.
better IT systems to enable smoother data sharing. Currently clinic cannot write CTG prescription except by manual annotation. System does not display expired concession cards which requires phone call to gain number on a regular basis
better communication about services available with pharmacies
simplifying the reporting and recontacting process

Appendix E ABRIDGED RESEARCH PROTOCOL

TABLE OF CONTENTS

Tables:

1. INTRODUCTION

1.1. THIS DOCUMENT

This document is the Research Protocol for the Review of the Indigenous Pharmacy Programs (the Review).

1.2. BACKGROUND

Urbis has been engaged by the Department of Health to conduct an evaluation continuous quality improvement (CQI) review of the Indigenous Pharmacy Programs (IPP or 'Programs'). The IPP refers to the following four separate but related programs:

- Closing the Gap PBS Co-payment Measure
- Quality Use of Medicines (QUM) Maximised for Aboriginal and Torres Strait Islander people (QUMAX) Program
- Section 100 (s100) Remote Area Aboriginal Health Services (RAAHS) Program
- s100 Support Allowance (Support Allowance) Program.

This suite of programs is designed to support Aboriginal and Torres Strait Islander people to access high quality medicines in an equitable and affordable way. Indigenous access to high quality medicines has been a focus under the Community Pharmacy Agreements since the first Agreement was signed in the 1990s.

1.3. REVIEW OBJECTIVE

The objective of the Review is to provide advice to the Department on improvements to the design and administration of the Programs to maximise access and quality use of PBS medicines.

Specifically, the review will assess the effectiveness of the delivery of the programs; individually as well as where access and pharmacy support programs operate in parallel.

2. LITERATURE REVIEW

2.1. THE STATE OF ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH

The state of Aboriginal and Torres Strait Islander peoples' health in Australia continues to be at lower levels than other sectors of the population. Indigenous people remain the least healthy sub-population in Australia (Productivity Commission, 2016; Australian Bureau of Statistics, 2008). The reasons for this are complex, but represent a combination of factors including education, employment, income and socioeconomic status (Australian Indigenous Health Infonet, 2015).

Available data indicate that the life expectancy at birth for Aboriginal and Torres Strait Islander people is much lower than for non-Indigenous Australians (Productivity Commission, 2016). Recently, the Australian Bureau of Statistics (ABS) reviewed their method of estimating life expectancy of Aboriginal and Torres Strait Islander people and concluded the difference in life expectancy for Indigenous Australians is 12 years lower for males and 10 years lower for females compared to the Australian average (ABS, 2006). The new method suggests there is less of a gap in life expectancy compared to previous estimates, which put the mortality gap at about 17 years lower for Aboriginal and Torres Strait Islander people than the Australian average.

The most recent AIHW report on Australia's Health (2010) explains that two-thirds of the Indigenous health gap was due to mortality, and one third to disability. In particular, chronic (non-communicable) illnesses such as cardiovascular disease, diabetes, mental disorders and chronic respiratory diseases are responsible for 70% of the observed health gap (Australian Institute of Health and Welfare, 2010)

A recent 'Overview of Australian Indigenous health status, April 2010' by the Australian Indigenous Health Infonet also acknowledges diabetes as a health problem among Indigenous people. They cite diabetes as a major contributor to Indigenous mortality, responsible for almost 8% of deaths among Indigenous people living in Queensland, Western Australia and the Northern Territory between 2002 and 2006 (Australian Indigenous Health Infonet, 2010).

There is evidence that many aspects of chronic disease can be prevented or mitigated with education, information regarding nutrition and lifestyle, access to good food, and availability of health services (Department of Health and Families, 2009). High rates of chronic disease also have intergenerational implications for the health, well-being and care of children in families where parents are affected by disease.The role of the social determinants of health is now widely recognised and governments are putting in place strategies to address those structural issues which contribute to the continuing poor health outcomes for Indigenous Australians.

2.2. THE INDIGENOUS PHARMACY PROGRAM

Given the state of Indigenous health in Australia, the Commonwealth Government has, since 1999, provided funding for evidence-based, patient-focused programs and services delivered by pharmacies and pharmacists that improve health outcomes for Aboriginal and Torres Strait Islanders. Among others, this funding is provided through the following four programs:

- Closing the Gap PBS Co-payment Measure
- Quality Use of Medicines (QUM) Maximised for Aboriginal and Torres Strait Islander people (QUMAX) Program
- Section 100 (s100) Remote Area Aboriginal Health Services (RAAHS) Program
- s100 Support Allowance (Support Allowance) Program.

Collectively, these four programs are known as the Indigenous Pharmacy Programs (IPP). The IPP were introduced progressively to facilitate access to PBS medicines as well as medication management and adherence in all areas. The objectives of these programs are to:

- recognise the cultural preferences of Aboriginal and Torres Strait Islander peoples in community pharmacy health care delivery
- provide ongoing funding through the community pharmacy Section 100 support allowances to improve QUM by clients of eligible remote area Aboriginal Health Services
- improve quality use of PBS medicines for Aboriginal and Torres Strait Islander peoples through the

- community pharmacy network in rural and urban Australia
- improve participation by Aboriginal and Torres Strait Islander people in the pharmacy workforce.

While the CTG and RAAHS programs facilitate the supply of PBS medicines for Aboriginal and Torres Strait Islander people, the other two Programs provide services for maximising the quality use of medicines by Aboriginal and Torres Strait Islander people.

The current iteration of the QUMAX and s100 Support Allowance is contained in the Sixth Community Pharmacy Agreement (Sixth Agreement) between the Australian Government and the Pharmacy Guild of Australia (the Guild). The Sixth Agreement commenced on 1 July 2015.

2.3. PREVIOUS REVIEWS OF THE IPP

The four programs have undergone a number of previous evaluations and reviews, including a Senate Inquiry in 2011. Combined, these reviews present a significant number of recommendations about rules, regulations, guidelines and other arrangements that apply to pharmacies in relation to Indigenous peoples' access to medications listed on the PBS. These recommendations, as well as the *Guide to Providing Pharmacy Services to Aboriginal and Torres Strait Islander People (Pharmaceutical Society of Australia, 2014),* offer an insight into both the operations of the Programs as well as the factors that affect Indigenous people's access to high quality and equitable pharmaceutical services and medicines. The recommendations highlight the importance of:

- supporting Indigenous people to improve awareness and understanding of own health in relation to medications
- transparency and accountability of the PBS and pharmaceutical services
- building the capacity and capability of the pharmaceutical workforce
- the capacity of pharmacies and their partnerships
- location and accessibility
- the interaction between each of the Indigenous Pharmacy Programs.

These previous reviews provide evidence of the effectiveness of IPPs' approaches in improving Indigenous health outcomes and highlight the factors influencing program effectiveness, discussed below.

First, they reveal that it is important that community pharmacies support Aboriginal people to be active participants in their own health care (Department of Health, 2013). Past reviews highlight the need for pharmacists to recognise low literacy levels and/or low health literacy and explain medicines accordingly (Pharmaceutical Society of Australia, 2014). Pharmacists also have an obligation to explain their role, and the role they can play in supporting a person's health (Department of Health, 2016; Pharmaceutical Society of Australia, 2014).

Second, the Programs recognise the role of education. For example, there is funding in the QUMAX Program for pharmacists to deliver medicine education in rural and urban locations, and in remote areas s100 Support Allowance funding may be used for medicine education (Pharmaceutical Society of Australia, 2014). This funding also supports education delivery to Aboriginal health service (AHS) staff and community groups (Pharmaceutical Society of Australia, 2014).

Another important factor is the approach to fees and charges. Pharmacies and pharmacists should be transparent about fees and charges and recognise that dispensing protocols and rules are complex (Department of Health, 2016; Pharmaceutical Society of Australia, 2014). Such complexity can create a barrier for some Aboriginal and Torres Strait Islander people, particularly those with low literacy levels. Pharmacists are encouraged to be aware of potential barriers and act accordingly when administering medication (Pharmaceutical Society of Australia, 2014). Reviews suggest that pharmacists should adjust their language and actively promote and explain the measures that are in place to reduce fees (Department of Health, 2013; National Aboriginal Community Controlled Health Organisation & The Pharmacy Guild of Australia, 2015).

Cultural safety is also vital in successful deliver of such programs. Ensuring pharmacists provide a culturally safe service is a priority in the delivery of pharmacy services to Indigenous people (Pharmaceutical Society of Australia, 2014). This supports the development of a trusting relationship between communities and their pharmacists (NOVA Public Policy , 2010). Pharmacies should be designed as culturally safe spaces. This can occur, for example, through the provision of culturally appropriate health resources, a private area to discuss medical issues, the employment of Indigenous staff and culturally aware non-Indigenous staff

(Pharmaceutical Society of Australia, 2014). Pharmacists have a role in becoming active members of their community, including their local health care community (NOVA Public Policy , 2010; Pharmaceutical Society of Australia, 2014). The QUMAX program provides cultural awareness training for pharmacists to encourage engagement and investment in Indigenous culture and increase their understanding of principles of respect and reciprocity that are essential in relationship building (Pharmaceutical Society of Australia, 2014; Urbis Pty Ltd, 2011). Initiatives to support Aboriginal people to join the pharmaceutical workforce are also a priority (National Rural Health Alliance Inc., 2014; NOVA Public Policy , 2010).

Partnerships between AHSs and pharmacists can provide pathways for greater involvement of pharmacists in primary healthcare programs and health promotion activities being implemented by the AHS (NOVA Public Policy, 2010; Urbis, 2011). This helps to increase knowledge among pharmacists about who is eligible for which programs (Department of Health, 2013; NOVA Public Policy, 2010). Where pharmacists have been directly employed by AHS high levels of satisfaction have been reported (NOVA Public Policy, 2010).

Finally, geography is a factor that must be considered. The difficulty in providing access to quality pharmacy services in remote locations has been considered by multiple reviews and evaluations (Department of Health, 2016; National Aboriginal Community Controlled Health Organisation & The Pharmacy Guild of Australia, 2015; National Rural Health Alliance Inc., 2014). Reviews have recommended that the Programs should accommodate the fact that some people are mobile, moving between remote, urban and regional areas, and therefore access to services should not be limited by location (National Aboriginal Community Controlled Health Organisation & The Pharmacy Guild of Australia, 2015). A suggestion to overcome this barrier is greater integration between services, which some reviews note may also reduce the complexity of services offered (National Aboriginal Community Controlled Health Organisation, 2011; National Aboriginal Community Controlled Health Organisation & The Pharmacy Guild of Australia, 2015).

2.4. THE LACK OF GOOD EVIDENCE

Every four years, the Productivity Commission reports on the wellbeing of Indigenous Australians. Many of the key headline indicators relate to health (Productivity Commission, 2016). These include child mortality rates, disability & chronic disease, life expectancy, and drug abuse. In its most recent report, the Commission found that there had been some improvement in numbers of potentially avoidable deaths, as well as tobacco use. Some indicators had regressed, while the remainder pointed to either gaps in data, or unclear results. Given these findings, the Commission commented on the dearth of transparent evaluation, and the need for all levels of government to invest in rigorous and independent reviews of Indigenous focused program and policies. This current evaluation of IPPs will help address this gap.

3. RESEARCH QUESTIONS AND REVIEW FRAMEWORK

Given that previous reviews and evaluations of the IPP have demonstrated the overall success of the programs, this project will explore how business processes and outcomes could be improved. Because of this, a methodology is proposed that focusses on a point-in-time review of the quality of the programs and identifies opportunities for improvement.

This evaluation will be guided through the use of an overarching framework, using the RE-AIM approach. This framework is the key tool guiding our data collection and analytic processes and sets out the evaluation questions, indicators and data sources, with a focus on the impact of the programs at individual and system levels. This framework is provided in Table 1 below.

Essentially, as these programs have been regularly evaluated and are continuing, this evaluation will adopt a continuous quality improvement lens and will focus on ways in the performance of the programs can be improved. The evaluation framework explicitly frames the questions in terms which allow evaluation participants to reflect on the ways in which the programs have achieved their objectives to date, enablers or barriers to performance, and opportunities for future performance improvement.

3.1. THE RE-AIM FRAMEWORK

Our framework is built on a structure commonly used in public health reviews and evaluations, known as 'RE-AIM', which focuses reviews on program reach, effectiveness, adoption, implementation, and maintenance (Glasgow et. al., 1999). More specifically:

- 'Reach' explores the success of an initiative in reaching its target communities. For any program to be effective it must successfully target those who are the focus of its services.
- 'Effectiveness' explores the effectiveness and efficiency at a program level, as well as the initiative as a whole. The effectiveness of the activity is assessed in relation to its ability to impact participants, the evidence base of best practice, and community experience.
- 'Adoption' explores the degree to which best practice or evidence informed approaches are being utilised, and the fidelity of the delivery to the evidence. This is explored at the systems-level.
- 'Implementation' explores the consistency of delivery and implementation. This includes the strengths of governance, extent of adaptability, budget implications, and risk management.
- 'Maintenance' explores areas of future focus for the initiative and outlines current gaps identified through the research.

The value of this framework is that it is inclusive of impacts on individuals as well as systems/networks, and it addresses the extent to which any positive changes are maintained.

NOTE: THE FINAL EVLAUATION FRAMEWORK IS PROVIDED IN APPENDIX F

4. RESEARCH DESIGN

4.1. DATA COLLECTION

Data collection will occur in two stages. The first will be a preliminary review. This will include a survey with pharmacists, as well as key informant interviews. The aim of this phase will be to allow initial input from key stakeholders, as well as providing the foundation for selection of consultation sites. The survey questions will be informed by the evaluation framework, the evidence review and engagement with the Pharmacy Guild. The survey can be provided to the HREC when it is drafted.

The second stage will be a national consultation with a range of relevant sites around Australia. It will also include extraction of selected PBS data, as well as interviews with selected stakeholders.

4.1.1. First phase of data collection

Pharmacist survey

As the role of pharmacists is central to all four programs, we propose to disseminate a brief survey early in the project to participating pharmacists in order to allow as many pharmacists as possible to contribute to the research (recognising that the fieldwork in phase two will be able to engage directly with a much smaller number of pharmacists). The online survey will take no more than 10 minutes and will be available through a web link that can be distributed easily. We will seek approval from the Pharmacy Guild of Australia, the Pharmaceutical Society of Australia, and the Society of Hospital Pharmacists of Australia to disseminate the survey to their members. We will also work with them and the Department to identify all possible means for distribution.

One of the objectives in undertaking this survey early in the project is to use the results in planning the fieldwork. The limitations of time and budget require that we limit the qualitative fieldwork to locations where we can ensure that people are fully engaged and active in the programs under review, and we will use the survey results, combined with the document/evidence review, to consider which locations will provide us with the greatest depth of knowledge and experience of the programs.

Key informant interviews

We will also undertake a number of interviews with key informants early in the project, in order to ensure that we have engaged with critical stakeholders and are aware of particular risks or sensitivities before commencing fieldwork and data analysis. We will agree the final list of key informants with the Department but expect that the list will include, but not be limited to:

- representatives of the Department
- the National Aboriginal Community Controlled Health Organisation (NACCHO) and at least four of its regional affiliates
- the three pharmacy peak bodies identified in the previous sub-section.

4.1.2. Second phase of data collection

Field visits

We will use the data from the key informant interviews and pharmacist survey to determine the locations for 21 field visits. These will be undertaken between January and June 2017. The purpose of the field visits will be to consult with Aboriginal community controlled health services (ACCHS) and Aboriginal health services (AHS), pharmacists, GPs and other prescribers relevant to the four programs, other health professionals as relevant and Aboriginal service users.

Two staff members will be present at each field visit. This will include a highly experienced Urbis researcher, as well as an independent Aboriginal consultation expert. Our experience shows that having an Aboriginal and a non-Aboriginal researcher in field together strengthens our ability to meet with both Aboriginal and non-Aboriginal stakeholders, and provides greater cultural security for Aboriginal participants.

Following a team briefing, members of the research team will spend two days in each location. Fieldwork sites will include urban, regional and remote locations. At each location a series of interviews will be conducted with members of each of the relevant cohorts. Interviews will be conducted using a tailored interview guide developed for this consultation, and conducted by experienced Urbis and partner

researchers. Interviews will be recorded manually and each field visit will be summarised by the researchers into a customised analysis template, providing an initial stage of analysis before a summative analysis to be conducted in the final stages of the project.

The final locations will be determined in close consultation with the Department. We have provided a sample field selection schedule in Table 2. These locations reflect the location of a range of the programs under review. However, program data and preliminary interviews will inform the final selection, which will be followed by engagement with the site to seek agreement to participating in the review. Urbis is happy to provide the HREC with a final schedule of field sites.

Table 1 – Field sites table

STATE	EVALUATION QUESTIONS	S100 SUPPORT ALLOWANCE	CLOSE THE GAP COPAYMENT	QUMAX
QUEENSLAND				
Coen	x	x		
Rockhampton	x	x		
Bundaberg			x	x
Cairns			x	x
Charleville			x	x
NORTHERN TERRITORY				
Katherine	x	x		
Hermannsburg	x	x		
Tiwi - Bathurst Is	x	x		
SOUTH AUSTRALIA				
Pt Augusta	x	x		
Ceduna	x	x		
Nthn suburbs			x	x
Sthn suburbs			x	x
WESTERN AUSTRALIA				
Halls Creek	x	x		
Newham	x	x		
Kalgoorlie	x	x		
South Perth			x	x
Albany			x	x
NEW SOUTH WALES				
Western Sydney			x	x
Nowra			x	x
VICTORIA				
Bendigo			x	x
Melbourne			x	x

For indicative purposes, the anticipated structure of the field visit is provided here.

Field visit to a remote location - Katherine, NT:

Interviews with the Aboriginal Medical Services Alliance Northern Territory (AMSANT) in Darwin before travelling to Katherine

Interviews with GPs and other health professionals and managers at Wurli Wurlinjang Health Service and Katherine West Health Board

Interviews with Aboriginal service users (pending ethics)

Interviews with other GPs (not based in the two services above) engaged with the four programs

Interviews with community pharmacists involved with the four programs

Interviews with hospital authorities and hospital pharmacists as relevant

Field visit to an urban location – Melbourne, VIC:

Interviews with the Victorian Aboriginal Community Controlled Health Organisation (VACCHO)

Interviews with GPs and other health professionals and managers at the Victorian Aboriginal Health Service (VAHS) and the Dandenong and District Aborigines Co-operative Ltd (DDACL)

Interviews with Aboriginal service users (pending ethics)

Interviews with local GPs (not based in the two services above) engaged with the four programs

Interviews with community pharmacists involved with the four programs

Interviews with hospital authorities and hospital pharmacists as relevant

Stakeholder interviews

In addition to the consultation at locations across Australia, we intend to consult with national and jurisdictional stakeholders relevant to this program. Up to 25 national stakeholder interviews will be conducted. The final list will be determined in consultation with the Department, but is likely to include:

- representatives of the Department
- NACCHO and its affiliates
- regional members of the Pharmacy Guild
- Department of Human Services
- Society of Hospital Pharmacists of Australia
- Royal Australian College of General Practitioners
- Australian College of Remote and Rural Medicine
- State and Territory Health Departments
- Central Australian Aboriginal Congress

Interviews addressing the research questions will be conducted by an experienced researcher using a tailored interview guide, and will be held face to face in Sydney, Melbourne, or Canberra, and by telephone for other locations (unless they can be included in fieldwork visits). Interviews will be recorded using an audio-recorder and transcribed.

PBS data

In order to assess the extent to which Programs achieved their objectives in facilitating access to PBS medicines, we will also extract a small number of relevant PBS data. This process will allow us to examine the number of people who have benefited from the programs for QUMAX and PBS CTG. It will also allow us to examine the level of expenditure on medicines over time.

We have previously completed research projects using data from all relevant programs and have developed protocols to manage such analyses in ways that are compliant with best practice, both ethically and technically. Table 1 below provides an overview of what relevant PBS datasets will be included. We expect

that three types of medications will be examined: antihypertensives, stomatological preparations, and 'other dermatological preparations'.

Table 2 – PBS data plan

PBS programs	Eligible primary care services	Type of supply	Data extraction
S100-remote supply	Remote ACCHOs	Bulk to ACCHOs	S100 database by ACCHO
QUMAX	Selected ACCHOs	Individual patients	PBS data extraction at regional and state level
PBS CTG co-payment	Any general practice	Individual patients	PBS data extraction at regional and state levels

4.2. RECRUITMENT OF PARTICIPANTS

4.2.1. Field visits

At each field visit, we will conduct interviews with members of the following groups:

- IPP consumers
- professional staff (including health professionals, GPs, as well as staff at ACCHOs, staff at AHSs, and staff at hospital authorities)
- pharmacists.

Each field visit will commence with a team briefing. Following this, members of the research team will spend two days in each location. Fieldwork sites will include urban, regional and remote locations. The precise locations for field visits will be selected based on the results of the foundational work described above.

IPP consumers

For IPP consumers, Urbis will first engage with the relevant Aboriginal community-controlled health organisation (ACCHO) to gain an understanding of the relevant IPP program(s), and the current program activity. The appropriate ACCHO staff will be informed about the research. As part of this, we will explain the nature, purpose and timing of our research, and we will ask ACCHO staff to make the project known to IPP consumers.

Following this, IPP consumers will be provided with an information flyer, which will invite them to meet with our team, and to participate in the research. Should a consumer decide that they do not want to participate in the research, then no further action will be taken.

If an IPP consumer agrees to participate in the research, then the team will begin the consent process with that person. Our team will provide the participant with the information sheet, and will ensure that they understand what they are consenting to. At this point, the researcher will assess the extent to which the participant understands what they are consenting to. If it appears that the person does not understand, then the evaluator will end the engagement with that person, and will provide an explanation as to why the engagement has ended. If the person understands what they are consenting to, then they will be asked to complete the written consent form.

Professional staff

For professional staff, Urbis will again first engage with the relevant ACCHO to gain an understanding of the relevant IPP program(s), and the current program activity. The appropriate ACCHO staff will be informed about the research. Eligible staff will be provided with an information sheet.

The project team and organisation stakeholders will organise a schedule of consultations with staff. Evaluators will provide the information sheet to staff and ensure that they understand what they are consenting to. Staff members that consent to participate will then complete the consent form at the commencement of the interview.

Pharmacists

For pharmacists, Urbis will engage directly with the pharmacists working with each target ACCHO. Here, we will introduce the project and the opportunity to participate. The pharmacists will be asked to identify appropriate staff members. These staff members will be provided with an information sheet. The evaluator will then organise a time to interview each pharmacist and their staff.

4.2.2. Key stakeholder interviews

As described above, we will also hold interviews with members of the following organisations/groups:

- representatives of the Department
- NACCHO and its affiliates
- regional members of the Pharmacy Guild
- Department of Human Services
- Society of Hospital Pharmacists of Australia
- Royal Australian College of General Practitioners
- Australian College of Remote and Rural Medicine
- State and Territory Health Departments
- Central Australian Aboriginal Congress

To engage with these groups, we will first write to them to advise them about the project, including its scope, focus, and broad approach and timing. The written correspondence will ask each organisation to nominate an appropriate staff member for future correspondence. We will then liaise with the nominated person to organise a suitable time with the most appropriate people in the organisation.

4.3. ANALYSIS

The project will require analysis of four separate programs, both individually and as a suite. The project will thus have to address a number of methodological and analytical complexities, including:

- the need to identify the relative contribution of each Program to increased uptake of medications, particularly where more than one program is in place
- the difficulty of attribution, as access to and uptake of medications will be influenced by many factors, many outside of the control of the health system
- the fact that much of the Programs' activities may be invisible to service users (particularly the S100 measures) and the challenge of tailoring qualitative data collection to ensure that the views of service users are included.

To meet these challenges, and answer the key research questions, we have incorporated the analytic processes described below.

4.3.1. Qualitative data analysis

Urbis' approach to qualitative research is grounded in a practical, rigorous, and coherent research framework. We understand the purpose of research to be the independent analysis of a particular policy, program, project or activity with the aim of assessing its success against agreed criteria.

We approach this task as 'pragmatic realists', with a perspective that recognises:

- The importance of an Indigenous lens as a core part of the analysis. There is a history in Australia of excluding Indigenous perspectives as part of research and policy making. Therefore to avoid repeating mistakes of the past, particular emphasis will be placed on prioritising Indigenous perspectives in the data. This will be achieved through the involvement of an Aboriginal consultant who will lead the community-based fieldwork and participate in the analysis, but also through seeking feedback regularly through NACCHO and its Affiliates, and other Aboriginal and Torres Strait Islander organisations as appropriate.
- That stakeholders' perceptions of facts may differ and each perspective may offer a view through a particular prism which casts the subject at hand in a new light – we seek to listen to as many voices as possible in order to gain a rich picture of the whole

- That all perspectives, including our own, are mediated by individuals' experiences and history – we seek to acknowledge our own and others' inherent biases and to ensure that our findings are grounded in the evidence as objectively as possible
- That individuals' positions in relation to the subject at hand, other individuals, and the systems and structures around them will influence their perspective – we seek to understand and analyse the relationships between people, systems and structures in order to understand the interactions which occur at the points of intersection
- That the language we use, and that others use, has significance – we seek to be mindful of how we articulate and conceptualise meaning in our interactions and our reports
- That it is a privilege to hear people's stories – we seek to act responsibly with the information which is entrusted to us, and to ensure that competing voices are heard.

We embrace the challenge of operating with a critical stance while endeavouring to provide the best possible outcome for our clients, and seek to ensure that our services and products have integrity and are true to the evidence while meeting our obligations to our clients.

Urbis' model for analysing qualitative data incorporates a modified grounded theory methodology, in which the subject at hand is defined, data is collected, and an iterative, interactive process of engagement begins between research team and the data. Data collected at each stage of the project will be coded by a team member involved in that data collection activity, for example, following fieldwork the researcher who undertook fieldwork will gather field notes and code in line with the coding framework, while also noting any adjustments to the framework that may be needed (parallel coding is used initially to ensure consistency). The framework reflects the key questions. In addition, a lead analyst will consider the relevance of findings for each program to ensure the individual focus of the project is addressed.

By the time the full team gathers to workshop the preliminary findings, the following sets of collated data will be available for the team to synthesise:

- evidence and document review findings
- pharmacist survey results
- key informant consultations
- field results
- PBS data analysis.

The full team half-day workshop then considers the evidence, noting its strengths and any limitations, and assesses the finding for each research question. We find that this structured process allows the triangulated data to be considered synergistically, provides an opportunity for every member of the team to contribute their understanding, and allows a collective perspective of the weight of the evidence to develop.

By the end of the workshop, areas for further analysis will be identified, the draft structure for the report confirmed, and additional research and analysis tasks allocated to the appropriate team member.

4.3.2. PBS data analysis

The analysis of PBS data will examine, to the extent possible, average expenditure per consumer on PBS medicines for Indigenous Australians compared to the general public in urban, rural and remote areas. Denominators will be based on national population data.

Trends in medicine use/supply will be examined by Anatomical Therapeutic Chemical classification to understand potential benefits in terms of the management of particular disease categories. In order to examine medicine adherence we will examine medicine possession ratios for anti-hypertensive, glucose-lowering, and lipid lowering medicines. The medicine possession ratio is a measure of the proportion of days in which a patient had medicine and is calculated from medicine fill data. Assuming the data is available, we will compare medicine possession data before and after participating in the programs. The level of analysis will take place at regional rather than individual level, to protect privacy.

Previous evaluations have demonstrated that areas with high-uptake of the PBS CTG measure had reduced potentially preventable hospitalisations compared to areas with low uptake. Because of this, a similar area level approach will be used to understand the health benefits of the programs at an area level.

4.4. RESPONSIBILITIES

The table below sets out the core members of our study team, including their broad responsibilities in the project.

Table 3 – Study team and responsibilities

Core team members		
s47F National Director	Urbis Project Director	is responsible for overall project delivery and quality of outputs, and will have a key role setting project direction, leading consultation with critical stakeholders and in framing key analytical activity.
s47F Associate Director	Urbis Project Manager	s47F is the project manager and responsible for on-time delivery of internal and external project products, resource management and project scheduling. s47F also have a key role leading development of project products and supervising and coordinating contributions by other team members. s47F will be the day-to-day contact point for the department.
s47F Senior Aboriginal Partner	Cultural Advisor	s47F will have a leading role in ensuring the project is conducted in a culturally appropriate way. This will include Cox Inall Ridgeway contributing to design of project processes and delivery of key products.
s47F Director	Quantitative Lead	s47F will have oversight of quantitative analysis of project data. She will also contribute to the development of the research method, instruments and analytical approach. s47F will also contribute to stakeholder consultation and field visits.
s47F Director	Qualitative Lead (contingency project director)	s47F is responsible for oversight of the qualitative data collection and analysis. She will lead development of the ethics application and the development of the qualitative research method, instruments and analytical approach. s47F will also contribute to stakeholder consultation and field visits. s47F is also the contingency director who will take on overall project leadership if s47F becomes unavailable.
s47F Aboriginal Partner	Field researcher and analyst	s47F will have a key role in completing field research within Indigenous communities, and will contribute to the analysis of qualitative data and fidnings.
s47F Aboriginal Partner	Field researcher and analyst	s47F will have a key role in completing field research within Indigenous communities, and will contribute to the analysis of data and findings..
s47F Aboriginal Partner	Field researcher and analyst	s47F will have a key role in completing field research within Indigenous communities, and will contribute to the analysis of qualitative data and findings.

s47F Associate Director	Quantitative Analyst	s47F is responsible managing and undertaking quantitative analysis.
s47F Senior Consultant	Urbis project team member (contingency project manager)	s47F will take a key role in desktop analysis of documentation and qualitative data and the development of key project reports. She is also the contingency project manager in the event that s47F becomes unavailable.
s47F Senior Consultant	Urbis project team member	s47F will support the senior team, supporting or conducting consultations, and undertaking analysis and reporting.
s47F Senior Consultant	Urbis project team member	s47F will take a key role in desktop analysis of documentation and qualitative data and the development of key project reports.
s47F	Expert Advisor	s47F will provide expert advice on data extraction, collection and analysis relating to MB and PBS datasets. She will also contribute to the development of the research method, instruments and analytical approach.
Urbis Graphic Design	Design services	The graphic design team will support the design and production of key project products.
Editor	Editorial/proofing	Editing and proofing of key project reports.

4.5. ETHICAL AND PRIVACY ISSUES

All activities will be carried out in accordance with the standards articulated in the Department of Health and Ageing (DoHA) Human Research Ethics Committee (HREC) and the NHMRC Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research

Activities from which ethical issues might arise in the course of the project include:

- inviting individual service users to participate in primary data collection
- accessing aggregated, de-identified data provided by Commonwealth, state and territory government departments.

We are aware that the use of data regarding Aboriginal and Torres Strait Islander peoples is of concern to many Aboriginal and Torres Strait Islander peoples, owing to the misuse of such data in the past. There is no intention to seek any clinical data other than aggregated, de-identified data at a jurisdictional or community level. We will work with the DoHA and state and territory officers to ensure that any concerns which arise will be addressed sensitively and with due respect to the people whose data we are using.

CONSENT FLOW CHART

Urbis engages with ACCHO to gain understanding of program/s delivered and current program activity. Appropriate staff are informed about the evaluation visit.

ACCHO staff make the evaluation participation opportunity known to program participants.

Subject to change based on advice of each ACCHO

Program participants are provided with the Evaluation information flyer, which invites them to meet with the evaluation team

Program participant does not want to meet with the evaluation team – no further action

Evaluation team meets with participant to undertake consent process. Evaluators provide participant with the Participant Information Sheet and ensures they understand what they are consenting to.

Evaluator assesses that the participant understands what they are consenting to. Participant completes written Consent Form.

Evaluator assesses that the participant does not understand what they are consenting to. Interview is ended after an explanation to the participant.

Participant does not consent to further contact – no further action

Interview is conducted. Interviewer commences interview with a verbal affirmation of willingness to continue.

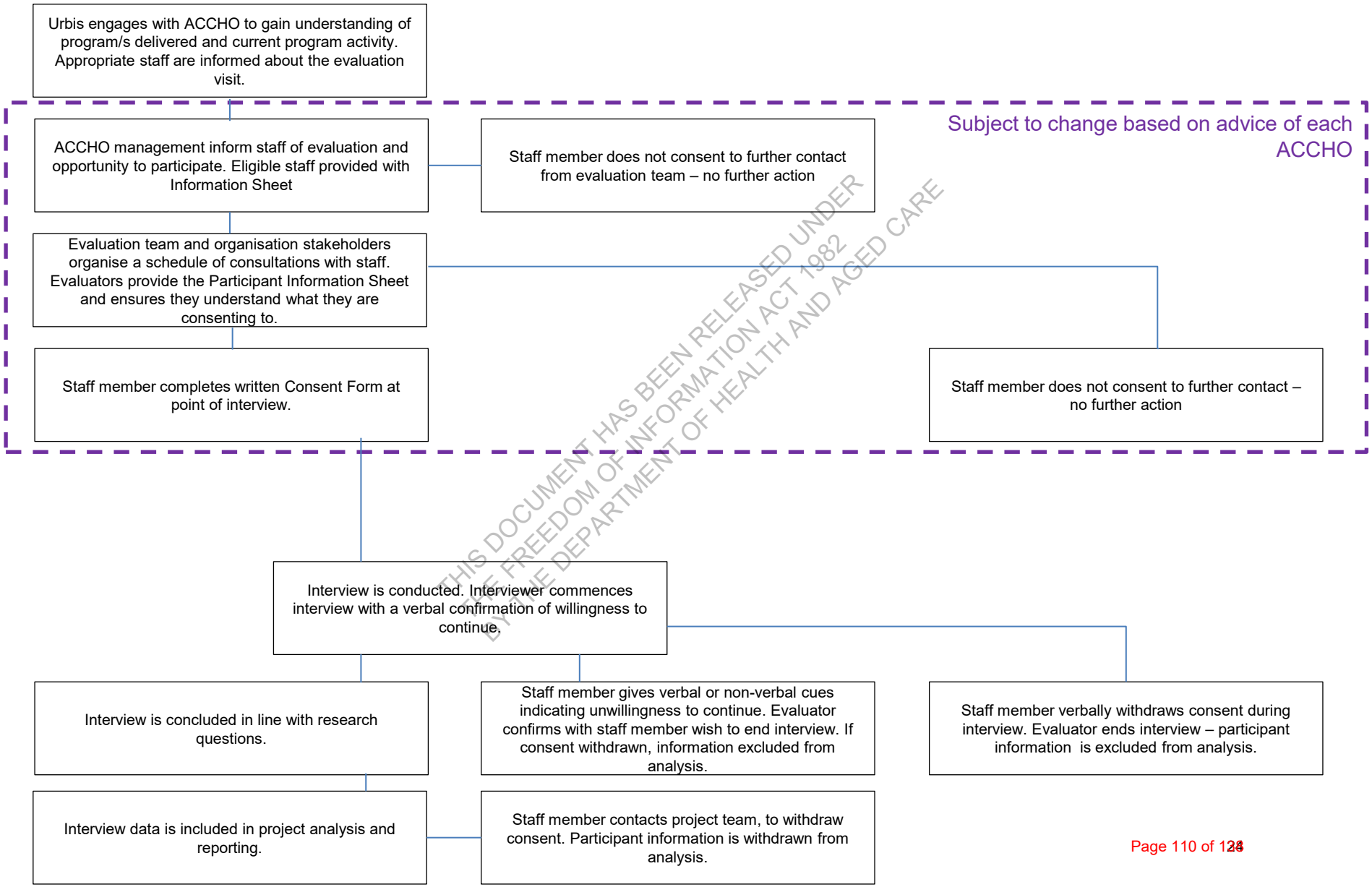
Interview is concluded in line with research questions.

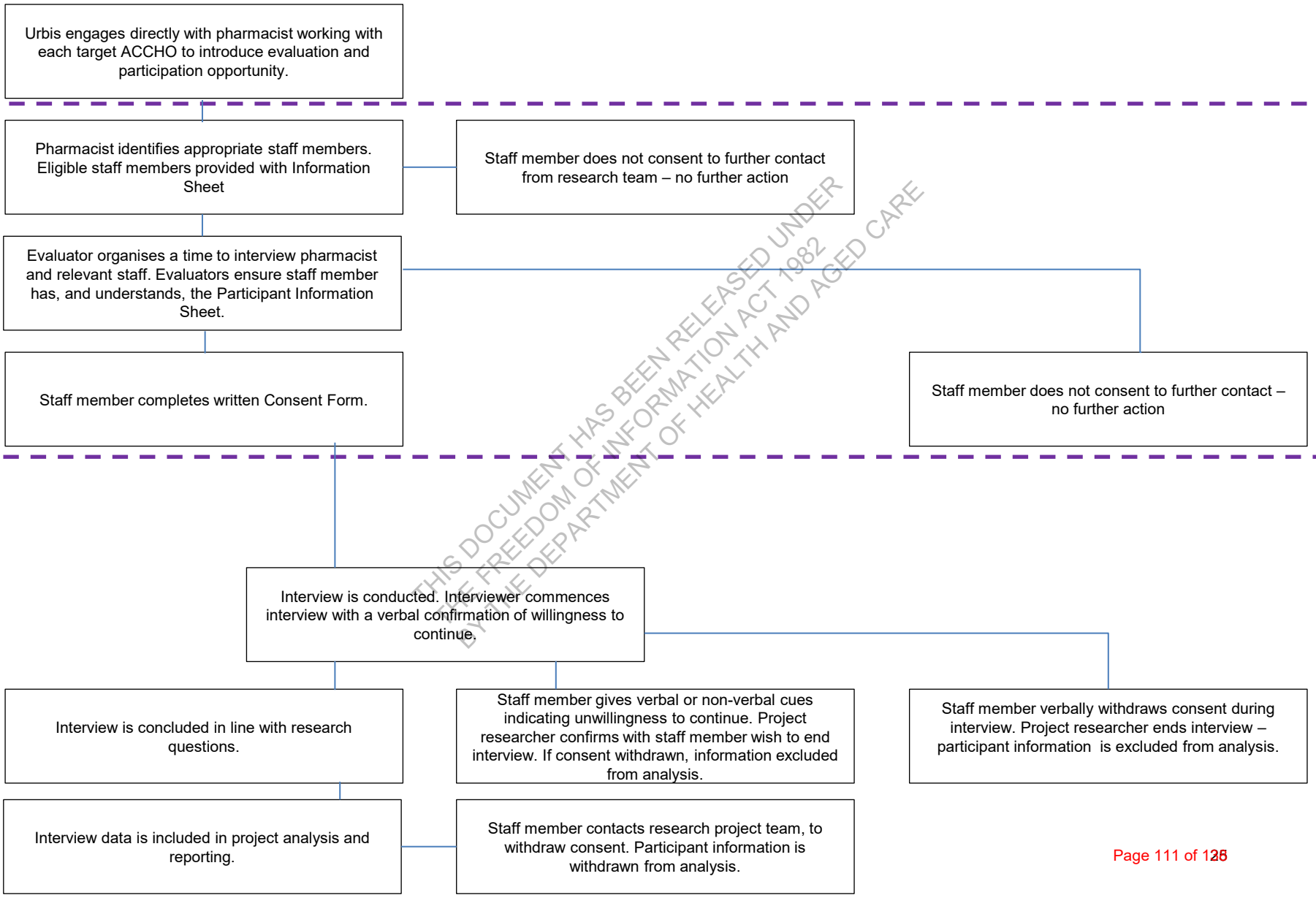
Participant gives verbal or non-verbal cues indicating unwillingness to continue. Evaluator confirms with participant wish to end interview. If consent withdrawn, information is excluded from analysis.

Participant verbally withdraws consent during interview. Interviewer ends interview – participant information is excluded from analysis.

Interview data is included in project analysis and reporting.

Participant contacts research project team to withdraw consent. Participant information is withdrawn from analysis.





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Appendix F REVIEW FRAMEWORK

FRAMEWORK FOR THE REVIEW OF THE INDIGENOUS PHARMACY PROGRAMS

Table 21 – Review framework

Component	Review questions	Indicators	Data Sources
Reach (individual /population level)	To what degree have the current eligibility criteria facilitated or hindered access to PBS medicines and QUM for Aboriginal and Torres Strait Islander people? How is this experienced by service users?	Influence of eligibility criteria on access to PBS medicines and QUM, as reported by service providers and service users	Interviews with service providers (AHSs and ACCHSs, GPs and other health professionals, community pharmacists, hospital pharmacists, service managers)
	What issues, if any, are experienced by Aboriginal and Torres Strait Islander people in accessing PBS medicines? In particular, what issues, if any, are experienced by people who move between remote, rural and urban areas and between hospitals and communities?	Number and extent of issues identify which impact on the ability of service users to access PBS medicines and support, as reported by service users	
	To what extent have health outcomes improved for Aboriginal and Torres Strait Islander people after participating in these programs? In what ways?	Extent to which service users report improved health and wellbeing as a result of accessing PBS medicines	
Effectiveness (individual/ population level)	To what extent are the Indigenous Pharmacy Programs achieving their objectives in: facilitating access to PBS medicines providing QUM support services to improve health outcomes for Aboriginal and Torres Strait Islander people?	Extent to which access to PBS medicines has increased over time as a result of the Indigenous Pharmacy Programs Number and type of QUM support services provided to service users, and change over time	Program volume data Program reports and documentation PBS data Interviews with service providers
	In what ways has the quality use of medicines and medication management and adherence improved? What is the impact of this for service users?	Extent of reported improvement in QUM and medication management and adherence and change over time	

Component	Review questions	Indicators	Data Sources
	What parts of the QUMAX Program's interventions, e.g. QUM devices, transport support and education activities, have had the greatest benefits for service users? What, if anything, could be improved?	Number and extent of reported benefits for service users across different aspects of the QUMAX program, as reported by service users	
Adoption (institutional/whole of sector level)	What is the average government expenditure per consumer on PBS medicines for Indigenous Australians? [NOTE: for CTG and RAAHS only, if data available] How has this changed over time? What factors might account for any changes?	Average of government expenditure by number of consumers, and change over time	Program reports and documentation AIHW reports PBS data Interviews with service providers Pharmacist survey
	To what extent are the participating state/territory, Aboriginal Health Services (AHSs), Aboriginal Community Controlled Health Services (ACCHSs), general practitioners, practices, prescribers, pharmacists, Aboriginal health workers, and other health professionals aware of and adhering to the eligibility criteria? What have been the challenges in adhering to the criteria? What, if anything, could be improved with regard to the eligibility criteria?	Extent of adherence to eligibility criteria, as reported by sites and service providers	
	Have any changes to program rules (as stated in the Legislative Instruments and Program Specific Guidelines) been made by participating State/Territory, AHSs, ACCHSs, GPs, practices, prescribers, pharmacists and other health professionals? What has been the impact of these changes, if any?	Number and extent of changes made to program rules Extent and type of impact of rule changes, as reported by service users	
	How effectively are participating pharmacists/pharmacies supporting remote area AHSs to manage PBS medicines? What factors enable pharmacists to support remote area AHSs most effectively? What, if anything, could be improved?	Extent of satisfaction with pharmacist/pharmacy support, as reported by AHSs Reported enablers for remote pharmacist support	

Component	Review questions	Indicators	Data Sources
Implementation (institutional level)	What factors are enabling or hindering the implementation of the individual programs? What, if anything, could be improved?	Number and consistency of identified factors that impact the implementation of the program, as reported by service providers and service users	Interviews with service providers Program reports and documentation Interviews with program managers and other stakeholders Pharmacist survey
	How effectively and efficiently are the four programs operating?	Extent to which the programs have achieved performance targets Extent to which the programs have demonstrated a high quality of operation, as reported by service providers, service users, and other stakeholders	
	How effective are the RAAHS arrangements for bulk supply, transport, storage, recording and reporting of PBS medicines in remote areas? What, if anything, could be improved?	Extent to which pharmacists and AHSs report satisfaction with RAAHS arrangements	
	What aspects of the Support Allowance services provided to AHSs are considered of greatest benefit? Why? What, if anything, could be improved?	Number and consistency of reported benefits of Support Allowance services	
	To what extent has the travel allowance under the Support Allowance been comparable with actual costs incurred by pharmacists? What has been the impact of the travel allowance on the ability of pharmacists to provide adequate support to remote AHSs?	Extent of reported alignment of the travel allowance with actual costs for pharmacists Reported impact of the travel allowance on pharmacists' capacity to provide support to remote AHSs	

Component	Review questions	Indicators	Data Sources
Maintenance (institutional level)	To what extent is the geographic focus for each program, as determined by the Rural, Remote and Metropolitan Areas (RRMA) Classification, 1991, efficient in meeting the needs, and in targeting resources and expenditures? What, if anything, could be improved?	Comparative analysis of RRMA and other geographic classifications Reported perceptions of service providers and other stakeholders regarding the impact of the classification on program operation	AIHW and ABS data Pharmacist survey Interviews with service providers
	Is there any wastage of PBS medicines at AHSs? If so, why? What could be improved with regard to minimising wastage of PBS medicines at AHSs?	Reported perceptions of medicine wastage and its consequences	
	In what ways, if any, could the Indigenous Pharmacy Programs be improved to ensure that Aboriginal and Torres Strait Islander people are able to access PBS medicines and QUM support services?	Number and type of program improvements identified by evaluation participants	
	What factors may influence the future performance of these programs? What do program managers need to consider in order to ensure that the programs continue to facilitate access to PBS medicines and QUM support?	Number and type of factors influencing future program performance, and identified opportunities for change	

Appendix G RESEARCH INSTRUMENTS

This appendix contains the key research instruments used to complete primary data collection for the Review.

G.1 S100 PHARMACIST INTERVIEW GUIDE

INTRODUCTORY SCRIPT

Hi, my name is [RESEARCHER NAME]. I'm working with a research company called Urbis who have been engaged to complete a review of the Indigenous Pharmacy Programs. That includes the QUMAX Program, the Close The Gap co-payment scheme, and the s100 program.

This interview is focused on the s100 program.

You should have received an introductory email from the Pharmacy Guild about the work we're doing. I also sent you an information sheet about the review when we made a time for this interview. Did you have any questions about that?

Just to confirm - this interview is both confidential and voluntary. You don't have to participate if you don't want to, and if you do, whatever you tell me will not be reported in a way that could identify you or your pharmacy. If you change your mind after our conversation, you can contact Urbis and we'll delete your responses.

Are you happy to go ahead with the interview? [Confirm consent]

1) Name of pharmacy

2) Name of interviewee

3) Consent verbally reconfirmed at interview?

4) Please confirm you are a current provider of:

- s100 Remote Area Aboriginal Health Service (RAAHS) supply
- s100 Quality Use of Medicines Support (the Support Allowance)

5) How long have you been registered as a provider of one or both of the s100 program/s? (confirm if different time frames for involvement with each)

6) What proportion of your overall pharmacy patients are Aboriginal and/or Torres Strait Islanders?

7) Over the time you've been working under s100 RAAHS, have you seen any change in the types of medicines requested by the Aboriginal Health Services? Why do you think that is?

- And in regard to s100 support - has the type of support being sought form you changes over time? If so, in what ways?
- Do you anticipate any further changes in supply demand or support needs over the coming year?

8) What factors would you say enable pharmacists to support remote area AHSs most effectively? What, if anything, could be improved? What difference would that change make?

9) In this review, we are particularly interested in the extent to which the Indigenous pharmacy programs complement each other.

- [Refer to the four programs: QUMAX, Close the Gap co-payment, s100 RAAHS and s100 support allowance]
- To what extent do you see the programs complementing each other? What, if anything, is missing from this suite of programs that could improve Indigenous peoples' access to and quality use of medicines?

10) s100 Support Allowance program only:

a. What aspects of the program do you think are providing remote AHSs the greatest benefit?

b. What, if any, improvements would you suggest?

c. What has been the impact of travel allowance on your ability to provide adequate support to remote AHSs?

11) s100 Supply program only: Now to explore the s100 supply program further - in your practice, how effective are the following arrangements for PBS medicines:

- a. bulk supply arrangements?
- b. transport arrangements?
- c. storage at the AHS?
- d. recording and reporting?
- What, if anything, could be improved?

12) s100 Supply program only: What strategies do you use to minimise wastage of PBS medicines when working with remote Aboriginal Health Services? What could be improved with regard to minimising any wastage of PBS medicines at remote AHSs?

13) What do you see as they key challenges for the s100 program/s in the future?

14) Is there anything else you would like to add?

15) How long did this interview take? [Interviewer to record this]

Thank You!

G.2 AHS STAKEHOLDER INTERVIEW GUIDE

DISCUSSION GUIDE FOR AMS/ ACCHO

Participants:	AMS and ACCHO
Consent:	Consent process done by interviewer
Before commencing:	• confirm understanding of process with reference to Information Sheet • ask if participant has any additional questions • complete written consent • note that detailed notes will be taken by the interviewer.
Profile of site to be provided to consultants prior to field visit, including:	Programs operating: Supply - CTG co-payment and s100 RAAHS; Support - s100 Support Allowance and QUMAX Profile of ACCHS: core services provided, catchment area and communities, total staff employed, relationship with other community controlled and mainstream health services NOTE – INSERT NAMES OF SUPPLY AND SUPPORT PROGRAMS FOR EACH SELECTED SITE

INTRODUCTION

1. Confirm the [programs] in place at AMS.
2. How long has it been in place?
3. How does the program/s run here?
4. Over time, what have you changed? Why did you make that change? Did the change address the issue?

WORKPLAN – QUMAX AND S100 ONLY

5. How do you go about writing your annual work plan?
6. Is the pharmacist involved – if so, how?
7. How do you decide on the priorities each year?

REACH

8. Is there anyone eligible for the [program] who is missing out on their medicine? If so, how could this be improved?

EFFECTIVENESS

9. What makes the [program] most effective? How could it be improved?
10. How well do [s100, CTG, QUMAX] work together, as they are all seeking to improve access to medicines? How could this be improved?

ADOPTION

11. What issues, if any, do you experience with the [name program] rules? What, if any, are the barriers to compliance? What, if anything, could be improved?
12. What support does the pharmacy provide? What could make that support more effective?

IMPLEMENTATION

13. If you were starting [name program] over again, what would you do differently?
    Prompt for: bulk, supply, transport, travel, storage, recording and reporting of PBS medicines

MAINTENANCE

14. Are the geographic classifications for s100? How might they be improved?
15. What issues have you experienced with wastage? How have you dealt with this?
16. What would you change about the program to further improve health outcomes for people?
17. Thinking ahead five years, what would you like your medicine program to look like? What will be the challenges in getting there?

CONCLUSION

18. Is there anything else you would like to add?

Thank you and close.

G.3 PHARMACIST FIELD INTERVIEW GUIDE

DISCUSSION GUIDE FOR PHARMACISTS

Participants:	Pharmacists
Consent:	Consent process done by interviewer
Before commencing:	confirm understanding of process with reference to Information Sheet ask if participant has any additional questions complete written consent note that detailed notes will be taken by the interviewer.
Profile of site to be provided to consultants prior to field visit, including:	Programs operating: Supply - CTG co-payment and s100 RAAHS; Support - s100 Support Allowance and QUMAX Date [supply] and/or [support] program/s commenced at site Current plan/s (if provided by site) Summary of [supply] and [support] program/s data made available to evaluators Profile of ACCHS: core services provided, catchment area and communities, total staff employed, relationship with other community controlled and mainstream health services NOTE – INSERT NAMES OF SUPPLY AND SUPPORT PROGRAMS FOR EACH SELECTED SITE

INTRODUCTION

1. How long have you been working in/managing this pharmacy? What geographic area do you cover?
2. Please describe your patient profile.
   a. What proportion of your clients is from an Aboriginal or Torres Strait Islander background?
3. How many staff are employed in the pharmacy?
4. What is the approximate average script volume of this pharmacy?
5. What has been your relationship with [ACCHS] prior to [program/s]?
6. Have you historically provided any services to the ACCHS or worked on any collaborative projects?
7. What has been your experience in providing pharmacy services to ACCHS clients?
   a. What are some of the barriers to ACCHS clients accessing your services?
   b. What challenges, if any, have you faced?

REACH

8. Is there anything about the program criteria that hinders people's to access PBS medicines? Why is that?
9. Are you aware of anyone eligible for the [program/s] who's missing out on their medicines? Why is this? What could be changed to address this?

EFFECTIVENESS

10. During your involvement in [program/s], have you noticed any differences in how people are exercising choice in:
    a. selecting effective management options for their illness
    b. choosing suitable medicines
    c. using medicines safely?
11. [FOR QUMAX ONLY]: What is the most significant change that you feel that the QUMAX program has generated for Aboriginal and Torres Strait Islanders?
12. [FOR QUMAX ONLY]: Have you or others in the pharmacy undertaken any Aboriginal and Torres Strait Islander cultural awareness training? How helpful or useful was that?

ADOPTION

13. To what extent are you able to comply with the program rules? What, if any, are the barriers to compliance?
14. Do you feel that any changes could be made to improve the program rules?
15. How would you describe your ability to support remote area AHSs? What, if anything, could be improved?

IMPLEMENTATION

16. Have you noticed anything that has prevented [program/s] being implemented as effectively as possible? If so, what are these?
17. What aspects of the [support program/s] do you think are providing AHSs the greatest benefit?
18. What, if any, improvements would you suggest?
19. [FOR SUPPORT ALLOWANCE ONLY]: Has the travel allowance been sufficient to cover your costs?
20. [FOR SUPPORT ALLOWANCE ONLY]: Has the travel allowance had any effect on your ability to provide adequate support to remote AHSs? If so, what is that?

MAINTENANCE

21. Are the geographic classifications for [program/s] appropriate? If so, how might they be improved? If not, why not?
22. Is there anything that you think will improve the ability of [program/s] to improve the health outcomes for Aboriginal and Torres Strait Islanders?
23. What do you see as the key challenges for [program/s] into the future?
24. Is there anything else you would like to add?

Thank you and close.

G.4 INFORMATION AND CONSENT FORMS (AHS STAKEHOLDERS)

The following information and consent documentation was used in support of engagement with stakeholders working within AHS. In NSW and South Australia, adapted versions were used that noted approval in those jurisdictions by the relevant state-based HREC.

INFORMATION SHEET - REVIEW OF THE INDIGENOUS PHARMACY PROGRAMS

INFORMATION FOR RESEARCH PARTICIPANTS

This sheet is about Urbis' evaluation of the Indigenous Pharmacy Programs. The project is evaluating the following four government programs, and developing advice to the Department of Health about improving the way the programs are designed and run:

- Closing the Gap PBS Co-payment Measure
- Quality Use of Medicines (QUM) Maximised for Aboriginal and Torres Strait Islander people (QUMAX) Program
- Section 100 (s100) Remote Area Aboriginal Health Services (RAAHS) Program
- s100 Support Allowance (Support Allowance) Program.

ABOUT THE RESEARCH PROJECT

Urbis has been engaged by the Department of Health to conduct this evaluation. Urbis is a social research consultancy that has completed similar projects over the last 30 years. Our team of researchers include Aboriginal and non-Aboriginal researchers.

As part of this project, we intend to interview:

- Aboriginal and Torres Strait Islander people accessing PBS medication under the programs
- Aboriginal Health Services registered with the program/s
- Pharmacists registered with the program/s.

WHAT THIS MEANS FOR YOU

We are hoping to interview those involved in the program to understand their perspective on the how it has worked. The interview should take no more than one hour, and will be transcribed. Interviews will focus on what is working (or not) about the programs, and how they could be improved.

WHAT WILL WE DO WITH YOUR INFORMATION

Only the research team will be able to read any interview notes. Your name will not be on these notes. We will keep your name separate to these notes. We may quote you, but we will not use your name, or any information that could be used to identify you. We are required to keep your information for 7 years but will only use the information for this project.

YOU CAN CHOOSE WHETHER YOU WANT TO BE INVOLVED

You do not have to take part in this research. There are no anticipated consequences for not participating. Your consent can be withdrawn at any time. If you decide to withdraw your consent, we will not use your comments.

WHAT SHOULD YOU DO NOW?

Our researcher will ask you to sign a consent form on the day. Your consent can be withdrawn at any time. If you decide to withdraw your consent, we will not use your comments. If you change your mind, please contact us on the details below.

DO YOU HAVE ANY QUESTIONS?

For more information please contact s47F Project Manager at Urbis, on s47F or s47F @urbis.com.au.

If you have any concerns or complaints on the ethical conduct of this research, please contact the

Secretariat, Department of Health Human Research Ethics Committee, by email at

ethics@health.gov.au or by post, GPO Box 9848, MDP 132, CANBERRA ACT 2601. The issue will then be referred to the Chair of the Committee

CONSENT FORM

I, _____

have read (or had read to me) and understood the information provided in this form for participants.

I agree to participate in this interview as part of the review of the Indigenous Pharmacy Programs, commissioned by the Department of Health and conducted by Urbis.

I understand that this interview is voluntary and confidential, and that I can withdraw my permission at any time.

I know that the things I say may be included in the final report, but understand that I will not be named in the report and no one will be able to find out what I said once the interview is over.

I understand that I may change my mind and decide not to take part at any time, and if I do then Urbis will remove my words from the research.

Position: _____

Organisation: _____

Signature:_____

Date:_____

Name of Researcher:_____

Signature: _____ **Date:** _____

G.5 INFORMATION AND CONSENT FORMS (PHARMACISTS)

INFORMATION SHEET - REVIEW OF THE INDIGENOUS PHARMACY PROGRAMS

INFORMATION FOR RESEARCH PARTICIPANTS (PHARMACISTS)

This sheet is about Urbis' review of the Indigenous Pharmacy Programs. The project is reviewing the following four government programs, and developing advice to the Department of Health about improving the way the programs are designed and run:

- Closing the Gap PBS Co-payment Measure
- Quality Use of Medicines (QUM) Maximised for Aboriginal and Torres Strait Islander people (QUMAX) Program
- Section 100 (s100) Remote Area Aboriginal Health Services (RAAHS) Program
- s100 Support Allowance (Support Allowance) Program.

ABOUT THE RESEARCH PROJECT

Urbis has been engaged by the Department of Health to conduct this review. Urbis is a social research consultancy that has completed similar projects over the last 30 years. Our team of researchers include Aboriginal and non-Aboriginal researchers.

As part of this project, we intend to interview:

- Aboriginal and Torres Strait Islander people accessing PBS medication under the programs
- Aboriginal Health Services registered with the program/s
- Pharmacists registered with the program/s.

WHAT THIS MEANS FOR YOU

We are hoping to interview participating pharmacists to understand their perspective on the programs. The interview should take no more than one hour, and will be transcribed. Interviews will focus on what is working (or not) about the programs, and how they could be improved.

WHAT WILL WE DO WITH YOUR INFORMATION

Only the research team will be able to read any interview notes. Your name will not be on these notes. We will keep your name separate to these notes. We may quote you, but we will not use your name, or any information that could be used to identify you. We are required to keep your information for 7 years but will only use the information for this project.

YOU CAN CHOOSE WHETHER YOU WANT TO BE INVOLVED

You do not have to take part in this research. There are no anticipated consequences for not participating. Your consent can be withdrawn at any time. If you decide to withdraw your consent, we will not use your comments.

WHAT SHOULD YOU DO NOW?

Our researcher will ask you to sign a consent form on the day. Your consent can be withdrawn at any time. If you decide to withdraw your consent, we will not use your comments. If you change your mind, please contact us on the details below.

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If you have any concerns or complaints on the ethical conduct of this research, please contact the

Secretariat, Department of Health Human Research Ethics Committee, by email at

ethics@health.gov.au or by post, GPO Box 9848, MDP 132, CANBERRA ACT 2601. The issue will then be referred to the Chair of the Committee.

CONSENT FORM

I, _____

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I agree to participate in this interview as part of the review of the Indigenous Pharmacy Programs, commissioned by the Department of Health and conducted by Urbis.

I understand that this interview is voluntary and confidential, and that I can withdraw my permission at any time.

I know that the things I say may be included in the final report, but understand that I will not be named in the report and no one will be able to find out what I said once the interview is over.

I understand that I may change my mind and decide not to take part at any time, and if I do then Urbis will remove my words from the research.

Position: _____

Organisation: _____

Signature:_____

Date:_____

Name of Researcher:_____

Signature: _____ **Date:** _____

Appendix H HUMAN RESEARCH ETHICS APPROVALS

Australian Government
Department of Health

11 January 2017

s47F
National Director, Urbis Pty Ltd
Level 23, Darling Park Tower 2
201 Sussex Street
SYDNEY NSW 2000

Dear s47F

Project 10/2016: The Review of Indigenous Pharmacy Programs

Thank you for submitting the above mentioned project and subsequent additional information to the Department of Health Human Research Ethics Committee ('the Committee') for approval.

This letter now confirms that your responses satisfactorily address the list of concerns raised by the Committee and that final ethics approval is granted for the project. This approval is valid for the duration of the project.

The approval is conditional upon the project meeting requirements set out in the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research 2007 (Updated May 2015)* and the *Privacy Act 1988* as well as the specific conditions that are set out in this letter. These conditions are:

1. The research project will be conducted as set out in your application to the Committee and in accordance with ALL subsequent correspondence.

2. The Principal/Senior Researcher will advise the Committee of:
   - any changes to the project or its conduct;
   - any unforeseen events that might affect the continued ethical acceptability of the project;
   - any serious or unexpected adverse events that take place; and/or
   - the project being abandoned for any reason.

New ethics approval will be required for substantially altered or revised research protocols.

3. A report is required annually and at the completion of the study (**Attachment A**). This is a requirement of both the Committee and the NHMRC.

Ethics approval for the project may be withdrawn if an initial report is not received by 11 January 2018.

The Department of Health Human Research Ethics Committee approval of your research involving humans does not guarantee access to the Department of Health and other institutional information and resources. The negotiations for information and resources for a given research project are outside the parameters of the role of the Committee and the approval process.

If you require further information on the Committee's consideration of your application, please do not hesitate to contact the Committee Secretariat by email: ethics@health.gov.au.

For all correspondence relating to this application please quote Project 10/2016: *The Review of Indigenous Pharmacy Programs*.

Yours sincerely

for Professor Colin Thomson
Chair
Department of Health Human Research Ethics Committee

Aboriginal Health & Medical Research Council of New South Wales

AH&MRC Celebrating 50 Years 1965 – 2015

AH&MRC ETHICS COMMITTEE

21st March 2017

s47F
National Director
URBIS Pty Ltd
Level 23, Darling Park Tower 2
201 Sussex Street
SYDNEY NSW 2000

Dear s47F

RE: 1248/17 Review of Indigenous Pharmacy Programs: URBIS

The Aboriginal Health and Medical Research Council (AH&MRC) Ethics Committee has considered your original application, received on 23rd of January 2017.

Standard Conditions of Approval (where applicable to the project)

1. The approval is for a period from **21st March 2017** until from **21st March 2018** (12 months after), with extension subject to providing an Annual Progress Report on the research by from **21st March 2018.**
2. All research participants are to be provided with a relevant Participant Information Statement and Consent Form in the format provided with your application.
3. Copies of all signed consent forms must be retained and made available to the Ethics Committee on request. A request will only be made if there is a dispute or complaint in relation to a participant.
4. Any changes to the staffing, methodology, timeframe, or any other aspect of the research relevant to continued ethical acceptability of the project must have the prior written approval of the Ethics Committee.
5. The AH&MRC Ethics Committee must be immediately notified in writing of any serious or unexpected adverse effects on participants.
6. The research must comply with:
   - the *AH&MRC Guidelines for Research in Aboriginal Health – Key Principles;*
   - *National Statement on Ethical Conduct in Research Involving Humans* (April 2007 – updated March 2014);
   - the *NSW Aboriginal Health Information Guidelines.*
7. The final draft report from the research, and any publication or presentation where data or findings are presented, must be provided to the AH&MRC Ethics Committee to be reviewed for compliance with ethical and cultural criteria prior to:
   - any submission for publication; and/or
   - any dissemination of the report.

Supported by the NSW Ministry of Health

Location: Level 3, 66 Wentworth Avenue, Surry Hills NSW 2010
Postal Address: PO Box 1565, Strawberry Hills NSW 2012
Contact: Phone: +61 (2) 9212 4777; Fax: +61 (2) 9212 7211; e-Mail: ahmrc@ahmrc.org.au; web: www.ahmrc.org.au
ABN: ABN 66 085 654 397

Aboriginal Health & Medical Research Council of New South Wales

8. A copy of the final published version of any publication is to be provided to the AH&MRC Ethics Committee.

Special Conditions:

The researchers must provide evidence of consent from the services with which they are engaged to the AH&MRC Ethics Committee prior to undertaking any research activities. The Committee would like to note that this whole research project is in the area of Aboriginal Health. The AH&MRC approves the entire approach to research, not just the data collection from Aboriginal people.

Please acknowledge receipt of this letter and your acceptance of the above conditions within fourteen (14 days).

Please find attached an Annual Progress Report pro forma for use at the end of the approval period.

We appreciate your agreement that the research findings will be made available in order to assist the future development of policy and programs in Aboriginal health.

On behalf of the AH&MRC Ethics Committee,

Yours sincerely,

s47F

Chairperson

AH&MRC Ethics Committee

Supported by the NSW Ministry of Health

Location
Level 3, 66 Wentworth Avenue
Surry Hills NSW 2010

Postal Address
PO Box 1565
Strawberry Hills NSW 2012

Contact
Phone: +61 (2) 9212 4777
Fax: +61 (2) 9212 728
e-Mail: ahmrc@ahmrc.org.au
web: www.ahmrc.org.au

ABN
ABN 66 085 654 397

Aboriginal Health Council of South Australia Inc.

'Our health, our choice, our way.'

6 April 2017

Principal Investigator 1 (as per the AHREC application form):	s47F
Organisation:	URBIS Pty Ltd
Via email to the Corresponding Researcher(s):	s47F

RE: The Review of Indigenous Pharmacy Programs

AHREC Protocol #: 04-17-713

Dear s47F

Thank you for your response to the issues raised by the Aboriginal Health Research Ethics Committee (AHREC).

Please be advised that your response as received on 29/03/2017 to the further information requested by AHREC was reviewed out-of-session and met with support. I am pleased to inform you of the Committee's approval of the study.

The duration of approval is from 6 April 2017 until the expected completion date of your study on 30 June 2017.

In accordance with the NHMRC requirements, AHREC requires progress reports or a final report from the principal researcher at the completion of the study. Please submit the final report by 1 July 2017. If you will not be able to finalise the study within the approval timeframe, please note the relevant instructions regarding how you are required to submit a modification request at http://ahcsa.org.au/research-overview/ethical-review-ahrec/ in order to prevent a protocol breach.

AHREC's advice constitutes ethical approval only and please also be advised of the standard conditions of approval below requiring you to seek relevant on-site permissions.

If you require further information, please do not hesitate to contact the Executive Officer s47F from s47F or s47F

Sincerely yours,

s47F

Kim Morey
Chairperson, AHREC

Aboriginal Health Research Ethics Committee (AHREC)
Street Address: 220 Franklin Street, Adelaide SA 5000, Mailing Address: PO Box 719 Adelaide SA 5001
Tel: (08) 8273 7200 Email: gokhan.aydurak@ahcsa.org.au Website: http://ahcsa.org.au/research-overview/ethical-review-ahrec/

DISCLAIMER

This report is dated 27 June 2017 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (**Urbis'**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of the Department of Health (**Instructing Party**) for the purpose of the Review of Indigenous Pharmacy Programs (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

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Department of Health and Aged Care

Evaluation of the 6CPA – MedsCheck and Diabetes MedsCheck programs

Final Evaluation Report

31 March 2023

HealthConsult
Better thinking
Better advice

1. Table of Contents

2. List of Tables

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Abbreviations

AIHW	Australian Institute of Health and Welfare
AQoL	Assessment of Quality of Life
ARMS	Adherence to Refills and Medications Scale
CBA	Cost-Benefit Analysis
CEA	Cost-Effectiveness Analysis
CPA	Community Pharmacy Agreements
DAA	Dose Administration Aid
DID	Difference in Difference
DVA	Department of Veterans Affairs
ED	Emergency Department
GASE	Generic Assessment of Side Effects
GP	General practitioners
HMR	Home Medicines Review
HRQoL	Health-Related Quality of Life
ICER	Incremental cost-effectiveness ratio
IRR	Internal Rate of Return
KEQ	Key evaluation questions
KPM	Key Performance Measures
MBS	Medicare Benefits Scheme
PBS	Pharmaceutical Benefits Scheme
PGA	Pharmacy Guild of Australia
PPA	Pharmacy Programs Administrator
PPI	Pharmacy Practice Incentive
PREM	Patient Reported Experience Measure
PROM	Patient Reported Outcome Measure
PSA	Pharmaceutical Society of Australia
QALY	Quality Adjusted Life Years
QoL	Quality of Life
RMMR	Residential Medication Management Review
TSQM	Treatment Satisfaction Questionnaire for Medication

Executive Summary

On 17 July 2018, the Australian Government Department of Health and Aged Care (the 'Department') engaged HealthConsult to evaluate four new and expanded community pharmacy programs funded under the Sixth Community Pharmacy Agreement (6CPA). This report focuses on the evaluation findings of the **MedsCheck and Diabetes MedsCheck program**.

About the MedsCheck and Diabetes MedsCheck programs

MedsCheck is an in-pharmacy, patient-centred service that includes a review of a patient's medicines, focusing on education and self-management. The MedsCheck service aims to:

- identify problems that the patient may be experiencing with their medicines
- help the patient learn more about their medicines including drugs that affect medical conditions
- improve the effective use of medications by patients
- educate patients about how to best use and store their medications.

Diabetes MedsCheck is an in-pharmacy, patient-centred service that provides a review of medications with a focus on the patient's type 2 diabetes medicines management, monitoring devices, education, and self-management. The service targets patients who are unable to get timely access to diabetes education or health services in their community, and aims to:

- optimise a patient's effective use of medicine by improving their understanding of, and compliance with, their diabetes medication therapy
- improve a patient's use of blood glucose monitoring devices through training and education
- improve blood glucose control
- reduce the risk of developing complications associated with type 2 diabetes.

Evaluation methodology and data sources

The objectives of the evaluation were to assess the effectiveness, health outcomes and cost effectiveness of the MedsCheck and Diabetes MedsCheck programs.

The evaluation applied a quasi-experimental design to measure the causal effect of an intervention in the absence of control group.[1] The evaluation therefore focused on surveying patients prior to, or at commencement of MedsCheck and Diabetes MedsCheck programs (initial) and again at six months (follow-up).

Four key evaluation questions (KEQ) were formed to guide the evaluation:

(1) **KEQ1**: To what extent is the MedsCheck and Diabetes MedsCheck program effective in improving patients' understanding and use of their medications?

(2) **KEQ2**: Does the program improve the health outcomes of patients?

(3) **KEQ3**: Is the MedsCheck and Diabetes MedsCheck program cost-effective?

(4) **KEQ4**: What are the barriers and enablers to providing an effective patient-centred MedsCheck and Diabetes MedsCheck service and how can it be strengthened?

There were 112 evaluation participants who completed an initial and/or follow-up Diabetes MedsCheck or MedsCheck survey. Of those, 88 participants (or 79%) received a MedsCheck service, and 24 participants (21%) received a Diabetes MedsCheck service. 69 participants (62%)

[1] Geldsetzer, P, Fawzi, W, 2017, "Quasi-experimental study designs series-paper 2: complementary approaches to advancing global health knowledge', *Journal of Clinical Epidemiology*, v.89, pp. 10-16.

completed both an initial survey and follow-up survey; 54 of those (78%) received a MedsCheck service, and 15 (22%) received a Diabetes MedsCheck service.

The evaluation also collected pharmacists' opinions on the effectiveness of these 6CPA programs via an online survey (n=128). Of the 128 respondents:

- 120 pharmacists (94%) reported that they had conducted a MedsCheck service, and 105 (88%) of those completed the MedsCheck section of the survey
- 94 pharmacists (73%) reported that they had conducted a Diabetes MedsCheck service, and 83 (88%) of those completed the Diabetes MedsCheck section of the survey.

The analysis presented in this report also includes 6CPA program data for MedsCheck and Diabetes MedsCheck covering the period between January 2019 and October 2019. Information at the registration and follow-up comprised of patient's characteristics, patient's knowledge about their medicines, reason to participate in the program, health conditions, MedsIndex scores, action and recommendation taken by the pharmacist. There were 170,112 patients at the registration and 30,540 patients at follow-up. Of 12,861 patients were matched in the data ID based on encrypted DVA/Medicare number.

Key evaluation challenges and limitations

The evaluation was challenged by pharmacies having difficulty in recruiting patients, there being no data dictionary on 6CPA datasets (so expected data was not realised), lost patient survey data (either at pharmacy or through Australia Post), patients not attending/participating in follow-up visits, delays and unavailability of access to program and/or national datasets (e.g. PBS and MBS) which led to several revised evaluation methodologies and significantly impacted the delivery of this evaluation report. Additionally, linking the 6CPA program data to PBS was not possible due to the lack of required identifiers in the 6CPA program data. Consequently, the findings of this report are limited by the small sample size of patient participants.

Unlike the other 6CPA programs, analysis of the impact of the MedsCheck programs needs to consider that most of the intervention by the pharmacist, "the intervention" may occur at registration and the benefits at 6-months may not be measurable using the indicators provided in the 6CPA program data (e.g. MedsIndex).

Cost-effectiveness analysis (CEA) was also unable to be completed due to the inability to identify an appropriate outcome parameter, so a Cost-benefit analysis (CBA) was completed instead.

Key evaluation findings

The evaluation of the MedsCheck and Diabetes MedsCheck programs found that:

(1) There were no significant improvements in medication adherence for both programs. However, both patients and pharmacists reported a positive impact on knowledge relating to understanding, use and adherence to medication regimes.

(2) Self-reported GP visits, hospitalisations and ED presentations of MedsCheck program participants were significantly less or unchanged at follow up suggesting that the program reduced GP visits, hospitalisations and ED presentations.

(3) Using health services utilisation in a CBA showed that the programs provide a benefit in reducing unnecessary GP visits for MedsCheck and Diabetes MedsCheck patients which equates to a saving of $79.50 for every 10 patients that are in the program. The analysis of the benefits of the reduction in total frequency of GP visits against the program cost shows that the program will achieve a cost-neutral outcome for the funder if the reduction of GP visits continues until 18 months after the program. Where the cost of data collection is excluded and only the cost of service provision is incurred, a cost-neutral outcome will be achieved in less than 12 months after the program.

(4) Pharmacists identified that the amount of time required per patient was the most significant barrier in providing the programs, but patients and pharmacists were satisfied with the program.

Knowledge and use of medicines

The evaluation found participation in MedsCheck and Diabetes MedsCheck had a positive effect with patients reporting an increased understanding of the importance of medication adherence and knowledge about their medication regimen, however, there was no change in medication adherence for patients participating in the MedsCheck and Diabetes MedsCheck programs. For the MedsCheck service, 81% of patients rated their plan adherence as 8 (out of 10) or higher.

Most pharmacists also indicated the MedsCheck and Diabetes MedsCheck programs increased patients' understanding of their medications and medication adherence.

Patient health outcomes

All forms of health service utilisation analysed in the patient survey (self-reported GP visits, hospitalisations and ED presentations) were significantly less or unchanged, suggesting that the program participation may have reduced GP visits, hospitalisation and ED presentations.

There were no significant differences in the number of medication-related side-effects reported by participants between the initial and follow-up surveys and no significant, nor clinically relevant, changes in quality-of-life measures between initial and follow up surveys (both programs), or in distress measures for people participating in the Diabetes MedsCheck program.

Most pharmacists (94%, n=105) reported that the MedsCheck programs had at least a moderate impact on improving the health of patients, and specific to the Diabetes MedsCheck, some pharmacists reported that patients were more likely to consistently monitor their blood glucose, possibly reducing the number of hypoglycaemia and hyperglycaemia events experienced whilst participating in the program.

Cost-effectiveness

A CBA of the MedsCheck and Diabetes MedsCheck programs was completed instead of a CEA due to the lack of identified effectiveness indicators. A CBA was estimated by using GP visits before and after the program for MedsCheck and Diabetes MedsCheck patients. Two analyses were conducted. In the first analyses, the CBA measured the benefits based on reduction in total frequency of GP visits against the program cost. In the second analyses, the CBA focused on the program effect of either a decrease or increase in GP visits.

The analysis of the benefits of reduction in total frequency of GP visits against the program cost shows that the program will achieve a cost-neutral outcome for the funder if the reduction of GP visits continues until 18 months after the program. Where the cost of data collection is excluded and only the cost of service provision is incurred, a cost-neutral outcome will be achieved in less than 12 months after the program.

The CBA analysis using either a decrease or increase in GP visits resulted in two key findings:

- There is a saving of $79.50 for every 10 patients that are in the program, equating to two GP visits (i.e., 79.50 / $39.75 = 2).
- Furthermore, if the Patient Survey data represents the actual impact of the MedsCheck and Diabetes MedsCheck program, it indicates the program generates a saving of two GP visits for every ten patients, every 6-months.

Barriers and enablers

Participants reported positively on the MedsCheck service, describing it as "easy-to-follow", "informative" and "comprehensive". Participants noted that the most important features of the service were that it was easy to access, private and confidential. Diabetes MedsCheck participants

reported the service as “helpful” since they were “able to ask questions” and receive advice on appropriate medicine use.

The major barrier to implementing the MedsCheck and Diabetes MedsCheck programs noted during all pharmacist interviews was the time taken to deliver the program. The most frequently reported enablers included enhanced patient understanding of medications, improved education and communication with patients, and opportunities to review medications to identify issues.

Identified opportunities for program improvement included increasing the monthly cap on the program for individual pharmacies based on the total number scripts dispensed, increasing the total reimbursement to make it cost effective to have two pharmacists on duty, and increasing patient awareness of the program.

Conclusion and next steps

The findings of the evaluation indicate that patients and pharmacists are satisfied with the MedsCheck programs and see the benefit of providing support for pharmacists to spend additional time with patients with complex medication requirements.

Suggested changes that could be made to the MedsCheck programs include:

- Increasing the accessibility of the service to allow a greater number of patients to participate. This could be achieved by individually tailoring the pharmacy’s monthly cap based on activity rather than the volume of patients.
- Increase the total reimbursement associated with initial and follow ups to make it cost effective to have two pharmacists on duty to address the time requirements for delivering the service.
- Limited patient awareness was identified as a barrier and pharmacists felt that recruitment to the program was impacted because patients thought they were being “sold” something. Increased advertising and marketing of programs to patients and health care professionals so that they are more aware and accepting of the program when offered by a pharmacist.
- Adjusting the reimbursement amount for a MedsCheck and Diabetes MedsCheck to be equal as they are delivering a similar program.
- There is a low adherence to pharmacists meeting the follow up requirements. The reasons for not conducting follow ups included difficulties scheduling appointments for follow up data collection, insufficient incentive due to the size of the fee, and follow ups occurring less formally and more often during routine contact with patients. The requirement of a formal follow-up should be reviewed.
- The main measure included in the health outcomes data to measure changes in medication adherence is the MedsIndex score. However, this is not a validated measure and its accuracy is questionable. Until validated, the utility of the MedsIndex score is limited. For example, if the pharmacist recommended to decrease the dose or medications for the patient at the registration, it will change the regime of medication use during the program. This is not captured in the MedsIndex score. Consider adopting an alternative measure to the MedsIndex score such as the ARMS measure (a validated tool) for measuring medication adherence.
- Modify the response options available for the data element “recommended changes in medications”. Currently, the data is unclear as it does not specify whether the recommendation to increase or decrease medicines is for dose only, for medicine only, or for both dose and medicine.
- Consider the inclusion of identifying data elements such as name, date of birth and address in the patient administration process so that a control group could be created by linking CPA program data to other national dataset (e.g. PBS, MBS, ED presentations and hospitalisation data).

1. Introduction

On 17 July 2018, the then Department of Health (the 'Department') engaged HealthConsult to:

"to evaluate four of the New and Expanded Community Pharmacy Programs Funded Under the Sixth Community Pharmacy Agreement (6CPA)"

The MedsCheck and Diabetes MedsCheck initiative is part of an initiative to expand the role of community pharmacy, beyond medication dispensing to an increased primary healthcare contribution. **This report focuses on the evaluation findings of the MedsCheck and Diabetes MedsCheck program.**

1.1. Context

Community Pharmacy Agreements (CPA) were introduced in 1991 between the Commonwealth and the Pharmacy Guild of Australia (PGA) to support the provision of PBS medications to Australians. Under the Improving Access to Medicines – Support for Community Pharmacies Budget Measure (the Measure), in 2017, $825 million was provided over three years to community pharmacies to support and improve access to medicines. The measure included $600 million through the 6th Community Pharmacy Agreement (6CPA) to continue and expand existing community pharmacy programs. This included two new medication adherence programs: Dose Administration Aids (DAA) and Staged Supply (SS), and two expanded medication management programs: **MedsCheck and Diabetes MedsCheck**.

1.1.1. The MedsCheck and Diabetes MedsCheck services

MedsCheck is an in-pharmacy, patient-centred service that includes a review of a patient's medicines, focusing on education and self-management. The MedsCheck service aims to:

- identify problems that the patient may be experiencing with their medicines
- help the patient learn more about their medicines including drugs that affect medical conditions
- improve the effective use of medications by patients
- educate patients about how to best use and store their medications.

Diabetes MedsCheck is an in-pharmacy, patient-centred service that provides a review of medications with a focus on the patient's type 2 diabetes medicines management, monitoring devices, education, and self-management. The service targets patients who are unable to get timely access to diabetes education or health services in their community, and aims to:

- optimise a patient's effective use of medicine by improving their understanding of, and compliance with, their diabetes medication therapy
- improve a patient's use of blood glucose monitoring devices through training and education
- improve blood glucose control
- reduce the risk of developing complications associated with type 2 diabetes.

1.2. Evaluation of the MedsCheck and Diabetes MedsCheck programs

The objective of the evaluation was to assess the effectiveness of the MedsCheck and Diabetes MedsCheck programs at achieving their service aims (see Section 1.1.1).

The purpose of the MedsCheck and Diabetes MedsCheck programs are to enhance the quality use of medicines and reduce adverse events and associated hospital admissions or medical presentations related to medication misuse. The MedsCheck and Diabetes MedsCheck program is designed to provide for in-pharmacy medication reviews between pharmacists and patients. This program provides an in-pharmacy, consumer-centred service that includes a review of a consumer's medicines, focusing on education and self-management. In addition, the Diabetes MedsCheck program includes a focus on the patient's type 2 diabetes medicines management, monitoring devices, education, and self-management.

1.2.1. Evaluation Questions

The evaluation applied a quasi-experimental design to measure the causal effect of an intervention in the absence of control group.[2] The evaluation therefore focused on surveying patients prior to, or at commencement of MedsCheck and Diabetes MedsCheck programs (initial) and again at six months (follow-up).

Four key evaluation questions (KEQ) were formed to guide the evaluation:

(1) **KEQ1**: To what extent is the MedsCheck and Diabetes MedsCheck program effective in improving patients' understanding and use of their medications?

(2) **KEQ2**: Does the program improve the health outcomes of patients?

(3) **KEQ3**: Is the MedsCheck and Diabetes MedsCheck program cost-effective?

(4) **KEQ4**: What are the barriers and enablers to providing an effective patient-centred MedsCheck and Diabetes MedsCheck service and how can it be strengthened?

The evaluation questions and data sources are described in the Evaluation Frameworks (See Appendix A below).

1.3. Data collections

This evaluation drew from multiple data sources, including patient surveys conducted at initial and 6-motnhs follow up, pharmacist and pharmacy profile surveys, case studies/pharmacist interviews and 6CPA program data.

1.3.1. Data sources

This evaluation had a quasi-experimental approach using multiple data sources, including:

- **Patient surveys**: The patient survey was completed by the patient whilst in the community pharmacy before the initial intervention and at 6 months follow-up. This survey included validated tools to measure medication adherence (the Adherence to Refills and Medications Scale (ARMS)), side effects (Generic Assessment of Side Effects (GASE)), QoL (The Assessment of Quality of Life (AQoL-4D)), problem in diabetes for Diabetes MedsCheck patients (Problem Areas in Diabetes Scale (PAID-5)), and patient satisfaction (Treatment Satisfaction Questionnaire for Medications (TSQM)).
- **Pharmacist survey**: The pharmacist survey was administered to participating pharmacies to explore program impacts and perceptions. This survey included questions about patients' knowledge and understanding of medication use and medication adherence, pharmacist perspectives on the MedsCheck and Diabetes MedsCheck program implementation and possible impacts of the program on their job satisfaction, the scope of practice, communication, and their role within a primary healthcare team.

[2] Geldsetzer, P, Fawzi, W, 2017, "Quasi-experimental study designs series-paper 2: complementary approaches to advancing global health knowledge', *Journal of Clinical Epidemiology*, v.89, pp. 10-16.

- **Pharmacy profile survey**: The pharmacy profile survey was administered to pharmacy owners. It explored characteristics of pharmacies, including location, pharmacy type (independent, franchise, banner, friendly society group, buying group), dispensing type (forward, traditional or semi-forward pharmacy), programs offered, and size.
- **Case studies/pharmacist interviews**: Semi-structured interviews were conducted as part of 15 case study visits with pharmacists working in one of the 170 pharmacies participating in the 6CPA evaluation. The interviews explored patient experience and outcomes, the impact of program participation on the pharmacy workforce and owners, operational effectiveness, perceived financial viability and barriers to program implementation.
- **6CPA program data**: This refers to data collected as per Attachment A of the program rules (2018). The datasets available for individuals participating in the data collection were: MedsCheck/Diabetes MedsCheck claims data, MedsCheck/Diabetes MedsCheck registration data, and MedsCheck/Diabetes MedsCheck follow-up data. The evaluation outcomes assessed using this data include MedsIndex score at initial and follow up as a supplementary indicator of medication adherence (noting the ARMS scale is a more accurate indicator of medication adherence), medication profile, medication knowledge, recommended changes to medications/dose, and utilisation of health services due to medication problems. **The 6CPA claims data, but not registration or six months follow up data, distinguishes between MedsCheck and Diabetes MedsCheck services. Therefore, analysis of the MedsCheck programs using 6CPA program data includes both MedsCheck and Diabetes MedsCheck programs.** The list of data elements available in the 6CPA data is provided in Appendix B, Table B. 1.

1.4. Participation in the MedsCheck and Diabetes MedsCheck evaluation

1.4.1. Evaluation participants

There were 112 evaluation participants who completed an initial and/or follow-up Diabetes MedsCheck or MedsCheck survey. Of those, 88 participants (or 78.6%) received a MedsCheck service, and 24 participants (21.4%) received a Diabetes MedsCheck service. Only 69 participants (61.6%) completed both an initial survey and follow-up survey; 54 of those (78.3%) received a MedsCheck service, and 15 (21.7%) received a Diabetes MedsCheck service.

Table 1: Number of evaluation participants of the MedsCheck and Diabetes MedsCheck programs who completed the initial and follow-up survey

Program	Number of evaluation participants*	Surveys completed		
		Initial	Follow up	Matched initial/ follow-up
MedsCheck	88	72	70	54
Diabetes MedsCheck	24	22	17	15
MedsCheck and Diabetes MedsCheck	112	94	87	69

*The MedsCheck and Diabetes MedsCheck groups were mutually exclusive. All evaluation participants completed an initial and/or follow-up survey.
Source: HealthConsult Patient survey – MedsCheck and Diabetes MedsCheck programs

The findings from the HealthConsult patient surveys are presented herein however, due to the small sample size no conclusions have been drawn from the findings that can be applied to determine the effectiveness of the MedsCheck and Diabetes MedsCheck programs.

1.4.2. Pharmacies' geographical location and participation numbers

The evaluation collected pharmacists' opinions on the effectiveness of the in-scope 6CPA programs via an online survey. A total of 128 pharmacists provided input into this evaluation via the pharmacist survey. Table 2 summarises the geographical distribution of the pharmacists who responded to the survey.

Table 2: Profile of pharmacists and pharmacies involved in the pharmacist survey

State/Territory*	The geographical location of pharmacy (PhAria)			Number of pharmacists
	Major city	Regional	Remote	
ACT	1	0	0	1
NSW	30	16	0	46
QLD	8	7	1	16
SA	14	2	0	16
TAS	0	2	0	2
VIC	16	8	0	24
WA	19	4	0	23
Total	**88**	**39**	**1**	**128**

*There were no respondents from NT
Source: HealthConsult Pharmacist Survey

Of the 128 respondents:

- 120 pharmacists reported that they had conducted a MedsCheck service, and 105 of those completed the MedsCheck section of the survey
- 94 pharmacists reported that they had conducted a Diabetes MedsCheck service, and 83 of those completed the Diabetes MedsCheck section of the survey.

1.4.3. 6CPA program data

The analysis includes 6CPA program data for MedsCheck and Diabetes MedsCheck, where data availability covers the period between January 2019 and October 2019. Information at the registration and follow-up comprise patient's characteristics, patient's knowledge about their medicines, reason to participate in the program, health conditions, MedsIndex scores, action and recommendation taken by the pharmacist. There were 170,112 patients at the registration and 30,540 patients at follow-up. 12,861 patients were matched in the data ID based on encrypted DVA/Medicare number.

Table 3: Data availability for MedsCheck and Diabetes MedsCheck program data

6CPA program data at registration	6CPA program data at follow-up	Matched data
170,112	30,540	12,861

Source: 6CPA program data for MedsCheck and Diabetes MedsCheck

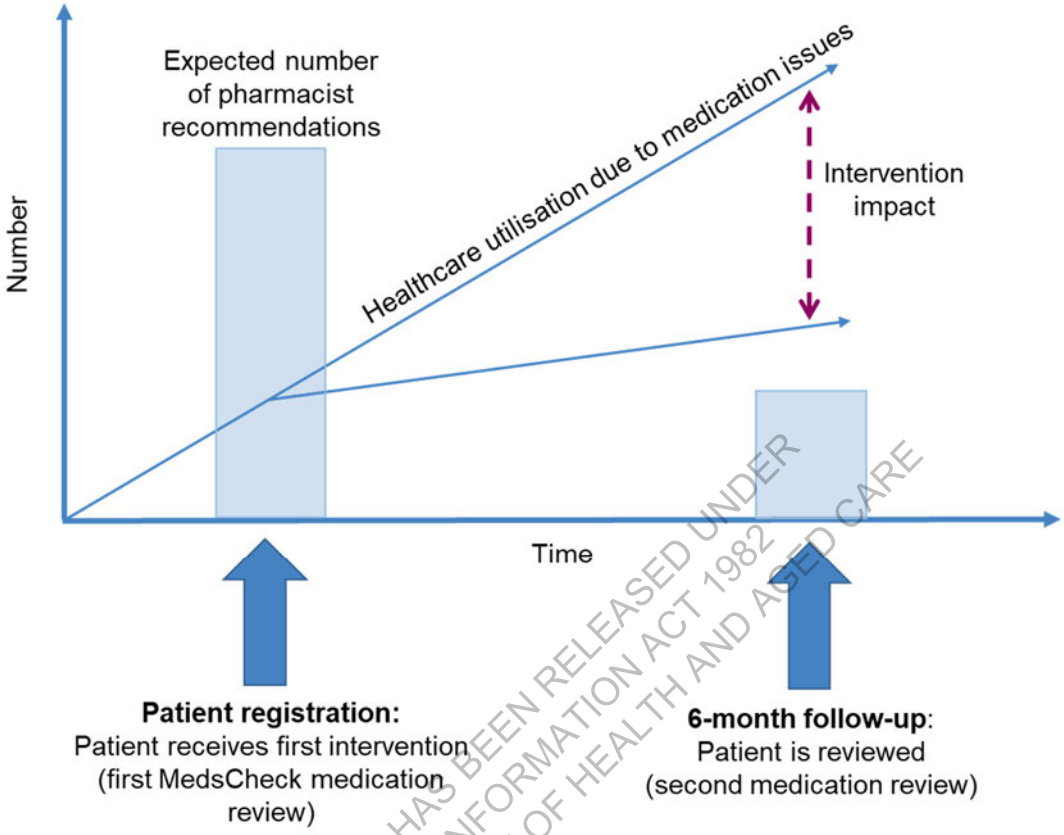
1.5. Evaluation design challenges and limitations

1.5.1. Pre/post evaluation design

Unlike the other 6CPA programs, analysis of the impact of the MedsCheck programs needs to consider that most of the intervention by the pharmacist, "the intervention" may occur at registration. Therefore, rather than looking at a change between registration and follow up, the evaluation will analyse the proportion of patients where the pharmacist "intervened" through recommendations related to a change in number and/or dose of medication or referred to a GP for a medication review and follow the trajectory of health service utilisation following the intervention. It is also expected that the number of recommendations by pharmacists will be higher at

registration given this is the first instance of pharmacist involvement. Follow-up data will be used for determining the impact of the pharmacist intervention on health service utilisation due to medication-related issues.

Figure 1: Expected impact of the MedsCheck and Diabetes MedsCheck programs



Source: HealthConsult (2022)

1.5.2. MedsIndex as an indicator of patient adherence for the MedsCheck programs

A patient's 'MedsIndex' score is a number out of 100 measuring adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist. Using the MedsIndex score to determine the impact of the MedsCheck is problematic due to the nature of the pharmacist intervention and the impact of a changed medication schedule on a patient's MedsIndex score. For example, where a pharmacist recommends a change in dose, the MedsIndex may decrease as an artefact of the formula used to calculate the score, given the score is calculated is based on the dispensing history of a patient, compared to the expected dispensing activity, rather than a current medical chart.

In order to address this, the evaluators attempted to stratify patients into groups based on whether their medication changed (number of medications and/or dose), and then review the change in MedsIndex for each of the groups. This approach was inconclusive due to poorly defined parameters related to dose and medication changes in the 6CPA program data (please refer to Section 4.1.3 for more information). Therefore **the evaluation team determined that MedsIndex is not suitable be used as an indicator of effectiveness for the MedsCheck and Diabetes MedsCheck programs.**

1.5.3. Patient recruitment and access to linked datasets

Recruitment from the approximately 180 participating pharmacies failed to reach the recommended patient participant targets. Regular contact with the recruited pharmacies provided insight into why the recruitment failed to reach the target including:

- the length of the survey to be completed (12 pages)
- the length of time needing to be spent on the surveys (approximately 40 minutes with the accompanying consent form, on top of the requirements associated with program participation)
- the lack of time on the part of the pharmacist to assist the participant and collate the responses
- a reported lack of suitable patients
- lack of remuneration for pharmacists.

Accessing routinely collected data, such as the 6CPA monitoring data, would provide additional insight into the impact of the programs by allowing a review of participant outcomes from a much larger sample of participants, pharmacies and pharmacists. Therefore, HealthConsult designed an updated evaluation approach that required the Department to provide the AIHW with the data of 6CPA participants so that the AIHW could link these data to participants' PBS data. Unfortunately, after attempting to carry out the updated methodology, it was discovered that the 6CPA program data did not contain the required identifiers for the AIHW to link it with PBS data. Therefore, the evaluation methodology was once again amended, and the evaluation approach was updated to remove the linked PBS data altogether.

Therefore, **the MedsCheck and Diabetes MedsCheck evaluation is limited to 6CPA program data (which includes the health outcomes data set) from the period between January 2019 and October 2019, and the primary evaluation data designed and collected by HealthConsult**.

The impact of the challenges in patient recruitment and the various approaches to accessing linked data has resulted in the project experiencing significant delays.

1.5.4. Limitations

A summary of the limitations is described below:

- a relatively short duration of the study (6 months), which is insufficient to collect information from trial participants.
- the original evaluation design did not include recruitment and selection of a control group. To attribute the changes in outcomes observed in 6CPA participants to the interventions provided as part of the program, there is a need to identify how changes in measured outcomes (such as quality of life) potentially resulting from program participation differ in the 6CPA cohort relative to matched control sample not participating in the 6CPA programs.
- healthcare utilisation is based on recollection and self-report, which is unreliable and potentially prone to error, especially in situations where the sample population is older or experiencing cognitive difficulties.
- across all 6CPA programs, only about 30% of those who participated in 6CPA program data collection had follow-up data collected when they reached the six-month mark, despite program rules requiring follow-up data be collected from all of the participants engaging in 6CPA data collection.
- lack of remuneration relative to the time taken (remuneration for 6CPA follow-up program data collection is set and provided by the 6CPA program administrator, not HealthConsult).

- lack of perceived clinical value in conducting a formal follow-up with associated data collection. Pharmacists felt there was no clinical value in conducting a follow-up and felt the clinical function of follow-up could be conducted using less formal, more frequent interactions shorter in duration.
- current measures collected as part of the 6CPA program monitoring do not comprehensively assess changes in medication use, utilisation of medical procedures or treatment compliance, due to the time it would take to comprehensively administer measures assessing those constructs.
- some pharmacists stated they were not encouraged to engage in follow-ups by branch or banner management due to the time required.

1.6. Structure of this document

This report presents the initial findings from the MedsCheck and Diabetes MedsCheck evaluation and is structured as follows:

- **Chapter 2:** an overview of the MedsCheck and Diabetes MedsCheck program and target audience
- **Chapter 3:** effectiveness of MedsCheck and Diabetes MedsCheck in improving patients' understanding and use of their medications
- **Chapter 4:** effectiveness of MedsCheck and Diabetes MedsCheck in improving the health outcomes of patients
- **Chapter 5:** cost-effectiveness of MedsCheck and Diabetes MedsCheck
- **Chapter 6:** barriers and enablers to providing an effective patient-centred program
- **Chapter 7:** conclusion and recommendations.

The evaluation framework is outlined in Appendix A: Evaluation Framework. The details of the methodology used for this report are outlined in Appendix B: Evaluation Methodology

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2. Overview of the MedsCheck and Diabetes MedsCheck Program

2.1. Overview of Sixth Community Pharmacy Agreement

Community Pharmacy Agreements (CPA) was introduced in 1991 between the Commonwealth and the Pharmacy Guild of Australia (PGA) to support the provision of PBS medications to Australians. From 2017/18 onwards, $825 million was provided over three years to community pharmacies to support and improve access to medicines, under the **Improving Access to Medicines – Support for Community Pharmacies Budget Measure (the Measure)**.

The Measure included $600 million through the 6th Community Pharmacy Agreement (6CPA) to continue and expand existing community pharmacy programs. These included two new medication adherence programs: SS and DAA, and two expanded **medication management programs MedsCheck and Diabetes MedsCheck**.

2.2. About the MedsCheck and Diabetes MedsCheck Program

The 6CPA between the Commonwealth and the Pharmacy Guild of Australia includes provision for a range of medication management programmes including Diabetes MedsCheck. Funding of $90 million was made available from 1st July 2017 to support both MedsCheck and Diabetes MedsCheck programs.

The 6CPA MedsCheck and Diabetes MedsCheck Program Rules[3] (July 2018) describe a Diabetes MedsCheck to be an in-pharmacy, patient-centred service that includes a review of a patient's medicines, focusing on education and self-management. A Diabetes MedsCheck service aims to:

- identify problems that the patient may be experiencing with their medicines
- help the patient learn more about their medicines including how medicines affect medical conditions
- improve the effective use of medicines by patients
- educate patients about how to best use and store their medicines.

The pharmacist providing a Diabetes MedsCheck service may also identify and refer patients to other appropriate clinical services such as the Dose Administration Aid (DAA) program, staged supply or Home Medicines Review (HMR).

From the inception of the program in July 2017 until November 2018, 4,221 pharmacies submitted one or more MedsCheck/Diabetes MedsCheck claims for about 516,900 individuals (this value is likely to be conservative due to a lag in the processing of claims data)[4].

The Pharmaceutical Society of Australia's (PSA) Guidelines for pharmacists describe MedsCheck and Diabetes MedsCheck services[5]. Specifically, they outline the infrastructure, service delivery, and quality assurance and evaluation along with templates and information sheets. Pharmacists should establish their pharmacy policies and procedures to govern the provision of MedsCheck and Diabetes MedsCheck services, drawing on legislative requirements and relevant professional practice standards and guidelines as outlined above. Table 4 outlines the program rules for MedsCheck and Diabetes MedsCheck, including patient eligibility.

[3] Department of Health, PGA (2018) *6CPA MedsCheck and Diabetes MedsCheck Program Rules*. Available at http://6cpa.com.au/medication-management-programs/medscheck-diabetes-medscheck/
[4] 6CPA monitoring data (2019)
[5] PSA (2017) *Guidelines for pharmacists providing MedsCheck and Diabetes MedsCheck services*. Available at http://www.psa.org.au/wp-content/uploads/5366-PSA-MedsCheck-guidelines-FINAL_WEB1.pdf

Table 4: MedsCheck and Diabetes MedsCheck program rules (effective July 2018)

Program Parameters	MedsCheck Program	Diabetes MedsCheck Program
Patient eligibility criteria	• The patient: – is a Medicare and/or DVA cardholder or is a person elig ble for a Medicare card; – has not received a MedsCheck, Diabetes MedsCheck, HMR or RMMR in the previous 12 months; – is living at home in a community setting; **AND** – is taking five or more prescription medicines; **OR** – has had a recent significant medical event **OR** – is taking a medication associated with a high risk of adverse events.	• The patient: – is a Medicare and/or DVA cardholder or is a person eligible for a Medicare card – has not received a MedsCheck, Diabetes MedsCheck, HMR or RMMR in the previous 12 months – is living at home in a community setting – is unable to gain timely access to existing diabetes education /health services in their community **AND** – has recently been diagnosed with type 2 diabetes (in the last 12 months) **OR** – has less than ideally controlled type 2 diabetes.
Referral source	• Community Pharmacy • Patient/carer self-identifies	• Community Pharmacy • Patient/carer self-identifies
Payment	• The following fees are payable for the provision of the MedsCheck Service: – $65.61 for Initial MedsCheck Service – $31.90 for the collection of data at Patient Registration (from 1st February 2018) – $31.90 for the collection of data for a Follow-up Service (from 1st February 2018).	• The following fees are payable for the provision of the Diabetes MedsCheck Service: – $97.05 for Initial Diabetes MedsCheck Service (May and June 2018) – $31.90 for the collection of data a Patient Registration (from 1st February 2018) – $31.90 for the collection of data for a Follow-up Service (from 1st February 2018).
Follow-up/review process	• MedsCheck Service Providers will be required to collect and provide follow-up data at six-monthly intervals	• Diabetes MedsCheck Service Providers will be required to collect and provide follow-up data at six-monthly intervals
Cap on the number of patients per pharmacy	• 20 MedsCheck Services (combined with Diabetes MedsCheck) per calendar month per Service Provider	• 20 Diabetes MedsCheck (combined with MedsCheck) per calendar month per Service Provider

2.3. MedsCheck and Diabetes MedsCheck claim process

Pharmacies delivering the service can claim $66.53 and $99.79 per patient for the provision of a MedsCheck and Diabetes MedsCheck service, respectively, that meet the eligibility criteria.[6] From 1st February 2018, an additional $31.90 for both the collection of patient data at the time of service (registration) and the mandatory six-month follow-up can also be claimed as per the Diabetes MedsCheck Program Rules (2018).

2.4. MedsCheck and Diabetes MedsCheck patient profile

The information from 6CPA program data provides patients' characteristics when they registered in MedsCheck and Diabetes MedsCheck program. As mentioned in the previous section 1.4.3, there were 170,112, patients who participate in the program[7] between January and October 2019, where the proportion by gender was 48% male (n=81,043) and 52% female (n=88,663). By age group, 71% of patient were 60 years old or above. Table 5 present details composition of MedsCheck and Diabetes MedsCheck participants by gender and age groups.

Table 5: MedsCheck and Diabetes MedsCheck patients by gender and age group at registration

Age group	Male	Female	Total
<40	6,895 (9%)	9,936 (11%)	16,831 (10%)

[6] Pharmacy Programs Administrator (PPA). 2018. Staged Supply, accessed 11 September 2020: https://www.ppaonline.com.au/programs/medication-management-programs/medscheck-and-diabetes-medscheck

[7] The number refers to 6CPA program data for period 4 and period 5 or between January 2019 to October 2019.

Age group	Male	Female	Total
40-49	5,691 (7%)	6,348 (7%)	12,039 (7%)
50-59	10,242 (13%)	10,343 (12%)	20,585 (12%)
60-69	16,886 (21%)	16,398 (18%)	33,284 (20%)
70-79	23,863 (29%)	24,203 (27%)	48,066 (28%)
80 and over	17,466 (22%)	21,435 (24%)	38,901 (23%)
No data	0 (0%)	0 (0%)	406 (0%)
Total	**81,043 (100%)**	**88,663 (100%)**	**170,112 (100%)**

Source: 6CPA program data, HealthConsult analysis

In terms of key reasons to participate in MedsCheck or Diabetes MedsCheck program, only 31% (n=52,257) of patients at registration had data available in this field. As presented in Table 6, the main reason for participating in the program was to identify problems the patient may be experiencing (32%), followed by a recent significant medical event (21%), to help the patient learn more about their medicines (19%), to improve the effective use of medicines by patient (15%), to educate the patient about how to best use and store their medicines (8%), and due to patient taking medications with a high risk of adverse event (4%).

Table 6: Reason in participating MedsCheck and Diabetes MedsCheck

Reasons	No. of patient	%
To identify problems the patient may be experiencing	16,828	32%
Recent significant medical event	11,076	21%
To help the patient learn more about their medicines	9,995	19%
To improve the effective use of medicines by patient	7,637	15%
To educate the patient about how to best use and store their medicines	4,421	8%
Patient is taking medications with a high risk of adverse event	2,300	4%
Total (n)	**52,257**	**100%**

Source: 6CPA program data, HealthConsult analysis

Mental health issues, diabetes, and pain were the main health conditions, for both male and female patients, when they registered for the program. Other health conditions included alimentary tract disorders, respiratory disorders, arthritis, osteoporosis, dementia, and Parkinson's. Table 7 and Table 8 summarise the health conditions of MedsCheck and Diabetes MedsCheck patients by gender and age group.

Table 7: Health condition by age group (female)

Female by age group	Pain	Mental health	Diabetes	Alimentary tract	Respiratory disorder	Arthritis	Osteoporosis	Dementia and Parkinson
<40	2,190	4,831	1,268	996	1,122	219	72	38
40-49	2,233	2,940	1,554	908	881	367	107	26
50-59	3,812	4,260	3,501	2,061	1,782	938	304	85
60-99	5,669	5,327	6,250	4,210	3,458	1,960	972	191
70-79	7,956	6,298	7,711	7,347	5,256	3,482	2,969	515
80 and over	7,111	4,567	4,907	6,881	4,155	3,251	4,349	814
Total	**28,971**	**28,223**	**25,191**	**22,403**	**16,654**	**10,217**	**8,773**	**1,669**

Source: 6CPA program data, HealthConsult analysis
Notes: One patient may have more than one health condition (comorbidities).

Table 8: Health condition by age group (male)

Male by age group	Pain	Mental health	Diabetes	Alimentary tract	Respiratory disorder	Arthritis	Osteoporosis	Dementia and Parkinson
<40	1,423	3,319	897	660	804	123	49	36
40-49	1,699	2,289	1,702	761	663	220	58	21
50-59	3,028	3,104	4,278	1,720	1,245	629	170	77
60-99	4,879	3,739	7,660	3,468	2,501	1,484	408	264
70-79	6,483	4,402	10,108	6,058	4,403	2,624	1,087	710
80 and over	4,755	2,672	5,476	5,150	3,444	2,092	1,441	797
Total	**22,267**	**19,525**	**30,121**	**17,817**	**13,060**	**7,172**	**3,213**	**1,905**

Source: 6CPA program data, HealthConsult analysis
Notes: One patient may have more than one health condition (comorbidities). Program data only covers period 4 and period 5.

3. Understanding and Use of Medications

This Chapter presents findings related to the evaluation question:

"To what extent is the MedsCheck and Diabetes MedsCheck program effective in improving patients' understanding and use of their medications?"

Patient understanding and use of medications were measured using patient surveys as well as pharmacist surveys and interviews. In addition, 6CPA program data was used to determine if there was a change in patient knowledge about medication adherence and understanding of their medication regime. Please note due to the small sample size of patient surveys, conclusions on program effectiveness cannot be drawn from the results of the patient surveys.

Key findings

- The evaluation found there was no change in medication adherence for patients participating in the MedsCheck and Diabetes MedsCheck programs.
- Participation in MedsCheck and Diabetes MedsCheck had a positive effect on patients' understanding of the use of medications:
  - 62% of patients reported an increased knowledge about the importance of their medication regime during the program.
  - 56% of patients reported increased knowledge about their medicine adherence both at registration and follow up.
- Most pharmacists indicated the MedsCheck and Diabetes MedsCheck services increased patients' understanding of their medications:
  - 96.2% of pharmacists reported that the MedsCheck service had at least a moderate impact on improving patients' understanding of their medications
  - 97.6% of pharmacists indicated the Diabetes MedsCheck service had at least a moderate impact on improving patients' understanding of their medications.
- Most pharmacists indicated the MedsCheck and Diabetes MedsCheck services improved patients' medication adherence.
  - 93.3% of pharmacists reported that the MedsCheck service had at least moderate impact on medication adherence
  - 92.8% of pharmacists indicated the Diabetes MedsCheck service had at least a moderate impact on medication adherence.
- For the MedsCheck service, 81% of patients rated their plan adherence as 8 out of 10 or higher.

3.1. Improvements in Medication adherence

Medication adherence is used as an indicator of patients' understanding and knowledge regarding the use of their medications. The 6CPA program data includes a patient's MedsIndex score at registration and follow up, which monitors a patient's adherence to the expected dispensing history. In addition, the patient survey provided a measure of medication adherence at the registration and follow-up, using the Adherence to Refills and Medications (ARMS) scale. Analysis of these two measures of medication adherence is provided below.

3.1.1. MedsIndex

The MedsIndex score collected at patient registration and follow-up can be considered as another measure of medication adherence, however, due to the nature of the pharmacist intervention, **MedsIndex is unsuitable as an indicator of effectiveness for the MedsCheck programs (refer 1.5.2).** The key limitation of MedsIndex score relies on identifying dispensing records that require a cross-check at patient level to measure the level of adherence (Stewart et al. 2014)[8].

A patient's 'MedsIndex' score is a number out of 100 measuring adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist. The number is formulated via the MedsIndex software, which provides a prompt for pharmacists to invite patients with a qualifying MedsIndex score to participate in a medication adherence program. The Pharmaceutical Society of Australia classified the MedsIndex score into four categories, which include:

- Lower than 70: Action required to improve compliance
- Lower than 80: Compliance can be improved
- Lower than 90: Compliance could be improved
- Greater than or equal to 90: Optimal

3.1.2. The Adherence to Refills and Medications Scale (ARMS)

The ARMS scale was included in the patient survey and is designed to assess adherence with the filling/ refilling of prescriptions and adherence with taking medications as prescribed. The ARMS-12[9] Total score is based on 12 questions and has a possible range of 12 to 48, where a lower score indicates better adherence. The ARMS can be split into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16).

Between initial and follow-up, there was no significant difference in ARMS score in both MedsCheck (Table 9) and Diabetes MedsCheck (Table 10) participants (n=54 and n=15 respectively), indicating the MedsCheck programs did not change medication adherence within the patient survey participants.

Table 9: ARMS score at initial and follow-up - MedsCheck

Measure	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value
Adherence to Refills and Medications Scale (ARMS-12					
Total score	54	15.31	15.19	0.44	0.646
		(3.10)	(2.95)	(4.23)	
Adherence to taking medication	54	9.60	9.48	0.24	0.535
		(2.10)	(2.09)	(2.95)	
Adherence to refilling medication on schedule	54	5.67	5.70	0.04	0.856
		1.54	1.51	1.49	

[8] Stewart, K, McNamara, K,P, George, J, "Challenges in measuring medication adherence: experience from a controlled trial", *International Journal of Clinical Pharmacy*, vol. 36, pp. 15-19.

[9] ARMS-12 has a possible range of 12 to 48, where a lower score indicates better adherence. Evaluation participants therefore had good overall adherence before and after participation in the StagedSupply service. Source: Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease. Value in Health. 2009 Jan 1;12(1):118-23.

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=54

Table 10: ARMS score at initial and follow-up - Diabetes MedsCheck

Measure	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value
Adherence to Refills and Medications Scale (ARMS-12					
Total score	15	14.93	15.33	0.40	0.663
		(2.19)	(3.52)	(3.48)	
Adherence to taking medication	15	9.40	9.27	-0.13	0.862
		(1.80)	(2.34)	(2.92)	
Adherence to refilling medication on schedule	15	5.53	6.07	0.53	0.334
		(1.46)	(1.53)	(2.07)	

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=15

3.2. Impact of MedsCheck and Diabetes MedsCheck on patients' understanding and use of medication

Both the patient survey and 6CPA program data provide measures regarding the impact of MedsCheck and Diabetes MedsCheck on patients' understanding and use of medication.

3.2.1. Self-reported patient understanding of medications

The patient survey asked participants to rate their current knowledge of their medications, how they should store their medications, and the importance of medication dosage and schedule, on a scale of 1 (very low) to 10 (very high). Between initial and follow-up, there were no significant differences in self-reported knowledge of medicines between initial and follow-up in both MedsCheck and Diabetes MedsCheck.

MedsCheck

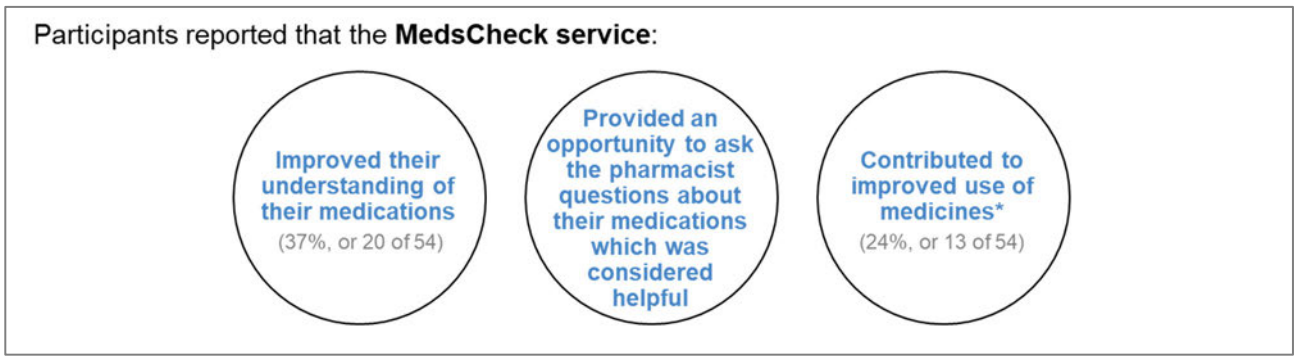
Between initial and follow-up surveys, participants rated their current **knowledge of their medicines** to be **higher at follow-up** compared to initial, with the remainder either having no change or deterioration (Figure 2).

Figure 2: Participants self-reported knowledge of their medicines (MedsCheck)

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=15

Fifty-four of the 88 MedsCheck participants[10] (61%) responded to an open-ended question in the follow-up survey on the features they liked the most about the MedsCheck service (Figure 3).

Figure 3: Participants reporting on features they liked the most about the MedsCheck service



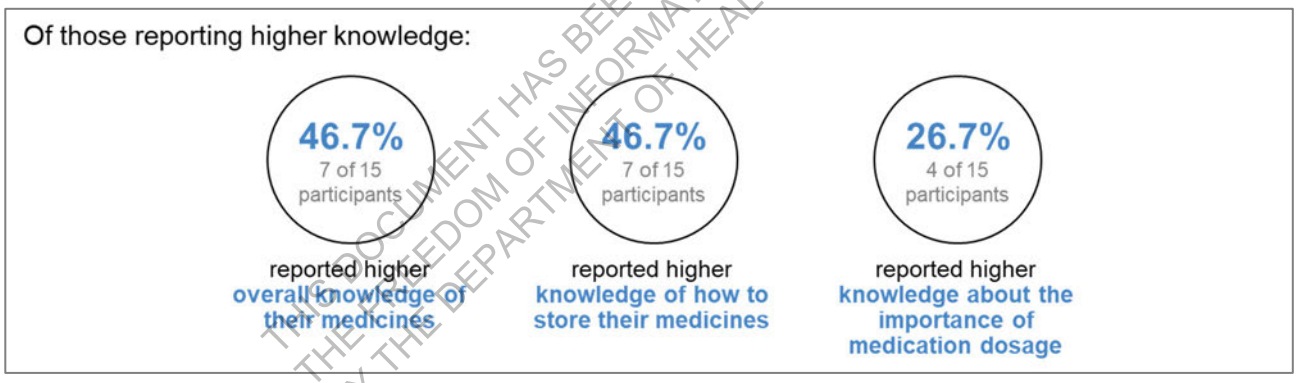
Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=15

* Mechanisms for improvement included education on when and how to take each medication to optimise its effect and medication reviews to identify more effective treatment options.

Diabetes MedsCheck

Participants were asked to rate their current knowledge of their medications, how they should store their medications, and the importance of medication dosage and schedule, on a scale of 1 (very low) to 10 (very high). Between initial and follow-up surveys, participants rated the current **knowledge of their medicines** to be **higher at follow-up** compared to initial, with the remainder either having no change or deterioration (Figure 4).

Figure 4: Participants self-reported knowledge of their medicines (Diabetes MedsCheck)



Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=15

Eight of the 24 participants[11] who responded to the follow-up Diabetes MedsCheck survey responded to an open-ended question about the features of the program that they liked the most. Five of the eight participants reported that it increased their awareness and understanding of Diabetes, and that it was a valuable, easy-to-access service:

"It made me feel aware of issues or problems that may arise due to my condition".

[10] 88 participants in total completed the follow-up patient survey (Only 53 also completed an initial survey).
[11] There were 24 participants in total that completed a follow-up survey (Only 15 also completed an initial survey).

3.2.2. Knowledge about the importance of medicine regime and adherence

The 6CPA program monitoring collects information, through the pharmacist, on the patient's knowledge about the importance of their medication regime and medicine adherence. Two questions were asked by the pharmacist;

Question 1: "Does the patient increase their knowledge about Importance of their medicine regime?"

Question 2: "Does the patient increase their knowledge about Importance of their medicine adherence?"

Based on matched participants (n=12,861), 62% of patients increased **knowledge about their medicine regime** at registration and/or follow up, but there were 38% who responded that their knowledge did not change during the program (Table 11).

Table 11: Knowledge MedsCheck patients about the importance of their medicine regime

Response to Question 1 (registration - follow up)	Description	n (%)
Yes-Yes	Full improvement (Increase knowledge at registration and follow-up)	4,237 (33%)
No-Yes	Partial improvement (No increase knowledge at registration, but increase at follow-up)	1,673 (13%)
Yes-No	Partial improvement (Increase knowledge at registration, but no further increase at follow-up)	2,122 (16%)
No-No	No change (No change in knowledge at registration and follow-up)	4,829 (38%)
	Improved knowledge at registration or follow up	**8,032 (62%)**

Source: 6CPA program data, HealthConsult analysis, n=12,861.

In terms of patients' **knowledge about adherence**, 56% of patients increased their knowledge at registration and/or follow-up, but around 44% patients responded that there was no change in knowledge of medication adherence during the program (Table 12).

Table 12: Knowledge MedsCheck patients about the importance of their medicine adherence

Response to Question 2 (registration - follow up)	Description	n (%)
Yes-Yes	Full improvement (Increase knowledge at registration and follow-up	3,674 (29%)
No-Yes	Partial improvement (No increase knowledge at registration, but increase at follow-up)	1,880 (15%)
Yes-No	Partial improvement (Increase knowledge at registration, but no increase and follow-up)	1,637 (13%)
No-No	No change (No change in knowledge at registration and follow-up)	5,679 (44%)
	Improved knowledge at registration or follow up	**7,191 (56%)**

Source: 6CPA program data, HealthConsult analysis, n=12,861.

3.3. Pharmacists' view on the impact of MedsCheck and Diabetes MedsCheck on patients' understanding and use of medicines

The pharmacist survey was administered to participating pharmacies at follow-up to explore program impacts and perceptions. The Pharmacist Survey included questions that captured

pharmacist views on the extent to which the program participation impacts patient understanding, adherence, and overall health.

3.3.1. MedsCheck

A total of 105 of the 128 survey respondents responded to an open-answer question on the positive aspects of the MedsCheck program. The most frequently reported (n=19) aspect of the MedsCheck program that was reported as working well related to improvement in patient's understanding of their medications. This was attributed to providing patients with further education and the opportunity to have in-depth discussions on indications, side effects, interactions, and the appropriate use of medications:

"We get patients to better understand the medications they are taking, increase their adherence and compliance, decrease possible side effects and medication interference".

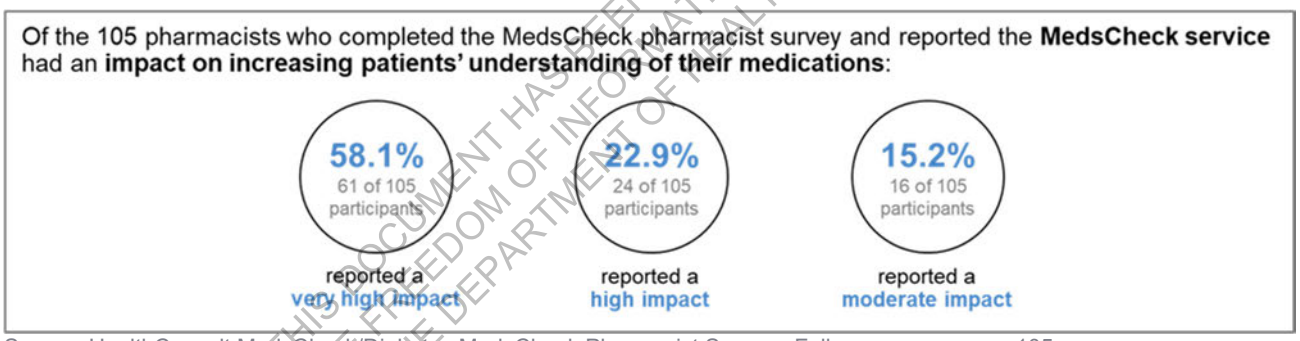
Pharmacists also reported that the MedsCheck service assisted in:

- identifying issues with patients' medication compliance, inappropriate use of medications and overall poor medication management
- provide appropriate education and referrals to other health care services (if required):

"It is a great way to ensure patients are taking their medication correctly and refreshing them with why. On many occasions, we have educated patients on how to correctly use their devices and this improves patient outcomes".

The majority of pharmacists (96.2%) reported that the MedsCheck service had at least a moderate impact on increasing **patients' understanding of their medications** (Figure 5).

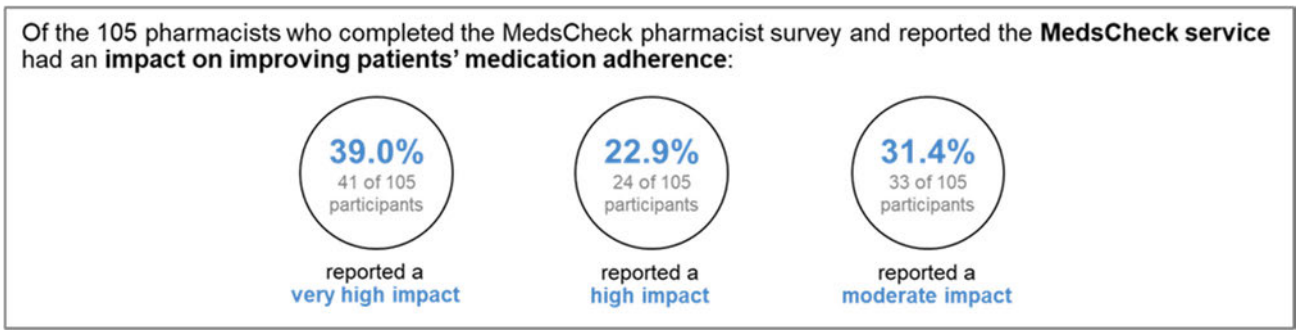
Figure 5: MedsCheck impact on patients' understanding of their medications



Source: HealthConsult MedsCheck/Diabetes MedsCheck Pharmacist Survey –Follow-up surveys, n=105

Most pharmacists (93.3%) reported that the MedsCheck service had at least a *moderate impact* on **improving patients' medication adherence** (Figure 6).

Figure 6: MedsCheck impact on improving patients' medication adherence



Source: HealthConsult MedsCheck/Diabetes MedsCheck Pharmacist Survey –Follow-up surveys, n=105

During case study interviews pharmacists indicated that the MedsCheck service improves patients' use of prescription and non-prescription medicines. The service allowed pharmacists the time to build rapport with patients and build individuals' confidence by educating them on the proper use of their medications (including side effects, interactions with other medicines and indicators for use):

"[patients are] more informed about their medications and therefore are more confident taking their medication and they are taking it as indicated more often"

According to the interviewed pharmacists, patients' effective use of medicines was also supported by pharmacist involvement with:

- reviewing over-the-counter and complementary medicines within the patient's medication profile
- providing non-pharmacological options (for example, exercise and dietary modifications to lose weight) to compliment medications
- deprescribing medications that are ineffective and/or not indicated
- monitoring patients for changes in their disease state
- identifying adverse effects.

3.3.2. Diabetes MedsCheck

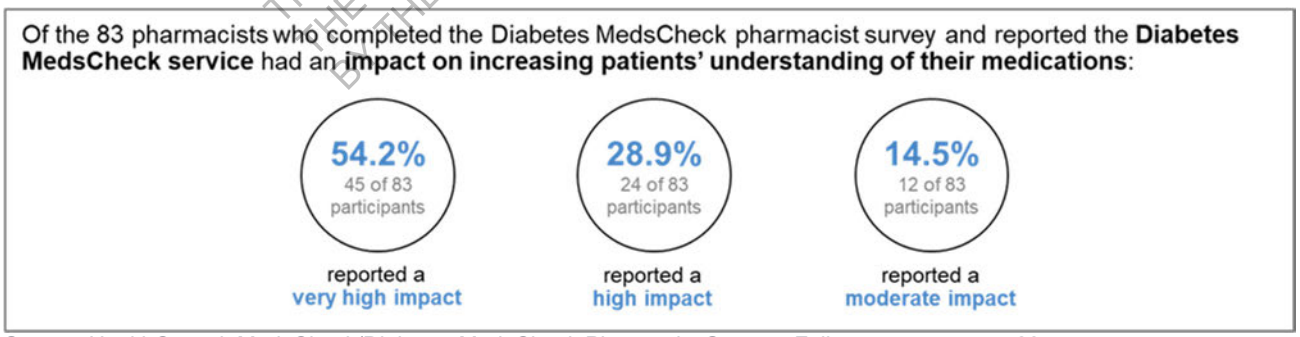
The most frequently reported (n=26) positive aspect of the Diabetes MedsCheck program related to improvements in patients' understanding of medicines and diabetes disease management. Pharmacists reported that this program helped patients "understand diabetes management", "improved their use of a blood glucose monitor" and clarified the importance of their medicines:

"Diabetes management can be quite complicated to manage with many health consequences. Patients gain a better understanding of the roles of each of their medicines in controlling this disease and enhance their adherence"

Through this service pharmacists were able to encourage better blood glucose monitoring, provide education on diet and exercise and *"double check what the patient knows regarding their medications"*.

Most pharmacists (97.6%) reported that the Diabetes MedsCheck service had at least a moderate impact on increasing patients' understanding of their medications (Figure 7).

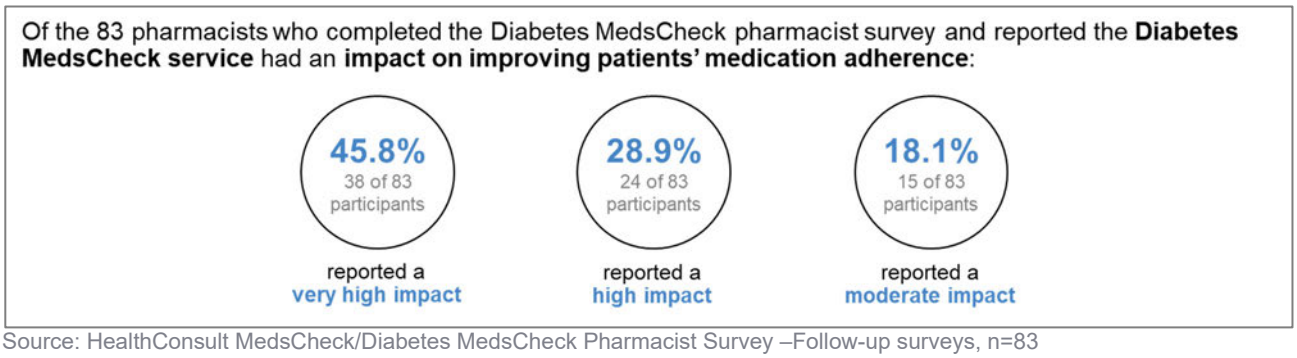
Figure 7: Diabetes MedsCheck impact on increasing patients' understanding of their medications



Source: HealthConsult MedsCheck/Diabetes MedsCheck Pharmacist Survey –Follow-up surveys, n=83

Most pharmacists (92.8%) reported that the Diabetes MedsCheck service had at least a *moderate impact* on **improving patients' medication adherence** (Figure 8).

Figure 8: Diabetes MedsCheck service impact on improving patients' medication adherence



Source: HealthConsult MedsCheck/Diabetes MedsCheck Pharmacist Survey –Follow-up surveys, n=83

Two of the pharmacists interviewed during the case studies stated that the Diabetes MedsCheck program optimises a patient's effective use of medicines (the remaining 13 pharmacists did not provide commentary). Noting that the service provides an opportunity to determine the patient's knowledge of their medication, subsequent use and rectification of any identified issues, which often leads to improved medication adherence and effective use of prescribed medication.

The common issues identified by pharmacists during interviews related to patients' use of medications included:

- taking the medication without food accompaniment
- inappropriate complementary medications with contraindications
- adverse effects
- inappropriate prescription by GPs.

One pharmacist reported the inappropriate prescription of medication related to diabetes by GPs frequently related to the use of slow-release versus fast-release insulin medications. This was able to be identified during a Diabetes MedsCheck service and advice provided to prescribing GPs on the potential misuse of medications.

3.4. Patient adherence to the action plan

In the follow-up patient survey, patients were asked to rate, on a scale of 1 to 10, (1 is low adherence and 10 is high adherence) how well they followed the actions included in their MedsCheck/Diabetes MedsCheck action plan at 6-month follow-up Of the 63 responses for the MedsCheck service, 81% rated their plan adherence as 8 or higher, whereas for the Diabetes MedsCheck service 59% rated their plan adherence as 8 or higher.

4. Patient Health Outcomes

This Chapter presents findings related to the evaluation question:

"Does the program improve the health outcomes of patients?"

The health outcomes of patients were measured using the 6CPA program data as well as patient surveys, pharmacist surveys and interviews. Please note due to the small sample size of patient surveys, conclusions on program effectiveness cannot be drawn from the results of the patient surveys.

Key findings

- All forms of health service utilisation analysed in the Patient Survey (GP visits, hospitalisations and ED presentations) were significantly less or unchanged, suggesting that the program participation may have reduced GP visits, hospitalisation and ED presentations.
- There were no significant differences in the number of medication-related side-effects reported by participants between the initial and follow-up surveys.
- There were no significant, nor clinically relevant, changes in quality of life measures between initial and follow up surveys (both programs), or in distress measures for people participating in the Diabetes MedsCheck program.
- Most pharmacists (94.3%) reported that the MedsCheck programs had at least a *moderate impact* on **improving the health of patients.**
- Specific to the Diabetes MedsCheck, pharmacists noted that the patients were more likely to consistently monitor their blood glucose reducing the number of hypoglycaemia and hyperglycaemia events experienced whilst participating in the program.

4.1. Medication profile changes as a result of the intervention

The evaluation used 6CPA program data to understand whether participation in the MedsCheck/Diabetes MedsCheck program impacted patients' utilisation of prescription and non-prescription medications. The 6CPA program data captures the number and type of medications (prescription or non-prescription) and when a pharmacist makes a recommendation to increase or decrease the dose and/or the number of medicines.

4.1.1. Actions and recommendations taken by the pharmacist

Most pharmacists developed and provided a MedsCheck plan to MedsCheck/Diabetes MedsCheck patients when they registered for the program (84%, n=142,451). Other actions taken by the pharmacist were the providing the plan to the patient's GP, and referral/consultation with the GP about the patient. Table 13 presents the list of actions taken by the pharmacist at registration.

Table 13: Action by the pharmacist to patient at registration

Action taken by the pharmacist	Total patient	%
MedsCheck - plan/record developed and provided to GP	4,937	3%
MedsCheck - plan/record developed and provided to patient	142,451	84%
MedsCheck - GP verbally consulted about the patient	4,716	3%

Action taken by the pharmacist	Total patient	%
MedsCheck - Referred to GP significant issues identified	3,957	2%
Other	14,051	8%
Total	**170,112**	**100%**

Source: 6CPA program registration data Jan – Oct 2019 (n=170,112). HealthConsult analysis

4.1.2. Utilisation of prescription and non-prescription medications

The 6CPA monitoring program data provided information about the number of medications that MedsCheck/Diabetes MedsCheck patients is using. These include prescription and non-prescription medications. There was a different intake between number of prescription and non-prescription for patients at registration (n=170,112), which include:

- The average number of prescriptions for medication was 6.3 (3.8).
- The average number of non-prescriptions for medication was 0.6 (2.0).

Table 14 summarises the number of medications that patients are using, where around 55% of patients utilised 5 to 8 prescription medications and most of patients (94%) only utilise 0 to 2 non-prescription medications (*note that no data availability in the follow up to measure changes of utilisation).*

Table 14: Number of medicine that patient is using at registration

No. of medicines that patient is using	Prescription	%	Non-prescription	%
0-2	22,197	13%	159,441	94%
3-4	20,416	12%	8,588	5%
5-6	60,693	36%	1,568	1%
7-8	32,950	19%	301	0%
8-10	17,540	10%	82	0%
>10	16,316	10%	132	0%
Total	**170,112**	**100%**	**170,112**	**100%**

Source: 6CPA program registration data Jan – Oct 2019 (n=170,112). HealthConsult analysis

4.1.3. Recommended to change the dose and or number of medicines

Following data collection of MedsIndex scores at the registration and follow up, the pharmacist provided recommendations of increase, decrease or no change to patient's dose and/or medicines. The outcome options that can be entered into the 6CPA monitoring data following a MedsCheck/Diabetes MedsCheck intervention are summarised in Table 15. As described in the table, the pharmacist has the option to enter 'yes' or 'no' following the provision of the MedsCheck/Diabetes MedsCheck service to describe the outcome of the intervention. This data is collected at the registration and follow-up. It provides an opportunity to understand the extent of the pharmacist's impact on a patient's medication profile following a MedsCheck/Diabetes MedsCheck service. However, **the information is unclear as it does not specify whether the recommendation to increase or decrease medicines is for dose only, for medicine only, or for both dose and medicine**.

Table 15: Pharmacist recommendation options following the intervention

Option	Recommendation of no change in medicines	Recommendation to increase the dose or number of medicines	Recommendation to decrease the dose or number of medicines	What this means for the patient
1	*no*	*no*	*no*	*not possible, data entry error*
2	no	no	yes	'decrease in meds' or 'decrease in dose' or 'decrease in meds and dose'
3	no	yes	no	'increase in meds' or 'increase in dose' or 'increase in meds and dose'
4	no	yes	yes	increase and/or decrease in the number of meds and/or dose
5	yes	no	no	**no intervention**
6	yes	no	yes	No change in meds but decrease in dose
7	yes	yes	no	No change in meds but increase in dose
8	yes	yes	yes	No change in meds but increase and decrease in dose

Source: 6CPA program monitoring data.

Based on the outcome options described patients with option 5 are deemed to have not received an intervention following the service. Other options, except option 1, refer to an increase or decrease (and/or a combination) in medicines and/or dose. Based on matched patients' (n=12,861), only 1,016 patients (8%) at the registration received an intervention where the pharmacist recommended a change in medicines, and 735 patients (6%) at follow up (Table 16). It is also worth noting the high rate of data errors recorded (33% and 27%) indicating a potential issue with the options provided for outcomes reporting.

Table 16: Intervention status between registration and follow up

Intervention status	Registration Total clients at registration n=170,112	Follow up Total clients at follow-up n =30,549
Receive intervention (Option 2,3,4,6,7,8)	13,615 (8%)	1,961 (6%)
No intervention (Option 5)	98,078 (58%)	20,101 (66%)
Data error (Option 1)	*58,419 (34%)*	*8,487 (28%)*
Total	**170,112 (100%)**	**30,549 (100%)**

Source: 6CPA program monitoring data.

4.2. Health service utilisation due to medication misuse

To understand whether participation in the MedsCheck/Diabetes MedsCheck program impacted patients requiring an ED presentation, hospital admissions or GP visits related to misuse of medication, self-reported recount was used in the patient surveys at initial and follow-up. The patient survey collected information on the number of GP visits, hospital admissions and ED presentations, and specialist attendance in the preceding six months.

4.2.1. Decrease in hospital presentations/admissions and/or GP visits related to misuse of medication (self-reported)

The analysis from the data collected at baseline and follow-up for MedsCheck/Diabetes MedsCheck patients suggests that (Table 17):

- 42% (n=29) patients reported reduced GP visits, and 14% (n=10) patients reported visiting their GPs more often.
- the frequency of hospitalisation was very low for MedsCheck/Diabetes MedsCheck patients, and during the assessment period, three patients increased (4%) and only two patients (3%) decreased hospitalisations.
- for ED presentations, four patients (6%) reported an increased number of presentations, and three patients (4%) reported a decreased number of presentations.

There were no statistically significant differences.

Table 17: Changes in the self-reported GP visits, hospital admissions and ED presentations

Service type	Decreased service utilisation	No change	Increased service utilisation
GP visits	29 (42%)	31 (45%)	9 (13%)
Hospitalisations	2 (3%)	64 (93%)	3 (4%)
ED presentations	3 (4%)	62 (90%)	3 (6%)

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=69

Furthermore, based on the assumption that maintaining current health service use, or decreasing it was a marker of program success, statistical tests (t-test two samples for means) were conducted where health service utilisation due to problems related to medicines was categorised using a binary approach between initial and 6 months follow-up. The value of "1" represents fewer or equal presentations at specified health services compared to the initial, and "2" represents more visits or presentations at 6 months follow-up (Table 18).

The binary test hypothesised that the MedsCheck/Diabetes MedsCheck program will reduce or maintain presentations due to improvement in adherence (as stated in section 3.1).[12] **All forms of health service utilisation analysed (GP visits, hospitalisations and ED presentations) of patients were significantly less or unchanged, suggesting that the program participation may have reduced GP visits, hospitalisation and ED presentations.**

Table 18: Binary tests of presentations between the frequency at initial and 6 months follow-up

Service type	Binary at 6 months follow up – means (SD)	Binary at initial – means (SD)	p-value*
GP visits	1.14 (0.35)	1.00 (0.00)	0.001
Hospitalisations	1.09 (0.41)	1.00 (0.00)	0.083
ED presentations	1.12 (0.47)	1.00 (0.00)	0.045

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=69
Note: *p-value was from the t-test of two samples at initial and follow-up.

Participants also reported the types of specialist services used (reporting on the 6 months prior) at initial and follow-up service. The reported specialist services included: psychiatry, cardiology, dermatology, physiotherapy, ophthalmology, and other mental health services. **There was no reported reduction in specialist service use between the initial and follow-up periods**. The lack of differences is not unexpected however they may also be due to insufficient data and biases involved with self-reported questions.

[12] Sorensen, L *et al*., 2004, "Medication reviews in the community: results of a randomized, controlled effectiveness trial", *British Journal of Clinical Pharmacology*, v.58, no.6, pp. 648-664.

4.2.2. GP visits and GP referral related to patient's medication

The 6CPA program data collect information from patients regarding whether the patient visited a GP or hospital in the past 6 months related to their medication. This information is collected at registration and follow-up from 12,861 patients who completed the data collection. There were two key questions related to GP visit, which include:

- **Patients go to the GP or hospital because of problems with their medications**. There were 1,734 patients (13%) who visited the GP before the program but did not report visiting the GP during the program. Conversely, 8% of the patients (n=1,070) who did not go to the GP prior to the program visited the GP during the program.
- **Patients referred to the GP because of significant issues identified**. There were 104 patients (1%) who were referred to the GP during the program because of a significant issue with their medications. Meanwhile, 232 patients (2%) were referred to the GP before the program but not referred during the program.

Table 19 summarises GP visits related to patients' medications based on 6CPA program data.

Table 19:GP visits related to patient's medication

Responses (Registration - Follow up)	Description	No. patients go to the GP or hospital because of problems with their medicine	No. of referred to the GP because of significant issues identified
No-No	No change (not going to the GP/Hospital)	8,365 (65%)	12,494 (97%)
Yes-Yes	No change (remain going to the GP/Hospital before and during the program)	1,692 (13%)	31 (0%)
Yes-No	Visited GP/Hospital prior to program but not during the program	1,734 (13%)	232 (2%)
No-Yes	Go to the GP/Hospital during the program (but not prior)	1,070 (8%)	104 (1%)

Source: 6CPA program monitoring data, n=12,861.

4.3. Reduction in the number of medication-related side-effects

The Generic Assessment of Side Effects (GASE) measure asks MedsCheck/Diabetes MedsCheck patients to rate the severity of 36 side effects on a scale of 0 (not present) to 3 (severe). Participants were also asked to determine if each side effect was related to their current medications regime. **There were no significant differences in the number of symptoms reported by participants between the initial and follow-up surveys** (Table 20). **Although there was a slight increase in the total score (medication attributed or in total) there was no significant differences suggesting the severity of symptoms did not change between the initial and follow-up.**

Table 20: Difference in GASE mean symptom count and mean total score from initial to follow up

GASE	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
Symptom Count	69	8.77 (6.58)	8.94 (7.00)	0.17	-1.28	1.62	0.82
Medication Attributed Symptom Count	69	2.59 (3.83)	2.74 (4.30)	0.14	-1.06	1.35	0.81
Total Score	69	13.43 (11.57)	14.32 (16.28)	0.88	-1.73	3.50	0.51

GASE	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
Medication Attributed Total Score	69	4.25 (6.46)	4.65 (7.57)	0.41	1.60	2.41	0.69

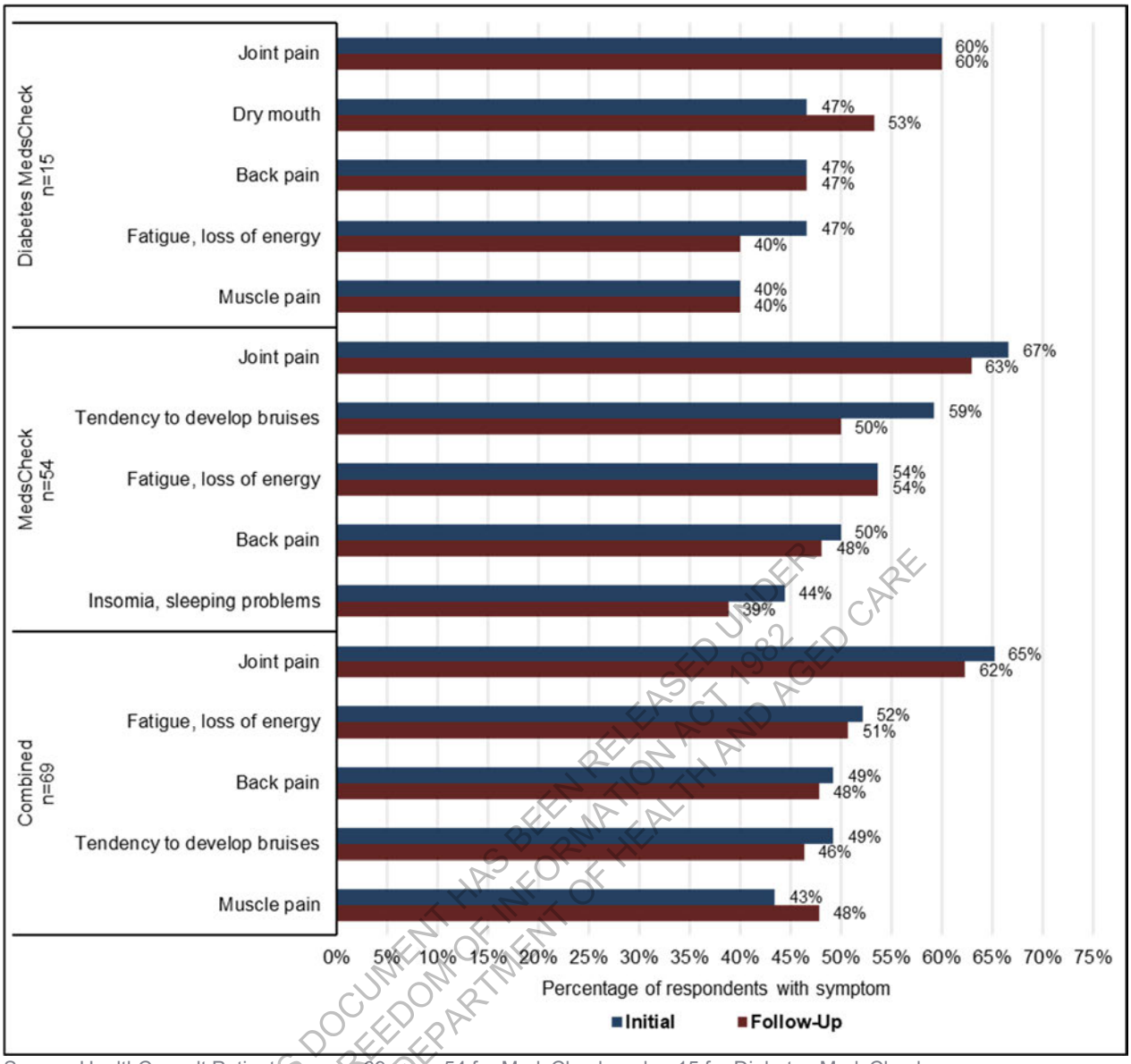
Source: HealthConsult Patient survey, n=69
Note: *p-value was from the t-test of two samples at initial and follow-up.

The most reported symptoms from initial to follow-up are outlined in Figure 9. There were no significant differences in the proportion of patients who reported specific symptoms[13] at initial compared to follow-up. In summary:

- For Diabetes MedsCheck patients, the five most-commonly reported symptoms at initial assessment were joint pain (reported by 60% of patients), muscle pain, back pain, dry mouth, and fatigue/loss of energy (each reported by 47% of patients), with no substantial changes at follow-up.
- For MedsCheck patients the five most reported symptoms at initial assessment were joint pain (67%), tendency to develop bruises (59%), fatigue/loss of energy (54%), back pain (50%) and insomnia (44%) of patients respectively), with no substantial changes at follow-up.
- For MedsCheck and Diabetes MedsCheck patients the five most-commonly reported symptoms at initial assessment were joint pain, fatigue/loss of energy, tendency to develop bruises, back pain, and muscle pain (reported by 65%, 52%, 49%, 49% and 43% of patients respectively), with no substantial changes at follow-up.

[13] GASE complaints measured: headache; hair loss; dry mouth; dizziness; chest pain; palpitations, irregular heartbeat; breathing problems; low blood pressure, other circulation problems; abdominal pain; nausea; vomiting; constipation; diarrhoea; reduced appetite; increased appetite; difficulty urinating; problems with sexual performance or sex organs; painful or irregular menstruation; skin rash or itching; tendency to develop bruises; fever, increased temperature; abnormal sweating; hot flashes; convulsions or seizures; fatigue, loss of energy; tremor; insomnia, sleeping problems; nightmares or abnormal dreams; back pain; muscle pain; joint pain; agitation; irritability, nervousness; depressed mood; thought about suicide; and anxiety, fearfulness.

Figure 9: Changes in the five most reported symptoms from initial to follow up



Source: HealthConsult Patient survey, n69 => n=54 for MedsCheck and n=15 for Diabetes MedsCheck.

4.4. Improvements in patient-reported quality of life

Patient-reported QoL was assessed by the AQoL-4D, a multi-attribute utility instrument comprised of 12 items across 4 dimensions. The weighted AQoL-4D domain utility scores for each dimension (independent living, relationships, mental health, and physical senses (i.e., seeing, hearing, and communication) are scaled between 0.00 (worst health state) and 1.00 (best health state).

The average AQoL score increased by 4 basis points (p value=0.25) from the initial to 6-month follow-up for 69 MedsCheck/Diabetes MedsCheck patients who completed both surveys (Table 21). Based on population norms derived for the AQoL in the Australian population, these scores of 0.59 at baseline and 0.62 at follow-up are indicative of being between 'poor health' and 'fair health'[14]. This increase is not statistically significant and is less than half of the value generally considered to be indicative of meaningful clinical change. In addition, although the 'physical

[14] Based on mean AQoL utility score by self-reported health status, from: Hawthorne G, Osborne R., 2005, "Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", *Australian and New Zealand journal of public health*, v.29, no.2, pp.136-42.

senses' dimension was increased by 3 basis points and statistically significant (p value= 0.01), the clinical significance of this is questionable as the initial score (0.90) was relatively high to start with.

Table 21: Difference in mean AQoL-4D score for each dimension from initial to follow up

AQoL-4D	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
Independent Living	69	0.88 (0.19)	0.82 (0.28)	-0.04	-0.10	0.01	0.01
Relationships	69	0.82 (0.27)	0.84 (0.24)	0.02	-0.03	0.07	0.42
Physical Senses	69	0.90 (0.13)	0.93 (0.10)	0.03	0.01	0.06	0.01
Mental Health	69	0.83 (0.18)	0.89 (0.16)	0.01	-0.02	0.03	0.56
AQoL Utility Score	69	**0.59 (0.30)**	**0.62 (0.31)**	**0.04**	-0.01	0.09	0.25

Source: HealthConsult patient survey, n=69
Note: Weighted AQoL-4D score is between 0 and 1. *p-value was from the t-test of two samples at initial and follow-up.

The literature suggests that improved medication adherence or an improvement in medication-related side effects will positively impact a person's QoL. The section below explores the association between QoL and the MedsCheck/Diabetes MedsCheck program by using the adherence (ARMS-12 score) and side-effect (GASE score).

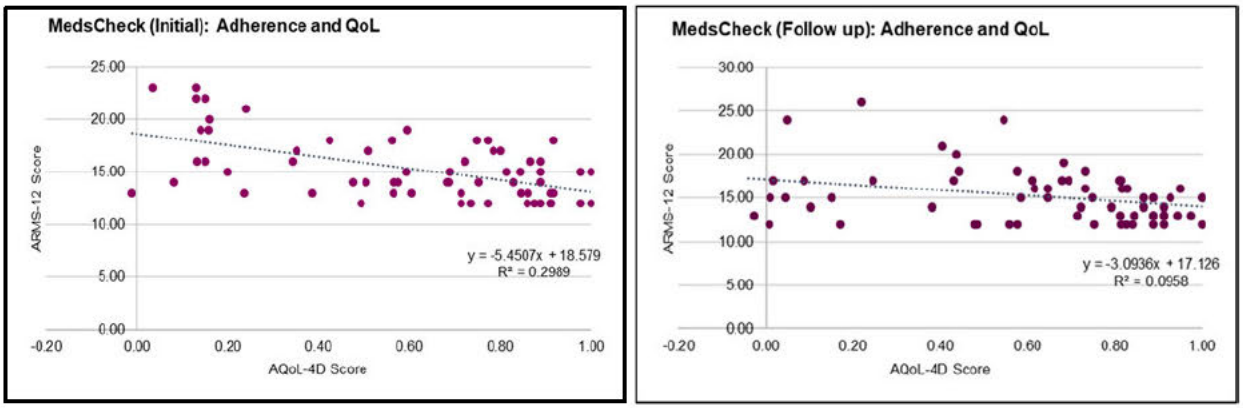
4.4.1. Adherence and quality of life

The average ARMS-12 score at baseline was 15.22, 15.31 and 14.93, in the combined MedsCheck, MedsCheck and Diabetes MedsCheck groups, respectively. This indicates "good" overall medication compliance in all groups.[15] Adherence was relatively unchanged at 6 months follow-up in the combined and regular MedsCheck populations (stable at 15.22 and decline to 15.19, respectively). Adherence decreased for the Diabetes MedsCheck population (declined to 15.33). General increases to adherence can be attributed to greater patient education.[16]

Aligned with the improvement of the ARMS-12 scores (a decrease in score suggests an increase in adherence), the plot between the quality of life and adherence shows a negative association (Figure 10). This suggests that an improvement in adherence increases the quality of life. The linear relationship indicates that at baseline, a decrease of 2.7 ARMS-12 score will improve quality of life by 50%. Meanwhile, at 6 months follow-up, the decrease is 1.5 ARMS-12 score. Findings from studies to understand adherence and quality of life from trial participants of pharmacist-led medication management program suggest that for older adults, the quality of life is unchanged after the program.[17] However, utilising technological assistance in the program has resulted in the improvement for quality of life. [18]

[15] ARMS-12 has a possible range of 12 to 48, where a lower score indicates better adherence. Evaluation participants therefore had good overall adherence before and after participation in the StagedSupply service. Source: Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease. Value in Health. 2009 Jan 1;12(1):118-23.
[16] NPS Medicinewise. 2017. Encouraging adherence to long-term medication. Accessed 26 August 2020: https://www.nps.org.au/australian-prescriber/articles/encouraging-adherence-to-long-term-medication
[17] Harlow, C, et al. (2017), Quality of Life and Medication Adherence of Independently Living Older Adults Enrolled in a Pharmacist-Based Medication Management Program, Pharmacy, 5(2), 20.
[18] Choi, A, Lovett, A,W, Kang, J, Lee, K, Choi, L, (2015), Quality of Life and Medication Adherence of Independen ly Living Older Adults Enrolled in a Pharmacist-Based Medication Management Program, *Advances in Pharmacology and Pharmacy*, 3(3), 64-74.

Figure 10: Adherence and QoL (initial and follow-up)



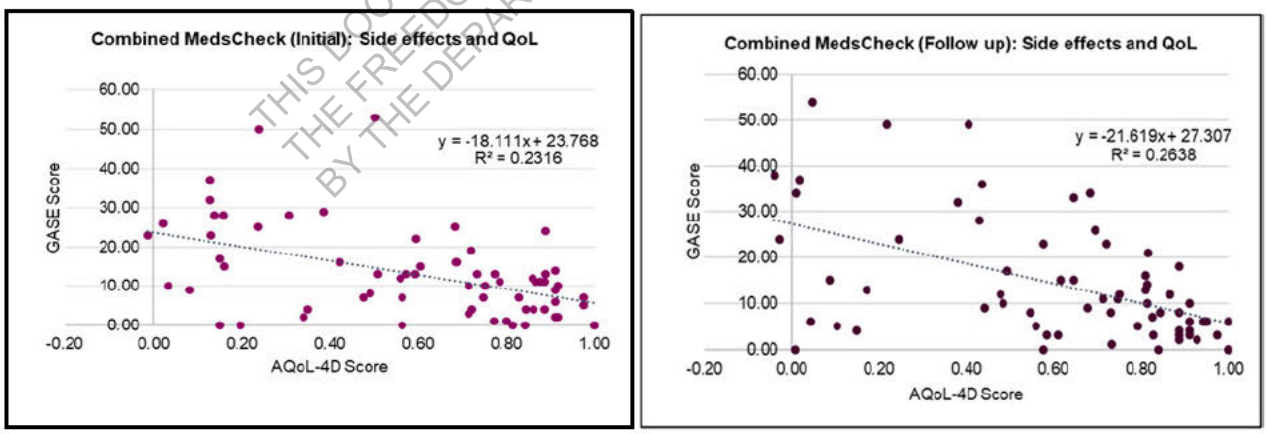
Source: HealthConsult patient survey, n=69

4.4.2. Side effects and quality of life

There was a slight increase in the GASE score from baseline to 6 months follow-up in the combined MedsCheck and regular MedsCheck groups (13.43 to 14.32 and 13.72 to 14.98, respectively). The diabetes MedsCheck group had a slight decrease in GASE scores from 12.40 to 11.93. As the Diabetes MedsCheck group is far smaller than the regular MedsCheck group (n=15 vs 54), the combined GASE score increased. This indicates that there are more side effects at 6 months follow-up than at baseline. However, changes to the GASE scores in all three groups were not significant.

In contrast, plotting the GASE score with quality of life (AQoL-4D score) shows a negative relationship (desirable in this context as lower GASE scores indicate improvements), both at baseline and at 6 months follow up (Figure 11). Although the linier regression has low R-squared[19] due to the sample size, it suggests that a decline in side effects is associated with an improvement in quality of life. This corroborates with the systematic review findings of Khalil and Huang (2020).[20] At baseline, a 10% improvement of quality of life will decrease GASE score by 1.7. Meanwhile, at 6 months follow-up the decrease of GASE score is higher at 2.1.

Figure 11: Side Effect and Quality of Life (initial and follow up)



Source: HealthConsult patient survey, n=69

[19] R-squared indicates the strength of the relationship between dependent and independent variable. In this context, between Quality of Life and Adverse Event.
[20] Khalil, H., Huang, C. Adverse drug reactions in primary care: a scoping review. BMC Health Serv Res 20, 5 (2020). https://doi.org/10.1186/s12913-019-4651-7

4.5. Emotional distress associated with diabetes treatment and management (Diabetes MedsCheck)

Completed questionnaires for the Problem Areas in Diabetes (PAID-5), which measure five areas of emotional distress (feeling scared; feeling depressed; worrying; mental and physical energy; complications), were only available for 13 of the 15 individuals who participated in the Diabetes MedsCheck evaluation. The measurement showed that there were no significant differences in the PAID-5 score for the Diabetes MedsCheck patients from initial to 6-month follow up (Table 22).

Table 22: Difference in mean PAID-5 score for each area from initial to follow up

PAID-5	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
PAID-5: Feeling scared	13	1.00 (1.36)	0.23 (0.60)	-0.16	-0.33	0.01	0.27
PAID-5: Feeling depressed	13	0.64 (0.93)	0.15 (0.55)	-0.10	-0.22	0.01	0.28
PAID-5: Worrying	13	1.38 (1.50)	0.77 (1.01)	-0.12	-0.29	0.05	0.36
PAID-5: Mental and physical energy	13	1.00 (1.11)	0.23 (0.60)	-0.16	-0.32	0.00	0.31
PAID-5: Complications	13	1.07 (1.14)	0.15 (0.55)	-0.19	-0.34	-0.04	0.07
PAID-5 Total Score	**13**	**5.38 (5.39)**	**1.50 (2.84)**	**-0.75**	**-1.47**	**-0.04**	**0.31**

Source: HealthConsult patient survey, n=13 for Diabetes MedsCheck patients who completed the questionnaire.
Note: PAID-5 score is between 0 and 20 (Scale: 0 = no problems and 20 = severe problems). *p-value was from t-test of two samples at initial and follow-up.

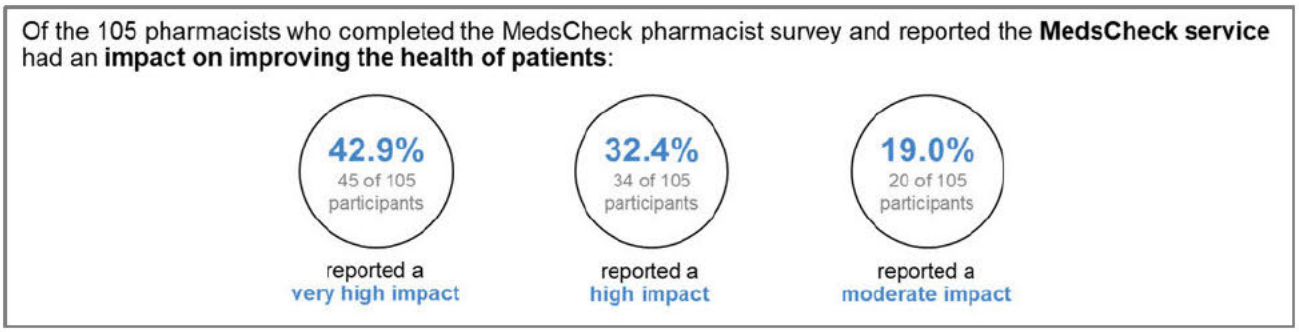
4.6. Perceived effectiveness for improving health outcomes

The Pharmacist Survey included questions that captured pharmacist views on program effectiveness on the overall health of participating patients.

4.6.1. MedsCheck

Most pharmacists (94.3%) reported that the MedsCheck service had at least a *moderate impact* on **improving the health of patients** (Figure 12).

Figure 12: MedsCheck impact on improving the health of patients



Source: HealthConsult Pharmacist Survey, n=105

Out of the 128 participants of the pharmacist survey, 105 provided open-ended responses on '*what is working well with the MedsCheck program*'. Twelve of the 105 participants reported that patients experienced better health outcomes because of improved use and understanding of medications resulting from the MedsCheck service.

During the case study interviews, pharmacists provided mixed reviews on the effectiveness of the MedsCheck program at improving patients' health outcomes. Noting that it was difficult to conclusively assess improvements in health outcomes as a result of the MedsCheck service as pharmacists do not receive cumulative or individual patient reports on health outcomes.

However, using anecdotal evidence and perception, the majority pharmacists were united in their view that the MedsCheck program was improving the health outcomes of participating patients. The service provided pharmacists with the opportunity to identify side effects from medication use and recommend appropriate changes. Resulting in improved adherence and subsequently improved health outcomes for patients. This is captured in the following vignette:

"A patient saw a new GP who prescribed them with a new medication administered via injection which caused an adverse reaction and the patient did not feel well. The patient engaged in a MedsCheck service where the pharmacist picked-up non-standard care by the patient's new GP. The pharmacist recommended seeing an alternate GP for a referral to a specialist who saw the same non-standard care issue as the pharmacist. The specialist replaced the injection medication and the patient is now happy and healthy with no signs of treatment emergent adverse effects".

The other significant areas that were resulting in a perceived improvement in health outcomes was the identification and reduction:

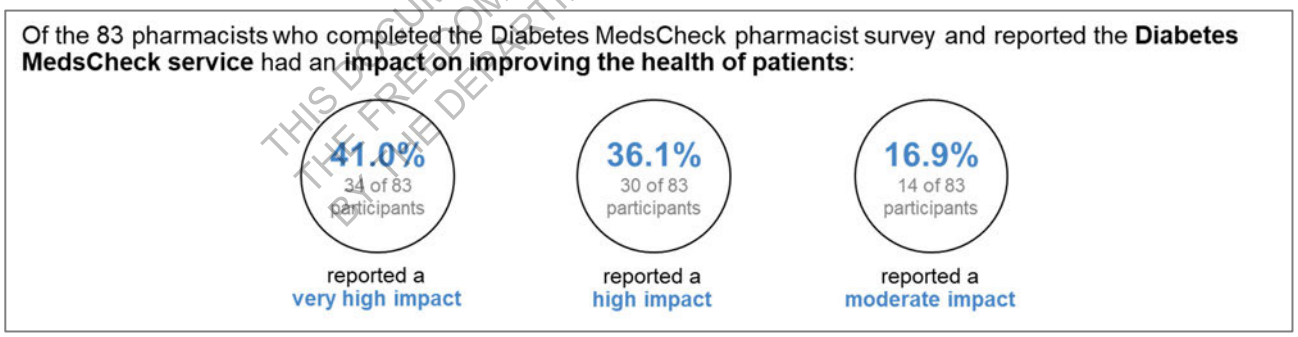
- of excessive prescription medication for patients
- of polypharmacy.

Some pharmacists who held opposing views were unsure of the effect of the MedsCheck program on health outcomes. Reporting that without access to direct primary health information (e.g. blood sugar level or blood pressure) they were *"unsure"* of the effect on health outcomes as they were *"not explicitly visible".*

4.6.2. Diabetes MedsCheck

Most pharmacists (92.8%) reported that the Diabetes MedsCheck service had at least a *moderate impact* on **improving the health of patients**

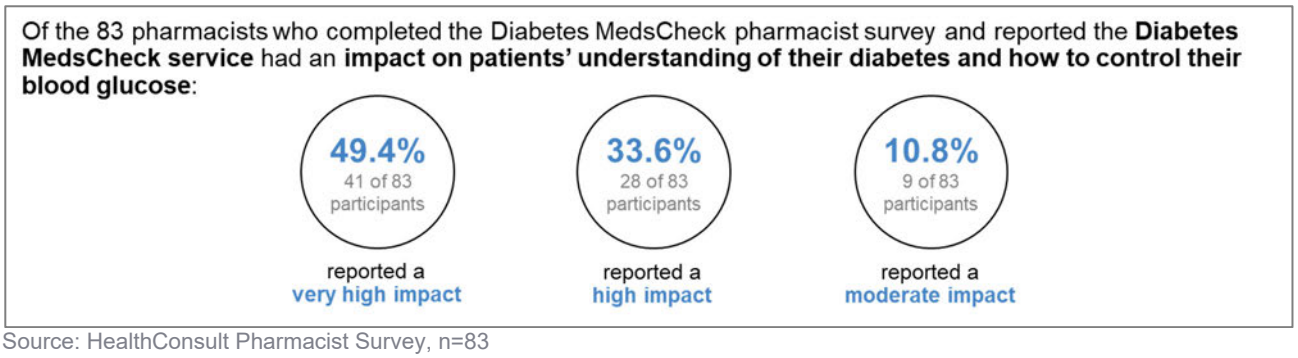
Figure 13: Diabetes MedsCheck impact on improving the health of patients



Source: HealthConsult Pharmacist Survey, n=83

Most pharmacists (92.8%) reported that the Diabetes MedsCheck service had at least a *moderate impact* on **patients' understanding of their diabetes and how to control their blood glucose**.

Figure 14: Diabetes MedsCheck impact on patients' understanding of their diabetes and how to control their blood glucose



Source: HealthConsult Pharmacist Survey, n=83

Out of the 128 participants of the pharmacist survey, 81 provided open-ended responses on '*what is working well with the Diabetes MedsCheck program'*. None reported the effect of the Diabetes MedsCheck on improving patients' health outcomes.

During the case study interviews, pharmacists suggested that the Diabetes MedsCheck program improves the health outcomes of patients. Noting that patient education on medication use leads to a reduction in adverse events and as such produces a positive effect on participating patients' health outcomes. Specific to the Diabetes MedsCheck pharmacists noted that the patients were more likely to consistently monitor their blood glucose reducing the number of hypoglycaemia and hyperglycaemia events experienced.

Additionally, the service helped remove unnecessary medications, reduce medication switching and address polypharmacy which can significantly impact a patient's health outcomes.

"A patient didn't know she had to take her meds with food and she never had breakfast in the morning. We told her she had to have breakfast and now she is, which is evening out her instances of hypos now she feels less light-headed"

A contrasting view was held by some interviewed pharmacists who suggested that improved health outcomes were only experienced by some patients if at all.

5. Cost-Effectiveness

This Chapter presents findings related to the evaluation question:

"Is the MedsCheck and Diabetes MedsCheck program cost-effective?"

A CBA of the MedsCheck and Diabetes MedsCheck programs was completed instead of a CEA due to the lack of identified effectiveness indicators. The CBA was implemented by analysing costs and benefits of the program related to health service utilisations. The key finding shows that the program resulted in cost-savings related to GP visits.

5.1. Determine cost and benefit for MedsCheck and Diabetes MedsCheck

In the absence of sufficient parameters (please refer to Table 24) to measure the effectiveness of the program, an alternative approach to a CEA was implemented by analysing cost and benefit of the program.

5.1.1. Cost per intervention

The key objectives of MedsCheck and Diabetes MedsCheck programs were to support patients with their medicines and to improve their knowledge about how to best use and store their medications. To support the collection of further patient information and monitoring within the program's delivery a new fee structure was implemented. Pharmacies delivering the service can claim $65.61 and $97.05 per patient for the provision of a MedsCheck and Diabetes MedsCheck service, respectively, that meet the eligibility criteria.[21] From 1st February 2018, an additional $31.90 for both the collection of patient data at the time of service (registration) and the mandatory six-month follow-up can also be claimed as per the Diabetes MedsCheck Program Rules (2018).

Table 23 presents the program costs that were calculated to be used in the economic evaluation. Note that the fee for collecting the outcomes data of $31.90 at registration and again at follow-up was excluded from the economic evaluation, as it is not part of the MedsCheck and Diabetes MedsCheck program in actual practice.

Table 23: Summary of cost inputs calculated for the economic evaluation

Program cost	Fee ($) used in economic evaluation
MedsCheck service fee	$65.61
Diabetes MedsCheck service fee	$97.05

Source: 6CPA MedsCheck and Diabetes MedsCheck program data.

5.1.2. Benefit per intervention

To determine benefits of the program, consideration was given to the evaluation tools used, both in the Patient Survey data and in the 6CPA program data. These include parameters with the likelihood that the MedsCheck and Diabetes MedsCheck programs would have a direct impact on the outcomes, and availability of data points (at registration and follow up).

There were seven parameters identified that could be used as the effectiveness indicator for the economic evaluation. Each parameter was evaluated for feasibility based on the relationship to the MedsCheck program aims, program characteristics, and whether the analysis identified a

[21] Pharmacy Programs Administrator (PPA). 2018. Staged Supply, accessed 11 September 2020: https://www.ppaonline.com.au/programs/medication-management-programs/medscheck-and-diabetes-medscheck

significant change in the indicator that could be attributed to the program. **Unfortunately, the analysis was unable to determine a suitable benefit parameter** (Table 24).

Table 24: Summary of feasibility of the benefit parameters for the CEA

Parameter and data source	Description that aligns with the program aim	Limitation	Feasibility for the CEA
Adjusted Quality of Life (AQoL-4D) – Patient Survey	Measure the change of patient's quality of life between registration and follow up by looking four dimensions (independent living, relationship, senses, mental health).	The outcome is not statistically significant, and the sample is relatively small (n=69) compared to the total program participants. Hence, the CEA will potentially bias.	Not feasible
Adherence to Refills and Medication Scale (ARMS-12) – Patient Survey	Measure the change of patient's adherence in taking and refilling medications life between registration and follow up.	The outcome is not statistically significant, and the sample is relatively small (n=69) compared to the total program participants. Hence, the CEA will potentially bias.	Not feasible
Problem Areas in Diabetes Scale five item questionnaire (PAID-5) – Patient Survey	Measure the change of patients with diabetes in five areas (feeling scared, feeling depressed, worrying, mental and physical energy, and complications).	The outcome is not statistically significant, and the sample is relatively small and only for Diabetes MedsCheck program (n=12). Hence, the CEA will potentially bias.	No feasible
Outcome of MedsCheck Service in the recommendation in medications – 6CPA program data.	Measure the change from pharmacist's recommendations in medicines between registration and follow up. The recommendations were determined based on patient's MedsIndex score.	The recommendations are unclear and inconsistent, which include. • Recommendation to increase or decrease does not specify for dose or medicine or for both. • Recommendations data are inconsistent where the option for no change (no intervention) includes recommendation to increase and/or decrease medications. On that basis, there is no clarity to measure the benefit from this parameter.	Not feasible
MedsIndex score – 6CPA program data	Measure patient's adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist.	The outcome is potentially bias due to the impact of a changed medication regimen on the calculation of the MedsIndex, especially when the intervention involves recommendations to increase or decrease dose.	Not feasible
Self-reported GP or hospital visits – 6CPA program data	Identify the change of patients' GP or hospital visits in the last six months because of problems with their medicines.	The outcome is potentially biased due to no detail information about the types of utilisation. The question is not specifically referred to hospitalisation or GP visits, therefore, measuring health utilisation using this data for CEA would result in bias estimations as the discrepancy between hospitalisation cost and GP cost is substantial.	Not feasible
Increase knowledge about the importance of medicine regime and medicine adherence – 6CPA program data	Measure the change of patient's knowledge of medicine regime and adherence between registration and follow up.	The data is not reliable due to patient's perception and there is no direct impact on their improvement in adherence.	Not feasible

Sources: 6CPA program data, 6CPA Patient Survey, HealthConsult analysis.

5.2. Cost-effectiveness analysis

Due to the lack of suitable benefit parameters, a CEA was not performed to measure the cost effectiveness or the program. An alternative approach was implemented to analyse cost and benefit by using health services utilisation from the Patient Survey data.

5.3. Cost-benefit analysis from health service utilisations

In the Patient Survey data, there were information about number of MedsCheck and Diabetes MedsCheck patients (n=69) in hospitalisation, ED presentation and GP visits. The information based on self-reported responses of a question "*In the last six months, how often did you go to your GP because of problems related to medication use*?", collected at registration and follow-up. Table 25 presents the average and total number of visits for each utilisation.

Table 25: Average and total number of health service utilisations

Health services utilisation (n=69)	Av. visit six months before the program	Av. visit six months after the program	p-value
GP visits (mean (st. deviation)) GP visits (total)	2.1 (3.2) 131	0.8 (1.4) 51	0.002
Hospitalisation (mean (st. deviation)) Hospitalisation (total)	0 (0.3) 3	0.0 (0.2) 4	1.000
ED presentation (mean (st. deviation)) ED presentation (total)	0.1 (0.3) 3	0.1 (0.3) 5	0.784

Source: 6CPA Patient Survey data.

The Patient Survey suggested that there was a significant reduction in GP visits (p-value 0.002) from two visits to one visit (on average), and in terms of frequency, from 131 visits to 51 visits. The reduction is equal to 61% decrease between six-month before the program and six-month after the program. On the other hand, the event of hospitalisation and ED presentation was relatively low and appeared to be a random event. The changes were also not statistically significant.

On that basis, the cost-benefit analysis was estimated by using GP visits before and after the program for MedsCheck and Diabetes MedsCheck patients. Two analyses were conducted. In the first analyses, the cost-benefit analysis (CBA) measured the benefits based on reduction in total frequency of GP visits against the program cost. In the second analyses, the CBA focused on the program effect of either a decrease or increase in GP visits.

5.3.1. Cost-benefit analysis on total frequency of GP visits

The analysis was conducted at the patient level (n=69) by measuring total number of GP visits at six months before and after the program (see Appendix E). The analysis applied some specifications and assumptions, which included:

- The cost of GP visit refers to MBS item number 23 where the fee is $39.75.
- The program cost refers to the actual cost of service provision cost and data collection cost (Table 4). The service provision cost was assumed to be one-time cost at registration and the data collection cost incurred at registration and follow up.
- The benefit defines as cost-savings from reduction in GP visits.
- The benefits were estimated using extrapolation until 24 months after the program and assumed to be constant effect after six months.
- The estimation used internal rate of return (IRR) of 0%, thus, no specific discounting rates were applied in the analysis. The IRR also an indicator of cost-neutral in the perspective of cost to the Government.

Table 26 summarises the cost-benefit analysis. The first cost component includes service provisions for 54 MedsCheck patients of $3,543 (54 * $65.61) and 15 Diabetes MedsCheck patients of $1,456 (15 * $97.05), summed to $4,999. The second cost component was data collection at the registration and follow up, each for $31.90. The total cost for data collection of 69 patients was estimated $2,201 at the registration and $2,201 at follow up.

The benefit was defined as cost-savings from total number of GP visits before and after the program. As presented in Table 25, total number of GP visits before the program was 131 visits or equal to $5,207 (by using the MBS item number 23), and GP visits after program reduced to 51 visits or equal to $2,027. The difference after and before the program of $3,180 is the benefit of the program.

The benefit of $3,180 incurred every six months, as the CBA assumed a constant effect up until 24 months.

Table 26: Cost-benefit analysis based on total frequency in GP visits

Period	Start of the program	6-month	12-month	18-month	24-month
(C1) Cost - service provisions[22]	$4,999.00	-	-	-	-
(C2) Cost - data collection	$2,201.	$2,201	-	-	-
(B1) Benefit - reduction of GP visits	$0.00	$3,180	$3,180	$3,180	$3,180
Net Benefit (B1-C1-C2)	**-$7,200.00**	**$979**	**$3,180**	**$3,180**	**$3,180**
IRR at 18-month	**0.84%**				
IRR at 24-month	**13.79%**				

Source: 6CPA Patient Survey data (n=69), HealthConsult analysis

The Patient Survey indicated that there were significant reductions in GP visits for MedsCheck and Diabetes MedsCheck patients. The analysis shows that the program will achieve a cost-neutral outcome for the funder if the reduction of GP visits continues until 18 months after the program. In the case of excluding the cost of data collection and only cost of service provision that incurred, the cost-neutral will be achieved in less than 12 months after the program.

5.3.2. Cost-benefit analysis on the program effect of GP visits

The analysis was based on the effect of the program in GP visits as shown in Table 17. It demonstrates that out of 69 patients in the Patient Survey data, 29 patients (42%) decrease GP visits, 9 patients (13%) increase GP visits and 31 patients (45%) no change in GP visits. The analysis also applied some specifications and assumptions, which include,

- The analysis assumed that a decrease in GP visit is the effect of the program, therefore, the condition without the program is 60 patients (87%) are classified as 'no change' and 9 patient (13%) increase GP visits. This assumption created two groups for the analysis – the intervention group and the control group.
- The analysis estimated the benefit using difference-in difference approach (DID). The benefit referred to a ratio of 'decreased-increased-no change' of GP visits for both the intervention group and the control group.
- The analysis focused on the cost to the Government of GP visits. The program costs (service provision and data collection cost per patient) were excluded and assumed to be a sunk cost.
- A decrease per GP visit represents cost-savings that refers to the MBS item number 23 ($39.75).

[22] Detail of total cost of service provisions is in Appendix E and it reflect for total sample in the Patient Survey data. As per program rules, the service provision for MedsCheck patients was $65.61 and for Diabetes MedsCheck was $97.05.

- An increase per GP visit incurs a GP cost (MBS item 23).
- A 'no change' of GP visit was assumed to be cost-neutral as the objective of the program is to prevent MedsCheck and Diabetes MedsCheck patients for unnecessary health services utilisation.

Table 27 summarises cost benefit analysis using difference-in-difference approach in the ratio of 10 patients. The intervention resulted in net benefit of $119.25[23] as four patients decreased GP visits and only one increased GP visit. The control group's net benefit was -$39.75 as one patient increased GP visit. Using difference-in-difference approach the net benefit was estimated $79.50.

Table 27: Cost-benefit analysis based on the effect of the program in GP visits

Group of analysis	Ratio out of 10 of "decrease-increase-no change" in GP visits before and after the program	Net benefit	Difference-in-difference (DID)
Intervention group	4-1-5	($39.75*4) - ($39.97*1) = $119.25	$119.25 - $39.75 = **$79.50**
Control group	0-1-9	-$39.75	

Source: 6CPA Patient Survey data (n=69), HealthConsult analysis
Note: The ratio is out of ten patients based on findings in the Patient Survey data.

The analysis resulted in two key findings, which include:

- **There is a saving of $79.50 for every 10 patients that are in the program, equating to two GP visits (i.e., 79.50 / $39.75 = 2).**
- Furthermore, if the Patient Survey data represents the actual impact of the MedsCheck and Diabetes MedsCheck program, it indicates the program generates a saving of two GP visits for every ten patients, every 6-months.

In summary, the program provides a benefit in reducing unnecessary GP visits for MedsCheck and Diabetes MedsCheck patients.

[23] Four patient decreased GP visits is cost savings and equal to $159 ($39.75*4). The one patient who increased GP visit is a cost of $39.75. The net benefit was estimated $119.25 ($159-$39.75).

6. Barriers and Enablers

This Chapter presents findings related to the evaluation question:

"What are the barriers and enablers to providing an effective patient-centred MedsCheck and Diabetes MedsCheck service and how can it be strengthened?"

The barriers and enablers of the MedsCheck/Diabetes MedsCheck program were measured using the pharmacist survey, pharmacy profile survey and case studies/pharmacists' interviews. Patient and pharmacist experience and satisfaction with their involvement in the program were used to identify barriers and enablers, as well as identify areas for program improvement. In addition, the pharmacist survey and pharmacy profile survey were used to capture perspectives from pharmacy owners.[24]

Key findings

- Participants reported positively on the MedsCheck service, describing it as "easy-to-follow", "informative" and "comprehensive". Participants noted that the most important features of the service were that it was easy to access, private and confidential. Diabetes MedsCheck participants reported the service as "helpful" since they were "able to ask questions" and receive advice on appropriate medicine use.
- There was a significant improvement in patient satisfaction between initial and follow-up surveys for the MedsCheck program in the convenience domain (n = 54, p=0.01).
- Eighty-eight out of 105 pharmacists (83.8%) reported that they believed most patients were "Somewhat Satisfied" or "Very Satisfied" with the MedsCheck service. Seventy-two out of 83 pharmacists (86.7%) reported that they believed most patients were "Somewhat Satisfied" or "Very Satisfied" with the Diabetes MedsCheck service.
- The major barrier to implementing the MedsCheck and Diabetes MedsCheck programs noted during all pharmacist interviews was the time taken to provide the program.
- The majority of pharmacists surveyed believed the MedsCheck programs had at least a moderate impact on expanding their role within the primary health care team, noting that their expanded role almost exclusively related to their interaction with the patient's GP rather than the wider primary care team.
- The majority of interviewed pharmacists indicated that MedsCheck and Diabetes MedsCheck had positively impacted their career development and communication with health professionals.
- Barriers related to participation in the programs, as identified by pharmacists, included time, data entry requirements, and difficulties engaging with a patient's GP.
- The most frequently reported enablers included enhanced patient understanding of medications, improved education and communication with patients, and opportunities to review medication to identify issues.
- Identified opportunities for program improvement included increasing the monthly cap on the program, increasing the total reimbursement to make it cost effective to have two pharmacists on duty, and increasing patient awareness of the program.

[24] The reason for distinguishing between "pharmacists and pharmacy owners" is to account for two different surveys in the study – one targeted at pharmacy owners (who are pharmacists) and then pharmacists (not owners, but support 6CPA programs in community pharmacies).

6.1. Patient experience and satisfaction with MedsCheck and Diabetes MedsCheck program

A key enabler of the MedsCheck/Diabetes MedsCheck program is whether patients report a positive experience and are satisfied with the service the program provides. Patient experience was measured using a series of questions included in the patient survey and a validated tool for patient satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM) score, both of which were included in the patient survey.

6.1.1. Patient-reported experience and satisfaction

MedsCheck

Out of the 70 respondents who completed a MedsCheck follow-up survey, 66 responded to the question about overall satisfaction with the service. Of those 66 respondents, 64 (97.0%) reported that they were satisfied or very satisfied with the MedsCheck service.

Participants were asked to provide feedback (open-ended questions) on the features of the MedsCheck service that could be improved. Thirty-seven participants responded to this question, and all reported that no changes are required for this program.

Overall, participants reported positively on the MedsCheck service, describing it as “easy-to-follow”, “informative” and “comprehensive”. Participants noted that the most important features of the service were that it was easy to access, private and confidential.

Diabetes MedsCheck

Out of the 17 respondents who completed a Diabetes MedsCheck follow-up survey, 16 (94.1%) reported they were very satisfied or satisfied with the Diabetes MedsCheck service.

Participants were asked (open-ended questions) if any improvements could be made to the program. Most participants who responded to this question stated that no further changes were required. One participant suggested that more frequent follow-ups would be beneficial.

Overall, participants described the Diabetes MedsCheck service as “helpful” since they were “able to ask questions” and received advice on appropriate medicine use.

6.1.2. Proportion of patients that reported being satisfied overall with the Diabetes/ MedsCheck service and see value gained by attending

The TSQM explored the value gained by attending Diabetes MedsCheck and MedsCheck services by measuring changes in the domains of effectiveness, side effects, convenience and global satisfaction, from initial to follow-up. The TSQM score is a reliable and valid instrument to assess patients' satisfaction with medication, providing scores on four scales – side effects, effectiveness, convenience, and global satisfaction, these were measured using the TSQM scores at initial and follow-up[25,26].

There was a significant improvement in patient satisfaction between initial and follow-up surveys for the MedsCheck program in the convenience domain (n = 54, p=0.01). There were no other significant changes in patient satisfaction in either the MedsCheck or Diabetes MedsCheck programs (Table 28 and Table 29).

[25] TSQM Version 1.4 is comprised of 14 questions that provide scores on four scales: effectiveness (3 items), side effects (5 items), convenience (3 items) and global satisfaction (3 items).
[26] Atkinson MJ, Sinha A, Hass SL, *et al.* 2004, “Validation of a general measure of treatment satisfaction, the Treatment Sa isfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease”, *Health Qual Life Outcomes*, v.2, no.12.

Table 28: Patient Satisfaction Survey Summary Statistics (TSQM) - MedsCheck

TQSM Measures	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value
Effectiveness	54	70.47 13.64	71.71 15.61	1.23 12.94	0.486
Side effects	51	91.67 17.62	87.62 23.60	-3.82 36.95	0.308
Convenience	54	76.92 16.63	83.33 14.48	9.26 22.56	0.010
Global satisfaction	54	73.21 15.79	71.56 19.15	-0.29 18.67	0.456

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=54

Table 29: Patient Satisfaction Survey Summary Statistics (TSQM) – Diabetes MedsCheck

TQSM Measures	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value
Effectiveness	15	75.19 (17.92)	74.81 (14.38)	-0.37 (13.19)	0.915
Side effects	15	93.75 (14.75)	89.17 (21.97)	-4.58 (27.60)	0.530
Convenience	15	82.96 (12.33)	80.37 (13.09)	-2.59 (15.69)	0.533
Global satisfaction	15	80.00 (15.56)	79.52 (16.39)	-0.48 (16.30)	0.912

Source: HealthConsult MedsCheck/Diabetes MedsCheck Patient Survey – Initial and Follow-up surveys, n=15

6.1.3. Pharmacist perspective on patient satisfaction with MedsCheck/Diabetes MedsCheck program

MedsCheck

Pharmacists were asked to indicate how satisfied they think most patients are with the MedsCheck service on a five-point scale:

- Eighty-eight out of 105 pharmacists (83.8%) reported that they believed most patients were "Somewhat Satisfied" or "Very Satisfied" with the service.
- Ten out of 105 pharmacists (9.5%) reported that they believed most patients were "Indifferent" about the service.
- Few pharmacists believed patients were dissatisfied with the service: 7 out of 105 (6.7%) reported that they believed most patients were "Somewhat Dissatisfied" or "Very Dissatisfied".

Diabetes MedsCheck

Pharmacists were asked to indicate how satisfied they think most patients are with the Diabetes MedsCheck service on a five-point scale:

- Seventy-two out of 83 pharmacists (86.7%) reported that they believed most patients were "Somewhat Satisfied" or "Very Satisfied" with the service.
- Eight out of 83 pharmacists (9.6%) reported that they believed most patients were "Indifferent" about the service.
- Few pharmacists believed patients were dissatisfied with the service: 3 out of 83 (3.6%) reported that they believed most patients were "Somewhat Dissatisfied" or "Very Dissatisfied".

6.2. Pharmacist experience and satisfaction with MedsCheck and Diabetes MedsCheck programs

The experience of the pharmacist in delivering the MedsCheck/Diabetes MedsCheck program is critical to the effectiveness of the program and pharmacists and pharmacy owners are well-placed to identify barriers and enablers related to the program implementation.

6.2.1. Pharmacist reimbursement

The 105 pharmacists who completed the MedsCheck survey gave their views on the payments for **conducting a MedsCheck service and** for the **collection of patient registration and follow-up data**.

- Fifty-one (48.6%) thought the payment for delivery of MedsCheck services was sufficient or mostly sufficient depending on the patient. The remaining 54 pharmacists (51.4%) thought the payment was not enough, or mostly not enough depending on the patient.
- Fifty-one pharmacists (48.6%) thought the payment for collecting patient registration was sufficient or mostly sufficient depending on the patient. The remaining 54 pharmacists (51.4%) thought the payment was not enough, or mostly not enough depending on the patient.
- Thirty-three pharmacists (40.7%) thought the payment for collecting six-month follow-up data was sufficient or mostly sufficient depending on the patient. The remaining 48 pharmacists (59.3%) thought the payment was not enough, or mostly not enough depending on the patient.

The 83 pharmacists who completed the Diabetes MedsCheck survey gave their views on the payments for conducting a Diabetes MedsCheck service for the **collection of patient registration and follow-up data**.

- Thirty-four (41.0%) thought the payment for delivery of Diabetes MedsCheck service was sufficient or mostly sufficient depending on the patient. The remaining 49 pharmacists (59.0%) thought the payment was not enough, or mostly not enough depending on the patient.
- Thirty-seven pharmacists (44.6%) thought the payment for collecting patient registration was sufficient or mostly sufficient depending on the patient. The remaining 46 pharmacists (55.4%) thought the payment was not enough, or mostly not enough depending on the patient.
- Twenty-four pharmacists (39.3%) thought the payment for collecting six-month follow-up data was sufficient or mostly sufficient depending on the patient. The remaining 37 pharmacists (60.7%) thought the payment was not enough, or mostly not enough depending on the patient.

Thematic analysis of questions asked of pharmacists and pharmacy owners during the case studies was conducted to explore their perspectives on the financial implications of participation in the MedsCheck/Diabetes MedsCheck programs. This included the perceived cost-effectiveness of the MedsCheck program by key stakeholders, pharmacies and pharmacists.

The major barrier to implementing the MedsCheck and Diabetes MedsCheck programs noted during all interviews was the time taken to provide the program. Some pharmacists indicated that conducting the service was time-consuming and the funding associated does not sufficiently compensate pharmacies for the time taken to provide the services (for both initial and follow-up). This was exacerbated for smaller pharmacies where a second pharmacist was required to be rostered on to ensure the core business was conducted and where complex patients were participating.

"There is not enough money in it, I understand that [patients] need it but it's not worth my time…capturing the all data collection required for these programs"

6.2.2. Pharmacist role within the primary health care team

The MedsCheck/Diabetes MedsCheck programs may require increased communication between the participating pharmacists and other health professionals, predominantly general practitioners (GPs). This could lead to opportunities for pharmacists to broaden their role within the primary health care team, potentially leading to improved career satisfaction, and is another enabler of the MedsCheck programs.

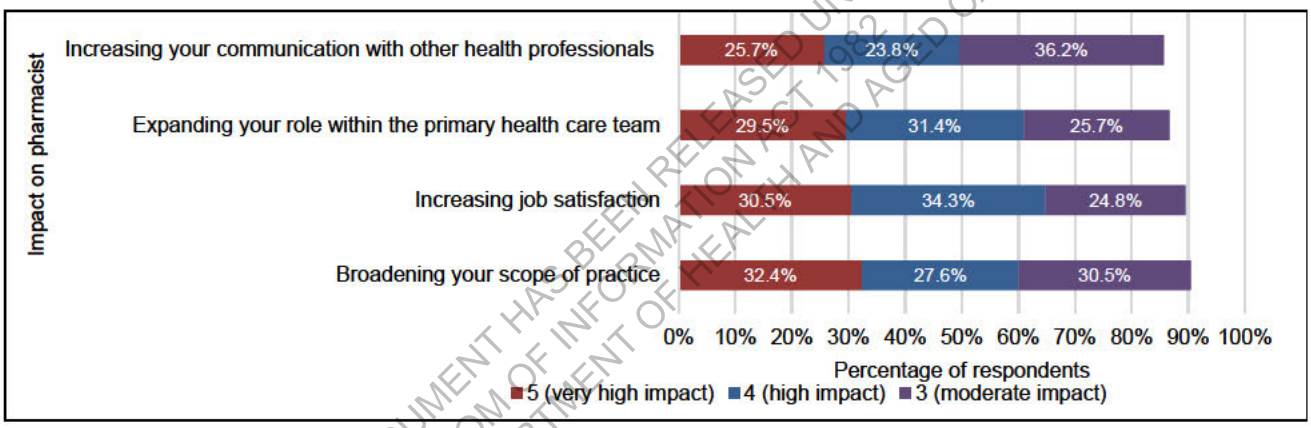
MedsCheck

Most pharmacists (86.7%) reported that the MedsCheck service had at least a *moderate impact* on **expanding their role within the primary healthcare team.** From Figure 15, out of the 105 pharmacists who completed the MedsCheck pharmacist survey:

- Thirty-one pharmacists (29.5%) reported that the MedsCheck service had a *very high impact*,
- Thirty-three pharmacists (31.4%) reported that the MedsCheck service had a *high impact*,
- Twenty-seven pharmacists (25.7%) reported that the MedsCheck service had a *moderate impact*.

on expanding their role within the primary health care team.

Figure 15: MedsCheck impact on the pharmacist role



Source: HealthConsult Pharmacist Survey, n=105

In addition, of the 128 participants of the pharmacist survey, 105 provided open-ended responses on *'what is working well with the MedsCheck program'*. Five of the 105 participants reported that the MedsCheck service helped expand their role within the primary health care team. Other responses suggest that there is a greater collaboration with GPs and other healthcare professionals since the MedsCheck service results in a referral to these services. Pharmacists also reported increased collaboration with other health professionals which they noted that it results in better health outcomes for patients.

Similarly, 85.7% of pharmacists reported that the MedsCheck service had a least moderate impact on increasing their communication with other health professionals (e.g. General Practitioners, and multi-disciplinary team members). Of the 105 pharmacists who completed the MedsCheck pharmacist survey:

- twenty-seven pharmacists (25.7%) reported that the MedsCheck service had a very high impact,
- twenty-five pharmacists (23.8%) reported that the MedsCheck service had a high impact,
- and thirty-eight pharmacists (36.2%) reported that the MedsCheck service had a moderate impact.

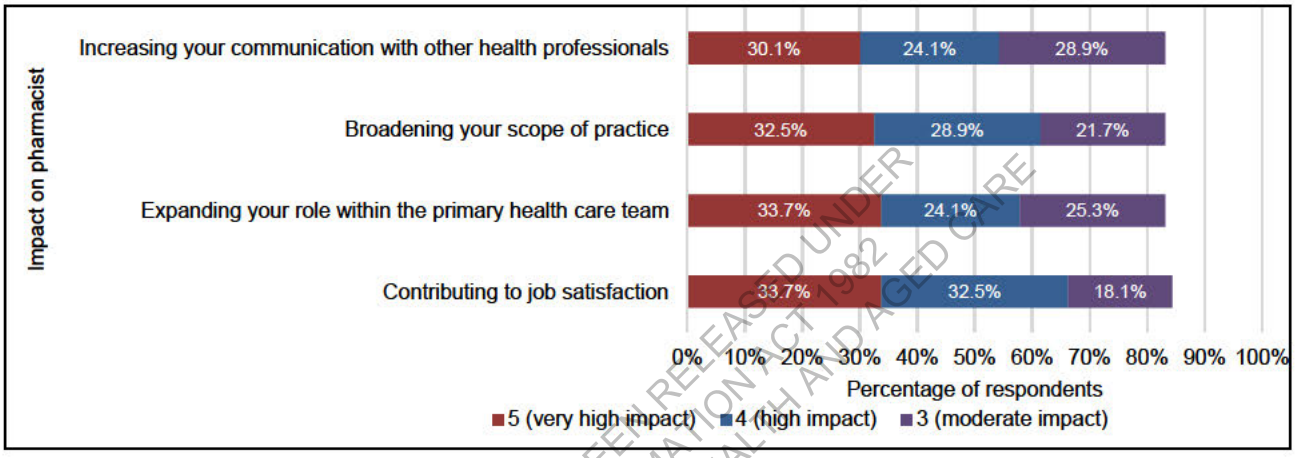
on increasing their communication with other health professionals.

Diabetes MedsCheck

Most pharmacists (83.1%) reported that the Diabetes MedsCheck service had at least a moderate impact on **expanding their role within the primary health care team.** From Figure 16, out of the 83 pharmacists who completed the Diabetes MedsCheck pharmacist survey:

- twenty-eight pharmacists (33.7%) reported that the Diabetes MedsCheck service had a **very high impact**
- twenty pharmacists (24.1%) reported that the Diabetes MedsCheck service had a **high impact**
- and twenty-one pharmacists (25.3%) reported that the Diabetes MedsCheck service had a moderate impact on expanding their role within the primary health care team.

Figure 16: Diabetes MedsCheck impact on pharmacist role



Source: HealthConsult Pharmacist Survey, n=83

Similarly, 83.1% of pharmacists reported that the Diabetes MedsCheck service had a least a 'moderate impact' on increasing their communication with other health professionals (e.g. General Practitioners, and multi-disciplinary team members). Of the 83 pharmacists who completed the Diabetes MedsCheck pharmacist survey:

- twenty-five pharmacists (30.1%) reported that the Diabetes MedsCheck service had a 'very high impact'
- twenty pharmacists (24.1%) reported that the Diabetes MedsCheck service had a 'high impact'
- and twenty-four pharmacists (28.9%) reported that the Diabetes MedsCheck service had a 'moderate impact' on increasing their communication with other health professionals.

Case study findings

Interviewed pharmacists attributed both the MedsCheck and Diabetes MedsCheck programs to expanding their role within the primary health care team. The programs provided pharmacists with the opportunity to utilise their clinical knowledge and expertise related to the use of and interaction of medications, changing their role from one that purely dispenses medication to a professional service with the time to be able to provide advice to patients.

Most interviewed pharmacists noted that their expanded role almost exclusively related to their interaction with the patient's GP rather than the wider primary care team. Indicating further improvement and links to other services are still required.

"[It has] increased [my] communication with GPs… as part of the check we can obtain information about patients' over-the-counter and complimentary medications…which could be related to adverse events that the GP may not be aware of."

Some pharmacists noted that the program-initiated pharmacist-led education for GPs and allied health within general practices; a role that was not previously performed.

A few participants commented on the impact of the Diabetes MedsCheck program on career development and communication with other health professionals. Pharmacists reported that they valued the *"collaboration opportunities"* with other health care professionals and this service brought increased job satisfaction. However, these features were not commonly reported, hence the impact of this service to delivering these aspects, is unclear.

6.2.3. Career development opportunities for pharmacists and communication with other health professionals

MedsCheck

Most pharmacists (90.5%) reported that the MedsCheck service had at least a moderate impact on **broadening their scope of practice**. Of the 105 pharmacists who completed the MedsCheck pharmacist survey:

- thirty-four pharmacists (32.4%) reported that the MedsCheck service had a very high impact,
- twenty-nine pharmacists (27.6%) reported that the MedsCheck service had a high impact,
- and thirty-two pharmacists (30.5%) reported that the MedsCheck service had a moderate impact.

Most pharmacists (89.5%) reported that the MedsCheck service had at least a moderate impact on **increasing job satisfaction**, of the 105 pharmacists who completed the MedsCheck pharmacist survey:

- thirty-two pharmacists (30.5%) reported that the MedsCheck service had a very high impact,
- thirty-six pharmacists (34.3%) reported that the MedsCheck service had a high impact,
- and twenty-six pharmacists (24.8%) reported that the MedsCheck service had a moderate impact.

Of the 105 pharmacists that responded to the survey, five (5%) stated that the MedsCheck service incurs greater appreciation for their clinical knowledge and expertise and it is an opportunity to demonstrate their full scope of practice. Also, it was reported to increase job satisfaction; pharmacists described offering the MedsCheck service as 'professionally rewarding'.

"I am quite proud and satisfied every time I sort out a patient's complex issues, as I know I have saved our under-pressure GPs' time, and I would also potentially keep someone away from our nearest rural hospital"

Diabetes MedsCheck

The Diabetes MedsCheck service had at least a moderate impact on **broadening the scope of practice** for 83.1% of pharmacists. Of the 83 pharmacists who completed the Diabetes MedsCheck pharmacist survey:

- twenty-seven pharmacists (32.5%) reported that the Diabetes MedsCheck service had a 'very high impact',
- twenty-four pharmacists (28.9%) reported that the Diabetes MedsCheck service had a 'high impact',
- and eighteen pharmacists (21.7%) reported that the Diabetes MedsCheck service had a 'moderate impact'.

Most pharmacists (84.3%) reported that the Diabetes MedsCheck service had at least a moderate **impact on contributing to job satisfaction**. Of the 83 pharmacists who completed the Diabetes MedsCheck pharmacist survey:

- twenty-eight pharmacists (33.7%) reported that the Diabetes MedsCheck service had a 'very high impact',
- twenty-seven pharmacists (32.5%) reported that the Diabetes MedsCheck service had a 'high impact',
- and fifteen pharmacists (18.1%) reported that the Diabetes MedsCheck service had a 'moderate impact'.

Case study findings

The majority of interviewed pharmacists indicated that MedsCheck and Diabetes MedsCheck had positively impacted their career development and communication with health professionals (Section 6.2.2). Stating that the service is essential for the future of pharmacists while noting that services:

- have helped pharmacists build rapport and trust with their patients
- increased the utilisation of clinical knowledge and encouragement to undertake continuous professional development to update their clinical knowledge and perform their full scope of practice
- are appropriate for pharmacists of all levels to provide these services
- receive positive feedback which they report as "rewarding", invoking further career satisfaction.

As reported (Section 6.2.2) the MedsCheck and Diabetes MedsCheck have resulted in improved communication between pharmacies, GPs, and other healthcare professionals. This is especially the case when dealing with patients with complex medication issues resulting in improved patient outcomes.

The increased communication was noted as a facilitating factor for building relationships and trust within the primary care network. This had a reported flow-on effect with increased communication between pharmacists and patients because of this service. Providing pharmacists with an opportunity to learn more about their patients and consequently provide better care.

Conversely, some pharmacists reported that these programs have no impact on their career development and/or satisfaction levels as the service is provided to help patients rather than for the pharmacist's benefit. This was also reflected in their communication with GPs noting that this had not improved since implementing these programs as it is reliant on *"doctors' attitudes towards pharmacists".*

6.2.4. Administrative and operational requirements

MedsCheck

Of the 128 pharmacists who responded to the survey, 105 pharmacists (n=105) provided their perspective on the administrative aspects of the MedsCheck program, in particular, data entry, data collection and program guidance. Pharmacists indicated they preferred using a practical, integrated and streamlined software system that is easy to navigate, efficient and avoids repetition. Seventeen of the 105 pharmacists (16%) who completed the survey provided the following suggestions for improvement:

- MedsCheck software should be integrated with dispensing software
- Data collection and claiming processes should be completed in the same software to avoid repeating data entry
- Data should be auto-populated in the MedsCheck software from dispensing software and My Health Record
- MedsCheck software should be linked to My Health Record and Medicare

- When conducting follow-ups, data from the initial consultation should be auto-populated so that pharmacists will only need to amend medications that have changed
- Software should be accessible on portable devices
- Drop-down and/or tick-box options are preferred over manual data entry
- Follow-ups should be able to be conducted via a phone call.

Seven pharmacists have also reported that the amount of data collected for the MedsCheck program is excessive, unnecessary and time-consuming.

Pharmacists (n=105) provided feedback on the MedsCheck program guidance via the online survey. Over half of the participants (n=65) stated that no changes are required and that currently, it is working well. Participants provided the following areas for improvement for the program guidance:

- Training should be available for all pharmacists via seminars, online training modules and videos, one-on-one training, case study discussions
- The purpose and process for conducting a MedsCheck should be clearly defined and audits conducted to prevent misuse of the service
- Measures should be implemented to increase public awareness of these services
- A checklist will help ensure that all necessary steps are undertaken during the service
- The program should mandate that two pharmacists are to be on duty when offering the MedsCheck service
- Program rules should be simplified to include step-by-step instructions on claiming process

Diabetes MedsCheck

Like the MedsCheck program, pharmacists prefer using software that is “integrated”, “user friendly”, “streamlined” and “simple”. They provided the following suggestions to improve the administrative/operational requirements of this program:

- Program software should be integrated to extract patient data from dispensing software and My Health Record
- Submission for program data and claims should be processed by the same software
- Patient summary/report from the service should be uploaded into the patient’s My Health Record
- A pre-filled template should be used for program data and claims submission
- Data collection requirements should be minimised to reduce the time taken to provide this service
- Information from the initial service should auto-populate when conducting a follow-up service.

One pharmacist has also suggested that the software should be accessible from devices other than a desktop computer or laptop.

Pharmacists also provided feedback on the Diabetes MedsCheck program guidance via the online survey. Most pharmacists stated that no further changes are required. Out of those who provided recommendations for changes to the program guidance, most requested further online training and support. Pharmacists have suggested that training could be provided in the form of case studies, online modules, and videos. Respondents also requested for guidance and clarity on how to use the portal, the purpose of the program, and ways to deliver the service. This support along with frequent audits was recommended by pharmacists to ensure that there is *“consistency in service delivery across pharmacies”*.

Case study findings

Pharmacists were divided on their experience with the administrative/operational requirements of providing the MedsCheck and Diabetes MedsCheck programs.

Pharmacists who had positive experiences noted that the data collection requirements were supported by the software for providing the services. Describing software prompts alerting pharmacists to eligible patients as a valued feature that reduces administrative burden and the claiming process as both easy and efficient.

In contrast, some pharmacists reported the following concerns with the operational requirements of the MedsCheck and Diabetes MedsCheck services:

- unfriendly and inefficient software
- software that doesn't link the service and claim submission
- lack of pre-filled data or proformas within the system capabilities
- inefficiencies in assessing whether a patient had previously undertaken these services in the past
- extensive data collection requirements impacting the amount of time spent on providing patient care
- lack of clarity on the type of data that should be collected for health outcomes and medication profiles, i.e. whether complementary medications should be included on a patient's medication profile.

6.3. Barriers to implementation and benefits of program participation

During the case study interviews, pharmacists reported several barriers (and enablers) to implementing the MedsCheck/Diabetes MedsCheck programs within their pharmacy.

6.3.1. Time

MedsCheck

Pharmacists were asked to provide their views on the time taken to deliver specific aspects of the MedsCheck service. The 105 pharmacists who completed the MedsCheck survey gave their views on the time taken for conducting a MedsCheck service.

- Forty-seven pharmacists (44.8%) believe conducting a MedsCheck service takes an appropriate amount of time for all or most patients. Only 20 pharmacists (19.0%) believe it took too long for all or most patients. The remaining 38 pharmacists (36.2%) indicated conducting a MedsCheck service took long for some patients, but not others.

The 105 pharmacists who completed the MedsCheck survey also gave their views on the time taken for the collection of patient registration data.

- Fifty-one pharmacists (48.6%) believe collecting patient registration data for a MedsCheck service takes an appropriate amount of time for all or most patients. 29 pharmacists (27.6%) believe it took too long for all or most patients. The remaining 25 pharmacists (23.8%) indicated collecting patient registration data took long for some patients, but not others.

The 81 pharmacists who indicated they had conducted a six-month follow-up MedsCheck service gave their views on the time taken for collecting six-month follow-up data.

- Forty pharmacists (49.4%) believe collecting six-month follow-up data took an appropriate amount of time for all or most patients. Only 22 pharmacists (27.2%) believe it took too long for all or most patients, while 38 pharmacists (36.2%) indicated it took too long only for some patients, but not others.

The pharmacists who completed the MedsCheck survey also gave their views on the time taken to submit data:

- Forty-nine out of 105 pharmacists (46.7%) who conducted a MedsCheck service indicated that submitting claims data took an appropriate amount of time for all or most patients. 41 pharmacists (39.0%) indicated it took too long for all or most patients, and the remaining 15 pharmacists (14.3%) indicated it took too long only for some patients, but not others.
- Thirty-six out of 81 pharmacists (44.4%) who conducted a MedsCheck follow up service indicated that submitting follow up data took an appropriate amount of time for all or most patients. 31 pharmacists (38.3%) indicated it took too long for all or most patients, and the remaining 14 pharmacists (17.3%) indicated it took too long only for some patients, but not others.
- Forty-five out of 105 pharmacists (42.9%) who conducted a MedsCheck service indicated that submitting registration data took an appropriate amount of time for all or most patients. 44 pharmacists (41.9%) indicated it took too long for all or most patients, and the remaining 16 pharmacists (15.2%) indicated it took too long only for some patients, but not others.

Diabetes MedsCheck

Pharmacists were asked to provide their views on the time taken to deliver specific aspects of the Diabetes MedsCheck service.

The 83 pharmacists who completed the Diabetes MedsCheck survey gave their views on the time taken for conducting a Diabetes MedsCheck service.

- Thirty pharmacists (36.1%) believe conducting a Diabetes MedsCheck service takes an appropriate amount of time for all or most patients. 25 pharmacists (30.1%) believe it took too long for all or most patients. The remaining 28 pharmacists (33.7%) indicated conducting a Diabetes MedsCheck service took long for some patients, but not others.

The 83 pharmacists who completed the Diabetes MedsCheck survey also gave their views on the time taken for the collection of patient registration data.

- Thirty seven pharmacists (44.6%) believe collecting patient registration data for a Diabetes MedsCheck service takes an appropriate amount of time for all or most patients. 26 pharmacists (31.3%) believe it took too long for all or most patients. The remaining 20 pharmacists (24.1%) indicated collecting patient registration data took long for some patients, but not others.

The 61 pharmacists who indicated they had conducted a six-month follow-up Diabetes MedsCheck service gave their views on the time taken for collecting six month follow up data.

- Twenty six pharmacists (42.6%) believe collecting six month follow up data took an appropriate amount of time for all or most patients. 20 pharmacists (32.8%) believe it took too long for all or most patients, while 15 pharmacists (24.6%) indicated it took too long only for some patients, but not others.

The pharmacists who completed the Diabetes MedsCheck survey also gave their views on the time taken to submit data:

- Thirty-seven out of 83 pharmacists (44.6%) who conducted a Diabetes MedsCheck service indicated that submitting claims data took an appropriate amount of time for all or most patients. 36 pharmacists (43.4%) indicated it took too long for all or most patients, and the remaining 10 pharmacists (12.0%) indicated it took too long only for some patients, but not others.
- Twenty-seven out of 61 pharmacists (36.1%) who conducted a Diabetes MedsCheck follow up service indicated that submitting follow up data took an appropriate amount of time for all or most patients. 31 pharmacists (50.8%) indicated it took too long for all or most patients, and the remaining 8 pharmacists (13.1%) indicated it took too long only for some patients, but not others.

- Thirty-two out of 83 pharmacists (38.6%) who conducted a Diabetes MedsCheck service indicated that submitting registration data took an appropriate amount of time for all or most patients. 39 pharmacists (47.0%) indicated it took too long for all or most patients, and the remaining 12 pharmacists (14.5%) indicated it took too long only for some patients, but not others.

6.3.2. Other barriers

The case study interviews with pharmacists uncovered a range of additional barriers to implement and/or operate the MedsCheck and Diabetes MedsCheck programs. These include:

- unsupportive GPs who do not encourage participation or follow through with pharmacist recommendations
- communication and/or contact with prescribers to discuss outcomes of the MedsCheck or Diabetes MedsCheck service
- inability to submit claims due to pharmacy time constraints
- submission deadlines for submitting claims are too short
- patients refuse the service as they believe that pharmacists are trying to sell products
- inappropriate marketing of the service as patients feel like they are being "checked"
- low awareness of the Programs by customers
- the Program cap is too low affecting the number of patients able to participate in this service.

Opportunities for program improvement identified by pharmacists included:

- Increase the accessibility of the service and allow a greater number of patients to participate by individually tailoring the monthly cap on the program's for individual pharmacies based on the total number scripts dispensed.
- Increase the total reimbursement associated with initial and follow ups to make it cost effective to have two pharmacists on duty
- Increase advertising and marketing of programs to patients and health care professionals so that they are more aware and accepting of the program when offered by a pharmacist.
- Provide the same reimbursement amount for a MedsCheck and Diabetes MedsCheck as they are delivering similar health outcomes for patients.

Despite being outlined as a barrier by some pharmacists (see Section 6.2.1), the majority of pharmacists noted that the reimbursement amount was adequate to provide the MedsCheck and Diabetes MedsCheck services. Subsequently, acting as an enabler to implement the program within their pharmacy.

The reimbursement amount allowed pharmacists, via the MedsCheck services, to *"build relationships"* with patients and increase the level of respect for the services provided by pharmacists. Prior to participating in the program, pharmacists noted that patients have a limited understanding of their medications but also the role that pharmacists play within the primary healthcare team. The increase in rapport was resulting in increases in repeat business and the number of sales through scripts and ancillary services. Both the MedsCheck and Diabetes MedsCheck was described as the "missing link" for patients in the healthcare system. With patients gain an increased knowledge about their diagnosis and provided with the opportunity to ask question about the purpose and use of their medications.

Pharmacists also noted the following enablers to the implementation of the MedsCheck program:

- sense of worth in providing interventions to patients that are documented and followed up
- patients provided positive feedback on completing the service

- increased role within the primary healthcare team
- opportunity to assess medications in a formalised and comprehensive manner which encourages conversations about a patient's medications and health concerns
- a safe environment for patients to ask questions without judgement.

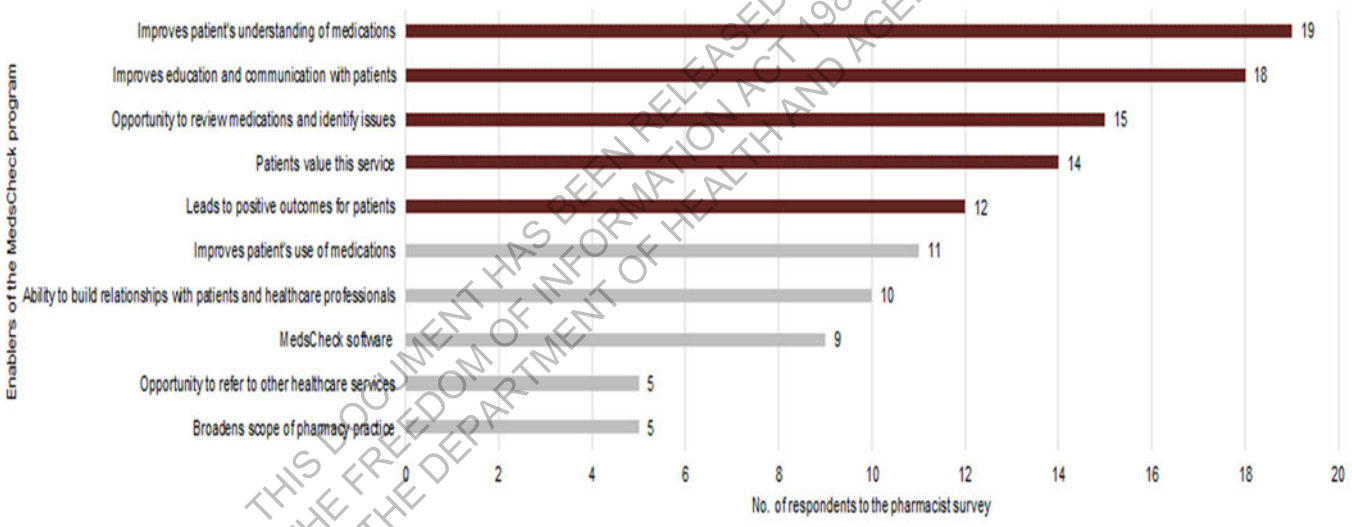
A suggested improvement to continue to enable the provision of both MedsCheck and Diabetes MedsCheck was to allow patients to complete their own health outcomes data in their own time.

6.4. Opportunities and enablers

MedsCheck

Pharmacists were asked to provide their opinion on the features of the MedsCheck program that are working well. A total of 105 of the 128 survey participants provided insight into the enablers of the MedsCheck program. Figure 17 highlights the most frequently-reported enablers: enhanced understanding of medications, improved education and communication with patients, opportunities to review medication to identify issues, service is valued by patients and leads to positive patient outcomes.

Figure 17: Features of the MedsCheck service that act as enablers according to pharmacists (via open-ended responses)



Source: HealthConsult Pharmacist Survey

Fifteen of the 105 pharmacists (14%) reported via the online survey that the MedsCheck service is a valuable opportunity to review patients' medications and identify issues. Pharmacists described the service as a *"structured"* and *"formalised"* medication review process which involves:

- identifying areas for improvement in medication use
- improving patients' understanding of medications
- developing a medication list for patients for future reference.

For rural patients, a pharmacist reported that this service provides convenient access to medication reviews. Pharmacists who completed the survey also supported the broad selection criteria which they claim it aims at patients who would benefit the most. Also, four pharmacists reported that payments associated with the MedsCheck service enhances their capacity to offer this service at their pharmacy.

"MedsChecks allow us as community pharmacists to sort out complex problems which are time consuming to explain and implement to the patient. The payment for service allows me to focus on our most at need patients and be proactive and not afraid to spend a lot of time with people"

Pharmacists (n=14, 13%) frequently reported that their patients find the MedsCheck service useful and are satisfied and appreciative of the person-centred care it offers. It is reported that as patients become more familiar with the service and its benefits, they were more likely to request follow up service in the future.

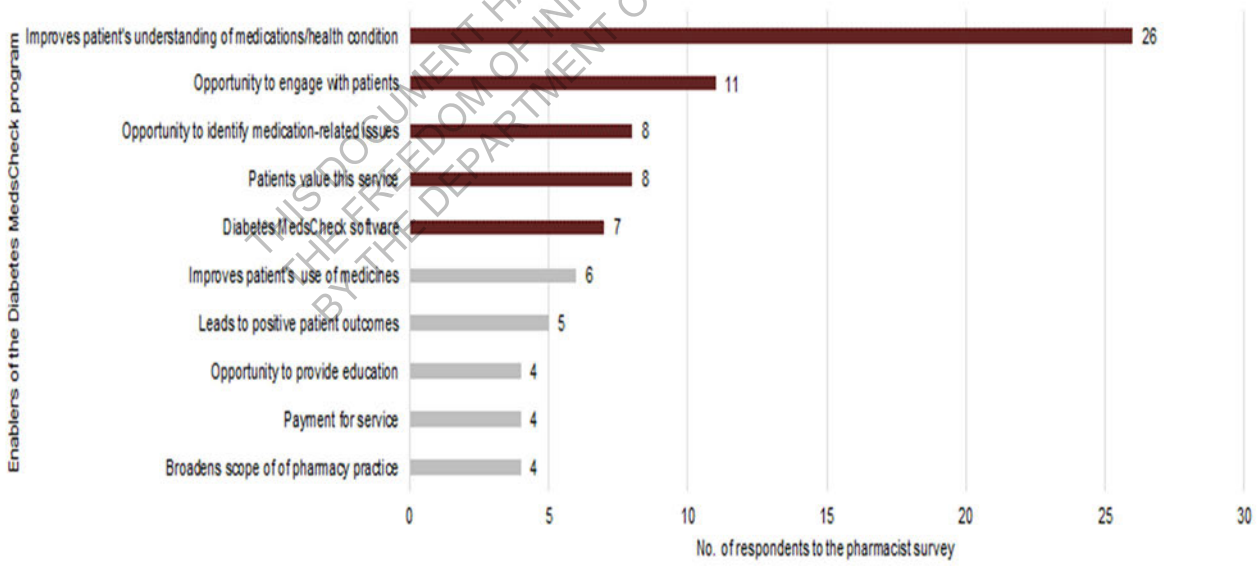
The MedsCheck service also brought on improved communication with patients, as reported by pharmacists. Pharmacists noted that the service was effective in engaging patients in conversations about their health, medical conditions, and medicines. This feature has been reported to help build trust and rapport and in developing relationships between pharmacists and their patients. One pharmacist stated that the MedsCheck service also helped strengthen ties between the pharmacy and the community by helping their *"community to get the most out of their medications"*. The following quote from a pharmacist is an example of a positive impact of the MedCheck service:

"Communicating with patients and learning the whole story of the patient helps us to serve them better and they [the patients] get better outcomes from their treatments"

Diabetes MedsCheck

Pharmacists were asked to provide their opinion on the features of the Diabetes MedsCheck program that are working well. A total of 81 of the 128 participants (63%) responded to this question in the online survey. Figure 18 highlights the most frequently-reported enablers of the Diabetes MedsCheck program: enhanced understanding of medications and diabetes, opportunities to engage with patients and identify medication-related issues, the service is valued by patients and the software used to conduct the program.

Figure 18: Features of the Diabetes MedsCheck service that act as enablers according to pharmacists (via open-ended responses)



Source: HealthConsult Pharmacist Survey

Most pharmacists valued the opportunity to engage with patients in discussions about diabetes control and medication use and understanding. By identifying gaps in their patients' understanding of medicine use and disease management, pharmacists were able to provide education tailored to their patients' needs. Reimbursements from this program compensated for the time spent with patients to deliver the service; encouraging in-depth discussions that lead to positive patient health outcomes and greater trust and rapport.

The program also offers pharmacists the opportunity to identify medication-related issues; a feature of the service that was noted as an enabler by several pharmacists (n=8, 10%). This feature was reported to be crucial for preventing adverse events and to improve medication use and compliance.

Pharmacists also reported that their patients responded positively to the service. Patients were "*grateful"* for, and valued, the service, leading to better *"customer satisfaction".* They were also more familiar with these programs, hence they "*often request to have one done again" and* spread awareness of these services through *"word of mouth".*

According to pharmacists, the most commonly reported enablers for the MedsCheck and Diabetes MedsCheck programs are being able to improve understanding of medications, increased engagement and communication with patients, opportunities to review and identify medication-related issues, patients considering the service as valuable, and the software to conduct the program.

7. Conclusion and next steps

This Chapter presents conclusions of the evaluation of the 6CPA MedsCheck and Diabetes MedsCheck programs and presents recommendations to support the programs under 7CPA.

7.1. Has the MedsCheck and Diabetes MedsCheck program effective in improving patients' understanding and use of their medications?

The evaluation found no significant improvements in medication adherence for both programs. However, both patients and pharmacists reported a positive impact on knowledge relating to understanding, use and adherence to medication regimes. Pharmacists felt the MedsCheck programs were impactful to patient adherence and health outcomes, including identifying issues with patients' medication compliance, inappropriate use of medications and overall poor medication management, whilst allowing opportunity to provide appropriate education and referrals to other health care services (if required).

7.2. Does the program improve the health outcomes of patients?

The evaluation found that self-reported GP visits, hospitalisations and ED presentations of MedsCheck program participants were significantly less or unchanged at follow up suggesting that the program reduced GP visits, hospitalisations and ED presentations.

There were no positive changes at follow up in measures of the number of medication-related side-effects or quality of life for both programs, nor in distress measures (Diabetes MedsCheck program only).

Most pharmacists reported that the MedsCheck programs had at least a *moderate impact* on improving the health of patients, and specific to the Diabetes MedsCheck, pharmacists noted that the patients were more likely to consistently monitor their blood glucose which would likely reduce the number of hypoglycaemia and hyperglycaemia events experienced whilst participating in the program.

7.3. Is the MedsCheck and Diabetes MedsCheck program cost-effective?

Due to the lack of suitable benefit parameters, a CEA was not performed to measure the cost effectiveness or the program. An alternative approach was implemented to analyse cost and benefit by using health services utilisation. The CBA found that the programs provide a benefit in reducing unnecessary GP visits for MedsCheck and Diabetes MedsCheck patients which equates to a saving of $79.50 for every 10 patients that are in the program. The analysis of the benefits of reduction in total frequency of GP visits against the program cost shows that the program will achieve a cost-neutral outcome for the funder if the reduction of GP visits continues until 18 months after the program. Where the cost of data collection is excluded and only the cost-of-service provision is incurred, a cost-neutral outcome will be achieved in less than 12 months after the program.

7.4. What are the barriers and enablers to providing an effective patient-centred MedsCheck and Diabetes MedsCheck service and how can it be strengthened?

The evaluation found that patients were satisfied with the MedsCheck programs and see value by participating. Pharmacists also reported satisfaction and positive impacts on their career development including broadening their role within the primary health care team. Barriers related to participation in the programs, as identified by pharmacists, included time, data entry requirements, and difficulties engaging with a patient's GP. The most frequently reported enablers included enhanced patient understanding of medications, improved education and communication with patients, and opportunities to review medication to identify issues.

Identified opportunities for program improvement included increasing the monthly cap on the program for individual pharmacies based on the total number scripts dispensed, increasing the total reimbursement to make it cost effective to have two pharmacists on duty (to address the time issues), and increasing patient awareness of the program.

7.5. Suggested changes to the MedsCheck programs

Suggested changes that could be made to the MedsCheck programs include:

- Increasing the accessibility of the service to allow a greater number of patients to participate. This could be achieved by individually tailoring the pharmacy's monthly cap based on the total number scripts dispensed, rather than the volume of patients.
- Increase the total reimbursement associated with initial and follow ups to make it cost effective to have two pharmacists on duty to address the time requirements for delivering the service.
- Limited patient awareness was identified as a barrier and pharmacists felt that recruitment to the program was impacted because patients thought they were being "sold" something. Increased advertising and marketing of programs to patients and health care professionals so that they are more aware and accepting of the program when offered by a pharmacist.
- Adjusting the reimbursement amount for a MedsCheck and Diabetes MedsCheck to be equal as they are delivering a similar program.
- There is a low adherence to pharmacists meeting the follow up requirements. The pharmacist's survey suggested that 60% of pharmacists are either not conducting follow ups or only doing so for a small number of patients. The reasons for not conducting follow ups included difficulties scheduling appointments for follow up data collection, insufficient incentive due to the size of the fee, and follow ups occurring less formally and more often during routine contact with patients. The requirement of a formal follow-up should be reviewed.
- Build in the completion of health outcomes data by patients in receipt of Commonwealth funded CPA program. This could be using a phone app or email that sends an alert for completion every 6 months – a lot of PREMs and PROMs are now conducted this way – this could be setup as part of the patient joining the CPA program. This would provide both monitoring and evaluation data.
- The main measure included in the health outcomes data to measure changes in medication adherence is the patient's average MedsIndex score. However, this measure has not been validated so it cannot be assumed that it accurately measures medication adherence. Until validated, the utility of the MedsIndex score is limited. Consider adopting an alternative measure to the MedsIndex score (e.g. the ARMS measure recommended by HealthConsult when advising on the design of the 6CPA data collection for new and expanded programs) for measuring medication adherence prior to inclusion in the data collection for 7CPA or conducting a study to validate MedsIndex as measure of medication adherence.

- The outcomes reporting for MedsCheck should be refined to address the issues identified in Section 4.1.3 relating to the information provided relating to recommended changes in medications. Currently, the data is unclear as it does not specify whether the recommendation to increase or decrease medicines is for dose only, for medicine only, or for both dose and medicine.
- Consider the inclusion of identifying data elements such as name, date of birth and address in the patient administration process so that a control group could be created by linking CPA program data to other national dataset (e.g. PBS, MBS, ED presentations and hospitalisation data).

7.6. Suggested changes to future evaluations of CPA programs

Future evaluations of the CPA programs should consider the following when designing future evaluation. These include:

- Obtaining buy in from key stakeholder groups (e.g., Guild, PSA, Chemist Warehouse, Webstercare, etc.) to promote to community pharmacies to participate in the evaluation is important.
- The 6CPA program data had limited utility for analysing patient health outcomes due to the nature of the reported data items such as yes/no questions (rather than frequency) and a low proportion of follow up data collected. A patient minimum dataset with tailored health outcome measures should be considered. The minimum dataset should include follow-up data capture on adherence and satisfaction.
- The primary outcome measure included in the evaluation (including the economic evaluation) should be medication adherence. Secondary outcomes should be minimised not to overburden patients in the data collection. Use of other pharmacy collected measure could be considered (e.g., blood pressure for patients with hypertension or HbA1c for patients with diabetes).
- Evaluating the CPA programs using a set number of pharmacies to recruit new patients to does not work as there is an insufficient number of new participants (largely due to the cap on the program), to meet a quota to power the study.
- The Pharmacy Programs Administrator (PPA) dataset does not contain sufficient data to inform an evaluation, nor does it include sufficient identifiable data (i.e., does not include, name, date of birth or address) about patients that can be used to link to MBS and/or PBS data. This means the PPA dataset can also not be used to identify a control versus intervention cohort in the MBS or PBS data set.
- Medicare number cannot be used by the AIHW to link to any national or state-based data set for which they are the data custodian. AIHW can only undertake probabilistic matching based on name, date of birth and address.
- Asking pharmacies to get patients to complete the surveys in pharmacy and then return patient survey forms in batches results in delays or lost survey data and/or the submission of data collected for other purposes (e.g., PBS claims forms were sent to HealthConsult offices as pharmacies used the provided pre-paid envelopes to post claims forms). This practice is a breach of data privacy, and it is time consuming for HealthConsult to safely return the data.
- Completion of paper-based surveys by patients results in many questions missed or incorrectly answered as well as loss of data because of paper forms not being returned.
- The provision of incentives to patients to submit completed data collection forms/surveys is effective.
- Requesting pharmacies to recruit patients for an evaluation without an incentive is a limiting factor when trying to recruit a quota to power a study.

- Requests to AIHW to link evaluation data sets to data sets they hold (e.g., PBS) results in long delays impacting the timely completion of projects, and the hospitalisation data and ED presentation data held by the AIHW requires individual State based approval for its use. This is both a costly and time-limiting exercise. In addition, there is often a two-to-three-year lag in the hospitalisation and ED data being available for use.

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Appendix A: Evaluation Framework

Table A. 1: Evaluation Framework for the MedsCheck and Diabetes MedsCheck Program

Evaluation Questions	Key Performance Indicators (KPIs)	MedsCheck	Diabetes MedsCheck	Data sources(s)/Data collection strategy
To what extent is the (Diabetes) MedsCheck program effective in improving patients understanding and use of their medications?	3.1 Improvements in medication adherence • MedsIndex • ARMS-12	✓	✓	Patient survey (ARMS) 6CPA program data
	3.2 Impact of MedsCheck and Diabetes MedsCheck on patients' understanding and use of medication • Patient understanding of medications • Knowledge about the importance of medication regime and adherence	✓	✓	Patient survey (6CPA participant knowledge) 6CPA program data
	3.3 Pharmacists' view on the impact of MedsCheck and Diabetes MedsCheck on patients understanding and use of medicines • Proportion of pharmacists that report that the intervention has resulted in optimising patients effective use of (pharmacological or non-pharmacological services) prescription and non-prescription medicines	✓	✓	Pharmacist survey (self-report)
	3.4 Adherence to Action Plan (Patient)	✓	✓	Patient survey
Does the (Diabetes) MedsCheck program improve the health outcomes of patients?	4.1 Proportion of patients whose medication profile changes as a result of the intervention: • Actions and recommendations taken by the pharmacist • Change in utilisation of prescription and non-prescription medications (number and type of medications) • Recommendation to increase dose and or number of medicines • Recommendation to decrease dose and or number of medicines	✓	✓	6CPA program data Patient survey
	4.2 Health service utilisation due to medication misuse • Decrease in hospital presentations/admissions and/or GP visits related to misuse of medication (self reported) • Decrease in GP visits due to problems with medication in preceding 6 months • Referred to GP significant issues identified	✓	✓	Patient survey 6CPA program data

Evaluation Questions	Key Performance Indicators (KPIs)	MedsCheck	Diabetes MedsCheck	Data sources(s)/Data collection strategy
	4.3 Reduction in the number of medication-related side-effects	✓	✓	Patient survey (GASE)
	4.4 Improvements in patient reported Quality of Life • Adherence and quality of life • Side-effects and quality of life	✓	✓	Patient survey (AQoL-4D), ARMS-12 and GASE
	4.5 Emotional distress associated with diabetes treatment and management	n/a	✓	Patient survey (PAID-5)
	4.6 Perceived effectiveness for improving health outcomes of patients (reported by pharmacists)	✓	✓	Pharmacist survey
Is the (Diabetes) MedsCheck program cost effective?	Cost (i.e. standard cost of all interventions based on costing study) per unit change in effectiveness indicator for all effectiveness measures (e.g. adherence, adverse events) for all MedsCheck cohorts (single (i.e. Diabetes MedsCheck only) and pairs (i.e. MedsCheck plus other 6CPA program))	✓	✓	Based on outcomes of analysis
What are the barriers and enablers to provide an effective patient-centred (Diabetes) MedsCheck service and how can it be strengthened?	6.1 Patient experience and satisfaction • Patient-reported experience and satisfaction • Proportion of patients that reported to be satisfied overall with the Diabetes/ MedsCheck service and see value gained by attending (TSQM) • Pharmacist perspective on patient satisfaction	✓	✓	Patient survey (participant knowledge) Patient survey (TQSM)
	6.2 Pharmacist experience of MedsCheck and Diabetes MedsCheck programs • Pharmacist reimbursement - Perceived cost effectiveness of the MedsCheck program by key stakeholders, pharmacies and pharmacists • Pharmacist role within the primary health care team - Proportion of pharmacists that report that the intervention has resulted in an expansion of their role within the primary health care team • Career development opportunities for pharmacists and communication with other health professionals • Administrative and operational requirements	✓	✓	Pharmacist survey and case studies
	6.3 Barriers to implementation and identified opportunities • Perceived barriers/enablers to implement and/or operate the (Diabetes) MedsCheck program and identified opportunities for improvement by key stakeholders, pharmacies and pharmacists			Pharmacist survey and case studies

Appendix B: Evaluation Methodology

Data collection

This evaluation drew from multiple data sources, including patient surveys, pharmacist and pharmacy profile surveys, case studies/pharmacist interviews and 6CPA evaluation data.

Patient Surveys

Patient surveys were administered before initial intervention and at 6 months follow-up, which took approximately 10-15 minutes to complete. HealthConsult provided a $30 supermarket voucher to all patients on receipt of completed follow-up survey. Pharmacists provided patients with the voucher following completion of the follow-up survey.

The surveys included validated scales and bespoke measures of medication adherence, QoL and patient satisfaction as outlined below:

Adherence to Refills and Medications Scale (ARMS)

Developed and evaluated by Kripalani et al. (2009) among low-literacy patients with chronic disease[27], the ARMS scale was designed as a self-report measure of medication adherence. Based on the paper describing the development and evaluation of the scale, there was a single aggregate measure (represented as the mean of all twelve questionnaire items) as well as two subscales: one of which pertains to taking medications as prescribed while the other refers to factors relating to refilling medications on schedule. The original validation paper suggested the use of 12 questions.

The **ARMS-12** total score is based on 12 questions and has a possible range of 12 to 48, where a lower score indicates better adherence. The ARMS can be split into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16).

Treatment Satisfaction Questionnaire for Medications (TSQM)

Treatment Satisfaction Questionnaire for Medications (TSQM v1.4) consists of 14 items and measures the domains of effectiveness, convenience, side effects and global satisfaction. Each domain is scored a value by adding the TSQM items in the domain and then transforming the score on a scale ranging from 0 to 100. TSQM permits comparisons across medication types and patient conditions. TSQM v1.4 was used given the reduced number of questions compared to other tools such as the Patient Satisfaction with Pharmacist Services Questionnaire (22 items).

Generic Assessment of Side Effects (GASE)

Information on the Generic Assessment of Side Effects (GASE) was collected to:

- develop a comprehensive profile of patient-reported side effects before and after administration of a given 6CPA service
- critically assess what changes, if any, could be attributed to the services provided.

The GASE was chosen because it collects information relating to a wide range of side effects commonly reported as part of clinical trial participation.

The GASE measure asks participants to rate the severity of 36 adverse events on a scale of 0 (not present) to 3 (severe). Participants were also asked to categorise each side-effect as to if it related

[27] S Kripalani et al Development and Evaluation of the Adherence to Refills and Medications Scale (ARMS) among Low-literacy Patients with Chronic Disease, Value in Health Vol.12 No.1 2009 Available at https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1524-4733.2008.00400.x

to the medications received or not. Based on the instructions from the developer of the instrument, the response recorded can be coded into one of four different composite scores:

(1) Symptom count: A per-person count of the number of items that an individual endorsed as 'mild', 'moderate', or 'severe'.

(2) Total score: A sum of the endorsed symptoms with increasing numerical values allocated to increasing levels of symptoms.

(3) Medication-attributed symptom count: A per-person count of the number of items an individual endorsed as 'mild', 'moderate', or 'severe' and which were identified by the respondent as being associated with medication use.

(4) Total Score (attributed): A sum of the endorsed symptoms identified as being attributed to medication use, with increasing numerical values allocated to increasing levels of symptoms.

In addition to the scoring algorithms above, changes in the type and frequency of commonly experienced side effects were also assessed for each program in the initial and follow-up questionnaires.

The Assessment of QoL - AQoL-4D

The Assessment of QoL was determined using the AQoL-4D questionnaire. This questionnaire consists of 12 questions. These questions can be coded into four domains based on psychometric (unweighted) scoring. The domains assessed by the AQoL-4D are

(5) Independent living – self-care, household tasks and mobility

(6) Relationships – friendships, isolation, and family role

(7) Mental health – sleeping, worrying, pain

(8) Senses – seeing, hearing, and communication.

The questions can also be aggregated into health state utility score estimates which can be used in economic evaluations for calculating Quality Adjusted Life Years (QALYs). The utilities are considered to be preference weights and in theory, should reflect peoples' preferences more accurately than unweighted surrogates. The AQoL utility score is obtained by weighting the items and then applying a multiplicative function to obtain an index that is transformed on a life-death utility-scale. The utility score is presented on a scale where the upper boundary, 1.00, represents the best possible HRQoL, death equivalent HRQoL is represented by 0.00, and the lower boundary, -0.04, represents an HRQoL state worse than death. The weighted AQoL-4D domain utility scores for each dimension (independent living, relationships, mental health, and physical senses (i.e., seeing, hearing, and communication) are scaled between a 0.00 (worst health state) and 1.00 (best health state).

Single item questions

6CPA participant knowledge

In addition to the validated measures used above, the survey also collected responses to individual questions which asked participants to rate their knowledge of, a) medication storage, b) knowledge of the importance of medication dosage and schedule, and c) overall knowledge of medications taken. Participants were asked to complete this question at initial and follow up where they rated their knowledge on a scale of 1 (very low) to 10 (very high).

Service satisfaction and impact

Participants were asked to rate their satisfaction with the service on a 5-point scale from very satisfied to not at all satisfied. Participants were also asked what impact the service had on their understanding and use of medicines on a 5-point scale from very high impact to no impact.

Pharmacist surveys

The Pharmacist Survey was administered to participating pharmacies at follow up to explore program impacts and perceptions. The survey consisted of 98 questions designed to elicit pharmacist views of the four programs administered as part of the 6th Community Pharmacy Agreement. The content of the survey elicited responses that could be loosely characterised into the following topic areas:

- The extent to which the program participation impacts patient understanding, adherence, and overall health
- The extent to which the program impacts pharmacist job satisfaction, the scope of practice, communication, and their role within a primary healthcare team
- The time taken and opinions about the time taken to complete aspects of the 6CPA program (e.g., registration, service, claims submission, and follow-up)
- Opinions surrounding the payment provided to complete aspects of the 6CPA program
- If the pharmacist conducts the six-month follow-up assessment and any identified reason why they may not
- Pharmacist perception of patient satisfaction with the service delivered.

The content of the survey was similar across the four programs with minor variations in content required to identify participant responses for program-specific items.

The survey was reviewed and endorsed by the Pharmacy Guild and promoted for dissemination. Dissemination occurred in three separate stages, staggered from March 2019 to January 2020. The first stage involved the dissemination of an invitation email and link to the survey to pharmacies and pharmacists who had consented to participate in the evaluation study. These pharmacists were targeted directly using their email addresses provided upon completion of the pharmacy consent form. It was thought that respondents would be more likely to provide candid replies if their preferred email address was used.

The second stage was to send an invitation email to all pharmacies identified by the Guild as providing one or more of the 6CPA programs evaluated. This circulation list was initially provided to HealthConsult for pharmacy recruitment for the evaluation, but separate consent was later provided to use it for the dissemination of the survey. Overall, more than 5,000 pharmacies were contacted during this stage. This version of the survey was also publicised by the Pharmacy Guild as well as the Pharmaceutical Society of Australia (PSA) using Twitter and their fortnightly newsletter.

The last stage involved paid dissemination of the survey link to a cohort of early-career pharmacists as well as publicising the content via the PSA LinkedIn page.

Pharmacy Profile Surveys

The pharmacy profile survey was designed to solicit information related to general pharmacy characteristics. This was done to describe participating pharmacies and to provide the ability to assess if pharmacy attributes contributed to patient outcomes and patient improvement. Nine questions were posed to the managing pharmacist or pharmacist-owner surrounding pharmacy characteristics.

The pharmacy survey was collected from all pharmacies that participated in the 6CPA evaluation along with a representative sample of pharmacies nationally. Responses were solicited using Survey Monkey although occasionally pharmacies were followed up and responses were received over the phone. The pharmacy profile survey collected information on the following topic areas:

- **Location:** Postcode
- **Type:** Independent, franchise, banner, friendly society group, buying group

- **Co-location:** Standalone, shopping centre, or co-located with another facility
- **Dispensing type:** Forward pharmacy, traditional pharmacy, semi-forward pharmacy
- **Pharmacy programs currently offered:** 6CPA programs currently offered by your pharmacy
- **Size:** Number of pharmacy staff currently employed

Case Studies/Pharmacist Interviews

Semi-structured interviews were conducted as part of 15 case study visits with 16 pharmacists who had consented to be part of the 6CPA evaluation. These interviews were completed between February and May 2019 and represented pharmacies in four states across a representative group of metropolitan, regional, rural, and remote services. The interviews varied in duration but mostly lasted between 45 minutes and one hour. The topic areas discussed during the site visit interviews were as follows:

- **Patient experience and outcomes:** Impact on patient's understanding, quality use of medications, overall patient-reported satisfaction, reduction in the impact of adverse events associated with medications.
- **Impact of program participation on the pharmacist workforce:** Satisfaction with providing the service, impact of the 6CPA programs on pharmacist's carer satisfaction/pathways for advancement. In addition, how provisioning of 6CPA services has impacted the pharmacist's role (in terms of both communication as well as stature) within a primary healthcare team.
- **Operational effectiveness:** Identification of barriers to the implementation and operation of each 6CPA program. Barriers can be identified as financial, logistical, practical, or ideological.
- **Financial viability:** Cost-effectiveness, as well as questions tailored specifically to financial costs associated with provisioning of each 6CPA program relative to the remuneration received.
- **Current program rules:** Specific questions relating to aspects of 6CPA program implementation (feasibility of data collection, follow-up, claim submission).

Stakeholder Consultations

The purpose of the stakeholder consultation was to solicit feedback from various identified stakeholder groups about what impact the administration of the relevant 6CPA program has had on the following aspects of patient care:

- The perception of any changes in patient experience and outcome resulting from program participation
- The perception of any changes related to pharmacist communication and pharmacist roles as a result of participation in the 6CPA program
- The perception of the cost-effectiveness of the program by stakeholders
- Perceived barriers and enablers to implementation.

HealthConsult was informed by the Department that these interviews will not go ahead.

6CPA Program Data

Table B. 1 lists the data elements available in the 6CPA program data.

Table B. 1: Data elements in 6CPA program data – MedsCheck/Diabetes MedsCheck Program

Data Element Name	Section
Date of MedsCheck Service	Service claim

Data Element Name	Section
Patient Date of Birth	Service claim
Date of MedsCheck Service	Patient Registration
Reason for MedsCheck Service	Patient Registration
Where is the patient currently living?	Patient Registration
Total number of prescription medicines	Patient Registration
Total number of non-prescription medicines	Patient Registration
Patient Date of Birth	Patient Registration
Patient's residential postcode	Patient Registration
Patient gender	Patient Registration
Is English the patient's primary language at home?	Patient Registration
Does the patient identify as Aboriginal and/or Torres Strait Islander?	Patient Registration
What health conditions/co-morbidities is the patient taking medications for?	Patient Registration
Outcome of MedsCheck Service	Patient Registration
Actions taken by pharmacist as a result of the MedsCheck	Patient Registration
In the last six months, did the patient go to the GP, or hospital, because of problems with his/her medicines?	Patient Registration
Does the patient have support with managing medicines?	Patient Registration
MedsIndex score	Patient Registration
PATIENT MEDICATION PROFILE (note multiple medications can be added)	Patient Registration
Brand Name	Patient Registration
Drug Name	Patient Registration
Form	Patient Registration
Strength	Patient Registration
Dose	Patient Registration
Dosage Regimen	Patient Registration
Date of follow-up service	6 months follow up
Patient Date of Birth	6 months follow up
Outcome of the MedsCheck Follow-Up Review	6 months follow up
Actions taken by pharmacist as a result of the MedsCheck	6 months follow up
In the last six months, did the patient go to the GP, or hospital, because of problems with his/her medicines?	6 months follow up
MedsIndex score	6 months follow up
PATIENT MEDICATION PROFILE (note multiple medications can be added)	6 months follow up
Brand Name	6 months follow up
Drug Name	6 months follow up
Form	6 months follow up
Strength	6 months follow up
Dose	6 months follow up
Dosage Regimen	6 months follow up

Appendix C: Patient survey findings

This chapter presents the analysis of, and detailed findings from, the patient survey

Participant characteristics

There were 112 evaluation participants who completed an initial and/or follow-up Diabetes MedsCheck or MedsCheck survey. Of those, 88 participants (or 78.6%) received a MedsCheck service, and 24 participants (21.4%) received a Diabetes MedsCheck service. Only 69 participants (61.6%) completed both an initial survey and follow up survey; 54 of those (78.3%) received a MedsCheck service, and 15 (21.7%) received a Diabetes MedsCheck service (Table C. 1).

Table C. 1: Number of evaluation participants of the MedsCheck and Diabetes MedsCheck program who completed initial and follow up survey

Program	Number of evaluation participants*	Surveys completed		
		Initial	Follow up	Matched initial/ follow-up
MedsCheck	88	72	70	54
Diabetes MedsCheck	24	22	17	15
MedsCheck and Diabetes MedsCheck	112	94	87	69

*The MedsCheck and Diabetes MedsCheck groups were mutually exclusive. All evaluation participants completed an initial and/or follow up survey.

Source: HealthConsult Patient Survey – MedsCheck and Diabetes MedsCheck programs

Appendix D: Pharmacist Survey and Case study

The evaluation collected pharmacists' opinions on the effectiveness of the in-scope 6CPA programs via an online survey. A total of 128 pharmacists completed the **pharmacist survey** (Table D. 1).

Table D. 1: Summary of location and number of pharmacists and pharmacies involved in the pharmacist survey

State/Territory*	Geographical location of pharmacies			Total
	Major city	Regional	Remote	
ACT	1	0	0	1
NSW	30	16	0	46
QLD	8	7	1	16
SA	14	2	0	16
TAS	0	2	0	2
VIC	16	8	0	24
WA	19	4	0	23
Total	**88**	**39**	**1**	**128**

Source: HealthConsult Pharmacist Survey

*There were no respondents from NT

Case study site visits were conducted at 15 pharmacies across four states in Australia. Table D. 2 summarises the geographical location of the pharmacies where 16 pharmacists were interviewed as part of this evaluation.

Table D. 2: Location and number of pharmacists and pharmacies involved in the case study site visits

State/Territory*	No. of pharmacies	Geographical location of pharmacies		No. of pharmacists interviewed
		Metropolitan	Regional/ remote	
NSW	4	2	2	4
QLD	3	1	2	3
VIC	4	2	2	5
WA	4	2	2	4
Total	**15**	**7**	**8**	**16**

Source: HealthConsult Case study site visit data

*There were no pharmacies involved in the case studies from ACT, NT, SA, and TAS

Participating pharmacies

From November 2018 to April 2019, 2,881 pharmacies across Australia registered patients for the MedsCheck/Diabetes MedsCheck programs. We compared the distribution of pharmacies participating in the 6CPA evaluation across states and remoteness to all pharmacies providing MedsCheck/Diabetes MedsCheck services over a similar period. Table D. 3 shows the distribution of the pharmacies who submitted registrations for MedsCheck/Diabetes MedsCheck services in Australia.

Table D. 3: Derived* locations of pharmacies MedsCheck/Diabetes MedsCheck services in Australia

State/Territory	Geographical location of pharmacy (PhAria)			Total
	Major city	Regional	Remote	
ACT	63	0	0	63
NSW	577	261	7	845
NT	0	13	7	20
QLD	442	215	11	668
SA	220	77	10	307
TAS	0	57	1	58
VIC	408	142	3	553
WA	287	59	21	367
Total	**1,997**	**824**	**60**	**2,881**

*Locations were derived by assigning each pharmacy to the most commonly reported suburb of the 6CPA registrants

Source: 6CPA Period 4 registration data

Between October 2018 to April 2019, 170 pharmacies consented to participate in the 6CPA evaluation. The pharmacy survey was distributed to all pharmacies who provide the in-scope 6CPA program service, regardless of their participation in this evaluation. Data was collected on the type of pharmacy, dispensing model, location, number of staff and work hours, and type 6CPA program service offered. This section presents data reported by pharmacies that participated in the evaluation.

Table D. 4 summarises the geographical locations of the pharmacies that provide MedsCheck and Diabetes MedsCheck services. A total of 161 of the 170 participating pharmacies (94.7%) indicated that they provided MedsCheck services. A slightly smaller proportion stated that they also provided Diabetes MedsCheck services (151 out of 170, 88.8%). No pharmacies indicated that they conducted Diabetes MedsCheck without also providing a MedsCheck service. Given the relatively small difference between the cohorts, in this section (Section D.1) we will report on pharmacies delivering the MedsCheck intervention.

Table D. 4: Summary of the HealthConsult pharmacy survey data by state/territory and geographical location for MedsCheck and Diabetes MedsCheck programs

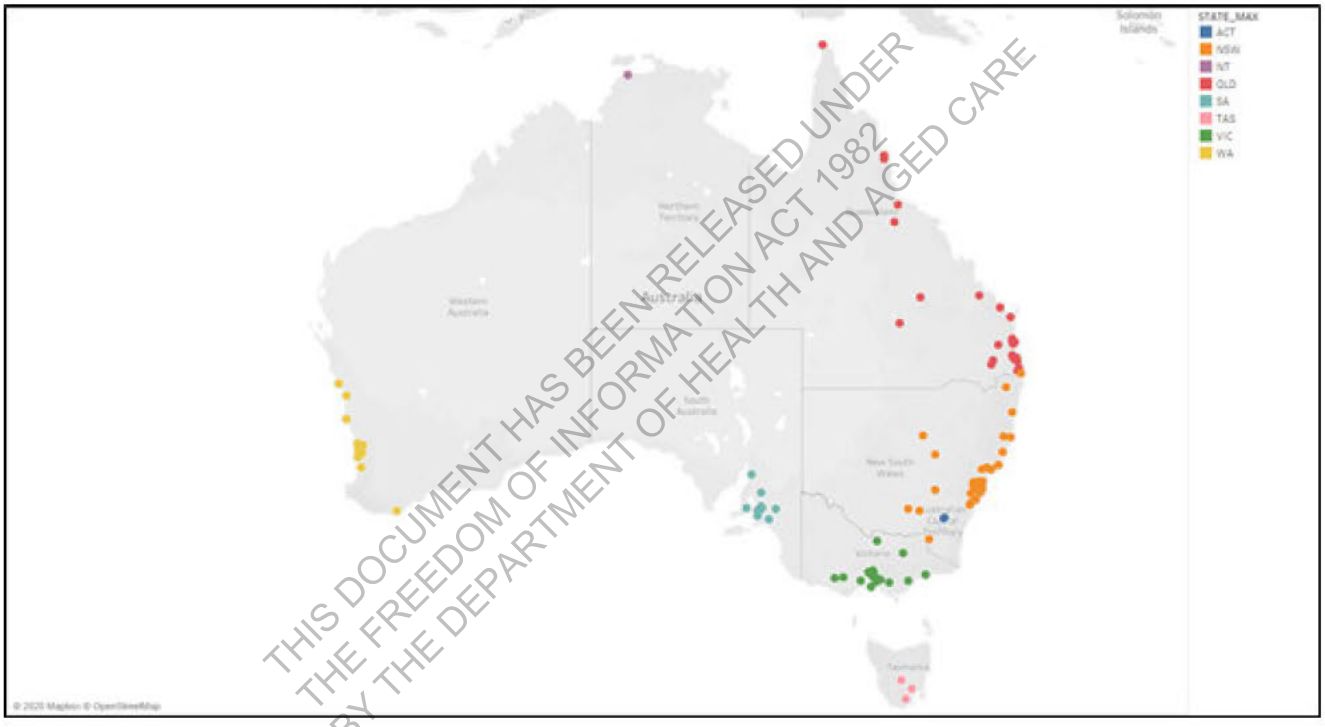
State/Territory	Geographical location of pharmacy (PhAria)			Total
	Major city	Regional	Remote	
ACT	2	0	0	2
NSW	34	17	0	51
NT	0	1	0	1
QLD	15	12	3	30

State/Territory	Geographical location of pharmacy (PhAria)			Total
	Major city	Regional	Remote	
SA	7	6	0	13
TAS	0	3	0	3
VIC	21	7	0	28
WA	24	9	0	33
Total	**103**	**55**	**3**	**161**

Source: HealthConsult Pharmacy Survey

The locations of pharmacies **participating in the evaluation** are shown in Figure D. 1. The evaluation had pharmacy representation from all states and territories.

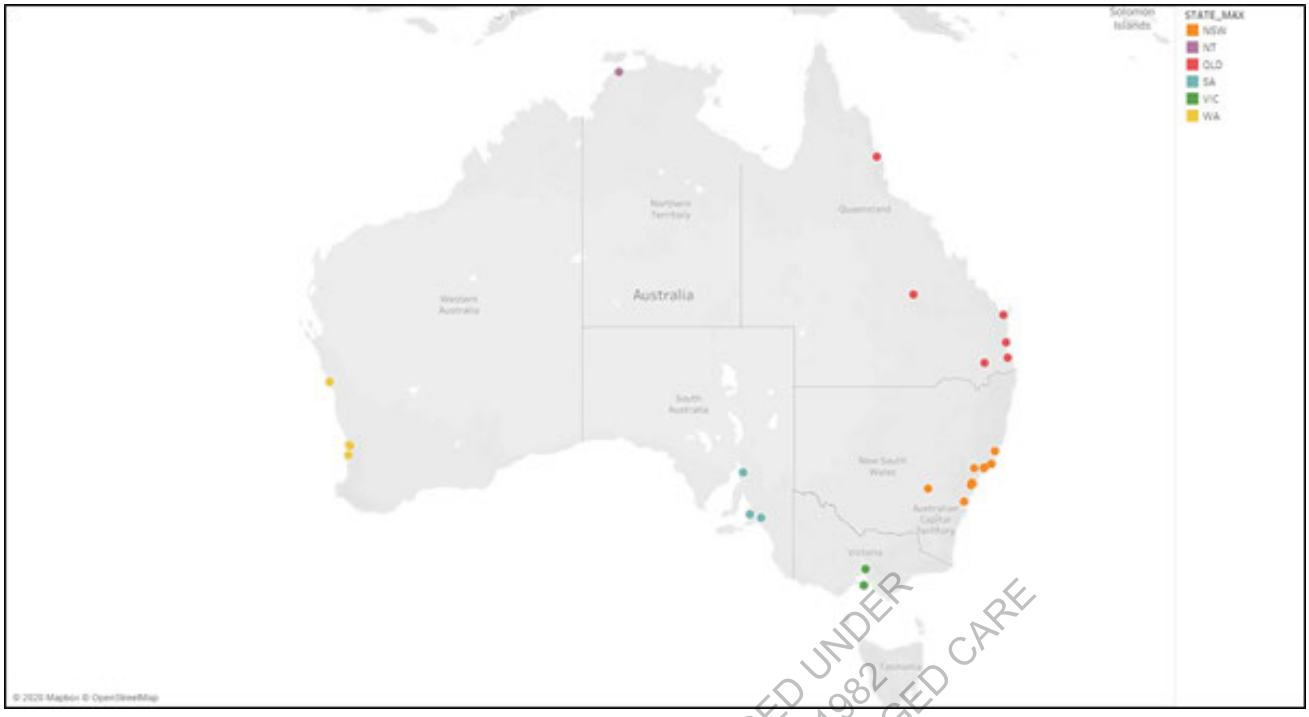
Figure D. 1: Locations of pharmacies participating in the 6CPA evaluation – MedsCheck and Diabetes MedsCheck programs



Source: HealthConsult 6CPA Evaluation – Pharmacy Registration

The location of the pharmacies **participating in the evaluation which provided participants** are shown in Figure D. 2. Overall, all states and territories were represented with the exception of Tasmania. Just under half of the pharmacies were in major cities (48.3%), with a similar proportion located in inner and outer regional areas (48.2%). One (3.5%) participating pharmacy which recruited a patient was in a remote area.

Figure D. 2: Locations of pharmacies participating in the 6CPA evaluation which provided participants-MedsCheck/Diabetes MedsCheck



Source: HealthConsult Participant Survey – MedsCheck and Diabetes MedsCheck

Appendix E: Cost-benefit analysis at patient level

Table below presents program costs and GP costs before and after the program at patient level.

Table E1: GP costs and program costs at patient level

Patient no.	Program	In the past six months before the program, how often did you go to your GP because of problems related to medication use	In the past six months after the program, how often did you go to your GP because of problems related to medication use	GP cost before	GP cost after	Service provision cost	Collecting data cost (Registration and follow-up)
1	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
2	MedsCheck	0	1	$0.0	$39.8	$65.6	$63.8
3	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
4	MedsCheck	0	6	$0.0	$238.5	$65.6	$63.8
5	MedsCheck	2	1	$79.5	$39.8	$65.6	$63.8
6	MedsCheck	2	0	$79.5	$0.0	$65.6	$63.8
7	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
8	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
9	MedsCheck	1	0	$39.8	$0.0	$65.6	$63.8
10	MedsCheck	2	0	$79.5	$0.0	$65.6	$63.8
11	MedsCheck	8	3	$318.0	$119.3	$65.6	$63.8
12	MedsCheck	3	0	$119.3	$0.0	$65.6	$63.8
13	MedsCheck	2	2	$79.5	$79.5	$65.6	$63.8
14	MedsCheck	1	0	$39.8	$0.0	$65.6	$63.8
15	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
16	MedsCheck	7	0	$278.3	$0.0	$65.6	$63.8
17	MedsCheck	12	4	$477.0	$159.0	$65.6	$63.8
18	MedsCheck	1	1	$39.8	$39.8	$65.6	$63.8
19	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
20	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
21	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
22	MedsCheck	15	4	$596.3	$159.0	$65.6	$63.8
23	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
24	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
25	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8

Patient no.	Program	In the past six months before the program, how often did you go to your GP because of problems related to medication use	In the past six months after the program, how often did you go to your GP because of problems related to medication use	GP cost before	GP cost after	Service provision cost	Collecting data cost (Registration and follow-up)
26	MedsCheck	0	1	$0.0	$39.8	$65.6	$63.8
27	MedsCheck	3	0	$119.3	$0.0	$65.6	$63.8
28	MedsCheck	3	0	$119.3	$0.0	$65.6	$63.8
29	MedsCheck	2	0	$79.5	$0.0	$65.6	$63.8
30	MedsCheck	0	3	$0.0	$119.3	$65.6	$63.8
31	MedsCheck	3	0	$119.3	$0.0	$65.6	$63.8
32	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
33	MedsCheck	1	1	$39.8	$39.8	$65.6	$63.8
34	MedsCheck	0	2	$0.0	$79.5	$65.6	$63.8
35	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
36	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
37	MedsCheck	4	2	$159.0	$79.5	$65.6	$63.8
38	MedsCheck	4	0	$159.0	$0.0	$65.6	$63.8
39	MedsCheck	2	6	$79.5	$238.5	$65.6	$63.8
40	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
41	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
42	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
43	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
44	MedsCheck	6	0	$238.5	$0.0	$65.6	$63.8
45	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
46	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
47	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
48	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
49	MedsCheck	2	0	$79.5	$0.0	$65.6	$63.8
50	MedsCheck	2	0	$79.5	$0.0	$65.6	$63.8
51	MedsCheck	10	0	$397.5	$0.0	$65.6	$63.8
52	MedsCheck	1	0	$39.8	$0.0	$65.6	$63.8
53	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
54	MedsCheck	0	0	$0.0	$0.0	$65.6	$63.8
55	Diabetes MedsCheck	1	0	$39.8	$0.0	$97.1	$63.8
56	Diabetes MedsCheck	0	0	$0.0	$0.0	$97.1	$63.8
57	Diabetes MedsCheck	1	0	$39.8	$0.0	$97.1	$63.8

Patient no.	Program	In the past six months before the program, how often did you go to your GP because of problems related to medication use	In the past six months after the program, how often did you go to your GP because of problems related to medication use	GP cost before	GP cost after	Service provision cost	Collecting data cost (Registration and follow-up)
58	Diabetes MedsCheck	2	0	$79.5	$0.0	$97.1	$63.8
59	Diabetes MedsCheck	0	4	$0.0	$159.0	$97.1	$63.8
60	Diabetes MedsCheck	5	2	$198.8	$79.5	$97.1	$63.8
61	Diabetes MedsCheck	0	0	$0.0	$0.0	$97.1	$63.8
62	Diabetes MedsCheck	0	1	$0.0	$39.8	$97.1	$63.8
63	Diabetes MedsCheck	0	0	$0.0	$0.0	$97.1	$63.8
64	Diabetes MedsCheck	6	2	$238.5	$79.5	$97.1	$63.8
65	Diabetes MedsCheck	0	0	$0.0	$0.0	$97.1	$63.8
66	Diabetes MedsCheck	1	0	$39.8	$0.0	$97.1	$63.8
67	Diabetes MedsCheck	10	3	$397.5	$119.3	$97.1	$63.8
68	Diabetes MedsCheck	6	0	$238.5	$0.0	$97.1	$63.8
69	Diabetes MedsCheck	0	2	$0.0	$79.5	$97.1	$63.8
	Total	**131**	**51**	**$5,207.3**	**$2,027.3**	**$4,998.7**	**$4,402.2**

In total, the cost-saving after the program was $3,180 and total program costs, which include service provision cost and data collection cost was $9,4001.

Department of Health and Aged Care

Evaluation of the 6CPA – Dose Administration Aid (DAA) Program

Evaluation Report

22 February 2023

HealthConsult
Better thinking
Better advice

Table of Contents

Abbreviations

6CPA	6th Community Pharmacy Agreement
7CPA	7th Community Pharmacy Agreement
ADE	Adverse Drug Events
ADR	Adverse Drug Reactions
AQoL-4D	Assessment of Quality of Life (4 dimensions)
AIHW	Australian Institute of Health and Welfare
ARMS-12	Adherence to Refills and Medications Scale (12 item scale)
CI	Confidence Interval
CEA	Cost Effectiveness Analysis
CPA	Community Pharmacy Agreement
CPMC	Chronic Pain MedsCheck
CPI	Consumer Price Index
DAA	Dose Administration Aid
DVA	Department of Veterans Affairs
ED	Emergency Department
GASE	Generic Assessment of Side Effects
GP	General Practitioner
HMR	Home Medicines Review (also known as Domiciliary Medication Management Review (DMMR)
HRQoL	Health-Related Quality of life
ICER	Incremental Cost-Effectiveness Ratio
KEQ	Key Evaluation Question
MBS	Medicare Benefits Scheme
ME	Medication Errors
MSAC	Medical Services Advisory Committee
PGA	Pharmacy Guild Australia
PBS	Pharmaceutical Benefits Scheme
PhARIA	Pharmacy Access/Remoteness Index of Australia
PPI	Pharmacy Practice Incentive
PPA	Pharmacy Programs Administrator
PSA	Pharmaceutical Society of Australia
QALYs	Quality-Adjusted Life Years
QoL	Quality of Life
SS	Staged Supply
TSQM	Treatment Satisfaction Questionnaire for Medications

Executive Summary

On the 17 July 2018, the Australian Government Department of Health and Aged Care (the 'Department') engaged HealthConsult to evaluate four new and expanded community pharmacy programs funded under the Sixth Community Pharmacy Agreement (6CPA). This report presents the final evaluation findings for the **Dose Administration Aids (DAA) program**.

About the DAA program

The DAA Program is designed to assist patients in the community to better manage their medicines. The objectives of the 6CPA DAA program were to:

(1) improve medication adherence and management

(2) decrease the incidence of adverse drug events due to medicines mismanagement

(3) decrease medication-related hospitalisation due to medicine misuse.

DAAs are sealed tamper-proof devices that allow individual medicine doses to be organised according to the prescribed dose schedule.

Evaluation methodology and data sources

The evaluation applied a quasi-experimental design to measure the causal effect of an intervention in the absence of control group.[1] Use of a control group was not possible:

(1) lack of patient identifiers included in the 6CPA program dataset

(2) the DAA program has been in existence for over 20 years finding matched control group was not possible

(3) randomising new DAA participants to a control group was not ethical.

The evaluation therefore focused on assessing patients' prior to, or at commencement of DAA (initial) and again at six months (follow-up).

There were 170 community pharmacies that agreed to participate in the evaluation. From these, 77 new DAA patients were recruited to participate in the DAA evaluation, but only 51 returned an initial and follow-up patient evaluation survey that could be matched and used in the evaluation analysis. The DAA initial patient surveys were completed by new DAA patients from October 2018 to June 2019 and the follow-up data collection for these recruited patients was completed between January to November 2019. The patient surveys included validated tools to measure medication adherence (ARMS), side effects (GASE), quality of life (AQoL) and patient satisfaction (TQSM) and bespoke measures of medication knowledge, and health service utilisation.

The evaluation data also included a pharmacist satisfaction survey (n=90) to explore program impacts and perceptions, a pharmacy profile survey (n=128) to understand the operational characteristics of the participating pharmacies and 15 case study visits to community pharmacies to capture qualitative information regarding the DAA program.

In addition, a subset of 6CPA program data was analysed to understand DAA patient characteristics and medication adherence (based on MedsIndex scores). The 6CPA program data covers the period January to October 2019 and includes participant registration (n=1,576), 6 months follow-up (n=1,040), of which 91 were matched (i.e. data for both registration and follow-up was available for the same participant).[2]

[1] Geldsetzer, P, Fawzi, W, 2017, "Quasi-experimental study designs series-paper 2: complementary approaches to advancing global health knowledge', *Journal of Clinical Epidemiology*, v.89, pp. 10-16.
[2] The relatively low number of participants with matched data is due to the limited imeframe of data availability (9 months), where follow-up cannot occur un il at least 6 mon hs post-registration.

Key Evaluation Findings

The evaluation of the DAA program found that the program:

(1) increased medication adherence and management

(2) did not change the incidence of medication side effects

(3) reduced General Practice (GP) visits, hospitalisations, and emergency department (ED) attendances related to medicine misuse

(4) is a low-cost intervention that improves adherence to medications.

Table 1 summarises the analysis and findings of the initial and follow-up patient surveys.

Table 1: Summary of evaluation findings

Measure	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value#
Quality of Life (AQoL-4D)					
AQoL Utility Score	51	0.42 (0.29)	0.35 (0.30)	-0.08 (0.03)	0.04
Independent living	51	0.68 (0.30)	0.6 (0.33)	-0.08 (0.02)	0.02
Relationships	51	0.78 (0.20)	0.75 (0.23)	-0.03 (0.02)	0.22
Senses	51	0.79 (0.16)	0.84 (0.14)	0.06 (0.01)	0.01
Mental health	51	0.60 (0.26)	0.74 (0.21)	0.15 (0.03)	0.00
Adherence to Refills and Medications Scale (ARMS-12)					
Total ARMS-12 Score	51	17.43 (3.96)	15.82 (4.84)	-1.61 (0.5)	0.03
Adherence to taking medication	51	10.73 (2.48)	10.18 (2.88)	-0.55 (0.24)	0.12
Adherence to refilling medication on schedule	51	6.71 (2.10)	5.94 (1.95)	-0.76 (0.22)	0.02
Generic Assessment of Side Effects (GASE)					
Total GASE Score	51	19.96 (16.70)	19.37 (16.28)	-0.59 (1.6)	0.79
Medication attributed symptom count	51	3.71 (4.28)	3.35 (4.58)	-0.35 (0.55)	0.65
Medication attributed total score	51	6.33 (8.01)	6.33 (9.83)	0.00 (1.16)	1.00
Treatment Satisfaction Questionnaire for Medications (TQSM)					
Effectiveness	51	66.01 (16.32)	66.01 (19.43)	0 (2.06)	1.00
Side effects	46	77.99 (26.96)	84.1 (25.91)	6.11 (3.76)	0.11
Convenience	51	77.29 (15.83)	82.79 (14.83)	5.5 (1.89)	0.01
Global satisfaction	51	67.23 (18.08)	71.01 (20.17)	3.78 (2.16)	0.09
Bespoke measures					
Overall knowledge of medicines	51	6.35 (2.5)	6.94 (2.27)	0.59 (0.34)	0.09
Knowledge about storage of medicines	50	7.58 (2.48)	7.86 (2.42)	0.28 (0.33)	0.40
Knowledge about importance of medication dosage and schedule	49	7.76 (2.03)	8.55 (1.77)	0.8 (0.26)	0.00

Measure	n	Initial	Follow Up	Change from Initial to Follow Up	
		Mean (SD)	Mean (SD)	Mean (SD)	P Value#
Knowledge about what to do with any medication you have not taken	43	7.65 (2.6)	8.37 (1.68)	0.72 (0.32)	0.03
Self-reported GP visits (binomial)*	51	1	1.35 (0.39)	0.35	0.01
Self-reported hospitalisations (binomial)*	51	1	1.20 (0.60)	0.2	0.02
Self-reported ED presentations (binomial)*	51	1	1.16 (0.54)	0.16	0.04

Source: HealthConsult patient evaluation survey
Note: 77 patients were recruited to the evaluation and 51 completed both initial and follow up surveys
* The health service utilisation variables were converted to a binomial variable whereby 1= decreased or no change to service utilisation and 2= increased service utilisation. The follow up values are closer to 1 indicating the majority decreased or did not change the frequency of health service utilisation.

Statistical significance was set at p<0.05. Red p values represent a negative significant change and green represents a positive significant change.

Key evaluation challenges and limitations

The evaluation was challenged by pharmacies having difficulty in recruiting new DAA patients (as most pharmacies were at the 6CPA cap), no data dictionary on 6CPA datasets (so expected data was not realised), lost patient survey data (either at pharmacy or through Australia Post), patients not attending/participating in follow-up visits, delays or unavailability in access to program and/or national datasets (e.g. PBS and MBS) led to several revised evaluation methodologies and significantly impacted the delivery of this evaluation report. Additionally, linking the 6CPA program data to PBS was not possible due to the lack of required identifiers in the 6CPA DAA program data. Consequently, the findings of this report are limited by the small sample size of patient participants (n=51).

Knowledge and Use of Medications

Analysis of the changes between the initial and follow-up patient survey data found that:

- 73% of patients (n=37) improved or maintained their adherence to taking and refilling medications.
- there were significant improvements in patients' "knowledge about the importance of medication dosage and schedule", "knowledge about medication disposal" and "adherence to refilling medication on schedule".

Over 90% (n=90) of the pharmacists reported significant impacts of the DAA on improving the health of patients, reducing adverse events associated with medication errors and improving patients' medication adherence.

Patient health outcomes

A review of the literature suggests that the quality of life (QoL) of the DAA cohort deteriorates over time. The evaluation found that there were no significant improvements in the QoL. The intervention did not arrest the expected deterioration as significant decreases were observed in the AQoL utility score including in the dimensions of independent living and relationships.

Self-reported GP visits, hospitalisations and ED presentations related to medicine misuse of DAA patients were significantly less or unchanged. This suggests these benefits may, in part, be attributed to the DAA program.

Most pharmacists (99%) reported the DAA program had a "moderate" to "very high" impact on patients' health outcomes (n=89) and reducing adverse events due to medication misuse (n=89). They also reported the DAA program useful to assess medication use and compliance.

Cost-effectiveness

The cost effectiveness analysis (CEA) used the DAA program cost only measured from a cost to Government perspective from the weekly DAA service fee (see Table 20). Hence, the intervention cost used in the CEA was $158.08 per patient (26 weeks @ $6.08 per week). Given 51 patients were included in the CEA, and the pre-intervention costs were zero (no DAA), the numerator for the Incremental Cost-Effectiveness Ratio (ICER) was $8,062.08 (i.e., $158.08 by 51 patients).

For effectiveness, of the 51 patients for whom there was initial and follow-up data, 22 out of 51 (43%) had improved medication adherence between initial and follow-up, while 14 (27%) had a lower adherence score and the other 15 (29%) were unchanged, resulting in an overall improvement in the ARMS-12 score of 0.804 (95% Confidence Interval was -0.142 to 1.750)[3]. Given the small sample size, this change, although moving in the expected direction, was not statistically significant.

By combining the cost and benefit[4] data, the ICER for a unit reduction in the ARMS-12 score was calculated as $196.62 (i.e., $8,062.08/0.804*51). Thus, using the available data on the 51 patients, the cost to improve medication adherence as represented by a one-point reduction in the ARMS score is $196.62.

The ICER can be compared to the cost to government for the provision of health services when patients do not adhere to medications. Cutler *et al.* (2018)[5] estimated that the annual cost of providing health services (e.g. ED attendances, hospitalisations, outpatient visits, etc.) to a patient who does not adhere to their medication regimen was $37,215 (AUD) in 2020 or $18,608 for six months (see Table 22). We note that this figure is derived from a US study and there are some translational issues, but the findings are considered indicative in the Australian context.

In this context, it is reasonable to suggest that it would take very few patients who are given a DAA to significantly improve their medication adherence to generate a substantial saving in downstream health services utilisation costs. To illustrate, in the study sample of 51 patients, the total DAA program cost is $8,062, which represents 43% of the saving obtainable from just one of the 51 program participants moving from non-adherence to adherence because of using a DAA (based on the Cutler *et al* (2018) estimate).

Thus, it could be argued that the ICER for the incremental reduction in the ARMS-12 score demonstrates that the DAA program is a low-cost intervention that improves adherence to medications (noting that this analysis has excluded any benefits from reductions in downstream health services utilisation, so the true intervention cost is likely to be even lower, and better data on downstream interventions may prove that the benefits exceed the costs).

But, given the low number of program participants in the evaluation resulted in the measured reduction in ARMS score not being statistically significant, these results should be interpreted with caution. It can be concluded that this evaluation has generated promising results, but a larger evaluation is needed before any definitive conclusions around the cost effectiveness of the DAA program can be drawn.

Program enablers and barriers

Program enablers were identified in the areas of patient satisfaction, pharmacist experience and career satisfaction, and satisfaction with program tools such as software.

- From initial to follow-up, patient surveys demonstrated a statistically significant increase in the convenience domain of TSQM scores (increased from 77.29 at initial to 82.79 at follow-up).

[3] Conversion of ARMS-12 score to between 0 and 1 for the CEA. The conversion is required for the incremental benefit.
[4] The CEA defines the benefit as the change in adherence to medications, as measured by the ARMS-12 instrument.
[5] Cutler, C.J, et al., 2018, "Economic impact of medication nonadherence by disease groups: a systematic review", BMJ open access, doi:10.1136/bmjopen-2017-016982.

- Nearly 98% of the patients were “very satisfied” or “satisfied” with the service provided through the DAA program (n=48) and the DAA service was frequently described as “convenient” and “easy to use”. It was reported to help maintain independence and enable people to live at home; preventing admissions into supported residential facilities.
- Most pharmacists (88%) reported DAA had “very high impact”, “high impact” or “moderate impact” on expanding their role within the primary health care team, and 78% reported the program had a positive impact on broadening their scope of practice (n=90).
- Many (78%) pharmacists reported that the DAA service had “very high impact”, “high impact” or “moderate impact” on contributing to job satisfaction (n=90) and 91% reported that the DAA service had “very high impact”, “high impact” or “moderate impact” on increasing their communication with other health professionals (n=90).

Barriers to implementation reported by pharmacists included issues related to time, reimbursement and program guidelines.

- Common barriers experienced by pharmacists in delivering the DAA program were time, issues with program eligibility criteria/guidelines, difficulties in scheduling appointments, lack of training and a preference for more informal and frequent follow up services.
- Communication between GPs and pharmacists could be improved to ensure patients’ medical records and packed medications are accurate and appropriately reviewed.
- Recommendations to enhance the program included patient-led improvements to scheduling, packaging and patient information, exploration of alternative methods for medications unsuitable for the DAA program, a review of cap payment to ensure reimbursement is commensurate with pharmacist workload and costs, including consideration of data collection and registration requirements.

Summary and conclusions

Patients were satisfied with the DAA program and see value in having access to a DAA. Significant improvements were observed in medication adherence, health care utilisation, and medication knowledge, disposal, and storage. Pharmacists felt the DAA program was impactful to patient adherence and health outcomes. Pharmacists also reported satisfaction and positive impacts on their career development including broadening their role within the primary health care team and working to their full scope of practice.

Pharmacists identified some barriers to implementation and areas for improvement. These included improvements to DAA eligibility and guidelines, scheduling, packaging, patient instruction, and accommodation of all medication types. Time and reimbursement for DAA were also identified as key barriers to implementation and pharmacist satisfaction.

In terms of cost-effectiveness, the ICER for the incremental reduction in the ARMS-12 score demonstrates that the DAA program is low-cost intervention that improves adherence to medications. Analysis of self-reported health service utilisation due to medication misuse issues also suggests that the DAA program is cost-effective, and it is reasonable to infer that participation in the DAA Program is likely to offset costs in other Commonwealth funded programs for more complex, vulnerable and high needs clients.

The reported changes to 6CPA, under 7CPA, address many of the barriers to implementation reported by pharmacists in this evaluation and represent positive improvements in program administration and implementation, and access for consumers.

Other suggested changes that could be made to the DAA program include:

- There is a low adherence to pharmacists meeting the follow up requirements. The reasons for not conducting follow ups included difficulties scheduling appointments for follow up data collection, insufficient incentive due to the size of the fee, and follow ups occurring less

formally and more often during routine contact with patients. The requirement of a formal follow-up should be reviewed.

- Consider building in the completion of health outcomes data by patients (not pharmacists) in receipt of Commonwealth funded DAA program. This could be done using a phone app or email that sends an alert for completion every 6 months – a lot of PREMs and PROMs are now conducted this way – this could be setup as part of the patient joining the CPA program. This would provide both monitoring and evaluation data.
- Review the weekly service fee to better align with the costing study that found the representative costs for the weekly DAA pack costs pharmacies $11.60, which is 91% higher than the fee of $6.08. Although a flat fee structure is easier to administer there are differences in costs being experienced by pharmacist based on patient characteristics including if they have or are being discharged from hospital.
- Consider the inclusion of identifying data elements such as name, date of birth and address in the patient administration process so that a control group could be created by linking 6CPA program data to other national dataset (e.g. PBS, MBS, ED presentations and hospitalisation data) and then separating those with a CPA funded DAA and those without. This data together with the PREMs/PROMs data would provide a very robust evaluation design and remove some of the challenges experienced with the 6CPA DAA evaluation.

1. Introduction

On 17 July 2018, the Department of Health and Aged Care (the 'Department') engaged HealthConsult to:

"to evaluate four of the new and expanded community pharmacy programs funded under the sixth Community Pharmacy Agreement (6CPA)"

1.1. Context

Community Pharmacy Agreements (CPA) were introduced in 1991 between the Commonwealth and the Pharmacy Guild Australia (PGA) to support the provision of PBS medications to Australians. Under the Improving Access to Medicines – Support for Community Pharmacies Budget Measure (the Measure), in 2017, $825 million was provided over three years to community pharmacies to support and improve access to medicines. The measure included $600 million through the 6 h Community Pharmacy Agreement (6CPA) to continue and expand existing community pharmacy programs. This included two new medication adherence programs: **Dose Administration Aids (DAA) and Staged Supply (SS)**, and two expanded medication management programs: **MedsCheck** and **Diabetes MedsCheck**. This report presents the findings for the evaluation of the DAA program.

Dose Administration Aids (DAA) are sealed tamper-proof devices that allow individual medicine doses to be organised according to the prescribed dose schedule. DAA may include blister, bubble, or compliance packs that a pharmacist provides to a patient to assist with medication dosage and adherence. The DAA priority area was established under the Better Community Health Initiative of the Fourth Community Pharmacy Agreement (4CPA) and Fifth Community Pharmacy Agreement (5CPA) between the PGA and the Commonwealth Government. The DAA initiative was continued under the 6CPA, as part of the Pharmacy Practice Incentive (PPI) program to improve medication compliance through community pharmacies in Australia.

1.2. Objectives of the DAA program

The DAA program is designed to assist patients in the community to better manage their medicines. The objectives of the DAA program are to[6]:

(1) improve medication adherence and management

(2) decrease the incidence of adverse drug events due to medicines mismanagement

(3) decrease medication-related hospitalisation due to medicine misadventure.

1.3. Evaluation of the DAA program

1.3.1. Objectives of the evaluation

The objective of the evaluation was to determine the extent to which the DAA program met its objectives. Four key evaluation questions (KEQ) were formed to guide the evaluation:

- **KEQ1:** Does the DAA program improve patients' understanding of their medications and the importance of adhering to the prescribed medication regime?
- **KEQ2:** Does the DAA program improve the defined health outcomes of patients?

[6] PPA, Program Rules Dose Administration Program (2021) DAA-Program-Rules.pdf (ppaonline.com.au)

- **KEQ3:** Is the DAA program cost-effective?
- **KEQ4:** What are the barriers and enablers to providing an effective patient centred DAA service and how can it be strengthened?

1.3.2. Outcome of the evaluation

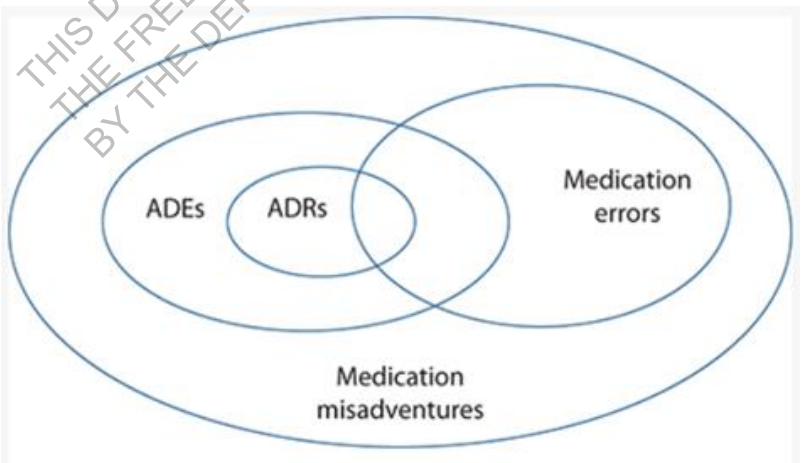
Central to the evaluation of the DAA program is a definition of what a positive outcome is for the DAA program participants. The program's eligibility limits participation to individuals experiencing difficulties managing their medications due to literacy or language issues, physical disability or cognitive difficulties, or is taking five or more prescription medicines and is experiencing difficulties with medication management. Therefore, many program participants are senior Australians with multimorbidity or have complexities associated with disability and/or cognitive decline. The literature suggests that people within this cohort age, will experience increased attendance rates to the GP and practice nurse[7], and decreased quality of life (QoL).[8] Therefore, to measure success of the DAA program, a positive outcome is assumed to be maintenance of current state, or a measurable improvement. Halting the age-, or health-related decline in QoL, or preventing increased health service utilisation and medication misuse which, as the literature report them as expected, should be viewed as a positive outcome.

Further details of the evaluation methodology including the logic model, evaluation framework and data collection are provided in Appendix A.

1.3.3. Medication misadventure

All adverse drug events (ADEs), adverse drug reactions (ADRs), and medication errors (MEs) fall under the umbrella of medication misadventures. An ADE refers to all ADRs, including allergic or idiosyncratic reactions, as well as MEs that result in harm to a patient. ADRs refer to any unexpected, unintended, undesired, or excessive response to a medicine; it is harm directly caused by the drug at normal doses, during normal use. A ME is any preventable event that has the potential to lead to inappropriate medication use or patient harm; many occur during prescribing, transcribing, dispensing, administering, adherence, or monitoring a drug. Figure 1 describes the relationship between medication misadventures, ADEs, ADRs and MEs. It is important to note that ADEs, ADRs and MEs are different to side-effects of medication.

Figure 1: Relationship between ADEs, ADR MEs and medication misadventures



Source: Adapted from Bates DW, et al. Relationship between medication and errors and adverse drug events. J Gen Inter Med. 1995 Apr; 10(4):199-205.

[7] O'Regan A, O'Doherty J, O'Connor R, Cullen W, Niranjan V, Glynn L, *et al*., 2022, "How do multi-morbidity and polypharmacy affect general practice attendance and referral rates? A retrospective analysis of consultations", *PLoS ONE*, v.17, no.2. *e0263258. https://doi.org/10.1371/journal.pone.0263258*
[8] Zaninotto, P., Falaschetti, E. & Sacker, A, 2009, "Age trajectories of quality of life among older adults: results from the English Longitudinal Study of Ageing", *Qual Life Res*, v.18, pp. 1301–1309. *https://doi.org/10.1007/s11136-009-9543-6*

For the purposes of the evaluation, specifically the cost-effectiveness analysis, the focus is on adherence (primary objective) as poor adherence has been shown to increase mortality and morbidity – thus adherence has been shown to prevent hospitalisations[9,10]. The secondary objective is to reduce medication misadventure.

1.4. Data collection

1.4.1. Participants

Following HealthConsult's invitation to all pharmacies providing DAA services to participate in the evaluation of DAAs, 170 consented to participate in the 6CPA program evaluation.

Participating pharmacies recruited DAA program participants and administered patient surveys prior to initial intervention and at 6 months follow-up. HealthConsult provided a $30 supermarket voucher to all patients on receipt of completed follow-up surveys. There were 77 evaluation participants who completed an initial and/or follow up DAA survey. Of those, 73 (95%) participants completed an initial survey, and 55 (71%) participants completed a follow up survey. Only 51 participants (66%) completed both an initial and follow up survey (note: a number of surveys were posted by pharmacies back to HealthConsult but never received). The matched initial and follow-up (n=51) surveys were used to measure the effectiveness of the program.

1.4.2. Data sources

This evaluation had a quasi-experiments approach using multiple data sources, including:

- **Patient surveys**: The patient survey was completed by the patient whilst in the community pharmacy before the initial intervention and at 6 months follow-up. This survey included validated tools to measure medication adherence (the Adherence to Refills and Medications Scale (ARMS)), side effects (Generic Assessment of Side Effects (GASE)), QoL (The Assessment of Quality of Life (AQoL-4D)) and patient satisfaction (Treatment Satisfaction Questionnaire for Medications (TSQM)).
- **Pharmacist survey**: The pharmacist survey was administered to participating pharmacies to explore program impacts and perceptions. This survey included questions about patients' knowledge and understanding of medication use and medication adherence, pharmacist perspectives on the DAA program implementation and possible impacts of the program on their job satisfaction, the scope of practice, communication, and their role within a primary healthcare team.
- **Pharmacy profile survey**: The pharmacy profile survey was administered to pharmacy owners. It explored characteristics of pharmacies, including location, pharmacy type (independent, franchise, banner, friendly society group, buying group), dispensing type (forward, traditional or semi-forward pharmacy), programs offered, and size.
- **Case studies/pharmacist interviews**: Semi-structured interviews were conducted as part of 15 case study visits with pharmacists working in the 170 pharmacies participating in the 6CPA evaluation. The interviews explored patient experience and outcomes, the impact of program participation on the pharmacy workforce and owners, operational effectiveness, financial viability and barriers to program implementation.
- **6CPA program data**: Data collected as per Attachment A of the DAA program rules (2018). The datasets available for individuals participating in the data collection process were: DAA claims data, DAA registration data, and DAA follow-up data. The evaluation outcome

[9] Simpson SH, Eurich DT, Majumdar SR, et al. A meta-analysis of the association between adherence to drug therapy and mortality. *BMJ*. 2006;333(7557):15. doi:10.1136/bmj.38875.675486.55

[10] Caroline A. Walsh, Caitriona Cahir, Sarah Tecklenborg, Catherine Byrne, Michael A. Culbertson, and Kathleen E. Bennett. The associa ion between medication non-adherence and adverse health outcomes in ageing populations: A systematic review and meta-analysis. *Br J Clin Pharmacol.* 2019 Nov; 85(11): 2464–2478. Published online 2019 Sep 6. doi: 10.1111/bcp.14075

assessed using this data include the MedsIndex score at initial and follow-up as a supplementary indicator of medication adherence (noting the ARMS scale is a more accurate indicator of medication adherence).

1.5. Evaluation design challenges and limitations

1.5.1. Patient recruitment

The original recruitment target for the 6CPA DAA evaluation was approximately 300 participants which, after an anticipated attrition rate of 40%, would have provided data at two time points for around 180 individuals. Patient recruitment was mediated by the approximately 170 participating pharmacies and the recommended patient targets were not met. Regular contact with the recruited pharmacies provided insight into why the recruitment failed to reach the target including:

- the length of the questionnaire to be completed (12 pages)
- the length of time needing to be spent on the questionnaires (approximately 40 minutes with the accompanying consent form, on top of the requirements associated with program participation)
- the lack of time on the part of the pharmacist to assist the participant and collate the responses
- a reported lack of suitable patients (i.e. new to 6CPA DAA)
- lack of remuneration for pharmacists.

1.5.2. Access to linked datasets

Due to low patient recruitment numbers, HealthConsult redesigned the approved evaluation design to make better use of 6CPA program data. Using the 6CPA program data would allow a review of participant outcomes from a much larger sample of participants. The revised evaluation design required the Department to provide the AIHW with the data of the 6CPA evaluation participants so that the AIHW could identify a matched control cohort (i.e. age, sex, location and not in receipt of 6CPA DAA program) and then link these two cohorts to PBS data. Unfortunately, after attempting to carry out the updated methodology, it was discovered that the 6CPA program data did not contain the required identifiers (i.e. it only contained the Medicare number of patients which cannot be used by AIHW for linkage) for the AIHW to link it with PBS data. Therefore, the evaluation methodology had to be once again amended to include a pre-post design of 6CPA program participants that also had 6CPA health outcomes data (i.e. pharmacies were only required to complete health outcomes data on up to five patients within the 6CPA).

The updated pre-post analysis would allow the comparison of medication utilisation of the above groups 6 months before they have their initial 6CPA consultation, to their PBS medication utilisation profile six months after their follow-up 6CPA program consult. However, once the data was received by AIHW it was discovered that the DAA 6CPA program health outcomes dataset nor the 6CA DAA claims dataset, unlike other 6CPA programs, included the required identifiers for the AIHW to link to PBS data, so the DAA evaluation was not able to use the linked dataset.

The PBS data was required to determine the following indicators:

- the proportion of patients whose medication profile changes as a result of the intervention
- the proportion of patients that report that any change in prescription and/or non-prescription medicine use to manage their condition has resulted in a positive improvement (e.g. reduced financial burden, improved sleep, less constipation.

Therefore, these indicators were unable to be assessed.

Therefore, **the DAA evaluation is limited to 6CPA program data (which includes the health outcomes data set) from the period between January 2019 and October 2019, and primary evaluation data designed and collected by HealthConsult**.

The impact of the challenges in patient recruitment and data access, and subsequent methodology changes, has meant the project has also experienced significant delays and personnel changes, all of which required ethical review of the amendments.

1.5.3. Limitations

The limitations of this evaluation, and therefore the inferences made in this report, are mainly related to the small sample size of program participants. Limitations include:

- A relatively small sample size of 51 matched respondents that completed patient surveys both at initial and 6 months follow up.
- A relatively short duration of the study (6 months).
- Changes in medication adherence, QoL, satisfaction and side effects were included in the evaluation and measured using validated instruments. Measuring side-effects was used as a proxy tool to assess medication mismanagement by monitoring for change in the included range of symptoms between initial and follow up (due to limited availability of validated instruments to measure AEs at the time of project design).
- To attribute the changes in outcomes observed in 6CPA participants to the interventions provided as part of the program, there is a need to identify how changes in measured outcomes (such as QoL) potentially resulting from program participation differ in the 6CPA cohort relative to matched control sample not participating in the 6CPA programs.
- Healthcare utilisation was self-reported by participants, which is not ideal as there is evidence to suggest this method can be unreliable, especially in situations where the sample population is older or experiencing cognitive difficulties. However, linking the 6CPA program participants to ED presentation and/or hospitalisation data is not possible due to the reasons explained in Section 1.5.2
- The health outcomes dataset which is part of routine 6CPA program data collection does not comprehensively assess changes in medication use, utilisation of medical procedures or treatment compliance.

1.6. Structure of this document

This report presents the draft final DAA evaluation and is structured as follows:

- **Chapter 2**: an overview of the DAA program and DAA evaluation
- **Chapter 3**: presents and analysis of the effectiveness of DAA program in improving patients' understanding and use of their medications
- **Chapter 4**: presents and analysis of the effectiveness of DAA program in improving the health outcomes of patients
- **Chapter 5**: presents and analysis of the cost-effectiveness of DAA
- **Chapter 6**: presents and analysis of the barriers and enables to provide an effective DAA program
- **Chapter 7**: presents the conclusions and opportunities to support the DAA program under 7CPA.

2. Overview of the DAA program

This Chapter provides an overview of the DAA program parameters, procedure and claim process.

2.1. DAA program parameters

Table 2 presents the DAA program parameters: patient eligibility criteria, referral, fee structure for service and data collection, the review process, and the limit on the DAA patients per pharmacy.

Table 2: Overview of DAA program under 6CPA Program

Program Parameters	Dose Administration Aids 6CPA Program
Patient Eligibility Criteria	The patient: • is a Medicare and/or DVA cardholder or is a person eligible for a Medicare card • is living at home in a community setting • is a current government issued concession cardholder AND • has difficulties managing their medications due to literacy or language issues, physical disability or cognitive difficulties *OR* • is taking five or more prescription medicines and is experiencing difficulties with medication management
Referral Source	• Referred from HMR Medication Management Plan (general or concession patient) OR • Referred from MedsCheck Action Plan (general or concession patient) OR • Referred for a DAA by a GP (general or concession patient)
Payment	• Fee for service $6.08 per week per patient for provision of weekly DAA service (including regular follow up with patient) for all elig ble patients who receive a DAA service • From 1 February 2018, fee for data collection per service (for five patients): ➢ $31.90 for collection of data at Patient Registration ➢ $31.90 for collection of data at Follow-up Services
Follow-Up/Review Process	• DAA Service Providers required to make a 6-month follow up contact with consumer (or at ceasing of DAA service)
Cap on number of patients per pharmacy	Numbers monitored and modified based on funding cap (2017/18 is $100 million)*: • All Approved DAA Service Providers will be allocated an individual caps based on previous DAA service volumes recorded and claimed under the Pharmacy Practice Incentive Program prior to 1 July 2017 (the most recent 12 month claiming period will be used to calculate the cap) • Providers who recorded greater than 200 DAA patient per week under the Pharmacy Practice Incentive Program prior to 1 July 2017 will have an upper limit cap of 200 DAAs

(*) Note: Special capping arrangements at a level of no more than 60% of previous DAA service volumes recorded and claimed under the Pharmacy Practice Incentive Program prior to 1 July 2017 may be put in place for Approved DAA Service Providers who previously recorded and claimed greater than 400 DAAs.

2.2. DAA program

The DAA program involves multiple steps, including:

- **Identify need** – identify patients suitable for DAA. Patient selection is based on the pharmacist's assessment (collaboratively with the patient's general practitioner (GP), community nurse and carer) of each consumer for their likelihood to benefit from, and ability to use, a DAA. Patients that may benefit from DAA include:
  - Patients with a medical history suggesting problems managing medicines (e.g. prior hospitalisation due to poor adherence)
  - Patients who forget if they have taken their medicines, and who would benefit from a visual cue
  - Patients who have a carer who monitors their medicine taking
  - Patients with a complex regimen of medicines with a regular dosing schedule of solid oral dosage forms suitable for packing in a DAA

  - Patients with signs of cognitive or physical impairment, which may affect their ability to effectively manage medicines (there needs to be an adequate level of cognition to manage the DAA)
  - Patients taking five or more medicines daily (including non-prescription medicines).
- **Conduct needs assessment** – consider consumer behaviours and attitudes to taking medicines that may impact on DAA use, and conditions that may limit the consumer's capacity to safely and effectively use the DAA (e.g. visual impairment, diminished dexterity due to arthritis), and confirm that the consumer can effectively use the proposed DAA.
- **Assess eligibility and gain informed patient consent** – A written agreement between the consumer and the pharmacist is drafted to formalise the service to be delivered. Patients are eligible for the DAA program if they are:
  - Medicare and/or Department of Veterans' Affairs cardholder or a person who is eligible for a Medicare card
  - Living at home in a community setting
  - Current government-issued concession cardholder
  - Difficulties managing their medicines due to literacy or language issues, physical disability or cognitive difficulties
  - Taking five or more prescription medicines and is experiencing difficulties with medication management
- **Medication reconciliation and pack DAA** – pharmacist must reconcile the patient's medicine to create an accurate medication profile that includes all prescription and non-prescription medicines. Regular reconciliation is required to promote medication optimisation and ensure any subsequent changes to the patient's medication regimen are reflected in the DAA medication profile.
- **Patient communication** – pharmacists should discuss with patients what medicines are contained in their DAA, the appropriate use of DAA, storage and disposal. Patients should be advised to return unused medicines in the DAA to the pharmacy for safe disposal.
- **Communication with prescribers** – regular communication with prescribers and other health care professionals.
- **Patient monitoring and follow-up** – monitor patients to detect and assess any issues or problems that patients have when starting to use a DAA. Ongoing monitoring should occur once a DAA is established.

2.3. DAA claim process

Pharmacies received $6.08 per patient each week that was enrolled on the DAA Program. To ensure that funding remained within the allocated budget the service was capped on an individual pharmacy basis. Approved community pharmacies were allocated an individual cap based on their previous DAA service volumes that were recorded and claimed under the PPI program for the period 1 June 2016 through 31 May 2017:

- those that had claimed between 200 and 400 DAA patients per week under the PPI Program were capped at an upper limit of 200 DAA patients per week
- those that had claimed greater than 400 DAA patients per week under the PPI Program received an upper limit cap at no more than 60% of their previous DAA service volumes
- requests to change the allocated DAA were not permitted, and pharmacies were only paid their individual allocated cap.

2.4. DAA patient profile

The most common patient groups that may access the DAA program include the elderly, who are often on several different medications, and patients with cognitive disabilities who may have trouble understanding or remembering their dosage regimes. The most common reasons for

recommending DAA for patients are non-adherence, age/mental frailty, and risk of medication misadventure (Table 3).

Table 3: Reasons for recommending the DAA program

	Reasons for recommending consumers to use a DAA	%
1	Non-adherence	79%
2	Age/mental frailty	42%
3	Risk of medication misadventure	40%
4	Recent medication misadventure	38%
5	5 or more medicines	35%
6	Poor health literacy	24%
7	Complex condition/co-morbidity	15%
8	Recent discharge from hospital	12%
9	High risk medicines	6%
10	Recent changes in health conditions	5%
11	Other (please specify)	3%
12	Interactions between medicines	1%

Source: Department of Health and Aged Care 2015. Combined Review of Fifth Community Pharmacy Agreement Medication Management Programmes Final Report. p61 Table 17

Note: In total, 767 survey responses were received; 719 pharmacists; 25 GPs; 23 nurses.

A literature review performed by the Australian National Prescribing Service[11] identified that individuals at the highest risk of ADEs or MEs in the community are older patients, those taking multiple medications, those with serious health conditions, and those taking high-risk medications (e.g. cardiovascular drugs, antithrombotic drugs, analgesics, antibiotics, oral anti-diabetic drugs, antidepressants, antiepileptic drugs and chemotherapeutic agents). The review found that in Australia, 5.6% of hospital admissions in the general population to 30.4% of admissions in the elderly were associated with ADEs. MEs in the community were found to occur at all stages in the medication management process from prescribing, supply and administration to therapeutic drug monitoring, medical records documentation, referrals, and hospital discharge summaries.

2.5. 6CPA program data

The analysis includes 6CPA program data collected for monitoring the DAA, where data availability covers the period between January 2019 and October 2019. Information at the registration and follow-up comprise patient's characteristics, health conditions, number of prescription and non-prescription, and MedsIndex scores. Table 4 summarises that there were 1,576 patients at the registration and 1,040 patients at follow-up. However, only 91 patients were matched in the data ID based on encrypted DVA/Medicare number. The small number was due to data availability from the 6CPA DAA monitoring program.

Table 4: Data availability for 6CPA program data (DAA)

6CPA program data at registration	6CPA program data at follow-up	Matched data
1,576	1,040	91

Source: 6CPA program data

[11] Easton KL, Chapman CB, Brien JA., 2004, "Frequency and characteristics of hospital admissions associated with drug-related problems in paediatrics", *Br J Clin Pharmacol*, v.57, no.5, pp.611–615.

2.6. Participation in the DAA evaluation

2.6.1. Patient and pharmacy surveys

Following HealthConsult's invitation to all pharmacies providing DAA services, 170 consented to participate in the 6CPA program evaluation. Most of the pharmacies were in major cities (n=111, 65%), with just over one-third located in regional and remote areas (n=59, 35%).

From 170 pharmacies, there were 77 evaluation participants who completed an initial and/or follow up DAA survey. Of those, 73 participants (94.8%) completed an initial survey, and 55 participants (71.4%) completed a follow up survey. **Only 51 participants (66.2%) completed both an initial and follow up survey and there were matched patient IDs between the surveys**. From the 51 participants, 42.2% were male (n=22) and 57.8% were female (n=29). Table 5 present DAA participants by age groups. In comparison, the 6CPA registration data had a gender spilt of 54.7% females and 45.9% males (and 0.4% indeterminate).

Table 5: DAA study participants by age groups

Age group	DAA participants	%
<50 years	6	12%
50-59	5	10%
60-69	5	10%
70-79	8	16%
80-89	**19**	**37%**
90 and above	7	14%
blank	1	2%
Total	**51**	**100%**

Source: HealthConsult patient survey, n=51

2.6.2. 6CPA program data

The information from 6CPA program data provides patients' characteristics when they registered in the DAA program. Within the analysed 6CPA data, there were 1,576 patients who participated in the DAA[12] program, 54% female and 46% male. By age group, 65% of patients were 70 years old and above. Table 6 present the details of the composition of DAA participants by gender and age group.

Table 6: DAA patients by gender and age group at registration

Age group	Male	Female	Total
<40	52 (7%)	52 (6%)	104 (7%)
40-49	46 (6%)	48 (6%)	94 (6%)
50-59	49 (7%)	64 (7%)	113 (7%)
60-69	113 (16%)	120 (14%)	233 (15%)
70-79	216 (30%)	212 (25%)	428 (27%)
80 and over	241 (34%)	360 (42%)	601 (38%)
No data	-	-	3 (0%)
Total	**717 (100%)**	**856 (100%)**	**1,576 (100%)**

Source: 6CPA program data, HealthConsult analysis

[12] The number refers to 6CPA program data between January 2019 to October 2019.

Mental health, pain, and diabetes were the top three of patient's health condition when they registered for the program (note that a patient may have more than one health condition). Other conditions include alimentary tract-related disorders, respiratory disorders, arthritis, dementia and Parkinson's, and osteoporosis (Table 7).

Table 7: Health conditions by age group

DAA patients by age group	Mental health	Pain	Diabetes	Alimentary tract	Respiratory disorder	Arthritis	Osteoporosis	Dementia and Parkinson
<40	80	18	16	6	8	0	0	1
40-49	72	29	26	19	7	3	2	2
50-59	71	50	43	25	14	13	9	5
60-99	122	84	92	69	32	39	17	14
70-79	160	145	165	104	60	73	47	53
80 and over	152	214	135	164	89	116	124	58
Total	**657**	**540**	**477**	**387**	**210**	**244**	**199**	**133**

Source: 6CPA program data, HealthConsult analysis
Notes: One patient may have more than one health condition (comorbidities).

3. Understanding and use of medications

This Chapter presents findings related to the evaluation question:

"Does the DAA program improve patients' understanding of their medications and the importance of adhering to the prescribed medication regime?"

Patient understanding and use of medications were measured using the initial and follow-up matched patient surveys as well as pharmacist surveys and interviews.

3.1. Improvement in medication adherence

The 6CPA program data includes a patient's MedsIndex score at registration and follow up, which monitors a patient's adherence to the expected dispensing history. In addition, the patient survey provided a measure of medication adherence at the registration and follow-up, using the Adherence to Refills and Medications (ARMS)[13] scale. Analysis of these two measures of medication adherence is provided below.

3.1.1. History of non-adherence and medication assistance

Prior to participating in the DAA program, a third of patients (67%) had a history of non-adherence and only a quarter of those patients received complete or routine assistance with their medications. Table 8 tabularises between patients who received assistance on medication and history of non-adherence. Over half of the program participants had a history of non-adherence *and* minimal assistance with their medications, indicating the DAA program is effectively targeting patients at risk of medication misuse.

Table 8: History of adherence and medication assistance

Assistance on medicines	History of non-adherence		
	Yes	No	Total
Complete assistance	74 (7%)	31 (6%)	105 (7%)
Routine assistance	195 (19%)	71 (14%)	266 (17%)
Occasional assistance	240 (23%)	127 (24%)	367 (23%)
Minimal assistance	544 (52%)	294 (56%)	838 (53%)
Total	**1,053 (100%)**	**523 (100%)**	**1,576 (100%)**

Source: 6CPA program data, HealthConsult analysis

3.1.2. MedsIndex

A patient's 'MedsIndex' score is a number out of 100 measuring adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist. The number is formulated via the MedsIndex software, which provides a prompt for pharmacists to invite patients with a qualifying MedsIndex score to participate in a medication adherence program. The Pharmaceutical Society of Australia classified the MedsIndex score into four categories, which include:

- Lower than 70: Action required to improve compliance
- Lower than 80: Compliance can be improved

[13] The ARMS-12 total score is based on 12 questions, and has possible range of 12 to 48, where a lower score indicates better adherence.

- Lower than 90: Compliance could be improved
- Greater than or equal to 90: Optimal

On average, based on 6CPA program data of DAA patients who completed data collection at the registration and follow-up (n=91), there was a slight improvement in MedsIndex scores for the DAA patients between initial and 6-month follow up, where in general, DAA patients comply with their medicine but require some improvements for adherence. The change of 4.1 basis points is considered not significant, given the standard deviation at the registration and follow-up is relatively high and the score of some patients remains under 80. Table 9 summarises MedsIndex scores for the DAA patients.

Table 9: DAA summary MedsIndex score (initial and follow-up survey)

DAA patients MedsIndex (n=91)	Registration	6-month follow up
Mean (SD)	81.7	85.8
Median	85.0	89.0
Standard deviation	15.9	13.8

Source: 6CPA program data, HealthConsult analysis

In addition, referring to DAA patients with a history of non-adherence (see section 3.1.1), patients with history of non-adherence have a higher improvement MedsIndex score than patients without history of non-adherence (Table 10).

Table 10: DAA summary MedsIndex score (initial and follow-up survey)

History of non-adherence (n=91)	MedsIndex scores		
	Registration	Follow-up	Improvement scores
Yes (n=59)	78.7 (16.4)	83.3 (15.0)	4.6
No (n=32)	87.2 (13.5)	90.5 (9.8)	3.3

Source: 6CPA program data, HealthConsult analysis

3.1.3. Medication adherence and knowledge

The ARMS is designed to assess adherence to taking medications as prescribed and refilling medication on schedule. The ARMS-12 total score is based on 12 questions, and has a possible range of 12 to 48, where **a lower score indicates better adherence**. The ARMS can be spilt into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16). The tool has been validated for use in populations with chronic disease, with good performance characteristics even among low-literacy patients.[14]

Table 11 presents the result of ARMS-12 survey for DAA patients. Out of the 51 patients who completed the survey both at initial and follow up, medication adherence was improved in 22 patients (45%), remained unchanged in 15 patients (29%), and reduced in 14 patients (27%).

[14] Kripalani S, Risser J, Gatti ME, Jacobson TA, 2009, "Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease", Value Health, v.12, no.1, pp. 118-123. *doi:10.1111/j.1524-4733.2008. 00400.x*

Table 11: Patient survey summary score at individual level (ARMS-12, medication adherence)

ARMS-12	n	Initial	Follow up	Change from initial to follow up			
		Score range	Score range	Range difference	Score		p-value*
					Lower	Upper	
Improved in medication adherence	22	16-28	12-24	1 -9 (decreased score)	-1.00	-9.00	**0.03**
Unchanged in medication adherence	15	12-21	12-20	0.00	n/a	n/a	0.12
Reduced medication adherence	14	12-22	14-24	1 – 6 (increase score)	1.00	6.00	**0.02**
All	**51**	**12-28**	**12-24**	**-9 (decrease)to 6 (increase)**	**-9.00**	**6.00**	**0.102**

Source: HealthConsult Patient survey, n=51
Note: *p-value was from t-test of two samples at initial and follow-up.

Table 12 shows that there were significant improvements in knowledge about the importance of medication dosage and schedule, and knowledge about what to do with any medication that has not been taken (p value= 0.03). There were no significant changes in overall knowledge of medicine (p value=0.09) and knowledge about the storage of medicine (p value=0.4).

Table 12: Patient survey summary statistics (knowledge of medicines)

Current knowledge	n	Initial	Follow up	Change from initial to follow up			
		Mean (SD)	Mean (SD)	Mean difference	95% CI		p-value*
					Lower	Upper	
Overall knowledge of medicines	51	6.35 (2.5)	6.94 (2.27)	0.59	-0.09	1.27	0.092
Knowledge about the storage of medicines	50	7.58 (2.48)	7.86 (2.42)	0.28	-0.39	0.95	0.401
Knowledge about the importance of medication dosage and schedule	49	7.76 (2.03)	8.55 (1.77)	0.80	0.27	1.32	**0.001**
Knowledge about what to do with any medication you have not taken	43	7.65 (2.6)	8.37 (1.68)	0.72	0.07	1.37	**0.033**

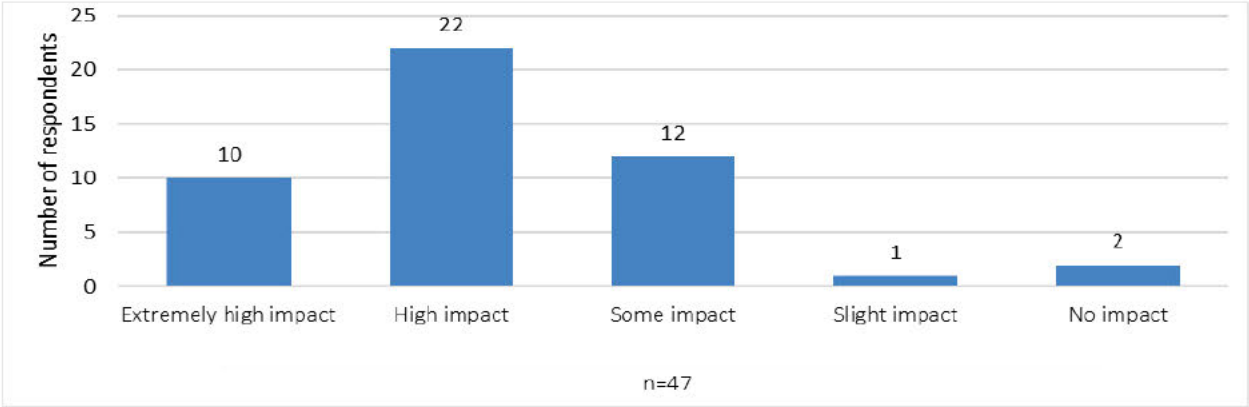
Source: HealthConsult Patient survey, n=43-51
Note: *p-value was from t-test of two samples at initial and follow-up.

3.1.4. Impact on understanding and use of medication

A total of 32 DAA evaluation participants (68%) reported that the DAA service had "extremely high" and "high" impact on **their understanding and use of their medications** (Figure 2). By removing the need to manage their medications, participants suggested that they were able to comply with their medication dosing schedule and were able to notice missed doses. Participants reported that all medication changes were well managed through the DAA service and information about their medicines was presented in a simple format.

The impact on patients' understanding of their medications was reflected in the DAA patient follow-up survey, where 68.1% of patients reported the service had an "*extremely high*" or "*high impact*" on their understanding and use of medicines (n=32 out of 47), and a further 25.5% reported the service had "*some impact*" (n=12) (Figure 2). Only 6.4% of respondents reported that the service had only a "*slight impact*" or "*no impact*" (n=3).

Figure 2: Patient-reported impact of DAA on understanding and use of medicines



Source: HealthConsult Patient survey, n=47

3.2. Patients with a changed medication profile

Based on 6CPA program data, there was relatively no change on medication profile for those DAA patients who completed data collection at the registration and follow-up (n=91). These include,

- The average number of prescriptions for medication used at registration was 7.1 (3.1) and at 6 months follow-up was 7.3 (3.3).
- The average number of non-prescriptions for medication used at registration was 1.1 (1.7) and at 6 months follow-up was 1.1 (1.1).

In terms of proportion in changing medication profile, 63% of prescriptions and 70% of non-prescriptions were no change between registration and follow up (Table 13).

Table 13: Change of number prescription and non-prescription on DAA patients

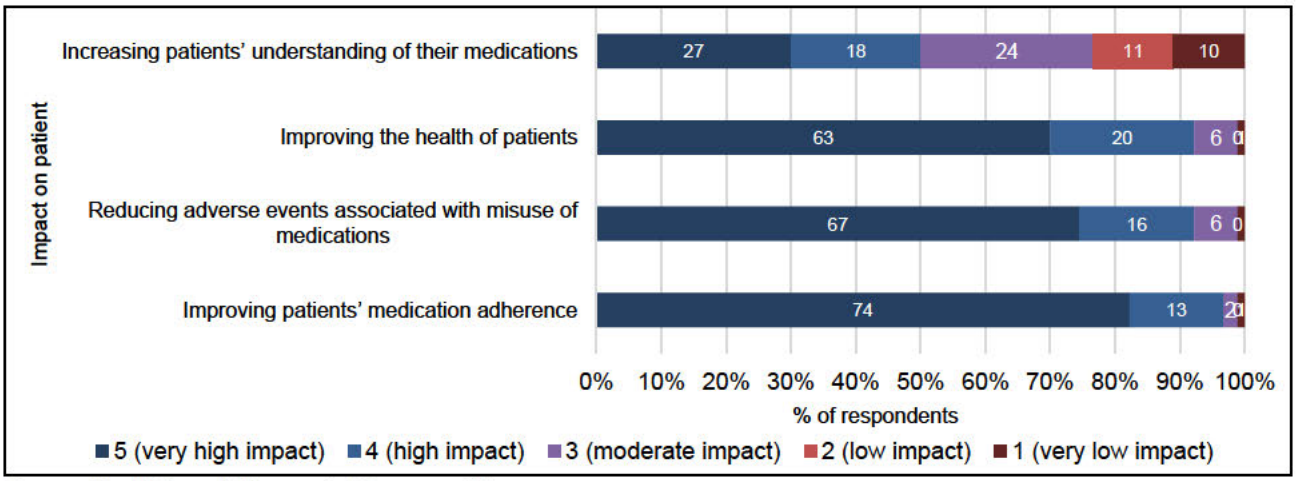
Change between registration and follow-up	Patient with prescription medication	Patient with non-prescription medication
No change	57 (63%)	64 (70%)
Increase	18 (20%)	16 (18%)
Decrease	16 (18%)	11 (12%)
Total	**91 (100%)**	**91 (100%)**

Source: 6CPA program data, n=91

3.3. Pharmacists' view on the impact of DAA on patients' understanding and use of medicines

Over three-quarters of pharmacists (76.7%, n=69) reported that the DAA service had at least a "moderate impact" on increasing patients' understanding of their medications (Figure 3). Over 90% of the pharmacists who completed the pharmacist survey agreed that the DAA service had a "*very high impact*" and "*high impact*" on: improving the health of patients, reducing adverse events associated with misuse of medications, and improving patients' medication adherence.

Figure 3: DAA program impact on patient health outcomes according to pharmacists



Source: HealthConsult Pharmacist Survey, n=90

During the interviews, pharmacists indicated that the DAA program improves patients' use of prescription and non-prescription medicines by **reducing the likelihood of patients:**

- missing/skipping doses
- overdosing
- storing medication inappropriately
- taking unnecessary medications
- experiencing any unintended drug interactions or other medication issues
- attempting to use an expired prescription.

Pharmacists noted that the service allows patients to transfer the responsibility for medication management to pharmacists and improve their confidence in taking their prescription and non-prescription medications appropriately.

Pharmacists provided education on the use of DAA devices which patients reported were easy to use with individualised time and date instructions provided to each patient. This was noted to improve the effective use of prescription and non-prescription medicines with patients adhering to their medication regimen.

The DAA was also noted to be of particular benefit to older people, those on complex medication regimens or those experiencing a significant cognitive decline. Changes to medications were able to be accurately reflected as part of the DAA service, removing the need for patients to identify and remember any changes to their medication profile. The DAA also encouraged medication dispensing from the same pharmacy providing the pharmacists with a complete and accurate medication profile for each patient receiving the service. A pharmacist commented:

"Only last week a lady with worsening dementia had her medications packed for [meal times]. Her daughter said it wasn't working because she can't remember meal times, so we recommended to get a review from her GP …so now she takes all her medicines in the morning."

Despite the overwhelmingly positive effect pharmacists reported that the DAA service has on the effective use of medications, they did note some limitations. These included:

- **patient and medication suitability**: some patients still misused their medications, and the service is inappropriate for some medication types
- **new medications**: patients exploring new medications (which can result in frequent medication and/or dose changes).

4. Patient Health Outcomes

This Chapter presents findings related to the evaluation question:

"Does the program improve the defined health outcomes of patients?"

The key objective of DAA program is to improve health outcomes through reduced medication-related hospitalisations and adverse events by improving adherence and medications management.[15] The impact of the DAA program on patient health outcomes was assessed using patient surveys as well as pharmacist surveys and interviews to measure adherence, side-effects, quality of life, utilisation of health services, and patients' MedsIndex. MedsIndex[16] analysis will enable an assessment of patient's level of compliance with their prescribed regimen.

4.1. Health service use due to medication misuse

To understand whether participation in the DAA program impacted on patients requiring Emergency Department (ED) presentations, hospital admissions or GP visits related to misuse of medication, self-reported recount was used in the patient surveys at initial and follow up. The surveys collected information on the number of GP visits, hospital admissions and ED presentations due to problems related to medicines in the preceding six months. Analysis of the data suggests that at the 6-months follow up (Table 14):

- 33% (n=17) patients reported reduced GP visits, and 18% (n=9) patients reported visiting their GPs more often.
- the frequency of hospitalisation was very low for DAA patients, and during the assessment period, five patients increased (10%) and five patients (10%) decreased hospitalisations.
- for ED presentations, four patients (8%) reported increased number of presentations, and three patients (6%) reported decreased number of presentations.

Table 14: Changes in the self-reported GP visits, hospital admissions and ED presentations

Service type	Decreased service utilisation	No change	Increased service utilisation
GP visits	17 (33%)	25 (49%)	9 (18%)
Hospitalisations	5 (10%)	41 (80%)	5 (10%)
ED presentations	3 (6%)	44 (86%)	4 (8%)

Source: HealthConsult DAA Participant Survey – Initial and Follow-up surveys, n=51

Furthermore, based on the assumption that maintaining current health service use, or decreasing it was a marker of program success, statistical tests (t-test two samples for means) were conducted where health service utilisation due to problems related to medicines was categorised using a binary approach between initial and 6 months follow-up. The value of "1" represents less or equal presentations at specified health services compared to initial, and "2" represents more visits or presentations at 6 months follow-up. The binary test hypothesised that the program will reduce or maintain presentations due to improvement in adherence (as stated in section 1.2).[17] All forms of health service utilisation analysed (GP visits, hospitalisations and ED presentations) of DAA

[15] Department of Health and Aged Care (2007) and Haywood, A et la. (2011)
[16] The community pharmacy dispensing software calculates the patient's MedsIndex score which represents how much medicine the doctor intended the pa ient to take compared to the actual interval between the patient's dispense dates. A score out of 100 is calculated to indicate the patient's level of compliance with their prescribed regimen.
[17] Sorensen, L *et al.*, 2004, "Medication reviews in the community: results of a randomized, controlled effec iveness trial", *British Journal of Clinical Pharmacology*, v.58, no.6, pp. 648-664.

patients were significantly less or unchanged, suggesting that the improvement in medication adherence may have reduced GP visits, hospitalisation and ED presentations (Table 15).

Table 15: Binary tests of presentations between frequency at initial and 6 months follow-up

Service type	Binary at 6 months follow up – means (SD)	Binary at initial – means (SD)	p-value*
GP visits	1.35 (0.39)	1.00 (0.00)	0.01
Hospitalisations	1.20 (0.60)	1.00 (0.00)	0.02
ED presentations	1.16 (0.54)	1.00 (0.00)	0.04

Source: HealthConsult DAA Participant Survey – Initial and Follow-up surveys, n=51
Note: *p-value was from t-test of two samples at initial and follow-up.

Participants also reported the types of specialist services used (reporting on the 6 months prior) at initial and follow up service. The reported specialist services included: psychiatry, cardiology, dermatology, physiotherapy, ophthalmology, and other mental health services. **There was no reduction in specialist service use between the initial and follow-up periods**. The lack of differences is not unexpected however they may also be due to insufficient data and biases involved with self-reported questions.

4.2. Reduction in medication-related side-effects

The Generic Assessment of Side Effects (GASE) measure asks participants to rate the severity of 36 side-effects on a scale of 0 (not present) to 3 (severe). Participants were also asked to determine if each side effect was related to their current medications. There were no significant differences in the number of symptoms reported by participants between initial and follow up (Table 16). There were also no significant differences in the total score (medication attributed or in total), suggesting the severity of symptoms did not change between initial and follow up.

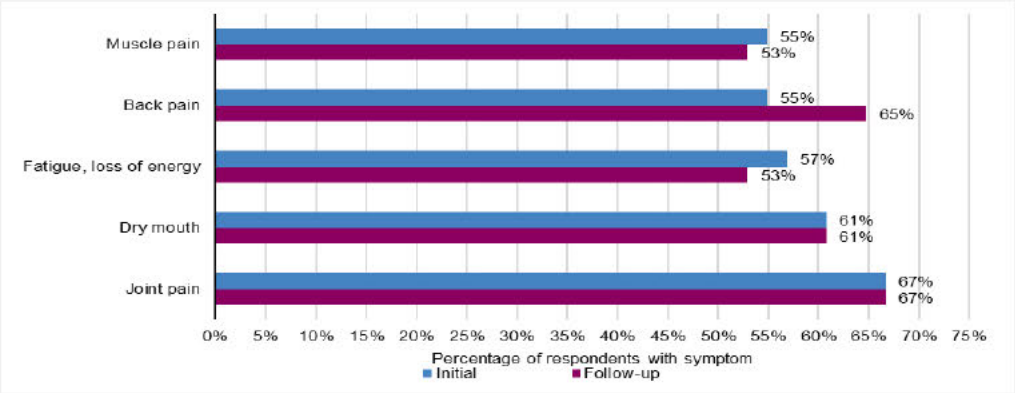
Table 16: Difference in GASE mean symptom count and mean total score from initial to follow up

GASE	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
Symptom Count	51	11.61 (7.78)	11.82 (8.1)	0.22	-1.82	2.25	0.83
Medication Attributed Symptom Count	51	3.71 (4.28)	3.35 (4.58)	-0.35	-1.85	1.14	0.64
Total Score	51	19.96 (16.70)	19.37 (16.28)	-0.59	-4.09	3.72	0.79
Medication Attributed Total Score	51	6.33 (8.01)	6.33 (9.83)	-0.00	-3.19	3.19	1.00

Source: HealthConsult Patient survey, n=51
Note: *p-value was from t-test of two samples at initial and follow-up.

The most reported symptoms from initial to follow-up are outlined in Figure 4. The highest one was joint pain reported by 67% of patients, followed by dry mouth by 61% of patients. Fatigue was reported by 57% of patients, and muscle and back pain were both reported by 55% of patients. The largest change from initial to follow up for most common symptoms was the incidence of back pain increased to 65%. The incidences of dry mouth and joint pain stayed the same and the incidence of muscle pain and fatigue decreased. None of the differences were statistically significant. Most of these changes were also unlikely to be related to mismanagement of medication.

Figure 4: Changes in the six most reported symptoms from initial to follow up



Source: HealthConsult patient survey, n=51

4.3. Patient-reported quality of life

Patient report QoL was measured at initial and follow up to determine whether participation in the DAA program, with the expected benefits of improved medication adherence and reduced adverse events due to medication misuse, had a positive impact on a participant's QoL.

The tool AQoL-4D was used, a multi-attribute utility instrument that comprises of 12 items across 4 dimensions, within the patient survey to measure QoL. Patients rate various aspects of QoL using 4-point multiple response options typically (level of help required or level of impairment). Responses are combined into an overall preference-based measure of QoL using the Australian utility weight tariff, called a utility score, ranging between 0 (indicating a state equivalent to being dead) and 1 (indicating perfect health). The questions can be coded into four domains based on psychometric (unweighted) scoring: independent living (self-care, household tasks and mobility), relationships (friendships, isolation and family role), mental health (sleeping, worrying, pain), and senses (seeing, hearing, and communication). The domains are scored on a scale from worst health state (scored 1) to best health state (scored 5).

The AQoL utility score is obtained by weighting the items then applying a multiplicative function to obtain an index that is transformed on a life-death utility-scale. The utility score is presented on a scale where the upper boundary, 1.00, represents the best possible HRQoL, death equivalent HRQoL is represented by 0.00.

The average AQoL score in DAA participants decreased by 4 basis points (p value=0.03) from initial to follow up for patients who completed both surveys (Table 17). Based on population norms derived for the AQoL in the Australian population, these scores are indicative of being in 'poor health'[18] and not unexpected for the cohort of people eligible for the DAA program. The independent living dimension decreased significantly (p value= 0.04) as well as the relationships dimension (p value=0.01). There were no significant differences between initial and follow up for the physical senses or mental health dimensions.

Table 17: Difference in mean AQoL-4D score for each dimension from initial to follow up

AQoL-4D	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
AQoL Score	51	71.13 (17.71)	67.05 (17.52)	-4.08	-7.78	-0.39	0.03

[18] Based on mean AQoL utility score by self-reported health status, from: Hawthorne G, Osborne R., 2005, "Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", *Australian and New Zealand journal of public health*, v.29, no.2, pp.136-42.

AQoL-4D	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference	95% CI		p-value*
					Lower	Upper	
Independent Living	51	68.19 (30.06)	61 (32.23)	-7.19	-13.86	-0.52	0.04
Relationships	51	78 (19.94)	71.9 (22.15)	-6.1	-10.53	-1.67	0.01
Physical Senses	51	78.65 (16.46)	78 (19.18)	-0.65	-5.47	4.16	0.79
Mental Health	51	59.69 (25.53)	57.3 (23.66)	-2.4	-8.96	4.17	0.47
AQoL Utility Score	51	**0.42 (0.29)**	**0.35 (0.30)**	**-0.08 (0.03)**	-0.15	-0.01	0.04

Source: HealthConsult patient survey, n=51
Note: *p-value was from t-test of two samples at initial and follow-up.

For the 51 participants that completed an initial and follow up survey, the average weighted AQoL-4D utility score at the initial assessment was 0.42 and decreased to 0.35 at 6 months follow up. Based on population norms derived for the AQoL in the Australian population[19],[20] scores of 0.42 and 0.35 are both indicative of being in 'poor health' (Table B. 2)[21]. The decrease of 0.07 between initial and 6 months follow up is statistically and clinically significant (Appendix B.2 for details).[22]

4.4. Relationship of adherence and side-effects to quality of life

The literature suggests that improved medication adherence[24], or an improvement in medication-related side-effects[26], will positively impact on a person's QoL. This section explores the association between QoL and the DAA program by using the adherence (ARMS-12 score) and side-effect (GASE score).

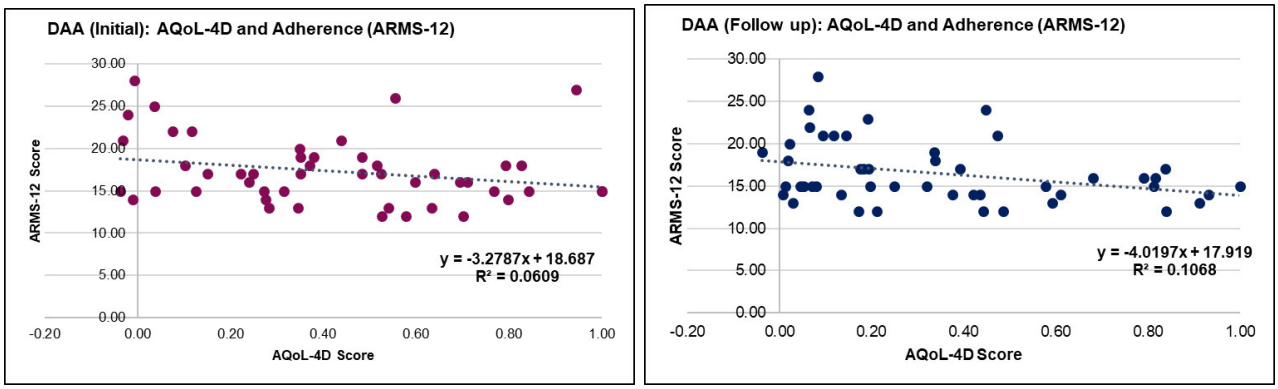
4.4.1. Adherence and quality of life

The average ARMS score at initial was 17.43, which indicates "good" overall medication compliance.[23] The score decreased by 1.61 to 15.82 at the 6 months follow up, indicating an overall improvement in medication adherence.

Consistent with the score's improvement between initial and 6 months follow up, the plot between adherence and QoL displays a slight negative association (Figure 5). This indicates that better adherence is associated with better QoL for patients on the DAA. However, there is limited evidence that the DAA program improves QoL.[24]

[19] Hawthorne, G., & Osborne, R., 2005, "Popula ion norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", *Australian and New Zealand Journal of Public Health*, v.29, no.2, pp.136–142.
[20] Hawthorne, G., Korn, S., & Richardson, J., 2013, "Population norms for the AQoL derived from the 2007 Australian National Survey of Mental Health and Wellbeing", *Australian and New Zealand Journal of Public Health*, v.37, no.1, pp.17–23.
[21] The AQoL-4D population norms from Hawthorne (2005)[21] and Hawthorne (2013)[21] were 0.83 (standard deviation: 0.2) and 0.81 (95%CI: 0.81-0.82), respectively
[22] A meaningful clinical change is equivalent to a MID of 0.06. Source: Hawthorne, G., & Osborne, R., 2005, "Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", Australian and New Zealand Journal of Public Health, v.29, no 2, pp.136–142.
[23] ARMS-12 has a possible range of 12 to 48, where a lower score indicates better adherence. Evaluation participants, therefore, had good overall adherence before and after participation in the DAA service. Source: Kripalani S, Risser J, Gatti ME, Jacobson TA., 2009, "Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease", *Value in Health*, v.12, no.1, pp.118-23.
[24] Etty-Leal M, G., 2017, "The role of dose administration aids in medication management for older people", *Journal of Pharmacy Practice and Research*, v.47, pp.241-247.

Figure 5: Adherence and QoL (initial and follow up)



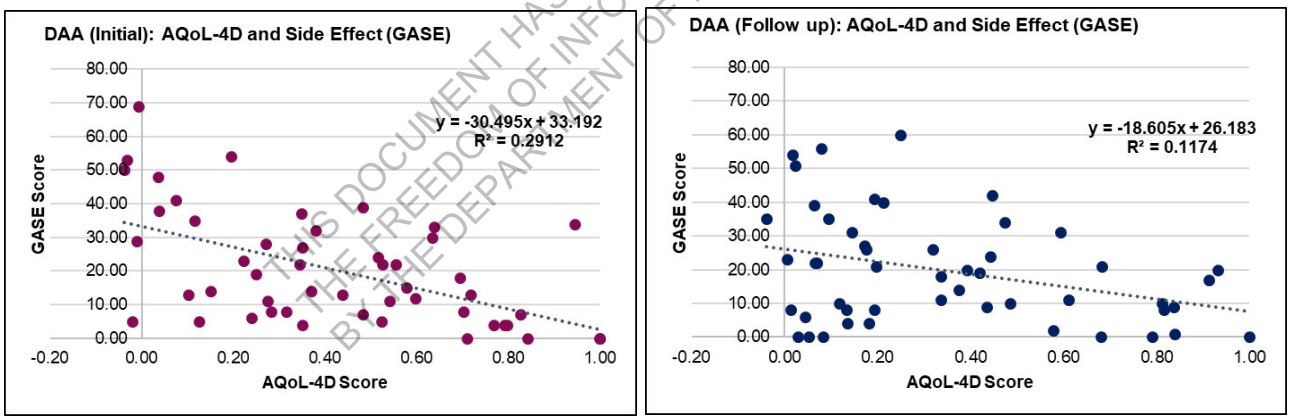
Sources: HealthConsult Patient survey, HealthConsult analysis.
Note: n=51, plot ARMS-12 score (y-axis) and AQoL-4D score (x-axis)

4.4.2. Side effects and quality of life

Plotting a linear regression between the GASE score and AQoL-4D score shows a negative association, both at initial and at 6 months follow up (Figure 6). It suggests that a low side-effect of medication is associated with a better QoL, albeit low R-squared[25] due to the sample size. As stated in Haywood et al. (2011), the provision of the DAA program through community pharmacies is expected to reduce side effects and to improve QoL.[26]

There was a decrease in the GASE score from the initial to 6 months follow up (19.96 to 19.37, respectively), indicating that patient reported side effects improved. However, this decrease was not significant (p=0.79). There was no significant difference in the number of symptoms reported in DAA patients (medication attributed or in total) between initial and follow up visits.

Figure 6: Side Effect and Quality of Life (initial and follow up)



Sources: : HealthConsult Patient survey, n=51, plot GASE score (y-axis) and AQoL-4D score (x-axis)

4.5. Change in medicine use and patient reported positive improvements

Please note, this indicator was not able to be evaluated as planned due to inability to link the PBS data with the Patient Survey. However, the 6CPA program data provides information regarding why a patient's medication profile changed. The results are summarised below.

[25] R-squared indicates the strength of the relationship between dependent and independent variable. In this context, between Quality of Life and Adverse Event
[26] Haywood *et al*., 2011, "Dose administration aids: Pharmacists' role in improving patient care", *Australian Medical Journal*, v.4, no.4, pp.183-189.

As reported in section 3.2, out of 91 patients, there were 16 (18%) of patients with prescription medication and 11 (12%) of patients with non-prescription medication who reduced the number of medicines used between registration and 6 months follow-up. Table 18 summarises the main reasons for change.

Table 18: Key reasons of change in medicine use

DAA patients	Key reasons of change
Reduce no. of prescriptions (n=16)	• Condition improvement • Dose reduction and/or change • GP consultation/review • Medication no longer necessary • Removal of a pain medication from pack.
Reduce no. of non-prescriptions (n=11)	• Dose reduction and cease medication • GP consultation/review • Hospitalisation

Source: 6CPA program data

4.6. Impact of adherence at individual level

To assess the impact of medication adherence on an QoL, we examined whether the change in medication adherence resulted in a corresponding change in QoL between the initial and follow up periods. Due to the small sample size, it is difficult to draw conclusions from the data, however, when examined at the individual level, there does not appear to be an association between medication adherence and a change in QoL.

At the individual level, those who had an improvement in medication adherence, had various degrees of improvement on QoL and side-effect (Table 19). Out of 22 patients who were improved in adherence, 17 (77%) and 13 (59%) also improved in QoL in mental health and senses dimensions respectively. Meanwhile, only 50% had an improvement on side-effects of medications.

Moreover, patients without change in adherence (n=15) had significant improvement in QoL of mental health and senses dimension, and those with declining adherence (n=14) improved in side-effect of medications.

Table 19: Impact on quality of life and side-effect based on adherence

Adherence improvement	QoL (Independent living)	QoL (Relationship)	QoL (Senses)	QoL (Mental health)	QoL Overall	GASE (Side-effect)
Improved adherence (n=22)	27%	45%	59%	77%	41%	50%
	9%	0%	9%	5%	0%	5%
	64%	55%	32%	18%	59%	45%
Unchanged adherence (n=15)	27%	40%	80%	73%	47%	40%
	7%	13%	7%	7%	0%	13%
	67%	47%	13%	20%	53%	47%
Declined adherence (n=14)	43%	36%	36%	93%	50%	71%
	14%	14%	21%	0%	0%	7%
	43%	50%	43%	7%	50%	22%

Improved Unchanged Declined

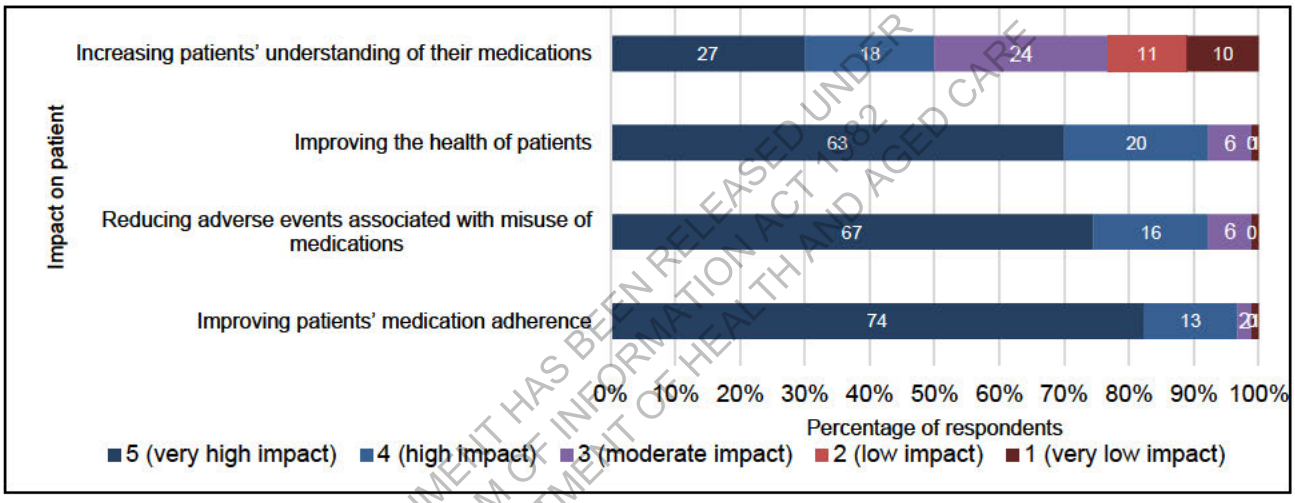
Sources: : HealthConsult Patient survey (n=51), HealthConsult analysis.

4.7. Pharmacists' view on effectiveness for improving health outcomes

Community pharmacists are well placed to observe the impact of the DAA program on the health outcomes of patients due to their regular interactions with the DAA patient cohort. Most pharmacists (98.9%) reported in the pharmacist survey that the DAA service had at least a moderate impact on improving the health of patients (Figure 7). Of the 90 pharmacists who completed the DAA Pharmacist Survey:

- 70.0% reported that the DAA service had a "very high" impact (n=63)
- 22.2% reported that the DAA service had a "high" impact (n=20) and
- 6.7% reported that the DAA service had a "moderate" impact on improving the health of patients (n=6).

Figure 7: Impact on patient health outcomes according to pharmacists



Source: HealthConsult Pharmacist Survey, n=90

Most pharmacists (98.9%) also reported that the DAA service had at least a moderate impact on reducing adverse events associated with the misuse of medications (n=89):

- 74.4% reported a "very high impact" (n=67)
- 17.8% reported a "high impact" (n=16)
- 6.7% reported a "moderate impact" (n=6).

Over three quarters of pharmacists (76.7%) reported that the DAA service had at least a moderate impact on increasing patients' understanding of their medications (n=90):

- 30.0% reported a "very high impact" (n=27)
- 20.0% reported a "high impact" (n=18)
- 26.7% reported a "moderate impact" (n=24).

A total of 79 of the 128 participants (62%) responded to the question: 'What is working well with the provision of DAA services?' The most frequently reported theme (32 of 79 participants, 41%) was improvements in medicine use. This improvement was attributed to the regular and reliable supply of medicines, adherence to medication changes and improved medication compliance. With the help of this service, patients were reported to be less confused about their medicines and can therefore better manage their medication.

The improvements in medicine use were attributed to regular and reliable supply of medicines, adherence to medication changes, and improved medication compliance.

As two pharmacists offering the DAA service stated:

"With the help of this service, patients were reported to be less confused about their medicines and can therefore better manage their medication."

"It improves compliance and convenience for patients who have issues remembering to take their medication."

Most pharmacists interviewed suggested that the DAA program was an "essential service" that improved the health outcomes of most patients. The perceived effectiveness was attributed to enhanced medication adherence and a subsequent reduction in adverse events. Leading to an improved QoL for those individuals receiving the service. One pharmacist commented:

"Once a patient starts DAA they become more compliant which then positively effects the patients' health outcomes and their quality of life."

The remaining interviewed pharmacists were unsure of the impact of the DAA program on patients' health outcomes noting that there is limited data collected on health outcomes. Pharmacists also indicated that the service improves the health outcomes of some patients but not for others as expected for any nationally designed program.

Pharmacists were united in their view that the DAA program improved the medication adherence of patients receiving the service. Noting that the services use of webster pack or similar medication management packages for individual patients minimises the risk of patients taking the incorrect dose of prescribed medication.

Adherence was checked by most interviewed pharmacists by assessing the returned medication management package when patients received their next service. This allowed pharmacists to either speak to patients directly or contact carers if adherence appeared to be an issue. It was assumed that if patients were returning an empty medication management package, they were adhering to their medication regimen. Another check described by pharmacists was ensuring that medication management systems were collected regularly and as prescribed.

"We pack websters for a lady who lives alone and we know she takes them because she brings them back every Thursday and we can see the tablets are missing."

5. Cost-Effectiveness

This Chapter presents findings related to the evaluation question:

"Is the DAA program cost-effective?"

The cost-effectiveness analysis (CEA) of the DAA program was undertaken using patient survey data (n=51), focusing on adherence to taking and refilling medications (ARMS-12 score).

5.1. Determine cost and benefit for DAA service

The Pharmacy Guild and the Commonwealth Government jointly assess the payment amount the eligible community pharmacy is entitled to receive for the provision of DAA. Under 6CPA, this amount was based on the number of services and pharmacy size (prescription volume). Approved DAA service providers could claim a fee of $6.08 per patient per week as a contribution towards the cost of providing the DAA service to patients that met the eligibility criteria. Patients were still required to pay to obtain the medicines packed into the DAA, including the PBS co-payment (if applicable) when medications were dispensed. The total number of DAA services that a pharmacy could claim was capped to 30 per month (note that for the purposes of the economic analysis it has been assumed that all clients were funded within the cap).

The method for CEA is a quasi-experimental design that assesses medication adherence pre vs post-intervention, so the "no cost" option is set as the comparator. However, it should be noted that there may be economic benefits of the DAA program that are outside the scope of the CEA design, such as cost savings on support workers or nurses who would otherwise need to assist with medication administration (given the DAA program facilitates self and/or carer administration). Therefore, the "no cost" comparator is likely to be a conservative approach to determining cost-effectiveness, and the true cost-effectiveness may be greater than measured in this report.

5.1.1. Cost per intervention

Table 20 shows that the DAA provision fee per patient was $6.08 per week, which was taken as the cost of the DAA (note this reflects a cost to Government approach, the cost of a pharmacy providing a DAA was also measured as part of the 6CPA costing study, but it has not been used in this analysis). Consistent with the two points at which outcome data was captured, 26 weeks of DAA fees are taken as the cost of the intervention for the six months, totalled to $158.08 (Table 20). Note that the fee for collecting the outcomes data of $31.90 at service initiation and again at six months follow up was excluded from the economic evaluation, as it is not part of the DAA program in actual practice.

Table 20: Intervention cost per patient

DAA service fee item	Fee ($)	Cost used in economic evaluation
The provision of weekly DAA service fee‡	$6.08	$158.08
Total		**$158.08**

Source: DAA trial data, PPA online
‡ 26 weeks were applied for the DAA economic evaluation

5.1.2. Benefit per intervention

To determine the benefits for use in the CEA, consideration was given to the evaluation tools used, the type and availability of data points, the likelihood that the DAA program would have a direct impact on the outcomes that were measured, and alignment with program aims.

Four criteria were considered to determine the key benefit of the DAA program. These include direct or indirect association between the benefit and the program, observation timeframe, degree of change between initial and follow-up, and significance level of statistic test (Table 21).

Table 21: Matrix to determine the benefit parameter of DAA program

Benefit parameter	Direct association to the program	Observation timeframe (six-month)	Change in means (pre-post)	Statistically significant	Overall
Adherence (ARMS-12 score)	●	◕	●	◕	◕
Health service utilisation (GP visits and hospitalisations)	◕	◑	◕	◕	◕
Quality of life (AQol-4D)	◔	◑	◐	◐	◔
Side-effect (GASE score)	◔	◕	◐	◐	◔

● strong degree; ◑ moderate degree; ◔ little degree; ◐ no impact

Sources: : HealthConsult Patient survey, HealthConsult analysis.

The summary of each benefit parameter includes:

- Adherence of taking and refilling medications (ARMS-12) has a direct, independent association to the program as the key objective of DAA is to improve adherence (Section 3.1). The observation timeframe of six months was considered sufficient to measure a change in a patient's adherence (see Table 11).
- Changes in ED presentations and hospitalisations due to medication misuse have an indirect association with the DAA program and should be viewed as a secondary outcome. The literature[27,28] states that poor medication adherence leads to increased ED presentations and hospitalisations. Therefore, there will be secondary benefits from improved adherence.
- Changes in GP visits associated with medication related problems have a direct association with the program and should also be viewed as a secondary outcome. It is accepted that GP attendances may fluctuate for a range of reasons, other than medication adherence.
- Self- or interviewer-administered surveys to measure QoL require longitudinal changes over a period.[29] In the context of the DAA program, the assessment of QoL by using AQoL-4D, requires a longer observation period to determine the impact of DAA program on the four-dimensions of QoL (independent living, relationship, senses, and mental health).
- Side effect (GASE) has an indirect association with the program, as all medication side-effects cannot be prevented by using a DAA. Side-effects from medication misadventures are a sub-set of the complaints measured in the GASE instrument, and the GASE will identify all complaints, not just those from misadventure. Therefore, this benefit parameter was determined not suitable to be included in the cost-effectiveness analysis.

As the ICER, focusing on adherence, has demonstrated that the DAA program is a low-cost intervention, any consideration of the secondary benefits (i.e., reductions in ED presentation and hospitalisations, and GP visits) would likely reduce the costs of the DAA Program. Thus, due to the small numbers in the study (n=51) and the relatively lower confidence in the accuracy of self-reported utilisation (for hospitalisations and GP attendances), a conservative approach has been taken and no dollar value has been attributed to the secondary outcomes in the economic analysis.

[27] Ho PM, Rumsfeld JS, Masoudi FA, et al. Effect of Medication Nonadherence on Hospitalization and Mortality Among Patients With Diabetes Mellitus. *Arch Intern Med*. 2006;166(17):1836–1841. doi:10.1001/archinte.166.17.1836

[28] M. Christopher Roebuck, Joshua N. Liberman, Marin Gemmill-Toyama, and Troyen A. Brennan. Medication Adherence Leads To Lower Health Care Use And Costs Despite Increased Drug Spending. *Health Affairs* 2011 30:1, 91-99

[29] Guyatt, GH, et al., 1993, 'Measuring Health-Related Quality of Life', *Annals of Internal Medicine*, v.188, no.8, pp. 622-629.

5.2. Cost-effectiveness

The CEA defines the benefit as the change in adherence to medications, as measured by the ARMS-12 instrument. The minimum score that a client can report for ARMS-12 is 12, and the maximum score is 48 (lower scores indicate greater adherence). The primary analysis has considered what the cost would be to achieve a one-unit improvement in the ARMS-12 score.

5.2.1. Costs

The primary analysis used the DAA program cost only, measured from the weekly DAA service fee (Table 20). Hence, the intervention cost used for the CEA was $158.08 per patient (26*$6.08). Given 51 patients were included in the CEA, and the pre-intervention costs were zero (no DAA), the numerator for the ICER was $8,062.08 (i.e., $158.08 x 51 patients).

5.2.2. Effectiveness

Of the 51 patients for whom there was initial and follow-up data, 22 out of 51 of them (43%) had improved medication adherence, while 14 (27%) had a lower adherence score and the other 15 (29%) were unchanged, resulting in an overall nett improvement in the ARMS-12 score for the 51 clients. The mean reduction in the ARMS-12 score was 0.804 (95% Confidence Interval was -0.142 to 1.750), with a standard deviation of 3.415. As the 95% confidence interval contained zero (i.e., we could not be 95% sure that the mean reduction was more than zero), the measured change was not statistically significant (alpha = 0.05). This result is most likely due to the small volume of data available for the CEA and represents a limitation for the study.

5.2.3. ICER

By combining the cost and benefit data, the ICER for a unit reduction in the ARMS-12 score was calculated as $196.62 (i.e., $8,062.08/0.804*51). Thus, using the study data, the cost to improve medication adherence as represented by a one point in reduction in the ARMS score is $196.62.

The ICER can be compared to the cost to government for the provision of health services when patients do not adhere to medications. Cutler *et al.* (2018)[30] estimated that the annual cost of providing health services (e.g., emergency departments, hospitalisations, outpatient, visits, etc.) to a patient who does not adhere to their medication regimen was $37,215 (AUD) in 2020 (Table 22).

Table 22: ICER threshold for the cost-effectiveness analysis

Economic cost of non-adherence per person (disease specific)	USD 2015 price	PPP and CPI adjusted factor	AUD 2020 price - PPP and CPI adjusted (six months / one year)
All causes (minimum range)	$5,271	Average exchange rate AUD/USD 2015=0.752	$4,167 / $8,335
All causes (maximum range)	$52,341	CPI (health) compounded 2015 to 2020= 3.79% per year (x5=18.9%)	$41,383 / $82,766
All causes (median value)	$23,535		$18,608 / $37,215

Sources: Cutler et al. (2018), HealthConsult analysis.
Note: Average exchange rates AUD/USD <exchangerates.org.uk>. ABS CPI (heath) between December 2015 and December 2020 was applied to estimate the threshold in 2020 price.

We note that this figure is derived from a US study and there are some translational issues, but the findings are considered indicative in the Australian context. Thus, when converted to a six-month period, the cost of non-adherence to medications is estimated at $18,608 per patient.

In this context, it would clearly take very few patients who are given a DAA to significantly improve their medication adherence to generate a substantial saving in downstream health services

[30] Cutler, C.J, et al., 2018, "Economic impact of medication nonadherence by disease groups: a systematic review", BMJ open access, doi:10.1136/bmjopen-2017-016982.

utilisation costs, thereby making the DAA intervention cost effective. To illustrate, in the study sample of 51 patients, the total DAA program cost is $8,062, which represents only 43% of the saving obtainable from just one of the 51 patients moving from non-adherence to adherence because of using a DAA based on the Cutler et al (2018) estimate.

Thus, it could be argued that ICER for the incremental reduction in the ARMS-12 score demonstrates that the DAA program is low-cost intervention to improve adherence to medications (noting that this analysis has excluded any benefits from reductions in downstream health services utilisation, so the true intervention cost is likely to be even lower, and better data on downstream interventions may prove that the benefits exceed the costs).

But, given the low number of clients in the study resulted in the measured reduction in ARMS score not being statistically significant, these results should be interpreted with caution. It can be concluded that this small study has generated promising results, but a larger study is needed before any definitive conclusions around the cost effectiveness of the DAA program can be drawn.

6. Barriers and Enablers

This Chapter presents findings related to the evaluation question:

"What are the barriers and enablers to provide an effective patient-centred DAA service and how can it be strengthened?"

The barriers and enablers of the DAA program were measured using the pharmacist survey, pharmacy profile survey and case studies/pharmacists' interviews. Patient and pharmacist experience and satisfaction of their involvement in the program were used to identify barriers and enablers, as well as identifying areas for program improvement. In addition, the pharmacist survey and pharmacy profile survey were used to capture perspectives from pharmacy owners.[31]

6.1. Patient experience and satisfaction of DAA program

6.1.1. Patient reported experience and satisfaction

A key enabler of the DAA program is whether patients' report a positive experience and are satisfied with the service the program provides. Patient experience was measured using the Treatment Satisfaction Questionnaire for Medication (TSQM) score and a series of questions included in the patient survey.

The TSQM score is a reliable and valid instrument to assess patients' satisfaction with medication, providing scores on four scales – side effects, effectiveness, convenience, and global satisfaction. The patient satisfaction and perceived value of service provided through the DAA were measured using the TSQM scores at initial to follow up[32,33].

Mean TSQM scores ranged from 66.01 (effectiveness) to 84.10 (side effects) with higher scores indicating better satisfaction (Table 23). A statistically significant improvement was observed only in the mean convenience score which changed from 77.29 (SD: 15.83) to 82.79 (SD: 14.83) at follow-up (p= 0.01). Whilst a modest increase in the TSQM scores from initial to follow-up was observed in side effects and global satisfaction domains, the change was not statistically significant (Table 23).

Table 23: Patient Satisfaction Survey Summary Statistics (TSQM)

TSQM	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean Difference (SD)	95% CI		P-Value
					Lower	Upper	
Effectiveness	51	66.01 (16.32)	66.01 (19.43)	0 (2.06)	-4.13	4.13	1.00
Side Effects	46	77.99 (26.96)	84.1 (25.91)	6.11 (3.76)	-1.47	13.70	0.11
Convenience	51	77.29 (15.83)	82.79 (14.83)	5.50 (1.89)	1.70	9.30	0.01
Global Satisfaction	51	67.23 (18.08)	71.01 (20.17)	3.78 (2.16)	-0.55	8.12	0.09

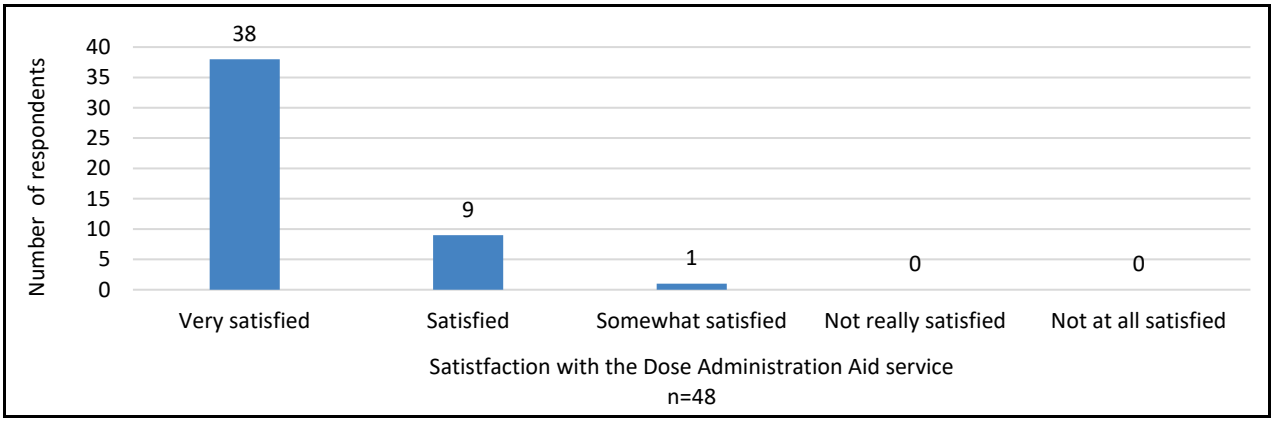
Source: HealthConsult Patient survey, n=51

In the DAA patient follow up survey, 48 out of 51 individuals responded to a question about satisfaction with the DAA service. Of these, 47 respondents (97.9%) reported that they were "very

[31] The reason for the distinguishment between "pharmacists and pharmacy owners" as there were two different surveys in the study – one targeted at pharmacy owners (who are pharmacists) and then pharmacists (not owners that support DAA in community pharmacy).
[32] TSQM Version 1.4 is comprised of 14 questions that provide scores on four scales: effectiveness (3 items), side effects (5 items), convenience (3 items) and global satisfaction (3 items).
[33] Atkinson MJ, Sinha A, Hass SL, *et al.* 2004, "Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease", *Health Qual Life Outcomes*, v.2, no.12.

satisfied" or "satisfied" with the service, and one respondent was "somewhat satisfied" with the service (Figure 8).

Figure 8: Service satisfaction and impact on understanding and use of medicines



Source: HealthConsult Patient survey, n=48

Of the 46 that provided feedback about features of the DAA service in the follow-up survey, 59% (n=27) described the DAA service as "*convenient*" and "*easy to use*". Participants have reported that the **DAA service overcomes issues related to remembering the dosing schedule**. The **ease of organising a DAA service** and the **home delivery services** were also important features reported by participants. One participant reported that the DAA service **helps with independence and their ability to continue living at home**. One participant commented:

"I no longer have to worry about how to take my medications, it's all done for me. One less stress for me."

Open responses also provided feedback on areas for improvement (n=36). Half of the participants (n=18) reported that no further changes were required. About a third of participants (12 of 36, 33%) reported the following issues with the DAA service:

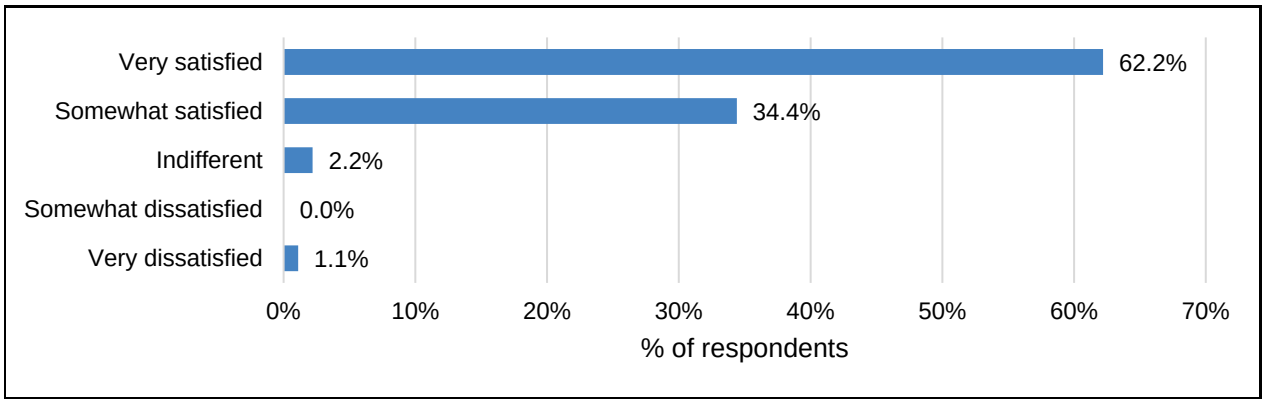
- **DAA scheduling**: medication doses were not distributed evenly across administration times, the DAA was packed every week which could be inconvenient
- **DAA packaging**: difficulties with administering medications from the DAA, labelling was too small (font size), DAA not compact making it difficult to store
- **Information and patient instruction**: lack of instruction on what to do with unused medications, lack of awareness of the names and information of medications packed in the DAA
- **Medication type limitation**: DAA was unable to accommodate all types of medications.

6.1.2. Pharmacists' view on patient satisfaction

In the pharmacist survey, pharmacists were asked to indicate how satisfied they think most patients are with the DAA service on a five-point scale (Figure 9).

Almost all (n=87, 96.7%) reported that they believed most patients were "*very satisfied*" or "*somewhat satisfied*" with the service. Two out of 90 pharmacists (2.2%) reported that they believed most patients were "*Indifferent*" about the service. Only one out of 90 pharmacists (1.1%) reported that they believed most `patients were "*Very Dissatisfied*".

Figure 9: Pharmacist's view on patient satisfaction



Source: HealthConsult Pharmacist Survey, n=90

6.2. Pharmacist experience of DAA program

The experience of the pharmacist in delivering the DAA program is critical to the effectiveness of the program and pharmacists and pharmacy owners are well placed to identify barriers and enablers related to the program implementation.

6.2.1. Pharmacist reimbursement

Thematic analysis of questions asked of pharmacists and pharmacy owners during the case studies was conducted to explore their perspectives on the financial implications of participation in the DAA program.

Many pharmacists felt the program was worthwhile (n=7):

"I think for what we do the DAA and SS [payment] is sufficient."

"It's cost-effective to supply DAA and SS services"

"It's well and truly adequate."

Others felt DAA participation was not financially viable due to the cap payment (n=9).

"Payment is not enough since a lot of resources are used and there is a small profit margin from dispensing medications"

"Spend a lot of time chasing scripts and making sure we have a current medications chart. We do about 65 DAA and could spend an hour chasing them up. It's not just the packing it's about the audit process and making it right."

"We are limited by the amount of the things we're allowed to do. It would be great to increase the cap rather than the monetary remuneration for these."

Some felt the reimbursement received was insufficient to cover delivering the DAA program, which was time-consuming, especially with the complexity associated with patients requiring tertiary care. This perception added to issues regarding costs and reimbursement:

"DAA capped at 200 and I'm not happy with that at all, I have 72 patients… and lots of them can come in and out of hospitals, I don't think we get the right amount for the 72 that we are delivering at the moment. We aren't getting a fair amount for the hospitals. I don't think there is a lot of transparency in regard to what we are receiving back."

"DAA reimbursement is not worth the amount of time taken… a change in a patient's medication means a redo of Webster packs. The pharmacist needs to hire someone else to specifically do the packs. There is another hire to deliver DAA to patients. Therefore, DAA reimbursements don't cover the wages of the new hires. It is a costly service. The incentive of getting the profits from the scripts is irrelevant as the customers would come into the store for their medications anyway."

Pharmacists suggested improvements to the DAA program to make it more financially viable including:

"Increase reimbursement for DAA to match the amount of required work"

"It would be good to see the DAA caps increased. I think the amount they pay covers the amount of time. The increase would just cover the number of webster packs that we already do."

It should be noted that the representative cost determined by the HealthConsult pharmacy costing study was that the provision of a single weekly DAA pack costs pharmacies $11.60, which is $5.52, or 91% higher than the current fee of $6.08.

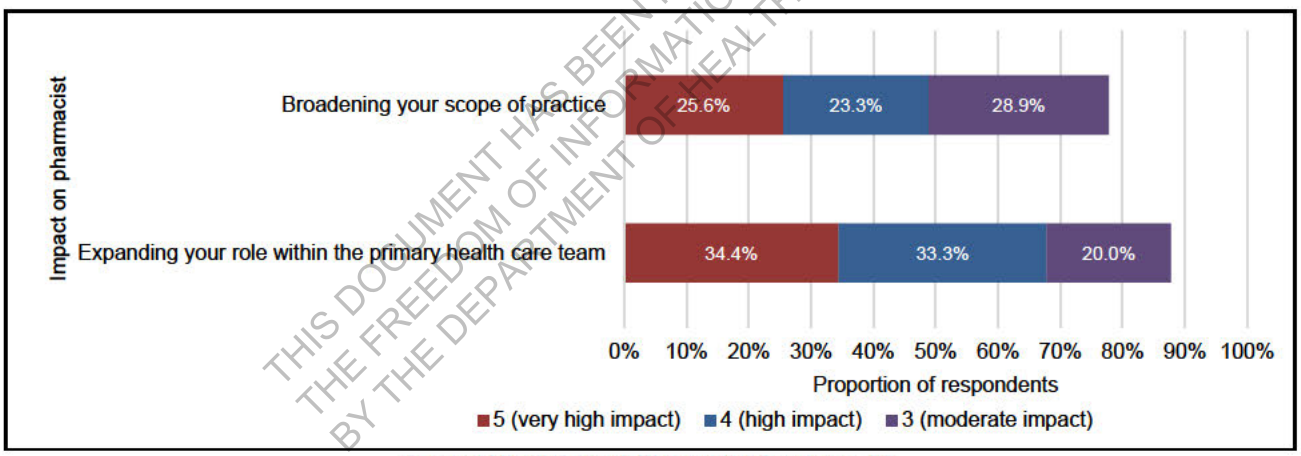
6.2.2. Pharmacist role within the primary health care team

The DAA program requires increased communication between the participating pharmacists and other health professionals, predominantly general practitioners (GPs). This may lead to opportunities for pharmacists to broaden their role within the primary health care team, potentially leading to improved career satisfaction, and is another enabler of the DAA program.

In the Pharmacist Survey, participants were asked to provide their opinion about the role of DAA in expanding their role within the primary health care team (Figure 10). From the 90 who responded to this question, 34.4% reported that the DAA service had a "very high impact" (n=31), 33.3% reported a "high impact" (n=30), and 20.0% reported a "moderate impact" (n=18).

In response to the impact on broadening their scope of practice, 25.6% reported that the DAA service had a "very high impact" (n=23), 23.3% reported that the DAA service had a "high impact" (n=21), and 28.9% reported that the DAA service had a "moderate impact" (n=26).

Figure 10: Pharmacist reported impact on role within primary health care team



Source: HealthConsult Pharmacist Survey, n=90

Pharmacist's experiences communicating with GPs and other health professionals were mixed. The DAA program was reported to encourage more frequent communication with GPs as pharmacists were required to request prescriptions on behalf of patients or clarify medication related issues. Pharmacists described the process as time consuming as GPs did not always provide timely responses to queries, delaying the preparation of DAA medication management packages.

Most pharmacists (91.1%) reported that the DAA service had at least a moderate impact on increasing their **communication with other health professionals** (e.g. GPs, multi-disciplinary team members). Out of the 90 pharmacists who completed the DAA Pharmacist Survey:

- thirty-nine pharmacists (43.3%) reported that the DAA service had a *very high impact*,
- twenty-six pharmacists (28.9%) reported that the DAA service had a *high impact*,
- and seventeen pharmacists (18.9%) reported that the DAA service had a *moderate impact*.

Pharmacists interviewed during the case study site visits provided mixed reviews on the impact of the DAA program on the expansion of their role within the primary health care team.

Most pharmacists who indicated their role within the primary health care team had increased noted that their main interaction was with the patient's GP. The DAA program had resulted in improved relationships and trust, with two-way communication occurring in relation to specific patients. Medication changes for patients already receiving a DAA service were able to be streamlined minimising the burden on patients receiving the service with GPs directly contacting the pharmacist to request changes.

Improved relationships were credited with pharmacists working with GPs to identify other referral opportunities within primary health care. As part of this some pharmacists were providing in-service education to GPs and allied health professionals on their role; an activity that was not performed prior to the 6CPA programs.

Some interviewed pharmacists indicated that they had also been able to expand their internal pharmacy team. Dedicated DAA technicians were employed to manage the packing of medication management packages prior to pharmacists conducting quality assurance checks as required in the program rules.

In contrast, three pharmacists suggested that the DAA program had made no change to the relationships with health care providers or to their role within the primary health care team. Noting that they still had limited interaction with GPs.

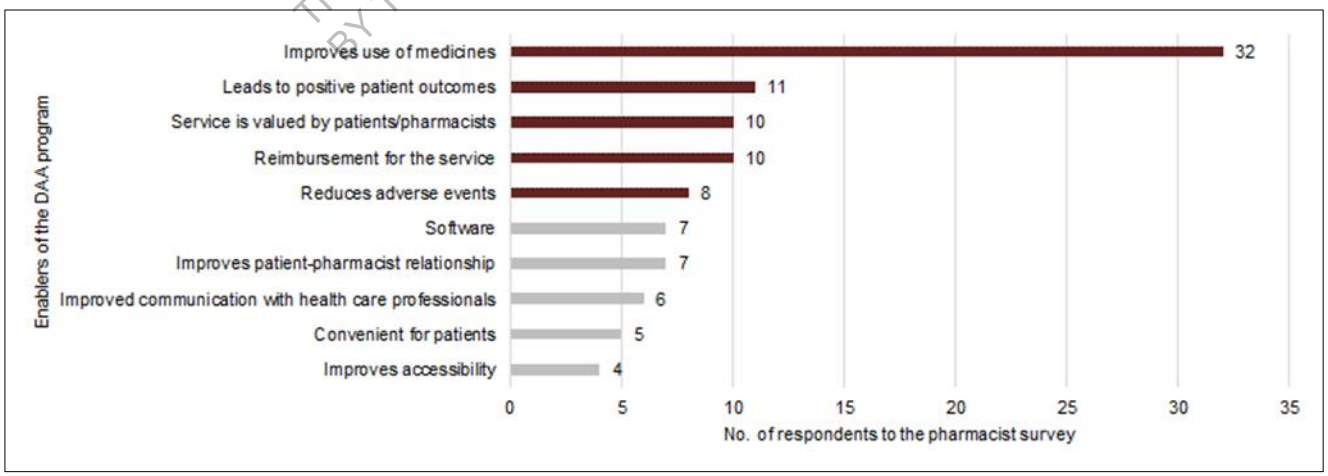
Although some pharmacists reported improved communication with other health professionals such as GPs, others suggested further areas of improvement. It was recommended that better cooperation and further collaboration is required among health care professionals to provide this service. This is to enable pharmacists' access to:

"*Medication records/summaries from doctors that are up to date, in a timely manner and without mistakes.*"

6.2.3. Career Development opportunities for pharmacists

In the Pharmacist Survey, pharmacists were asked to provide their opinion on the features of the DAA program that are working well. A total of 79 of the 90 survey participants provided insight into the enablers of the DAA program. Figure 11 highlights the most frequently reported enablers: improved use of medicines, positive patient outcomes, valued by patients and pharmacists, reimbursements relating to this program and reductions in adverse events.

Figure 11: Pharmacist reported enablers of DAA (via open-ended responses



Source: HealthConsult Pharmacist Survey (n=90)

Respondents reported that the DAA service was valued by pharmacists and patients, describing it as an "*invaluable aid*" and a "*great service*", resulting in "*an amazing lifestyle change*". It was

reported to be most useful for people with complex medication regimens, the ageing population and those "*becoming less competent*" with their medicines.

Another enabler that survey participants frequently reported was the payments involved with providing the DAA service. Pharmacists stated that payments are fast and timely, and the claiming process was easy to follow.

Other reported enablers by pharmacists providing the DAA service included:

- program software: system used for submitting claims was linked to the DAA software enabling efficient claiming processes
- improved relationships between pharmacists and their patients
- improved communication with health care professionals, especially GPs
- greater convenience for patients in managing their medications
- improved accessibility to this service since lower prices or free services were offered to patients.

Pharmacists reported that the DAA program positively impacted their careers.

"Without this program, pharmacy would just be a retail job."

Providing the DAA program was noted to provide a "*sense of purpose*" to pharmacists by creating a positive impact on patient's lives by reducing the number of adverse events associated with medication misuse, resulting in increased job satisfaction. The DAA program also provided a pathway for unqualified individuals, as a DAA Technician was sometimes involved to pack medication for patients.

Some pharmacists (n=8) also suggested that this program improved their clinical knowledge since patients asked questions about their medicines during the initial and follow up services. This provided pharmacists an incentive to undertake more learning and/or training. One pharmacist stated that the loss of clinical skills would:

"impact on the patient's health outcomes and the whole health services ability to provide high quality medicine use".

Pharmacists also noted that they learn more about their patient, which helped build relationships and increased career satisfaction.

Similarly, 77.8 % of pharmacists reported that the DAA service had at least a moderate impact on contributing to **job satisfaction**. Out of the 90 pharmacists who completed the DAA Pharmacist Survey:

- twenty-one pharmacists (23.3%) reported that the DAA service had a *very high impact*,
- twenty-five pharmacists (27.8%) reported that the DAA service had a *high impact*,
- and twenty-four pharmacists (26.7%) reported that the DAA service had a *moderate impact*.

6.2.4. Administrative/Operational requirements

Pharmacists reported a positive experience and high level of satisfaction with the administrative and operational requirements of the DAA program as collected via Pharmacist survey and case study site visits. The highly structured nature of the program led to auditable administrative requirements which was assisted by the program software. Noted by pharmacists to be easy to submit claims and capture appropriate patient data.

The following recommendations were provided by pharmacists to further strengthen the administrative and/or operational aspects of the program:

- patients should be able to complete their own health outcomes data prior to receiving the service

- patient health outcomes to be auto populated from dispensing software and My Health Record into the claim's portal
- duplicate data entries should be avoided by having one streamlined software for submitting program data and claims
- the amount of program data collected should be reduced to allow pharmacists to spend more time providing patient care
- the claiming and data entry system should be simplified to be more user friendly and efficient.

With regards to payment satisfaction, the majority (62.2%) of Pharmacists reported the payment for delivery of the DAA service was mostly not enough, or not enough (Table 24). Payments for collection of patient registration data and collection of follow up data, were also deemed insufficient by a narrow majority (55.5% and 55.3% respectively).

Table 24: Summary of payment satisfaction from the pharmacist survey

Indicator	Delivery of a DAA service	Collection of patient registration data	Collection of six month follow up data
The payment is not enough	37 (41.1%)	28 (31.1%)	19 (28.4%)
It depends on the patient but is mostly not enough	19 (21.1%)	22 (24.4%)	18 (26.9%)
It depends on the patient but is mostly sufficient	30 (33.3%)	33 (36.7%)	24 (35.8%)
The payment is sufficient	4 (4.4%)	7 (7.8%)	6 (9%)

Source: HealthConsult Pharmacist survey (n=90)

6.3. Barriers to implementation and identified opportunities

6.3.1. DAA program

During the case study interviews, pharmacists reported several barriers (and enablers) to implementing the DAA program within their pharmacy.

- **Preparation Time**: The preparation of individual DAA services for patients was time consuming for pharmacists; particularly for those pharmacies who didn't employ a dedicated DAA Technician. This was a particular barrier when:
  - pharmacists had relationships with hospitals where patients were discharged with minimal time provided to pharmacists prior to a DAA being required
  - pharmacists were unable to contact individual patients' prescribers to obtain a complete medication profile
  - prescriptions have inappropriate drug interactions requiring further follow up with the patients GP
  - there are multiple prescribers leading to issues with contact and authority (i.e. GP unable to assist where a hospital or specialist commenced medication).
- **Reimbursement amount**: Most pharmacists interviewed indicated that the reimbursement amount acted as the key enabler for their pharmacy to provide the DAA service. Of those pharmacists who indicated the reimbursement was an enabler, their pharmacy was at least breaking even if not making a profit. The total revenue amount was dependent upon the size of the pharmacy and the total number of DAA services provided however, where needed the payment enabled the employment of additional staff. However, some pharmacists indicated that due to the DAA program's time-consuming nature, the reimbursement amount acted as a barrier for their pharmacy to provide the program. Pharmacists noted high costs when

accumulating time spent on the service, communicating with the GP and packing, checking and delivering (where appropriate) the medication management package.

- **Program rules**: The program's structure encouraged accurate and reliable documentation of medication changes that enabled informed discussions with healthcare providers. As a result, the program was easily auditable for adverse events. However, some program rules acted as a barrier as pharmacies could not claim for nursing home or community care patients. The overall cap was also low, with some pharmacists indicating that some patients could not access the service.
- **Patient engagement**: Pharmacists described the positive feedback received from patients as an important reason to offer the DAA service. Regular follow-up was conducted as patients regularly attended the pharmacy to collect their medication management packages. This resulted in increased rapport between pharmacists and patients.
- **Communication with the primary health care team**: Communication with the primary health care team encouraged frequent contact with GPs, resulting in stronger relationships. In some cases, the GP communicated all medication changes to the pharmacist. This prevented any miscommunication of medication changes, therefore avoiding adverse events. However, communicating with GPs and hospital staff to clarify medication-related issues was described by pharmacists as difficult as both healthcare workers and pharmacists were often busy with other patients.
- **Promotion of the service**: Some pharmacists felt patients did not understand the purpose of the DAA program. Pharmacists indicated patients had concerns that they would be losing control over their medicines and wouldn't know what medications they were taking. Some pharmacists also thought some GPs did not understand the purpose of DAA and viewed communication by the pharmacist as a sales pitch rather than a professional service for their patients.

Some pharmacists noted that the current software used for data collection, data entry, and claiming *enabled* the DAA program. This view was not supported by all pharmacists who participated in the online survey and the following recommendations for improvement were provided (via open-ended responses):

- integrate DAA packing software (e g. Webstercare) with dispensing software to enable auto population of data rather than performing manual data entry
- the data collection and entry requirements streamlined to be "quicker", "user friendly" and "efficient"
- administrative requirements minimised to allow "more time to focus on patient care"
- patients' prescribers should also be involved in the data entry process
- increase availability of further training and education on how to efficiently use the systems/software
- GPs and pharmacists need to communicate on a regular basis to ensure patients' medical records and packed medications are accurate and revised.

6.3.2. Follow up services

Out of the 95 pharmacists who had conducted a DAA service, 94 responded to a question regarding conducting follow up services in the pharmacist survey. Only 18 pharmacists indicated they conducted follow up services for all patients. Of the remaining 76 pharmacists that did not do follow up:

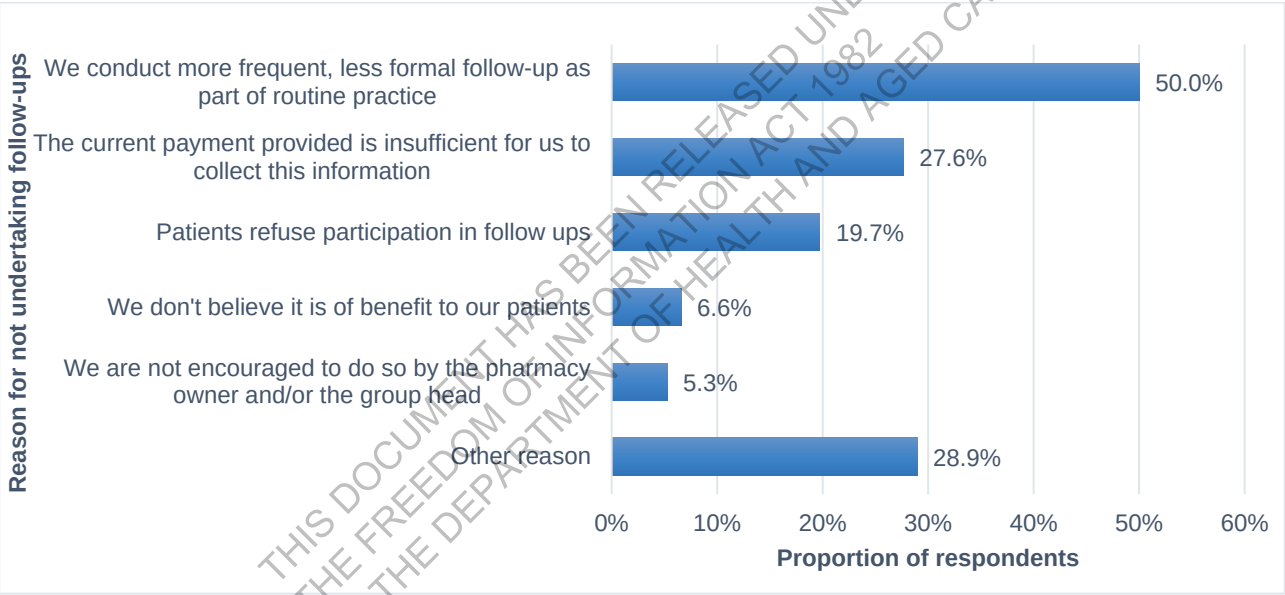
- Twenty-three pharmacists indicated that they "never" conducted follow up services
- Thirty-four pharmacists indicated that they conducted follow up services for a "small number of patients"

- Nineteen pharmacists indicated that they conducted follow up services for “most patients”.

Pharmacists who did not conduct a follow up service for all patients were asked to indicate the reasons for not undertaking follow ups (Figure 12):

- The most common reason indicated (50%, n=38/76) is that they conducted frequent, less formal follow up as part of routine practice.
- Other common reasons included 27.6% (21 out of 76) and 19.7% (15 out of 76) respectively, included the current payment provided was insufficient, or patients refused to participate in follow ups.
- Less common reasons, 6.6% (5 out of 76) and 5.3% (4 out of 76), are that they were not encouraged to do so by the owner/ group head or did not believe a follow up service would benefit patients.
- Twenty-two out of 76 (28.9%) indicated another reason for not conducting the follow up services.
- Over a third of the participants (28 of 76 respondents, 37%) reported that they were “time poor” and therefore were unable to conduct DAA follow up services.

Figure 12: Reasons for not completing the DAA follow up service (close-ended response)



Source: HealthConsult Pharmacist Survey (n=90)
Notes: Follow-up service survey could be more than one response, n=76 pharmacists who have conducted a DAA service and have not conducted follow up services for all patients.

Pharmacists also noted the following **barriers to conducting the follow up** DAA service:

- issues with the current program criteria and guidelines such as:
  - claims were capped at only five patients per month and no incentive for pharmacists to gather data on more than five patients
  - patients in nursing homes did not meet the eligibility criteria and were not able to access the follow up service
  - there was insufficient information about the reimbursement amount and process for submitting claims
  - the guidelines were not easy to understand and follow
- difficulties with scheduling appointments due to the following reasons:

  - pharmacists miss the follow up due date since there were no prompts to conduct this service
  - carers refuse to, or were unable to undertake the service since they lack insight into the patient's clinical history
  - patients do not return regularly to the pharmacy
  - insufficient staff to support a follow up service
- pharmacists were not adequately trained
- informal follow ups were performed more frequently.

6.4. Opportunities for program improvement

Based on the feedback from the participating pharmacists and pharmacy owners, the following recommendations for program improvement were identified:

- explore improvements to scheduling, packaging and patient information in consultation with patient groups
- work with pharmacists to identify medications unsuitable for the DAA program and explore alternative methods for patient (and/or carer) support
- review cap payment to ensure reimbursement is commensurate with pharmacist workload and costs
- monitor data collection and entry requirements to ensure enrolment to the program is streamlined and efficient, and commensurate with reimbursement payment
- develop a schedule of training and software updates to ensure efficient use of the software platform.

7. Conclusions and next steps

This Chapter presents conclusions of the evaluation of 6CPA DAA program and presents opportunities to support the programs under 7CPA.

7.1. Conclusion

To evaluate whether the DAA program was effective in meeting its objectives, four key questions were investigated.

- **KEQ1:** Does the DAA program improve patients' understanding of their medications and the importance of adhering to the prescribed medication regime?

The evaluation found significant improvements were observed in medication adherence, knowledge, disposal, and storage. Pharmacists felt the DAA program was impactful to patient adherence and health outcomes, including reducing adverse events associated with medication errors and improving patients' medication adherence

- **KEQ2:** Does the DAA program improve the defined health outcomes of patients?

The evaluation found that self-reported GP visits, hospitalisations and ED presentations of DAA patients were significantly less or unchanged at follow up suggesting that the improvement in medication adherence reduced GP visits, hospitalisations and ED presentations.

There was no positive change at follow up in measures of side effects or QoL, whereby there was a statistically significant decrease in the average AQoL score between initial and follow up.

Most pharmacists reported the DAA program had an impact on patients' health outcomes and reducing adverse events due to medication misuse

- **KEQ3:** Is the DAA program cost-effective?

The DAA program was found to be cost-effective to improve patient's adherence in taking and refilling medications between the initial and 6-month follow up. The ICER for the 51 clients receiving a DAA during the six-month period was $21,894. The results are subject to some caveats such as small sample size. Analysis of health service utilisation due to problems with medicine also demonstrated the DAA program was effective, and it is reasonable to infer that participation in the DAA program is likely to offset costs in other Commonwealth funded programs for more complex, vulnerable and high needs clients.

- **KEQ4:** What are the barriers and enablers to providing an effective patient centred DAA service and how can it be strengthened?

The evaluation found that patients were satisfied with the DAA program and see value by participating. Pharmacists also reported satisfaction and positive impacts on their career development including broadening their role within the primary health care team and working to their full scope of practice. Pharmacists identified some barriers to implementation and areas for improvement including improvements to DAA eligibility and guidelines, scheduling, packaging, patient instruction, and accommodation of all medication types. Time and reimbursement for DAA were also identified as key barriers to implementation and pharmacist satisfaction.

7.2. Suggested changes to the DAA program

Under 6CPA, the DAA service was capped on an individual pharmacy basis and pharmacies were allocated an individual cap based on their previous DAA service volumes whereby pharmacies were only paid their individual allocated cap. Under 7CPA the base cap for pharmacies doubled. The changes under 7CPA also included an increase to the dispensing renumeration for above co-payment medications, an annual increase to the average renumeration by PBS medication (based

on indexation of fees and projected PBS) and increases to medicine dispense volumes. Further, to increase access to PBS for Aboriginal and Torres Strait Islander peoples, a PBS co-payment measure was introduced and access to DAA was uncapped.

These changes address many of the barriers to implementation reported by pharmacists in this evaluation and represent positive improvements in program administration and implementation, and access for consumers.

Other suggested changes that could be made to the DAA program include:

- There is a low adherence to pharmacists meeting the follow up requirements. The pharmacist's survey suggested that 60% of pharmacists are either not conducting follow ups or only doing so for a small number of patients. The reasons for not conducting follow ups included difficulties scheduling appointments for follow up data collection, insufficient incentive due to the size of the fee, and follow ups occurring less formally and more often during routine contact with patients. The requirement of a formal follow-up should be reviewed.
- Build in the completion of health outcomes data by patients in receipt of Commonwealth funded DAA program. This could be using a phone app or email that sends an alert for completion every 6 months – a lot of PREMs and PROMs are now conducted this way – this could be setup as part of the patient joining the CPA program. This would provide both monitoring and evaluation data.
- Consider a review of the renumeration to better align with the independent costing study that HealthConsult conducted showing the representative costs for the weekly DAA pack costs pharmacies $11.60, which is $5.52, or 91% higher than the current fee of $6.08. Although a flat fee structure is easier to administer there are differences in costs being experienced by pharmacist based on patient characteristics including if they have or are being discharged from hospital.
- The main measure included in the health outcomes data to measure changes in medication adherence is the patient's average MedsIndex score. However, this measure has not been validated so it cannot be assumed that it accurately measures medication adherence. Until validated, the utility of the MedsIndex score is limited. Consider adopting an alternative measure to the MedsIndex score (e.g. the ARMS measure recommended by HealthConsult when advising on the design of the 6CPA data collection for new and expanded programs) for measuring medication adherence prior to inclusion in the data collection for 7CPA or conducting a study to validate MedsIndex as measure of medication adherence.
- Consider the inclusion of identifying data elements such as name, date of birth and address in the patient administration process so that a control group could be created by linking CPA program data to other national dataset (e.g. PBS, MBS, ED presentations and hospitalisation data) and then separating those with a CPA funded DAA and those without.

7.3. Suggested changes to future evaluations of DAA program

Future evaluations of the DAA program, and CPA programs more broadly, should consider the following when designing future evaluation. These include:

- Obtaining buy in from key stakeholder groups (e.g., Guild, PSA, Chemist Warehouse, Webstercare, etc.) to promote to community pharmacies to participate in the evaluation is important.
- The 6CPA program data had limited utility for analysing patient health outcomes due to the nature of the reported data items such as yes/no questions (rather than frequency) and a low proportion of follow up data collected. A patient minimum dataset with tailored health outcome measures should be considered. The minimum dataset should include follow-up data capture on adherence and satisfaction.

- The primary outcome measure included in the evaluation (including the economic evaluation) should be medication adherence. Secondary outcomes should be minimised not to overburden patients in the data collection. Use of other pharmacy collected measure could be considered (e.g., blood pressure for patients with hypertension or HbA1c for patients with diabetes).
- Evaluating the DAA program using a **set number of pharmacies** to recruit new patients to the DAA program does not work as there is an insufficient number of genuine[34] new DAA participants (largely due to the cap on the program), to meet a quota to power the study.
- The use of DAAs is embedded in pharmacy practice to manage older Australians adherence to medications. So, finding a truly matched control group (i.e., for a control vs intervention design) to evaluate DAA is not possible. This is also compounded by the knowledge that the 6CPA program data does not have sufficient identifiers to create a control group. Given that a key aim of the DAA program is to improve adherence and medication management, the only way to measure if this change occurs is to have a true baseline measure (i.e. by recruiting new to DAA clients as they enter the program) and then collecting follow-up data post intervention at six-month time points (at least three is preferable but two is better than one).
- The PPA dataset does not contain sufficient data to inform an evaluation, nor does it include sufficient identifiable data (i.e., does not include, name, date of birth or address) about patients that can be used to link to MBS and/or PBS data. This means the PPA dataset can also not be used to identify a control versus intervention cohort in the MBS or PBS data set.
- Medicare number cannot be used by the AIHW to link to any national or state-based data set for which they are the data custodian. AIHW can only undertake probabilistic matching based on name, date of birth and address.
- Designing a randomised control trial for the DAA evaluation is not practical and given DAAs have been embedded in practice for many years, it would not be ethical to withhold the provision of a DAA to someone who has been deemed would benefit from one.
- Asking pharmacies to get patients to complete the surveys in pharmacy and then return patient survey forms in batches results in delays or lost survey data and/or the submission of data collected for other purposes (e.g., PBS claims forms were sent to HealthConsult offices as pharmacies used the provided pre-paid envelopes to post claims forms). This practice is a breach of data privacy, and it is time consuming for HealthConsult to safely return the data.
- Completion of paper-based surveys by patients results in many questions missed or incorrectly answered as well as loss of data because of paper forms not being returned.
- The provision of incentives to patients to submit completed data collection forms/surveys is effective.
- Requesting pharmacies to recruit patients for an evaluation without an incentive is a limiting factor when trying to recruit a quota to power a study.
- Requests to AIHW to link evaluation data sets to data sets they hold (e.g., PBS) results in long delays impacting the timely completion of projects, and the hospitalisation data and ED presentation data held by the AIHW requires individual State based approval for its use. This is both a costly and time-limiting exercise. In addition, there is often a two-to-three-year lag in the hospitalisation and ED data being available for use.

[34] Patients who do not receive of a DAA funded from any source (i.e., CPA funded, DVA funded, self-funded or subsidised by the pharmacy owner).

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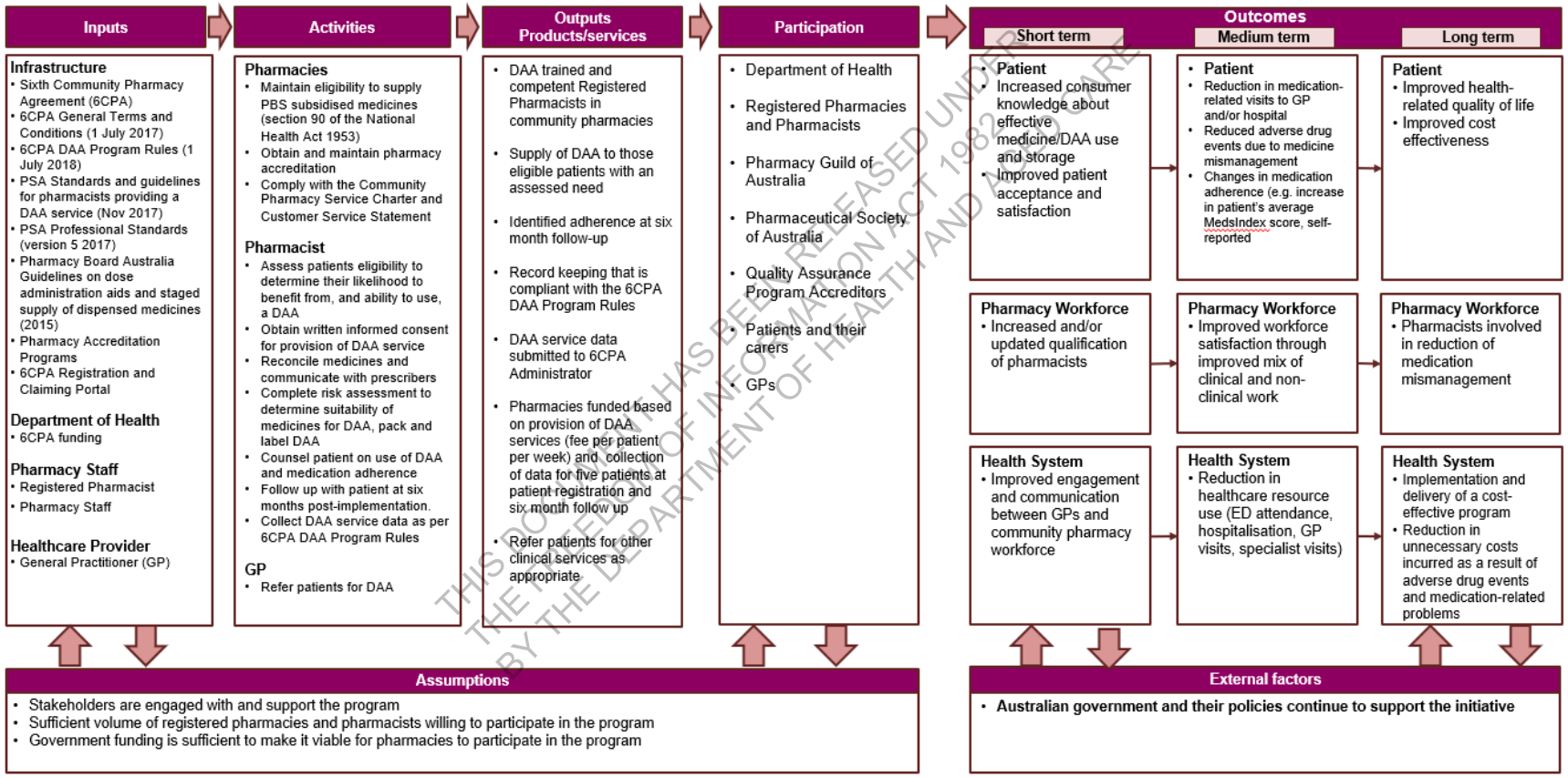
Appendix A: Methods

A.1 Logic model

Figure 13: Logic Model for the DAA program



A.2 Evaluation Framework

The DAA program evaluation was planned using the DAA evaluation framework presented in Table A.2. Data was collected to satisfy the indicator and thereby enable the evaluation question to be addressed. In drafting the evaluation report, and as a result of the data access limitations, the evaluators modified the evaluation framework and the report is therefore presented following a revised evaluation framework presented in Table A.1, whereby changes from the original framework can be identified by comparing the indicator number column.

Table A.1: Revised DAA Evaluation Framework

Evaluation Questions	Indicators	Indicator no. in original framework	Data Source
Does the DAA program improve patients understanding of their medications and the importance of adhering to the prescribed medication regime?	3.1 Improvements in medication adherence • History of non-adherence and medication assistance • MedsIndex • Medication adherence and knowledge (ARMS) • Proportion of patients that self-reported improvements in their understanding of, and use of medication, as a result of DAA service	4.1, 3.2, 3.5	Patient survey (ARMS) 6CPA program data
	3.2 Patients with a changed medication profile	3.3	Patient survey
	3.3 Pharmacists' view on the impact of DAA on patients' understanding and use of medicines	3.4	Pharmacist survey
Does the program improve the defined health outcomes of patients?	4.1 Health service use due to medication misuse	4.4	Patient survey
	4.2 Reduction in the number of side effects associated with misuse of medications	4.2	Patient survey (GASE)
	4.3 Improvements in patient reported Quality of Life	4.3	Patient survey (AQoL-4D)
	4.4 Relationship of adherence and side-effects to quality of life	New	Patient survey
	4.5 Proportion of patients that report that any change in prescription and/or non-prescription medicine use to manage their condition has resulted in a positive improvement (e.g. reduced financial burden, improved sleep, less constipation)	*4.5*	*PBS data – UNAVAILABLE* 6CPA program data
	4.6 Impact of adherence at individual level	5.5	Patient survey
	4.7 Perceived effectiveness of the DAA program to improve health outcomes of patients reported by pharmacists	4.6	Pharmacist survey
Is the program cost-effective?	5.1 Cost (i.e. standard cost of all interventions based on costing study) per unit change in effectiveness indicator for an effectiveness measure of adherence in taking and refilling medications for all DAA cohorts (single (i.e. DAA only) and pairs (i.e. DAA plus other 6CPA program)) • Cost per intervention	5.1	6CPA DAA costing study and price of DAA paid under the 6CPA program

Evaluation Questions	Indicators	Indicator no. in original framework	Data Source
	• Benefit per intervention		
	5.2 Cost-effectiveness per incremental benefit of adherence • Costs • Effectiveness • ICER	5.2	Patient survey
What are the barriers and enablers to providing an effective patient centred DAA service and how can it be strengthened	6.1 Patient experience and satisfaction of DAA program • Patient-reported experience and satisfaction • Pharmacists' view on patient satisfaction	3.1	Patient survey (TSQM) Pharmacist survey
	6.2 Pharmacist experience of DAA program • Pharmacist reimbursement • Pharmacist role within the primary health care team • Career development opportunities for pharmacists • Administrative/operational requirements	5.3, 5.4, 6.2, 6.3, 6.4, 6.5	Stakeholder interviews/case studies, Pharmacist and Pharmacy survey
	6.3 Barriers to implementation and identified opportunities. • DAA Program • Follow up services	6.3	Stakeholder interviews/case studies, Pharmacist and Pharmacy survey
	6.4 Opportunities for program improvement	6.3	Stakeholder interviews/case studies, Pharmacist and Pharmacy survey

Table A.2: Original DAA Evaluation Framework

Evaluation Questions	Indicators	Data Source
Does the DAA program improve patients understanding of their medications and the importance of adhering to the prescribed medication regime?	3.1 Proportion of patients that are satisfied with the DAA service and see value gained by attending	Patient survey (TSQM)
	3.2 Proportion of patients that self-reported improvements in their understanding of, and use of medication, as a result of DAA service	6CPA participant knowledge survey
	3.3 Proportion of patients whose medication profile changes as a result of the intervention	PBS data
	3.4 Proportion of pharmacists that report that the intervention has resulted in optimising patients effective use of prescription and/or non-prescription medicines	Pharmacist survey
	3.5 Improvement in medications, Medication Index, and GP visits from 6 CPA program data	6CPA program data (The Department)

Evaluation Questions	Indicators	Data Source
Does the program improve the defined health outcomes of patients?	4.1 Improvements in medication adherence	Patient survey (ARMS)
	4.2 Reduction in the number of self-reported side effects associated with misuse of medications	Patient survey (GASE)
	4.3 Improvements in patient reported Quality of Life	Patient survey (AQoL-4D)
	4.4 Changes in hospital presentations/admissions and/or GP visits related to misuse of medication	Patient survey
	4.5 Proportion of patients that report that any change in prescription and/or non-prescription medicine use to manage their condition has resulted in a positive improvement (e.g. reduced financial burden, improved sleep, less constipation)	PBS data
	4.6 Perceived effectiveness of the DAA program to improve health outcomes of patients reported by pharmacists	Pharmacist survey
Is the program cost-effective?	5.1 Cost (i.e. standard cost of all interventions based on costing study) per unit change in effectiveness indicator for an effectiveness measure of adherence in taking and refilling medications for all DAA cohorts (single (i.e. DAA only) and pairs (i.e. DAA plus other 6CPA program))	6CPA DAA costing study and price of DAA paid under the 6CPA program
	5.2 Cost-effectiveness per incremental benefit of adherence	Patient survey
	5.3 Perceived cost effectiveness of the DAA program by key stakeholders	Stakeholder interviews/case studies, Pharmacist and Pharmacy survey
	5.4 Perceived cost effectiveness of the DAA program by pharmacists	
	5.5 Impact of the intervention at individual level	Patient survey
What are the barriers and enablers to providing an effective patient centred DAA service and how can it be strengthened	6.1 Proportion of pharmacists that report that the intervention has resulted in an expansion of their role within the primary health care team	Pharmacist survey
	6.2 Proportion of other health professionals that report the intervention has resulted in an expansion of the community pharmacists' role within the primary health care team	Stakeholder interviews
	6.3 Perceived barriers/enablers to implement and/or operate the DAA program and identified opportunities for improvement by key stakeholders and/or by pharmacists	Stakeholder interviews Pharmacist survey
	6.4 Reported experience and satisfaction levels with providing the DAA program by pharmacists including impact on career development and pathways, and communication with other health professionals	Stakeholder interviews Pharmacist survey
	6.5 Reported experience and satisfaction levels with providing the DAA program by pharmacies including administrative/operational requirements/impacts.	Stakeholder interviews Pharmacy survey

A.3 Data Collection

This evaluation drew from multiple data sources, including initial ad follow-up patient surveys, pharmacist survey, pharmacy profile survey, case studies/pharmacist interviews and 6CPA program data.

Patient Surveys – Validated tools

Patient surveys were administered prior to initial intervention and at 6 months follow-up, which took approximately 20-30 minutes to complete. HealthConsult provided a $30 supermarket voucher to all patients on receipt of completed follow-up surveys. Pharmacists provided patients with the voucher following completion of the follow-up survey.

The surveys included validated scales and bespoke measures of medication adherence, quality of life and patient satisfaction as outlined below:

Adherence to Refills and Medications Scale (ARMS)[35] (medication adherence)

Developed and evaluated by Kripalani et al. (2009) among low-literacy patients with chronic disease[36], the ARMS scale was designed as a self-report measure of medication adherence. Based on the paper describing the development and evaluation of the scale, there was a single aggregate measure (represented as the mean of all twelve questionnaire items) as well as two subscales: one of which pertains to taking medications as prescribed while the other refers to factors relating to refilling medications on schedule. We used the ARMS-12 using 12 questions.

The ARMS-12 total score is based on 12 questions, and has possible range of 12 to 48, where a lower score indicates better adherence. The ARMS can be spilt into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16).

Generic Assessment of Side Effects (GASE) (side effects)[37]

The GASE measure asks participants to rate the severity of 36 side effects on a scale of 0 (not present) to 3 (severe). Participants were also asked to determine if each side effect was related to their current medications or not. Based on the instructions from the developer of the instrument, the response recorded can be coded into one of four different composite scores:

(1) Symptom count: A per-person count of the number of items which an individual endorsed as 'mild', 'moderate', or 'severe'.

(2) Total score: A sum of the endorsed symptoms with increasing numerical values allocated to increasing levels of symptoms.

(3) Medication attributed symptom count: A per-person count of the number of items an individual endorsed as 'mild', 'moderate', or 'severe' and which were identified by the respondent as being associated to medication use.

(4) Total Score (attributed): A sum of the endorsed symptoms identified as being attributed to medication use, with increasing numerical values allocated to increasing levels of symptoms.

[35] Developed and evaluated by Kripalani et al. (2009) among low-literacy patients with chronic disease, the ARMS scale was designed as a self-report measure of medication adherence. Patients rate their non-adherences on 12 items using a scale from 1: None of the ime, to 4: All the time. The ARMS-12 total score has possible range of 12 to 48, where a lower score indicates better adherence.
[36] Kripalani S, Risser J, Gatti ME, Jacobson TA, 2009, "Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease", *Value in Health*, v.12, no.1, pp.118-23.
[37] The General Assessment of Side Effects (GASE) questionnaire is a validated instrument which allows for the assessment and interpretation of general side effects as well as drug-induced side effects. Patients rate the extent of common complaints in terms of the distress and discomfort, and impact on functions. Patients score each symptom from 0 to 3 with 0 indicating complain is not present, and 3 indicating severe distress and discomfort, severe impairment in daily functioning or acute danger to health.

In addition to the scoring algorithms above, changes in the type and frequency of commonly experienced side effects were also assessed for each program at the initial and follow up surveys Information on the GASE was collected to:

- develop a comprehensive profile of patient reported side effects before and after administration of a given 6CPA service
- critically assess what changes, if any, could be attributed to the services provided.

The GASE was chosen because it collects information relating to a wide range of side effects commonly reported as part of clinical trial participation.

The Assessment of Quality of Life (AQoL-4D) (quality of life)[38]

The Assessment of Quality of Life was determined using the AQoL-4D questionnaire[39]. This questionnaire consists of 12 questions. These questions can be coded into four domains based on psychometric (unweighted) scoring. The domains assessed by the AQoL-4D are:

(1) Independent living – self-care, household tasks and mobility

(2) Relationships – friendships, isolation and family role

(3) Mental health – sleeping, worrying, pain

(4) Senses – seeing, hearing, and communication.

The questions can also be aggregated into health state utility score estimates which can be used in economic evaluations for calculating QALYs. The utilities are considered to be preference weights and in theory should reflect peoples' preferences more accurately than unweighted surrogates. The AQoL utility score is obtained by weighting the items then applying a multiplicative function to obtain an index which is transformed on a life-death utility scale. The utility score is presented on a scale where the upper boundary, 1.00, represents the best possible HRQoL, death equivalent HRQoL is represented by 0.00, and the lower boundary, -0.04, represents a HRQoL state worse than death. The weighted AQoL-4D domain utility scores for each dimension (independent living, relationships, mental health, and physical senses) are scaled between a 0.0 (worst health state) and 1.0 (best health state).

Treatment Satisfaction Questionnaire for Medications (TSQM)[40] (patient satisfaction)[41]
Treatment Satisfaction Questionnaire for Medications (TSQM) v1.4 consists of 14 items and measures the domains of effectiveness, convenience, side effects and global satisfaction[42,43,44]. Each domain is scored a value by adding the TSQM items in the domain, and then transforming the score on a scale ranging from 0 to 100. TSQM permits comparisons across medication types and patient conditions. TSQM v1.4 was used given the reduced number of questions compared to other tools such as the Patient Satisfaction with Pharmacist Services Questionnaire (22 items).

A.4 Patient Surveys – Non-validated tools

6CPA Participant Knowledge

[38] The Assessment of Quality of Life (AQoL-4D) questionnaire consists of 12 items. Patients rate various aspects of quality of life using 4-point multiple response options typically (level of help required or level of impairment). A utility score QoL is calculated ranging between 0 (equivalent to death) and 1 (perfect health). Domains include Independent Living, Relationships, Mental Health, Senses ranging from 1 (worst state health) to 5 (best state health). http://www.aqol.com.au/choice-of-aqol-instrument/54.html.
[39] Hawthorne G, Osborne R., 2005, "Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", *Australian and New Zealand journal of public health*, v.29, no.2, pp.136-42.
[40] Atkinson MJ, Sinha A, Hass SL, et al, 2004, " Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease", *Health Qual Life Outcomes*, v.2, no.12.
[41] Measures the domains of effectiveness, convenience, side effects and global satisfaction. Patients rate their satisfaction with their medications on 14 items using a 7-point Likert scale from 1 (Extremely Dissatisfied to 7(Extremely Satisfied).
[42] Atkinson MJ, Sinha A, Hass SL, *et al*., 2004, "Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease", *Health Qual Life Outcomes*, v.2, no.12.
[43] Atkinson, M. J., Kumar, R., Cappelleri, J. C., & Hass, S. L., 2005, "Hierarchical construct validity of the treatment satisfaction questionnaire for medication (TSQM version II) among outpatient pharmacy consumers", *Health and quality of life outcomes*, v2, no.12.
[44] Atkinson, M. J., Sinha, A., Hass, S. L., Colman, S. S., Kumar, R. N., Brod, M., & Rowland, C. R., 2004, "Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease", *Health and quality of life outcomes*, v.2, no.1, pp.1-13.

Patient surveys asked participants to rate their knowledge of a) medication storage, b) knowledge of the importance of medication dosage and schedule, c) overall knowledge of medications taken and d) disposal of medications. Participants were asked to complete this question at initial and follow up where they rated their knowledge on a scale of 1 (very low) to 10 (very high).

Compliance with Actions Resulting from Program Participation

Participants were also asked to rate (1 (unlikely) to 10 (very likely)) their likelihood of following the actions identified in their DAA at initial assessment as well as rate how well they felt they followed the actions at follow up.

Service Satisfaction and Impact

Participants were asked to rate their satisfaction with the service on a 5-point scale from very satisfied to not at all satisfied. Participants were also asked to what impact the service had on their understanding and use of medicines on a 5-point scale from very high impact to no impact.

A.4 Summary scores from analysis of Patient Surveys

Table 25: Summary of survey participation

Measure	Initial		Follow Up		Change from Initial to Follow Up	
	n	Mean (SD)	n	Mean (SD)	Mean (SD)	p-value
Patient survey – validated tools						
Quality of life (AQoL-4D) Utility Score	72	0.42 (0.29)	55	0.35 (0.3)	-0.08 (0.03)	**0.04**
Adherence to Refills and Medications Scale (ARMS-12) - Total Score	72	17.43 (3.96)	55	15.82 (4.84)	-1.61 (0.5)	**0.03**
Generic Assessment of Side Effects (GASE) – Total score	73	19.96 (16.7)	55	19.37 (16.28)	-0.59 (1.6)	0.79
GASE - Medication Attributed Total Score	73	6.33 (8.01)	55	6.33 (9.83)	0	1
Treatment Satisfaction Questionnaire for Medications (TQSM) - Effectiveness	73	66.01 (16.32)	55	66.01 (19.43)	0 (2.06)	1
TQSM - Side effects	73	77.99 (26.96)	55	84.1 (25.91)	6.11 (3.76)	0.11
TQSM - Convenience	73	77.29 (15.83)	55	82.79 (14.83)	5.5 (1.89)	**0.01**
TQSM - Global satisfaction	73	67.23 (18.08)	55	71.01 (20.17)	3.78 (2.16)	0.09
Bespoke measures						
Overall knowledge of medicines	73	6.35 (2.5)	55	6.94 (2.27)	0.59 (0.34)	0.09
Knowledge about storage of medicines	73	7.58 (2.48)	55	7.86 (2.42)	0.28 (0.33)	0.4
Knowledge about importance of medication dosage and schedule	73	7.76 (2.03)	55	8.55 (1.77)	0.8 (0.26)	**0**
Knowledge about what to do with any medication you have not taken	73	7.65 (2.6)	55	8.37 (1.68)	0.72 (0.32)	**0.03**
Self-reported GP visits (binomial)*	71	1	52	1.35 (0.39)	0.35	**0.01**
Self-reported hospitalisations (binomial)*	72	1	52	1.20 (0.60)	0.2	**0.02**
Self-reported ED presentations (binomial)*	72	1	51	1.16 (0.54)	0.16	**0.04**

Source: HealthConsult initial and follow-up (at 6 months) patient survey

Abbreviations: validated scales of medication adherence (the Adherence to Refills and Medications Scale (ARMS)), side effects (Generic Assessment of Side Effects (GASE)), Quality of Life (The Assessment of Quality of Life (AQoL-4D)) and patient satisfaction (Treatment Satisfaction Questionnaire for Medications (TSQM)).

* The health service utilisation variables were converted to a binomial variable whereby 1= decreased or no change to service utilisation and 2= increased service utilisation. The follow up values are closer to 1 indicating the majority decreased or did not change the frequency of health service utilisation.

A.5 Pharmacist Survey

The Pharmacist Survey was administered to participating pharmacies at follow up to explore program impacts and perceptions. The Pharmacist Survey consisted of 98 questions designed to elicit pharmacist views of the four programs administered as part of the 6CPA. The content of the survey elicited responses which could be loosely characterised into the following topic areas:

- The extent to which the program participation impacts patient understanding, adherence, and overall health
- The extent to which the program impacts pharmacist job satisfaction, scope of practice, communication, and their role within a primary healthcare team
- The time taken and opinions about the time taken to complete aspects of the 6CPA program (e.g. registration, service, claims submission, and follow up)
- Opinions surrounding the payment provided to complete aspects of the 6CPA program
- If the pharmacist conducts the six month follow up assessment and any identified reason why they may not
- Pharmacist perception of patient satisfaction with the service delivered.

The content of the survey was similar across the four programs with minor variations in content where required to identify participant responses for program specific items. The survey was reviewed and endorsed by the Pharmacy Guild and promoted for dissemination. Dissemination occurred in three separate stages, staggered from March 2019 to January 2020. The first stage involved dissemination of an invitation email and link to the survey to pharmacies and pharmacists who had consented to participate in the evaluation study. These pharmacists were targeted directly using their personal email address provided upon completion of the pharmacy consent form. It was thought that respondents would be more likely to provide candid replies if their preferred email address was used.

The second stage was to send an invitation email to all pharmacies identified by the Guild as providing one or more of the 6CPA programs evaluated. This circulation list was initially provided to HealthConsult for the purposes of pharmacy recruitment for the evaluation, but separate consent was later provided to use it for the dissemination of the survey. Overall, more than 5,000 pharmacies were contacted during this stage. This version of the survey was also publicised by the Pharmacy Guild as well as the PSA using Twitter and their fortnightly newsletter.

The last stage involved paid dissemination of the survey link to a cohort of early career pharmacists as well as publicising the content via the PSA LinkedIn page. A total of 128 pharmacists completed the Pharmacist Survey, of those 95 reported that they had conducted a DAA service, and 90 of those completed the DAA section of the survey. Table A.3 shows the respondents by state and geographical location of pharmacy.

Table A.3: Respondents of pharmacists' survey by State and geographical location of pharmacy

State/Territory*	Geographical location of pharmacy (PhAria)			Number of pharmacists
	Major city	Regional	Remote	
ACT	1	0	0	1
NSW	30	16	0	46
QLD	8	7	1	16
SA	14	2	0	16
TAS	0	2	0	2
VIC	16	8	0	24
WA	19	4	0	23
Total	**88**	**39**	**1**	**128**

*There were no respondents from NT
Source: HealthConsult Pharmacist Survey

A.6 Pharmacy Profile Survey

The pharmacy profile survey was administered at follow up to managing pharmacists or owners, designed to solicit information related to general pharmacy characteristics. It aimed to describe participating pharmacies and to provide the ability to assess if pharmacy attributes contributed to patient outcomes and patient improvement. There were nine questions which were posed to the managing pharmacist or pharmacist owner surrounding pharmacy characteristics.

The pharmacy profile survey was collected from all pharmacies that participated in the 6CPA evaluation along with a representative sample of pharmacies nationally. Responses were solicited using Survey Monkey although occasionally, pharmacies were followed up and responses were solicited over the phone. The survey collected information on the following topic areas:

- **Pharmacy location**: Postcode
- **Pharmacy type**: Independent, franchise, banner, friendly society group, buying group
- **Pharmacy co-location**: Stand alone, shopping centre, or co-located with another facility
- **Pharmacy dispensing type**: Forward pharmacy, traditional pharmacy, semi-forward pharmacy
- **Programs currently offered by the pharmacy**: 6CPA programs currently offered by the pharmacy
- **Pharmacy size**: Number of pharmacy staff currently employed.

A.7 Case Studies/Pharmacist Interviews

Semi-structured interviews were conducted as part of 15 case study visits with pharmacists working in the 170 pharmacies participating in the 6CPA evaluation (Table A.4). These interviews were completed between February and May 2019 and represented pharmacies in four states across a representative group of metropolitan, regional, rural, and remote services. The interviews varied in duration but mostly lasted between 45 minutes and one hour.

The topic areas discussed during the site visit interviews were as follows:

- Patient experience and outcomes
- Impact of program participation on the pharmacist workforce and owners
- Operational effectiveness
- Financial viability
- Barriers to program implementation

Table A.4: Location and number of pharmacists and pharmacies involved in case study site visits

State	No. of pharmacies	Pharmacy geographical location		No. of pharmacists interviewed
		Metropolitan	Regional/remote	
NSW	4	2	2	4
QLD	3	1	2	3
WA	4	2	2	4
VIC	4	2	2	5
Total	**15**	**7**	**8**	**16**

Source: HealthConsult Pharmacist Survey

A.8 6CPA program data

For the purposes of this evaluation, the Department provided HealthConsult with a summative extract for program monitoring every six months. The data provided pertained to each individual who participated in data collection processes from February 2018 (the time at which the consent form specifically named HealthConsult as the evaluator of the program) until July 2019 (the most recently available data at the time of data extraction). It is assumed that individuals who participated in the registration process were representative of all 6CPA participants in terms of demographic and treatment-related characteristics. However, demographic characteristics of participants and registrants could not be compared because this information is not collected from program participants. The datasets available for individuals participating in the data collection process were:

- **DAA claims data** (from enrolment into the program (from February 2018 to July 2019), characterised as being complete data. Claims data refers to the delivery of service and the payments made. This data captures the date that the data was collected along with the pharmacy name and the payment made.
- **DAA registration data** (from February 2018 to July 2019). It should be noted that the registration data did not readily record whether the individual received a DAA service, although this could be inferred by linking the registration data to the claims data.
- **DAA follow-up data** (from February 2018 to July 2019).

A.9 MedsIndex Score

One of the few outcome measures collected routinely for all 6CPA program registrants at initial and follow up was the MedsIndex measure. The patient's medication profile data is used to calculate a patient's average MedsIndex Score. A patient's 'MedsIndex' score is a number out of 100 measuring adherence to a particular medicine, via comparison of the quantity prescribed with how much is actually dispensed by a pharmacist. The number is formulated via the MedsIndex software which provides a prompt for pharmacists to invite patients with a qualifying (sufficiently low) MedsIndex score to participate in a medication adherence program.

Patient's MedsIndex scores are collected for all 6CPA funded programs in accordance with 6CPA program rules have recently (2020). There are four key bands representative of the levels of patient compliance (Table A.5).

Table A.5: MedsIndex Score rating

MedsIndex Score	Rating
Lower than 70	Action required to improve compliance
Lower than 80	Compliance can be improved
Lower than 90	Compliance could be improved
Greater than or equal to 90	Optimal

Source: Pharmaceutical Society of Australia MedsIndex Score Resources

A.10 Timing of data collection

Table A.6 presents a summary of the evaluation data collection tools used at the various data collection points by the program participants.

Table A.6: Overview of evaluation data collection timing

Data Collection Source	Measures	Sample (n)	Date of Data Collection
Patient Surveys	1. Medication adherence: the ARMS 2. Side effects: GASE 3. Quality of life: The Assessment of Quality of Life (AQoL-4D) 4. Patient satisfaction: TSQM 5. GP visits 6. Hospitalisation 7. ED presentation	• ARMS: Initial=72, Follow-up=55, Matched=51. • GASE: Initial=73, Follow-up=55, Matched=51. • AQoL-4D: Initial=72, Follow-up=55, Matched=51. • TQSM: Initial=73, Follow-up=55, Matched=51. • GP visits: Initial= 71, Follow-up=52, Matched=51. • Hospitalisation: Initial= 72, Follow-up=52, Matched=51. • ED presentation: Initial= 72, Follow-up=51, Matched=51.	Initial: Oct 2018 – June 2019 Follow-up: Jan 2019 – Nov 2019
Pharmacist Survey	8. patient understanding and adherence 9. pharmacist perspectives on the implementation 10. possible impacts of the program on job satisfaction, scope of practice, communication, and role within a primary healthcare team	• Initial=90 • Follow-up=67	April 2019 – Jan 2020
Pharmacy Profile Survey	11. pharmacy location 12. pharmacy type (independent, franchise, banner, friendly society group, buying group) 13. dispensing type (forward pharmacy, traditional pharmacy, semi-forward pharmacy) 14. programs offered 15. pharmacy size	129	Nov 2018 – Jan 2020
Case Studies/Pharmacist Interviews	16. patient experience and outcomes 17. impact of program participation on the pharmacist workforce and owners 18. operational effectiveness 19. financial viability and barriers to program implementation	15 case study visits	March-May 2019

A.11 Limitations of the data

Due to limitation of the data, we were unable to link 6CPA program data to MBS, PBS or primary evaluation data for the DAA program evaluation.

Initially, it was intended that the Department would provide HealthConsult with a summative extract for program monitoring. However, due to issues with linking participating data, this data source was unavailable for DAA. The other programs under evaluation (SS, MedsCheck and Diabetes MedsCheck) will include this information in their evaluation reports. The data pertained to each individual who participated in the data collection process from February 2018 (the time at which the consent form specifically named HealthConsult as the program's evaluator) until July 2019 (the most recently available data at the time of data extraction). The datasets for individuals participating in the data collection process were: DAA claims data (from enrolment into the program (from February 2018 to July 2019), DAA registration data (from February 2018 to July

2019) and follow up data (from February 2018 to July 2019). However, this data was unavailable for the evaluation, which impacted the sample size and the ability to address some KPIs.

The sample size of patients who had initial and follow up data in the patient survey was small (n=51), influencing our ability to draw conclusions with certainty. Demographic characteristics of participants and registrants could not be compared and contrasted because this information was not routinely collected from program participants. We have used data from the patient survey to capture demographics. It is assumed that individuals who participated in the evaluation process were representative of all 6CPA participants in terms of demographic and treatment-related characteristics.

The representativity of pharmacists in the evaluation program may also be influenced by the over representation of WA pharmacies who signed up to participate. This was due to positive engagement with franchise and brand managers who operated a string of pharmacies in WA.

Appendix B:Patient survey findings

Patient participants

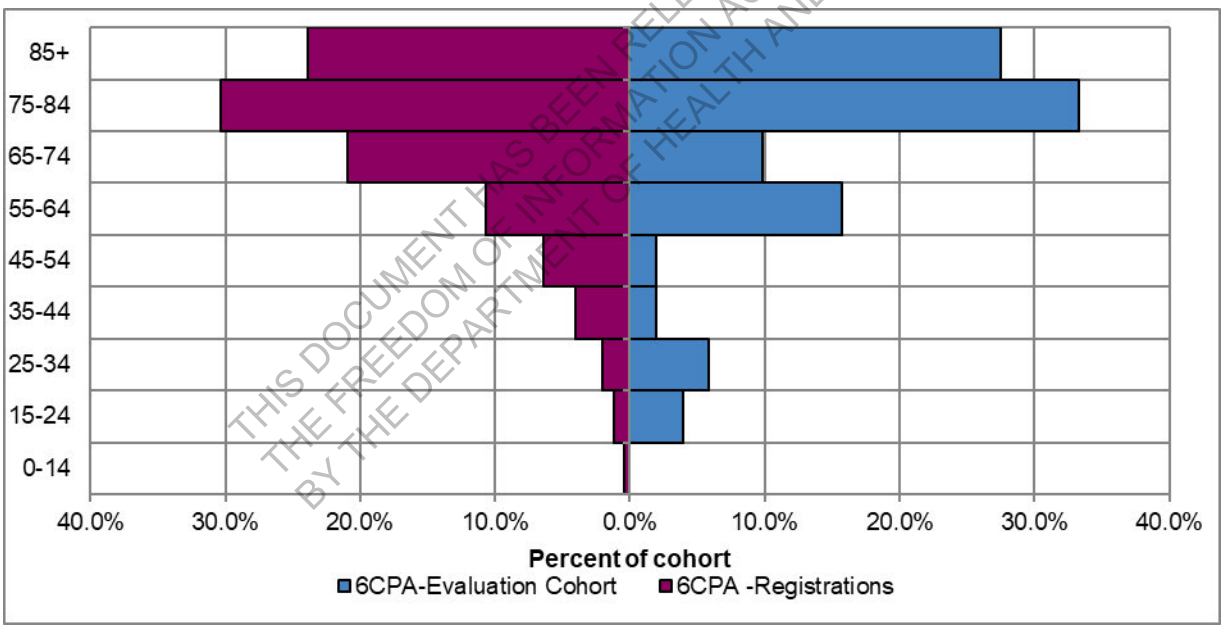
There were 77 evaluation participants who completed an initial and/or follow up DAA survey. Of those, 73 participants (or 94.8%) completed an initial survey, and 55 participants (71.4%) completed a follow up survey. **Only 51 participants (66.2%) completed both an initial and follow up survey and applied to measure the effectiveness of the program between initial and 6 months follow-up.**

There is over representation in the evaluation cohort for age groups 55-64, 25-34 and 15-24 compared to 6CPA registration data. The 6CPA evaluation cohort of participants with matched initial and follow up survey had gender spilt of 58.8% females and 42.2% males. In comparison, the 6CPA registration data had a gender spilt of 54.7% females and 45.9% males (and 0.4% indeterminate).

Age Characteristics

There is overrepresentation in the evaluation cohort for age groups 55-64, 25-34 and 15-24 compared to 6CPA registration data.

Figure B.1: Comparison of age characteristics between the 6CPA evaluation cohort and the 6CPA registrations for DAA services between November 2018 and April 2019.



Source: 6CPA registrations; HealthConsult Patient survey- matched initial and follow up individuals (n=51)

Gender Characteristics

The 6CPA evaluation cohort of participants with match initial and follow up surveys had gender spilt of 58.8% females and 42.2% males. In comparison, the 6CPA registration data had a gender spilt of 54.7% females and 45.9% males (and 0.4% indeterminate).

Patient survey summary statistics

Table B.1: Patient survey summary statistics

Measure	n	Initial	Follow Up	Change from Initial to Follow Up			
		Mean (SD)	Mean (SD)	Mean (SD)	95% CI		P Value
					Lower	Upper	
AQoL-4D Weighted Score							
AQoL Utility Score	**51**	**0.42 (0.29)**	**0.35 (0.30)**	**-0.08 (0.03)**	**-0.15**	**-0.01**	**0.04**
Independent living	51	0.68 (0.30)	0.6 (0.33)	-0.08 (0.02)	-0.14	-0.01	0.02
Relationships	51	0.78 (0.20)	0.75 (0.23)	-0.03 (0.02)	-0.08	0.02	0.22
Senses	51	0.79 (0.16)	0.84 (0.14)	0.06 (0.01)	0.02	0.10	0.01
Mental health	51	0.60 (0.26)	0.74 (0.21)	0.15 (0.03)	0.07	0.22	0.00
ARMS-12							
Total Score	**51**	**17.43 (3.96)**	**15.82 (4.84)**	**-1.61 (0.5)**	**-3.05**	**-0.17**	**0.03**
Adherence to taking medication	51	10.73 (2.48)	10.18 (2.88)	-0.55 (0.24)	-1.23	0.13	0.12
Adherence to refilling medication on schedule	51	6.71 (2.10)	5.94 (1.95)	-0.76 (0.22)	-1.37	-0.16	0.02
GASE							
Total Score	**51**	**19.96 (16.70)**	**19.37 (16.28)**	**-0.59 (1.6)**	**-4.90**	**3.72**	**0.79**
Medication attributed symptom count	51	3.71 (4.28)	3.35 (4.58)	-0.35 (0.55)	-1.85	1.14	0.65
Medication attributed total score	51	6.33 (8.01)	6.33 (9.83)	0.00 (1.16)	-3.19	3.19	1.00
TSQM							
Effectiveness	51	66.01 (16.32)	66.01 (19.43)	0 (2.06)	-4.13	4.13	1.00
Side effects	46	77.99 (26.96)	84.1 (25.91)	6.11 (3.76)	-1.47	13.70	0.11
Convenience	51	77.29 (15.83)	82.79 (14.83)	5.5 (1.89)	1.70	9.30	0.01
Global satisfaction	51	67.23 (18.08)	71.01 (20.17)	3.78 (2.16)	-0.55	8.12	0.09
Overall knowledge of medicines	51	6.35 (2.5)	6.94 (2.27)	0.59 (0.34)	-0.09	1.27	0.09
Knowledge about storage of medicines	50	7.58 (2.48)	7.86 (2.42)	0.28 (0.33)	-0.39	0.95	0.40
Knowledge about importance of medication dosage and schedule	49	7.76 (2.03)	8.55 (1.77)	0.8 (0.26)	0.27	1.32	0.00
Knowledge about what to do with any medication you have not taken	43	7.65 (2.6)	8.37 (1.68)	0.72 (0.32)	0.07	1.37	0.03

Table B. 2: AQoL-4D utility weights - Australian population norms

Evidence	Age group								Summary
Study	16-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	Reported weight
Hawthorne 2005 (SD)	0.87 (0.17)	0.87 (0.18)	0.85 (0.20)	0.85 (0.18)	0.80 (0.22)	0.79 (0.19)	0.75 (0.25)	0.66 (0.29)	0.83 (0.20)
Hawthorne 2013 (SD)	0.87 (0.17)	0.86 (0.19)	0.84 (0.21)	0.81 (0.23)	0.80 (0.24)	0.80 (0.22)	0.76 (0.23)	0.70 (0.26)	0.81 (0.22)

Source: Hawthorne (2005) and (2013).

Appendix C:Pharmacist Survey Findings

Pharmacist participants

There were 128 responses to the DAA Pharmacy Profile Survey, of those 42.2% located in shopping centre, 34.4% stand alone, 12.5% medical centre, 10.2% shopping strip/high street and 0.8% at the hospital. The type was franchise banner group for 42.2% of the pharmacies and 29.7% independent, 18% private banner group and the other 10.2% in either buying group, friendly society, community pharmacy, medical centre or retail. More than half of the pharmacies (56.6%) were semi-forward, 34.1% forward pharmacy and 8.5% traditional pharmacy dispensing type.

Of the 128 pharmacists, 95 pharmacists reported that they had conducted a DAA service, and 90 of those completed the DAA section of the survey.

Pharmacist survey summary statistics

Table C.1: Pharmacist rating of impact of the service

	1 (very low impact)	2 (low impact)	3 (moderate impact)	4 (high impact)	5 (very high impact)
Impact on patients					
Increasing patients' understanding of their medications	10 (11.1%)	11 (12.2%)	24 (26.7%)	18 (20%)	27 (30%)
Improving patients' medication adherence	1 (1.1%)	0 (0%)	2 (2.2%)	13 (14.4%)	74 (82.2%)
Reducing adverse events associated with misuse of medications	1 (1.1%)	0 (0%)	6 (6.7%)	16 (17.8%)	67 (74.4%)
Improving the health of patients	1 (1.1%)	0 (0%)	6 (6.7%)	20 (22.2%)	63 (70%)
Impact on pharmacists					
Broadening your scope of practice	10 (11.1%)	10 (11.1%)	26 (28.9%)	21 (23.3%)	23 (25.6%)
Increasing job satisfaction	10 (11.1%)	10 (11.1%)	24 (26.7%)	25 (27.8%)	21 (23.3%)
Increasing your communication with other health professionals*	4 (4.4%)	4 (4.4%)	17 (18.9%)	26 (28.9%)	39 (43.3%)
Expanding your role within the primary health care team	8 (8.9%)	3 (3.3%)	18 (20%)	30 (33.3%)	31 (34.4%)

Source: HealthConsult Pharmacist Survey, n=90
*(e.g. General Practitioners, multi-disciplinary team members)

Table C.2: Pharmacists views on time taken to deliver aspects of a DAA service for an average group of patients- count and percentage of pharmacists

Views on time taken to deliver aspects of the service	n	It takes too long for all patients	It takes too long for most patients	It takes too long for some patients, but not others	It takes an appropriate amount of time for most patients	It takes an appropriate amount of time for all patients
Conducting a DAA service	90	4 (4.4%)	16 (17.8%)	24 (26.7%)	39 (43.3%)	7 (7.8%)
Collecting patient registration data	90	10 (11.1%)	18 (20%)	14 (15.6%)	38 (42.2%)	10 (11.1%)
Collecting six month follow up data from patients	67	7 (10.4%)	10 (14.9%)	18 (26.9%)	25 (37.3%)	7 (10.4%)
Submitting registration data	90	16 (17.8%)	14 (15.6%)	15 (16.7%)	34 (37.8%)	11 (12.2%)
Submitting follow up data	67	13 (19.4%)	10 (14.9%)	12 (17.9%)	22 (32.8%)	10 (14.9%)
Submitting claims data	90	19 (21.1%)	13 (14.4%)	10 (11.1%)	30 (33.3%)	18 (20%)

Source: HealthConsult Pharmacist Survey, n=90 and n=67 pharmacists who conducted a follow up service

Table C.3: Pharmacists views on the payments for delivering aspects of a DAA service- count and percentage of pharmacists

Views on the payments for delivering aspects of a DAA service	n	The payment is not enough	It depends on the patient but is mostly not enough	It depends on the patient but is mostly sufficient	The payment is sufficient
Delivery of a DAA service	90	37 (41.1%)	19 (21.1%)	30 (33.3%)	4 (4.4%)
Collection of patient registration data	90	28 (31.1%)	22 (24.4%)	33 (36.7%)	7 (7.8%)
Collection of six month follow up data	67	19 (28.4%)	18 (26.9%)	24 (35.8%)	6 (9%)

Source: HealthConsult Pharmacist Survey, n=90 and n=67 pharmacists who conducted a follow up service

Table C.4: Pharmacist perception of patient satisfaction

How satisfied do you think most patients are with the DAA service?	n	Very dissatisfied	Somewhat dissatisfied	Indifferent	Somewhat satisfied	Very satisfied
Count and percentage of pharmacists	90	1 (1.1%)	0 (0%)	2 (2.2%)	31 (34.4%)	56 (62.2%)

Source: HealthConsult Pharmacist Survey, n=90

Appendix D:Cost Effectiveness Data

Results of the Economic Evaluation

This section presents a modelled economic evaluation based on initial versus 6 months follow-up results from the DAA trial (i.e. pre vs post). Costs and outcomes of the original 6CPA agreement at initial were assumed to be reflective of initial scores and have been treated as such for the purposes of the economic evaluation. Results of the 6-month follow up were used to determine whether the new program changes were effective in providing benefits to trial participants. This was treated as the follow up group for the economic evaluation. A summary of the key characteristics of the economic evaluation is given in Table D.1.

Table D.1: Summary of the economic evaluation

Parameter	Input
Perspective	Healthcare system
Comparator	Pre-intervention / Treatment-As-Usual (TAU)
Type of economic evaluation	Cost-effectiveness analysis
Sources of evidence	DAA trial
Time horizon	Six months
Outcomes	Cost per unit improvement in patient medication adherence using the ARMS-12 score
Methods used to generate results	Trial based analysis: quasi experimental of pre vs post
Discount rate	Not applicable as the model duration is one year
Software packages used	Microsoft Excel 2016

Note: *These analyses were conducted on the total CPMC trial population (i.e. not just those from evaluation trial sites).

The analysis of the primary outcome is presented first, this is followed by the secondary outcomes. Given the lack of control group for the pre vs post analysis, the results of the economic evaluation were not extrapolated beyond the 6-month follow up as this would result in greater uncertainty in results. The discount rate is not applicable due to the duration or the program (6 months follow-up). The threshold for the ICER refer to an Australian study by Cutler et al. (2018)[45], estimating economic impact of medication non-adherence by disease groups and by all causes.

Table D.2: ICER threshold for the cost-effectiveness analysis

Economic cost of non-adherence per person (disease specific)	USD 2015 price	PPP and CPI adjusted factor	AUD 2020 price - PPP and CPI adjusted (six months / one year)
All causes (minimum range)	$5,271	Average exchange rate AUD/USD 2015=0.752	$4,167 / $8,335
All causes (maximum range)	$52,341	CPI (health) compounded 2015 to 2020= 3.79% per year (x5=18.9%)	$41,383 / $82,766
All causes (median value)	$23,535		$18,608 / $37,215

Sources: Cutler et al. (2018), HealthConsult analysis.
Note: Average exchange rates AUD/USD <exchangerates.org.uk>. ABS CPI (heath) between December 2015 and December 2020 was applied to estimate the threshold in 2020 price.

[45] Cutler, C.J, et al., 2018, "Economic impact of medication nonadherence by disease groups: a systematic review", BMJ open access, doi:10.1136/bmjopen-2017-016982.

Table D.3 presents the estimation of incremental cost-effectiveness ratio at individual basis (primary analysis).

Table D.3: Summary of the economic evaluation (primary analysis)

(n=51)	ARMS-12 Score (pre)	ARMS-12 Score (post)	Conversion ARMS-12 Score to 0-1 (pre)	Conversion ARMS-12 Score to 0-1 (post)	Post - Pre (A)	Lower intervention cost (B1)	Upper intervention cost (B2)	ICER -lower range (B1/A)	ICER-upper range (B2/A)	Threshold per six months
1	17	13	0.86	0.97	0.11	$158.08	$221.88	$1,437	$2,017	$18,608
2	19	12	0.81	1.00	0.19	$158.08	$221.88	$815	$1,144	$18,608
3	21	19	0.75	0.81	0.06	$158.08	$221.88	$2,823	$3,962	$18,608
4	15	14	0.92	0.94	0.03	$158.08	$221.88	$5,646	$7,924	$18,608
5	17	14	0.86	0.94	0.08	$158.08	$221.88	$1,905	$2,673	$18,608
6	16	15	0.89	0.92	0.03	$158.08	$221.88	$5,646	$7,924	$18,608
7	17	15	0.86	0.92	0.06	$158.08	$221.88	$2,823	$3,962	$18,608
8	15	12	0.92	1.00	0.08	$158.08	$221.88	$1,905	$2,673	$18,608
9	18	17	0.83	0.86	0.03	$158.08	$221.88	$5,646	$7,924	$18,608
10	26	24	0.61	0.67	0.06	$158.08	$221.88	$2,823	$3,962	$18,608
11	27	19	0.58	0.81	0.22	$158.08	$221.88	$712	$999	$18,608
12	24	15	0.67	0.92	0.25	$158.08	$221.88	$632	$888	$18,608
13	18	14	0.83	0.94	0.11	$158.08	$221.88	$1,424	$1,999	$18,608
14	19	14	0.81	0.94	0.14	$158.08	$221.88	$1,137	$1,596	$18,608
15	19	18	0.81	0.83	0.03	$158.08	$221.88	$5,646	$7,924	$18,608
16	16	13	0.89	0.97	0.08	$158.08	$221.88	$1,905	$2,673	$18,608
17	18	16	0.83	0.89	0.06	$158.08	$221.88	$2,823	$3,962	$18,608
18	18	12	0.83	1.00	0.17	$158.08	$221.88	$947	$1,329	$18,608
19	16	15	0.89	0.92	0.03	$158.08	$221.88	$5,646	$7,924	$18,608
20	17	13	0.86	0.97	0.11	$158.08	$221.88	$1,424	$1,999	$18,608
21	25	21	0.64	0.75	0.11	$158.08	$221.88	$1,424	$1,999	$18,608
22	28	18	0.56	0.83	0.28	$158.08	$221.88	$569	$798	$18,608
23	25	25	0.64	0.64	0.00	$158.08	$221.88	$0	$0	$18,608

(n=51)	ARMS-12 Score (pre)	ARMS-12 Score (post)	Conversion ARMS-12 Score to 0-1 (pre)	Conversion ARMS-12 Score to 0-1 (post)	Post - Pre (A)	Lower intervention cost (B1)	Upper intervention cost (B2)	ICER -lower range (B1/A)	ICER-upper range (B2/A)	Threshold per six months
24	14	14	0.94	0.94	0.00	$158.08	$221.88	$0	$0	$18,608
25	14	14	0.94	0.94	0.00	$158.08	$221.88	$0	$0	$18,608
26	15	15	0.92	0.92	0.00	$158.08	$221.88	$0	$0	$18,608
27	15	15	0.92	0.92	0.00	$158.08	$221.88	$0	$0	$18,608
28	16	16	0.89	0.89	0.00	$158.08	$221.88	$0	$0	$18,608
29	15	15	0.92	0.92	0.00	$158.08	$221.88	$0	$0	$18,608
30	20	20	0.78	0.78	0.00	$158.08	$221.88	$0	$0	$18,608
31	12	12	1.00	1.00	0.00	$158.08	$221.88	$0	$0	$18,608
32	21	21	0.75	0.75	0.00	$158.08	$221.88	$0	$0	$18,608
33	16	16	0.89	0.89	0.00	$158.08	$221.88	$0	$0	$18,608
34	12	12	1.00	1.00	0.00	$158.08	$221.88	$0	$0	$18,608
35	17	17	0.86	0.86	0.00	$158.08	$221.88	$0	$0	$18,608
36	13	13	0.97	0.97	0.00	$158.08	$221.88	$0	$0	$18,608
37	15	15	0.92	0.92	0.00	$158.08	$221.88	$0	$0	$18,608
38	17	22	0.86	0.72	-0.14	$158.08	$221.88	-$1,138	-$1,598	$18,608
39	18	21	0.83	0.75	-0.08	$158.08	$221.88	-$1,897	-$2,663	$18,608
40	15	17	0.92	0.86	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
41	15	17	0.92	0.86	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
42	13	14	0.97	0.94	-0.03	$158.08	$221.88	-$5,691	-$7,988	$18,608
43	22	28	0.72	0.56	-0.17	$158.08	$221.88	-$948	-$1,331	$18,608
44	14	16	0.94	0.89	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
45	15	17	0.92	0.86	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
46	17	23	0.86	0.69	-0.17	$158.08	$221.88	-$948	-$1,331	$18,608
47	22	24	0.72	0.67	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
48	17	21	0.86	0.75	-0.11	$158.08	$221.88	-$1,423	-$1,997	$18,608
49	13	15	0.97	0.92	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608
50	12	15	1.00	0.92	-0.08	$158.08	$221.88	-$1,897	-$2,663	$18,608

(n=51)	ARMS-12 Score (pre)	ARMS-12 Score (post)	Conversion ARMS-12 Score to 0-1 (pre)	Conversion ARMS-12 Score to 0-1 (post)	Post - Pre (A)	Lower intervention cost (B1)	Upper intervention cost (B2)	ICER -lower range (B1/A)	ICER-upper range (B2/A)	Threshold per six months
51	13	15	0.97	0.92	-0.06	$158.08	$221.88	-$2,845	-$3,994	$18,608

Sources: : HealthConsult Patient survey, HealthConsult analysis.

Table D.4 presents the estimation of incremental cost-effectiveness ratio at individual basis (secondary analysis).

Table D.4: Summary of the economic evaluation (secondary analysis)

(n=51)	Adherence status	GP visit status	Pre-post adherence gain* (A)	GP visits (delta)	Lower with GP cost* (B1)	Upper with GP cost* (B2)	ICER lower (B1/A)	ICER upper (B2/A)	Annualised ICER (lower)	Annualised ICER (upper)	Threshold per six months	Threshold per year
1	Improved/stable	Decreased	0.02800	0.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
2	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
3	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
4	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
5	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
6	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
7	Improved/stable	Increased	0.08350	1.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
8	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
9	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
10	Improved/stable	Increased	0.08350	1.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
11	Improved/stable	Increased	0.08350	2.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
12	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
13	Improved/stable	Decreased	0.02800	0.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
14	Improved/stable	Increased	0.08350	2.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
15	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
16	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
17	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
18	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215

(n=51)	Adherence status	GP visit status	Pre-post adherence gain* (A)	GP visits (delta)	Lower with GP cost* (B1)	Upper with GP cost* (B2)	ICER lower (B1/A)	ICER upper (B2/A)	Annualised ICER (lower)	Annualised ICER (upper)	Threshold per six months	Threshold per year
19	Improved/stable	Increased	0.08350	1.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
20	Improved/stable	Increased	0.08350	1.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
21	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
22	Improved/stable	Increased	0.08350	2.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
23	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
24	Improved/stable	Decreased	0.02800	0.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
25	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
26	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
27	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
28	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
29	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
30	Improved/stable	Increased	0.08350	1.00	$268.44	$332.24	$3,215	$3,979	$6,430	$7,958	$18,608	$37,215
31	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
32	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
33	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
34	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
35	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
36	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
37	Improved/stable	Decreased	0.02800	1.00	$72.69	$136.49	$2,596	$4,875	$5,192	$9,749	$18,608	$37,215
38	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
39	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
40	Declined	Increased	-0.05556	-3.00	$268.44	$332.24	$4,832	$5,980	$9,664	$11,961	$18,608	$37,215
41	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
42	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
43	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
44	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
45	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215

(n=51)	Adherence status	GP visit status	Pre-post adherence gain* (A)	GP visits (delta)	Lower with GP cost* (B1)	Upper with GP cost* (B2)	ICER lower (B1/A)	ICER upper (B2/A)	Annualised ICER (lower)	Annualised ICER (upper)	Threshold per six months	Threshold per year
46	Declined	Decreased	-0.05556	0.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
47	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
48	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
49	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
50	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215
51	Declined	Decreased	-0.05556	1.00	$72.69	$136.49	$1,308	$2,457	$2,617	$4,914	$18,608	$37,215

Sources: : HealthConsult Patient survey, HealthConsult analysis.
Note: *at mean per type of patient status, and hence, the ICER is in absolute numbers.

Literature Review

A targeted literature search was conducted on between August 2020 and November 2021 to identify any cost-effectiveness studies or related with the cost-effectiveness methodology, which evaluated the DAA intervention. The search of the published literature includes on PubMed, Medline, Wiley Library, Cochrane, BMJ, SuperSearch, and Google Scholar (Table D.5).

Table D.5: Search terms used in PubMed

Platform	Element of clinical question	Search terms
PubMed, Medline, Wiley Library, Cochrane, BMJ, SuperSearch, Google Scholar.	Intervention	('Dose Administration Aid*' OR 'DAA' (all fields)) AND ('pharmacy'(all fields) 'pharmacies' (all fields) OR 'pharmacist*' (all fields)
	Study type	'cost effectiveness analysis' (exp) OR 'cost-utility analysis (exp)

The search resulted in around 50 journal articles, books and reports. The key articles for the analysis are presented in Table D.6.

Table D.6: Key studies for the cost-effectiveness analysis

Category	Key literature
Parameter of CEA	• M. Christopher Roebuck, Joshua N. Liberman, Marin Gemmill-Toyama, and Troyen A. Brennan. Medication Adherence Leads to Lower Health Care Use and Costs Despite Increased Drug Spending. *Health Affairs* 2011 30:1, 91-99 • Guyatt, GH, et al., 1993, 'Measuring Health-Related Quality of Life', *Annals of Internal Medicine*, v.188, no.8, pp. 622-629. • Cutler, C.J, et al., 2018, "Economic impact of medication nonadherence by disease groups: a systematic review", *BMJ open access*, doi:10.1136/bmjopen-2017-016982. • Coyne, C.J, et al. 2017, "The Relationship Between Medication Knowledge, Perceived Importance, and Medication Adherence", *Annals of Emergency Medicine*, research forum abstract, v.70, no.4, S169. • Hawthorne G, Osborne R., 2005, "Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure", *Australian and New Zealand journal of public health*, v.29, no.2, pp.136-42.
Methodology CEA	• Gray, AM, Clarke, PM, Wolstenholme, JL, Wordsworth, S, 2011, "*Applied methods of cost-effectiveness analysis in health care*, Oxford University Press • Cohen DJ, Reynolds MR, 2008, "Interpreting the results of cost-effectiveness studies", *J Am Coll Cardiol, vol.*52, no.25, pp.2119-2126.

Structure of the Economic Evaluation

The economic evaluation was conducted utilising the DAA trial data at initial and at 6 months follow-up. Data include assessment quality of life (AQoL-4D), side effect (GASE score) and adherence (ARMS score). The key parameter used to estimate incremental cost was ARMS-12 score. The structure of the economic evaluation is shown in Figure D.1.

Figure D.1: Decision analytic structure of the economic evaluation

Methodology

The key result of economic evaluation is the incremental cost-effectiveness ratio (ICER) per improvement in adherence for the DAA program between initial and 6 months follow-up. The ICER formula is as follows:

$$ICER_{DAA\ patient} = \frac{Cost_{6\ months\ follow-up} - Cost_{initial}}{Benefits_{6\ months\ follow-up} - Benefits_{initial}}$$

The study assumed that the comparator or alternative program for the analysis was patient's condition prior to the DAA services, suggesting no cost ($0) and no change in adherence of taking and refilling medications. In order to estimate the ICER, the ARMS-12 scores were converted between 0 and 1, where 0 represents no adherence and 1 represents full adherence (noted that this approach is the opposite of standard ARMS-12 score between 12 and 48, where 12 represents a full adherence and 48 represent no adherence). The approach aligned with the form of analysis as the ICER is expressed as the ratio of the incremental cost to the incremental utility gain between 0 and 1.[46]

Total intervention costs include lower ($158.08) and upper ($221.88) intervention costs (note that the upper cost is due to an additional service fee of $31.90 at initial and follow-up for five patients or fewer). An additional analysis was conducted to include GP visit net costs. The ICER for patients who improve (n=22) was estimated between $569-$5,691 for lower cost estimations and $799-$7,988 for upper cost estimations. Meanwhile, for patients with no improvement in adherence, the ICER was estimated in negative terms.

Sensitivity Analyses

Results for the primary (base-case) and secondary (sensitivity analyses) have been presented in this section. For upper and lower bounds, an arbitrary 20% of weekly service fee was used to estimate the ICER (Table D.7).

Table D.7: Key drivers of the economic model

Description	Results
Base case	• Lower estimations ICER: $569-$5,691 • Upper estimations ICER: $799-$7,988
DAA weekly service fee decreased from $158.08 to $126.46 (20% relative decrease)	• Lower estimations ICER: $455-$4,553 • Upper estimations ICER: $685-$6,850
DAA weekly service fee increased from $158.08 to $189.70 (20% relative increase)	• Lower estimations ICER: $683-$6,829 • Upper estimations ICER: $913-$9,126

Sources: HealthConsult analysis

Caveat on cost-effectiveness analysis

From the final report (November 2016) of the initial evaluation of the 'Sixth Community Pharmacy Agreement Pharmacy Practice Incentive Program: Dose Administration Aids', most participating patients were aged 55 years or older. Further, the most represented age group was 75-84 years, and the second most common age group was the 85-94 years. The analysis assumes that initial results obtained prior to the first intervention would be indicative of the original 6CPA program. The results at follow up are assumed to reflect the DAA program changes as of July 2018.

[46] Culyer, AJ (Editor), 2014, *"Encyclopedia of Health Economics: Bryan and Williams, Adoption of new technologies, using economic evaluation"*, pp. 26-31.

The DAA evaluation has some limitations. These include:

- a relatively small sample size of 51 respondents that completed both at initial and 6 months follow up
- a relatively short duration of the study (6 months)
- a paucity of data for the long term follow up of the DAA interventions
- a lack of control group or placebo group that receive treatment as usual to be compared with the intervention group
- a limited information of PBS item usage post the intervention.

The absence of a control group has disabled the analysis to provide further evidence of benefits from the intervention. Meanwhile, the duration of 6 months is relatively short as most of trial-based studies went for 12 months follow up.[47] Adding to this, from Dawoud (2019)[48]

"…studies reflected cost effectiveness, both in the short and long term, as the follow up time in the economic evaluations conducted alongside clinical studies ranged from 6 to 12 months while the modelling studies had time horizons ranging from 1 year to a lifetime."

Limited information of PBS usage after the intervention provide uncertainty for the long-term follow up as the usage cost was a major cost driver. The impact of the use of these items will also impact on how adherent and what adverse events patients would be experiencing. Moreover, if the analysis was extrapolated, costs would increase due to PBS usage.

[47] Ahumada-Canale A, Quirland C, Martinez-Mardones FJ, Plaza-Plaza JC, Benrimoj S, Garcia-Cardenas V., 2019, "Economic evaluations of pharmacist-led medication review in outpatients with hypertension, type 2 diabetes mellitus, and dyslipidaemia: a systematic review", *Eur J Health Econ*, v.20, no.7, pp.1103-1116. *doi:10.1007/s10198-019-01080-z*

[48] Dawoud DM, Haines A, Wonderling D, *et al*., 2019, "Cost Effectiveness of Advanced Pharmacy Services Provided in the Community and Primary Care Settings: A Systematic Review", *Pharmacoeconomics*, vol.37, no.10, pp.1241-1260. *doi:10.1007/s40273-019-00814-4*

Department of Health and Aged Care

Evaluation of the 6CPA – Staged Supply Program

Final Evaluation Report

31 March 2023

HealthConsult
Better thinking
Better advice

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Abbreviations

AE	Adverse Event
AIHW	Australian Institute of Health and Welfare
ARMS	Adherence to Refills and Medications Scale
AQoL	Assessment of Quality of Life
CBA	Cost Benefit Analysis
CEA	Cost-Effectiveness Analysis
CPA	Community Pharmacy Agreements
CPOP	Community Pharmacotherapy Program
DAA	Dose Administration Aids
DALY	Disease adjusted life years
ED	Emergency Department
GASE	Generic Assessment of Side Effects
GP	General Practitioner
HMR	Home Medicines Review
HPI	Health Price Index
HRQoL	Health-Related Quality of Life
ICER	Incremental Cost-Effectiveness Ratio
KEQ	Key evaluation questions
KPM	Key Performance Measures
MBS	Medicare Benefits Scheme
MCID	Minimal clinical important difference
MSAC	Medical Services Advisory Committee
PBS	Pharmaceutical Benefits Scheme
PGA	Pharmacy Guild of Australia
PPI	Pharmacy Practice Incentives
PREM	Patient-Related Experience Measure
PROM	Patient-Related Outcome Measure
PSA	Pharmaceutical Society of Australia
QALY	Quality Adjusted Life Years
QoL	Quality of Life
SD	Standard Deviation
TSQM	Treatment Satisfaction Questionnaire for Medication
WA	Western Australia

Executive Summary

On 17 July 2018, the then Australian Government Department of Health (the 'Department') engaged HealthConsult to conduct an evaluation of four new and expanded community pharmacy programs funded under the Sixth Community Pharmacy Agreement (6CPA), inclusive of Dose Administration Aids (DAA), MedsCheck and Diabetes MedsCheck, and Staged Supply (SS)

This report presents the final evaluation findings of the SS program. The report outlines the evaluation methods and findings of the SS program evaluation including the extent to which the SS program achieved its intended objectives.

About the Staged Supply program

The SS Program aims to assist people who are at risk of drug dependency or who are otherwise unable to manage their medicines safely. The key aim of the SS program is to improve medication adherence and reduce the risk of self-harm or harm to others through accidental or intentional misuse, abuse or diversion of prescribed medicines. The program is for patients with a mental illness, drug dependency, or who are unable to manage their medicines safely.

Evaluation methodology and data sources

The objective of the evaluation was to assess the effectiveness of the SS program at achieving its aim of improved medication adherence and reduced risk of harm to self or others through misuse, abuse or diversion of prescribed medicines.

The evaluation applied a quasi-experimental design to measure the causal effect of an intervention in the absence of control group.[1] The evaluation focused on assessing patients' prior to, or at commencement of the SS program (initial) and again at six months (follow-up).

Four key evaluation questions (KEQ) were formed to guide the evaluation:

(1) **KEQ1**: To what extent is the SS program effective in improving patients' understanding and use of their medications?

(2) **KEQ2**: Does the SS program improve the health outcomes of patients?

(3) **KEQ3**: Is the SS program cost-effective?

(4) **KEQ4**: What are the barriers and enablers to providing an effective patient-centred SS program and how can it be strengthened?

This evaluation drew from multiple data sources, including:

- **Patient surveys**: The patient survey was completed by the patient whilst in the community pharmacy before the initial intervention and at 6 months follow-up.
- **Pharmacist survey**: The pharmacist survey was administered to participating pharmacies to explore program impacts and perceptions.
- **Pharmacy profile survey**: The pharmacy profile survey was administered to pharmacy owners.
- **Case studies/pharmacist interviews**: Semi-structured interviews were conducted as part of 15 case study visits with pharmacists working in one of the 170 pharmacies participating in the 6CPA evaluation.

[1] Geldsetzer, P, Fawzi, W, 2017, "Quasi-experimental study designs series-paper 2: complementary approaches to advancing global health knowledge', *Journal of Clinical Epidemiology*, v.89, pp. 10-16.

- **6CPA program data:** This refers to data collected as per Attachment A of the 6CPA program rules (2018).

In total, there were 38 evaluation participants who completed an initial and/or follow up SS survey. Of those, 14 completed **both an initial and a follow-up survey**. A total of 24 participants completed an initial and/or a follow-up survey.

The evaluation also collected pharmacists' opinions on the effectiveness of the in-scope 6CPA programs via an online survey (n=128). Of the 128 respondents 83 pharmacists reported that they had conducted a SS service, and 82 of those completed the SS section of the survey.

In addition, this evaluation report includes analysis of 6CPA – SS program data including the period between February 2019 and February 2020. Information at the registration and follow-up comprise patient's characteristics, patient's knowledge about their medicines, reason to participate in the program, health conditions, MedsIndex scores, action and recommendation taken by the pharmacist. **There were 2,751 SS program patients at registration and 1,067 SS program patients at follow up. 237 patients** were registered and followed up in the above period and their data was matched based on encrypted DVA/Medicare number.

Key evaluation findings

The evaluation of the SS program found that:

(1) There was no measurable change in medication adherence and management based on the measurement tools used, however participants reported increased knowledge.

(2) There was a significant decrease in GP visits for program participants.

(3) Time was the most significant barrier identified by pharmacists to provide the SS program, but patients and pharmacists were satisfied with the program.

Key evaluation challenges and limitations

The 6CPA evaluation was challenged by pharmacies having difficulty in recruiting patients; there being no data dictionary on 6CPA datasets (so expected data was not realised); lost patient survey data (either at pharmacy or through Australia Post); patients not attending/participating in follow-up visits; and delays and unavailability of access to program and/or national datasets (e.g. PBS and MBS). These challenges led to several revised evaluation methodologies and significantly impacted the delivery of this evaluation report. Additionally, linking the 6CPA program data to PBS was ultimately not possible due to the lack of required identifiers in the 6CPA program data. Consequently, the findings of this report are limited by the small sample size of patient participants.

Unlike the other 6CPA programs, analysis of the impact of the SS program needs to consider the vulnerability of the SS program participants due to the characteristics of the cohort where many of the program participants may be experiencing mental illness or drug addiction/dependence problems (i.e. these are vulnerable persons). Therefore, issues relating to low rates of compliance for participation in follow-up data collection activities is not entirely unexpected. In addition, the evaluation could not access data relating to participant compliance with the SS program, so measures of medication adherence should be interpreted with caution as the results may be more related to program compliance than a true indicator of the SS program's impact.

Cost-effectiveness analysis (CEA) was unable to be completed due to the inability to identify an appropriate effectiveness parameter, so a cost-benefit analysis (CBA) was completed instead on the basis that benefits could be measured (e.g. reduced GP attendances).

Understanding and use of medications

The evaluation found there was no significant change in medication adherence for patients participating in the SS program. Participation in the SS program had a positive effect on patients' understanding of the use of medications:

- 43% rated their overall knowledge of the medicines they were taking higher at follow-up.
- 36% rated their knowledge about how they should store their medicines higher at follow-up.
- 36%) rated their knowledge about the importance of medication dosage higher at follow-up.

Overall, the average ratings of knowledge by SS program participants in the initial survey were relatively high, at 7.3 for overall knowledge of medicines, 9.3 for knowledge of medication storage and 8.9 for the importance of dosage on schedule. Patients' perception at follow-up demonstrated that the participants felt the SS program was effective at preventing a medicine-related problem and assisting participants to manage their medicines. At 6-month follow up, 90% of SS program patients were recommended to continue in the program indicating widespread belief in the benefits of program participation.

Patient health outcomes

There were no significant differences in the number of symptoms reported in SS program patients (medication attributed or in total) between initial and follow-up in measuring side-effects associated with use of medications and there was no difference in quality of life between pre and post measures.

Analysis of patient survey data (n=14) showed no significant differences in the presentations to health care services at initial and follow-up for patients receiving SS program services. However, the 6CPA program data demonstrated that there was a significant decrease in GP visits because of problems related to medications at 6-months follow up compared to registration (n=273).

It is important to place this observation in context with the characteristics of the patient cohort, as these patients are vulnerable and are likely to have increased utilisation of health services when left to self-manage[2].Therefore, it would be expected that without intervention (i.e. the SS program) health service utilisation would increase and any deviation from this would be observed as a beneficial outcome. On that basis, this indicates the program is effective at preventing health service utilisation given the cohort eligibility is based on a history, or risk, of medication misuse.

Most pharmacists (96%) reported that the SS program had at least a moderate impact on reducing adverse events associated with the misuse of medications. Most pharmacists (93%) reported that the SS program had at least a moderate impact on improving the health of patients. Also 25% noted improvements in patients' health outcomes as a result of the program.

Cost-effectiveness

The CEA of the SS program was unable to be completed due to the lack of identified effectiveness indicators. The alternative approach used was a CBA which shows that the program resulted in a reduction of GP visits, equating to two GP visits for every 10 patients enrolled in the SS program. What this means is that for 10 patients in the SS program over a 6-month period, the cost of having those patients in the SS program would be $1,111.20 (i.e. 10 patients x $111.12 per six months). However, the SS program would have cost $1,031.70 (i.e. 10 patients x $103.70 per six months) for the 6-month period if we assume on average one GP visit was prevented for two patients out of every 10 patients in the program.

Barriers and enablers

Patient feedback and satisfaction with the SS program were mixed. The majority (88%) of patients that completed the patient survey were satisfied with the program, however, some found the program as 'inflexible' and 'inconvenient' and removed their ability to independently manage their

[2] Pharmacy Guild of Australia. (2011) Professional Pharmacy Services: Staged Supply. Accessed 19 July 2016. Available from: http://www.guild.org.au/pps/content.asp?id=1425

medications. Patients also reported no significant differences in the domains of effectiveness, side effects, convenience, and global satisfaction, between initial and follow-up surveys.

The majority (58%) of surveyed pharmacists reported the reimbursement amount for conducting the program was insufficient, however the additional payments for registration and follow up data collection was sufficient.

Over three-quarters of pharmacists (74%) reported that the SS program had at least a moderate impact on expanding their role within the primary health care team including improved integration with the local allied health team and increased opportunity to collaborate with GPs. Pharmacists reported that the SS program helped with professional development by encouraging pharmacists to improve their clinical knowledge, led to other career pathways such as working in community mental health and exposed pharmacy graduates and trainees to complex patients. Pharmacists also appreciated being able to spend more time with their patients which removed them from performing only dispensing services.

Time was identified as a critical barrier due to the complexity and vulnerability of the patients involved. Patient complexity is linked to other barriers identified by the pharmacists such as patient reluctance to engage, patients accessing more than one pharmacy, and patients not completing their course of care or follow-up.

Identified opportunities for program improvement included increasing the monthly cap on the program for individual pharmacies, increasing the total reimbursement to assist with the administration requirements, and increasing patient awareness and acceptability of the program.

Summary and conclusions

The findings of the evaluation suggest that the SS program increases patient knowledge about their medication, reduces visits to the GP for medication-related issues, and results in a cost-benefit by decreasing at least two GP visits for every 10 SS patients or equal to a saving of at least $79.50 every 6 months (per 10 SS patients). In addition, whilst participating in the program, health service utilisation remained stable suggesting a potential prevention of ED presentations and hospital admissions.

Suggested changes to the SS program include increasing the patient cap to allow a greater number of patients to participate, an increase in the total reimbursement to pharmacies to assist with the administration and reporting requirements associated with the program, and changing patient monitoring platform so individuals can be managed across multiple pharmacies.

Limited patient awareness and acceptance was identified as a barrier and pharmacists felt that recruitment to the program was impacted because patients were sensitive to conversations regarding non-compliance. Increased advertising and marketing of programs to patients and health care professionals could assist with patient acceptance of the program when offered by a pharmacist.

1. Introduction

On 17 July 2018, the Department of Health (the 'Department') engaged HealthConsult to:

"to evaluate four of the New and Expanded Community Pharmacy Programs Funded Under the Sixth Community Pharmacy Agreement (6CPA)"

The 6CPA program is an initiative to expand the role of community pharmacy, beyond medication dispensing to an increased primary healthcare contribution. **This report focuses on the evaluation findings of the Staged Supply (SS) program.**

1.1. Context

Community Pharmacy Agreements (CPA) were introduced in 1991 between the Commonwealth and the Pharmacy Guild of Australia (PGA) to support the provision of PBS medications to Australians. Under the Improving Access to Medicines – Support for Community Pharmacies Budget Measure (the Measure), in 2017, $825 million was provided over three years to community pharmacies to support and improve access to medicines. The measure included $600 million through the 6th Community Pharmacy Agreement (6CPA) to continue and expand existing community pharmacy programs. This included two new medication adherence programs: Dose Administration Aids (DAA) and Staged Supply (SS), and two expanded medication management programs: MedsCheck and Diabetes MedsCheck.

1.1.1. The Staged Supply program

Staged Supply program provides PBS medicines in instalments when requested by the prescriber. The Staged Supply Program aims to assist people who are at risk of drug dependency or who are otherwise unable to manage their medicines safely. The program is beneficial for patients with a mental illness, drug dependency, or who are unable to manage their medicines safely. The frequency of Staged Supply dosing instalments is determined by the prescriber in consultation with the Pharmacy and the Patient and/or their carer. The Staged Supply Program excludes medicines supplied under the Section 100 Opioid Dependence Treatment Program.

The aim of the staged supply program is:

- to improve medication adherence and reduce the risk of self-harm or harm to others through accidental or intentional misuse, abuse or diversion of prescribed medicines.

1.2. Evaluation of the Staged Supply program

The objective of the evaluation is to assess the effectiveness of the Stage Supply program at achieving its aims of improved medication adherence and reduced risk of harm to self or others through misuse, abuse or diversion of prescribed medicines.

1.2.1. Evaluation Questions

Four key evaluation questions (KEQ) were formed to guide the evaluation:

(1) **KEQ1**: To what extent is the SS program effective in improving patients' understanding and use of their medications?

(2) **KEQ2**: Does the program improve the health outcomes of patients?

(3) **KEQ3**: Is the SS program cost-effective?

(4) **KEQ4**: What are the barriers and enablers to providing an effective patient-centred SS program and how can it be strengthened?

Figure A. 1 presents the SS program logic model that was produced for the evaluation using information obtained from the documentation review. The logic model illustrates the chain of events (activities and outcomes) resulting from the SS program.

1.3. Data collections

This evaluation drew from multiple data sources, including patient surveys, pharmacist and pharmacy profile surveys, case studies/pharmacist interviews and 6CPA program data.

1.3.1. Data sources

This evaluation had a quasi-experimental approach using multiple data sources, including:

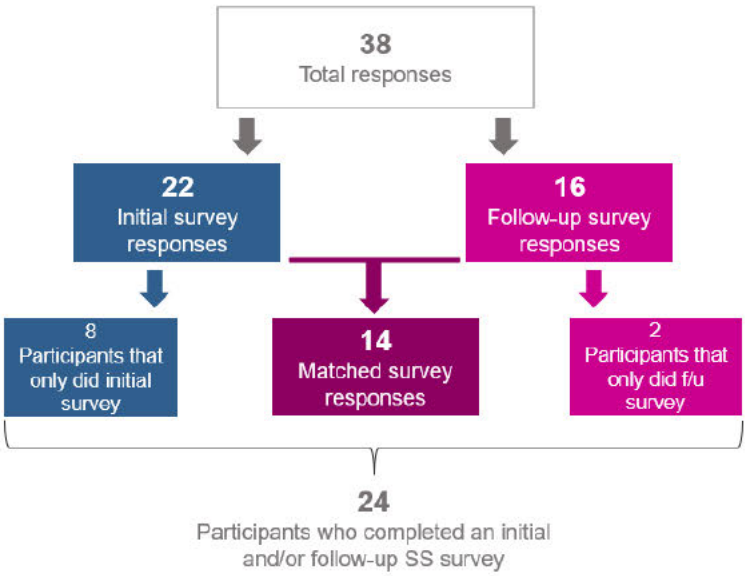
- **Patient surveys**: The patient survey was completed by the patient whilst in the community pharmacy before the initial intervention and at 6 months follow-up. This survey included validated tools to measure medication adherence (the Adherence to Refills and Medications Scale (ARMS)), side effects (Generic Assessment of Side Effects (GASE)), QoL (The Assessment of Quality of Life (AQoL-4D)), problem in diabetes for Diabetes MedsCheck patients (Problem Areas in Diabetes Scale (PAID-5)), and patient satisfaction (Treatment Satisfaction Questionnaire for Medications (TSQM)).
- **Pharmacist survey**: The pharmacist survey was administered to participating pharmacies to explore program impacts and perceptions. This survey included questions about patients' knowledge and understanding of medication use and medication adherence, pharmacist perspectives on the MedsCheck and Diabetes MedsCheck program implementation and possible impacts of the program on their job satisfaction, the scope of practice, communication, and their role within a primary healthcare team.
- **Pharmacy profile survey**: The pharmacy profile survey was administered to pharmacy owners. It explored characteristics of pharmacies, including location, pharmacy type (independent, franchise, banner, friendly society group, buying group), dispensing type (forward, traditional or semi-forward pharmacy), programs offered, and size.
- **Case studies/pharmacist interviews**: Semi-structured interviews were conducted as part of 15 case study visits with pharmacists working in one of the 170 pharmacies participating in the 6CPA evaluation. The interviews explored patient experience and outcomes, the impact of program participation on the pharmacy workforce and owners, operational effectiveness, perceived financial viability and barriers to program implementation.
- **6CPA program data:** This refers to data collected as per Attachment A of the 6CPA program rules (2018). The datasets available for individuals participating in the data collection were: Staged Supply (SS) claims data, SS registration data, and SS follow-up data. The evaluation outcomes assessed using this data include MedsIndex score at initial and follow up as a supplementary indicator of medication adherence (noting the ARMS scale is a more accurate indicator of medication adherence), medication profile, medication knowledge, recommended changes to medications/dose, and utilisation of health services due to medication problems.

1.4. Participation in the Staged Supply evaluation

1.4.1. Evaluation participants - patients

In total, there were 38 evaluation participants who completed an initial and/or follow up SS survey. Of those, 22 participants completed an initial survey and 16 completed a follow-up survey (Figure 1). **Fourteen participants completed both an initial and a follow-up survey**. A total of 24 participants completed an initial and/or a follow-up survey.

Figure 1: Flow chart of SS survey responses/participants



Abbreviation: f/u, follow-up

*Matched survey responses - refers to the number of respondents that did an initial and a follow-up survey

The findings from the HealthConsult patient surveys are presented herein however, due to the small sample size caution should be taken drawing conclusions from the findings to determine the effectiveness of the Staged Supply program.

1.4.2. Evaluation participants - pharmacists

The evaluation collected pharmacists' opinions on the effectiveness of the in-scope 6CPA programs via an online survey. A total of 128 pharmacists provided input into this evaluation via the pharmacist survey. Table 1 summarises the geographical distribution of the pharmacists who responded to the survey.

Table 1: Profile of pharmacist survey responses

State/Territory*	The geographical location of pharmacy (PhAria)			Number of pharmacists
	Major city	Regional	Remote	
ACT	1	0	0	1
NSW	30	16	0	46
QLD	8	7	1	16
SA	14	2	0	16
TAS	0	2	0	2
VIC	16	8	0	24
WA	19	4	0	23
Total	**88**	**39**	**1**	**128**

*There were no respondents from NT
Source: HealthConsult Pharmacist Survey

Of the 128 pharmacists that completed the survey, 83 pharmacists reported that they had conducted a SS program, and 82 of those completed the SS section of the survey.

1.4.3. 6CPA program data

For this evaluation, the Department provided HealthConsult with a summative extract for program monitoring. The data provided pertained to each individual who participated in data collection processes between February 2019 to February 2020. It was assumed that individuals who

participated in the registration process were representative of all 6CPA participants in terms of demographic and treatment-related characteristics. However, the demographic characteristics of participants and registrants could not be compared because this information is not collected from program participants. The datasets used in the analysis included:

- **SS registration data** (from February 2019 to February 2020). It should be noted that the registration data did not readily record whether the individual received a SS program, although this could be inferred by linking the registration data to the claims data.
- **SS follow-up data** (February 2019 to February 2020).
- **SS matched data** includes the individuals that were registered and followed up between February 2019 to February 2020.

There were 2,751 patients at registration and 1,067 patients at follow up. 237 patients were registered and followed up in the above period and their data was matched based on encrypted DVA/Medicare number.

Table 2: 6CPA program data for the Staged Supply program

Staged supply registration data	Staged supply follow up data	SS matched data
2,751	1,067	237

Source: 6CPA program data, HealthConsult analysis
Notes: Program data includes registrations and follow ups conducted between February 2019 to February 2020

1.5. Evaluation design challenges and limitations

1.5.1. Patient recruitment and access to linked datasets

Recruitment from the approximately 180 participating pharmacies failed to reach the recommended patient participant targets. Regular contact with the recruited pharmacies provided insight into why the recruitment failed to reach the target including:

- the length of the survey to be completed (12 pages)
- the length of time needing to be spent on the surveys (approximately 40 minutes with the accompanying consent form, on top of the requirements associated with program participation)
- the lack of time on the part of the pharmacist to assist the participant and collate the responses
- a reported lack of suitable patients
- lack of remuneration for pharmacists.

Accessing routinely collected data, such as the 6CPA monitoring data, would provide additional insight into the impact of the programs by allowing a review of participant outcomes from a much larger sample of participants, pharmacies and pharmacists. Therefore, HealthConsult designed an updated evaluation approach that required the Department to provide the AIHW with the data of 6CPA participants so that the AIHW could link these data to participants' PBS data. Unfortunately, after attempting to carry out the updated methodology, it was discovered that the 6CPA program data did not contain the required identifiers for the AIHW to link it with PBS data. Therefore, the evaluation methodology was once again amended, and the evaluation approach was updated to remove the linked PBS data altogether.

The updated methodology involves analysis based on the 6CPA program monitoring data, routinely collected at registration and 6-months follow-up. The patient information and activity will be linked between time points and analysis of the impact of the SS program participation on medication adherence, healthcare resource use resulting from medicine

misuse and/or mismanagement. An updated cost-benefit analysis of the programs was also completed.

The impact of the challenges in patient recruitment and data access, and subsequent methodology changes, has meant the project has also experienced significant delays and personnel changes, all of which required ethical review of the amendments.

1.5.2. Limitations

A summary of the limitations is described below:

- a relatively short duration of the study (6 months), which is insufficient to collect information from trial participants.
- the original evaluation design did not include recruitment and selection of a control group. To attribute the changes in outcomes observed in 6CPA participants to the interventions provided as part of the program, there is a need to identify how changes in measured outcomes (such as quality of life) potentially resulting from program participation differ in the 6CPA cohort relative to matched control sample not participating in the 6CPA programs.
- healthcare utilisation is based on recollection and self-report, which is unreliable and potentially prone to error, especially in situations where the sample population is older or experiencing cognitive difficulties.
- across all 6CPA programs, only about 30% of those who participated in 6CPA program data collection had follow-up data collected when they reached the six-month mark, despite program rules requiring follow-up data be collected from all of the participants engaging in 6CPA data collection.
- lack of remuneration relative to the time taken (remuneration for 6CPA follow-up program data collection is set and provided by the 6CPA program administrator, not HealthConsult).
- lack of perceived clinical value in conducting a formal follow-up with associated data collection. Pharmacists felt there was no clinical value in conducting a follow-up and felt the clinical function of follow-up could be conducted using less formal, more frequent interactions shorter in duration.
- current pre-post measures collected as part of the 6CPA program data do not comprehensively assess changes in medication use, utilisation of medical procedures or treatment compliance due to the time it would take to comprehensively administer measures assessing those constructs.
- some pharmacists stated they were not encouraged to engage in follow-ups by branch or banner management due to the time required.

1.6. Structure of this document

This report presents the initial findings from the SS evaluation and is structured as follows:

- **Chapter 2:** overview of the SS program and target audience
- **Chapter 3:** evaluation findings regarding the effectiveness of SS in improving patients' understanding and use of their medications
- **Chapter 4:** evaluation findings regarding the effectiveness of SS in improving the health outcomes of patients
- **Chapter 5:** cost-effectiveness of SS
- **Chapter 6:** barriers and enablers to providing an effective patient-centred SS program
- **Chapter 7:** conclusion and recommendations.

2. Overview of the SS program

2.1. Overview of Sixth Community Pharmacy Agreement

Community Pharmacy Agreements (CPA) were introduced in 1991 between the Commonwealth and the Pharmacy Guild of Australia (PGA) to support the provision of PBS medications to Australians. From 2017/18 onwards, $825 million was provided over three years to community pharmacies to support and improve access to medicines, under the Improving Access to Medicines – Support for Community Pharmacies Budget Measure (the Measure).

The Measure included $600 million through the 6th Community Pharmacy Agreement (6CPA) to continue and expand existing community pharmacy programs. These included two **new medication adherence programs: SS** and Dose Administration Aids (DAA), and two expanded medication management programs MedsCheck and Diabetes MedsCheck.

2.2. About the SS Program

The SS program is the supply of PBS medicines to a patient in periodic instalments (e.g., daily, weekly) and in quantities less than the originally prescribed amount. This program is offered on request by the prescriber or carer and excludes medicines supplied under the Section 100 opioid dependency treatment program. The Pharmaceutical Society of Australia (PSA) Standard and Guidelines for Pharmacists Providing a SS Service for Prescribed Medicines (March 2011) defines SS to be 'the provision of PBS medicines in instalments were requested by the prescriber or consumer'.

The SS priority area was established under the Better Community Health Initiative of the Fourth Community Pharmacy Agreement (4CPA) and Fifth Community Pharmacy Agreement (5CPA) between the Pharmacy Guild of Australia and the Commonwealth Government. The SS initiative was continued under the 6CPA, as part of the Pharmacy Practice Incentives (PPI) Program directed at improving medication compliance through community pharmacies in Australia.

The objectives of the SS program are:

(1) to improve medication adherence, and

(2) to reduce the risk of self-harm or harm to others through accidental or intentional misuse, abuse, or diversion of prescribed medicines.

In addition, SS programs may also be used in conjunction with a DAA to help improve adherence to the prescribed medication treatment regimen. The expanded SS program has been redesigned to collect information to assist with the assessment of the effectiveness of Community Pharmacy Programs.

2.2.1. Pharmacy Eligibility Criteria

To become an approved SS program provider and participate in the SS program, eligible Pharmacies must first register via the Pharmacy Programs Administrator Portal. To be eligible and participate in the SS program, a Pharmacy must:

- be a Section 90 Pharmacy (under the National Health Act 1953)
- be accredited by an approved Pharmacy Accreditation Program such as the Quality Care Pharmacy Program
- agree to publicly display and comply with the Community Pharmacy Service Charter and Customer Service Statement
- register for the SS priority area via the 6CPA Registration and Claiming Portal

- deliver SS program in accordance with the PPI Program Specific Guidelines
- continue to meet the above eligibility criteria while participating in the SS priority area

SS program services are paid for by the Australian Government through the 6CPA. Eligible community pharmacies are entitled to claim an annual incentive payment for offering SS program services in accordance with the PPI Program Specific Guidelines. Payment for the provision of the SS program is prospective. To be eligible for payment the eligible pharmacy is:

- required to retain evidence to demonstrate the pharmacy has met the requirements; and
- lodged the PPI Declaration each year as part of the pharmacy's accreditation cycle and provided the required evidence at the eligible community pharmacy's next accreditation assessment.

2.2.2. Patient Eligibility Criteria

According to the current PSA guidelines for providing a SS program (PSA, 2011), the clinical need for the SS program may be identified during the delivery of other services, such as a MedsCheck (also known as Medicines Use Review) or Home Medicines Review (HMR). The decision to provide a SS program service is based on performing a risk assessment by the pharmacist of the interplay between consumer and drug factors, as well as the pharmacist's professional judgement. SS may be indicated in circumstances where:

- the pharmacist or the prescriber perceives the consumer is unable to manage the prescribed medicine safely or appropriately because they are disoriented or confused;
- the pharmacist or the prescriber considers the consumer is at risk of, or there is a history of, deliberate self-harm or causing harm to others;
- there is considered to be a risk of, or there is a history of, intentional misuse or diversion of medicine;
- adherence with the intended treatment regimen is in doubt or there is a history of poor adherence; or
- regulatory requirements dictate the use of SS (e.g., jurisdictional medication supply contracts or treatment orders).

According to the PSA guidelines, SS should be considered for the following types of prescribed medicines:

- antipsychotics;
- anxiolytics;
- hypnotics and sedatives;
- antidepressants;
- opioid analgesics; and
- psychostimulants.

The most common patient groups that may access this program include those with mental illness and those with drug addiction/dependence problems.

2.3. Staged Supply patient profile

The information from 6CPA program data provides patients' characteristics when they registered in Staged Supply (SS) program. Of the 2,751 patients who were registered in the SS program

between February 2019 to February 2020[3], the proportion by gender was almost equal at 50% for both male (n=1,383) and female (n=1,360). By age group, 65% of patients were under 50 years old. Table 3 present detailed composition of SS participants by gender and age group.

Table 3: SS patients by gender and age group at registration

Age group	Male	Female	Total
<40	518 (37%)	477 (35%)	995 (36%)
40-49	393 (28%)	391 (29%)	784 (29%)
50-59	276 (20%)	269 (20%)	545 (20%)
60-69	140 (10%)	145 (11%)	285 (10%)
70-79	36 (3%)	45 (3%)	81 (3%)
80 and over	20 (1%)	33 (2%)	53 (2%)
No data	-	-	8 (0%)
Total	**1,383 (100%)**	**1,360 (100%)**	**2,751 (100%)**

Source: 6CPA program data, HealthConsult analysis
Notes: Program data includes registrations and follow ups conducted between February 2019 to February 2020

In terms of the key reasons identified for participation in SS, 59% of patients had a history of, or were at risk of, intentional misuse of their medication. As presented in Table 4, other reasons included a history or risk or poor adherence (17%), a history or risk of deliberate self-harm or harm to others (7%), a history of medicine diversion (4%), due to patients being disoriented or confused (3%) or experiencing cognitive or physical impairment (3%).

Table 4: Reasons for participating in SS

Reasons	No. of patient	%
History or risk of intentional misuse	1,619	59%
History or risk of poor adherence	471	17%
History or risk of deliberate self-harm or harm to others	205	7%
History or risk of medicine diversion	114	4%
Disoriented or confused	87	3%
Cognitive or physical impairment	72	3%
Other	183	7%
Total (n)	**2,751**	**100%**

Source: 6CPA program data, HealthConsult analysis
Note: Program data includes registrations and follow ups conducted between February 2019 to February 2020

With regards to the underlying health conditions, most SS patients were experiencing mental health conditions or pain. These two health conditions accounted for 90% of females participating in the program, and 89% for male. Other health conditions included arthritis, epilepsy, dementia, diabetes, CVD, osteoporosis, and conditions related to the alimentary tract. Table 5 and Table 6 present health conditions at registration for SS patients by gender and age group.

Table 5: Health condition by age group (female)

Female by age group	Mental health issue	Pain	Other health conditions	Total
<40	360 (75%)	81 (17%)	36 (8%)	477 (100%)

[3] The number refers to 6CPA program data including registrations and follow ups conducted between February 2019 to February 2020.

Female by age group	Mental health issue	Pain	Other health conditions	Total
40-49	247 (63%)	107 (27%)	37 (9%)	391 (100%)
50-59	163 (61%)	77 (29%)	29 (11%)	269 (100%)
60-69	79 (54%)	48 (33%)	18 (12%)	145 (100%)
70-79	24 (53%)	15 (33%)	6 (13%)	45 (100%)
80 and over	17 (52%)	10 (30%)	6 (18%)	33 (100%)
Total	**890 (65%)**	**338 (25%)**	**132 (10%)**	**1,360 (100%)**

Source: 6CPA program data, HealthConsult analysis
Notes: no data (n=1), program data only covers February 2019 to February 2020. Other health conditions include arthritis, epilepsy, dementia, diabetes, CVD, osteoporosis, and alimentary tract.

Table 6: Health condition by age group (male)

Male by age group	Mental health issue	Pain	Other health conditions	Total
<40	387 (75%)	87 (17%)	44 (8%)	518 (100%)
40-49	237 (60%)	105 (27%)	51 (13%)	393 (100%)
50-59	148 (54%)	91 (33%)	37 (13%)	276 (100%)
60-69	68 (49%)	59 (42%)	13 (9%)	140 (100%)
70-79	12 (33%)	20 (56%)	4 (11%)	36 (100%)
80 and over	5 (25%)	8 (40%)	7 (35%)	20 (100%)
Total	**857 (62%)**	**370 (27%)**	**156 (11%)**	**1383 (100%)**

Source: 6CPA program data, HealthConsult analysis
Notes: no data (n=7), program data only covers February 2019 to February 2020. Other health conditions include arthritis, epilepsy, dementia, diabetes, CVD, osteoporosis, and alimentary tract.

In terms of the classification of scheduled medicines at the registration, more than half (52%) of SS patients classified as S4D (local anaesthetics, antibiotics, strong analgesic - prescribed restricted substances), 29% as S8 (opioid analgesic - controlled drug) and 19% as S4 (local anaesthetics, antibiotics, strong analgesic - prescribed only). Table 7 summarises SS patients by medicine schedule at the registration.

Table 7: SS patients by scheduled medicine classification

Scheduled medicine	No. of SS patients	%
S4 - Local anaesthetics, antibiotics, strong analgesic (Prescribed only)	520	19%
S4D - Local anaesthetics, antibiotics, strong analgesic (Prescribed restricted substances)	1,437	52%
S8 - Opioid analgesic (controlled drug)	792	29%
No data	2	0%
Total	**2,751**	**100%**

Source: 6CPA program data, HealthConsult analysis. Program data includes registrations between February 2019 to February 2020

3. Understanding and Use of Medications

This Chapter presents findings related to the evaluation question:

"To what extent is the SS program effective in improving patients' understanding and use of their medications?"

The understanding and use of medications evaluation questions were measured using patient questionnaires as well as pharmacist surveys and interviews.

Key findings

- The evaluation found there was no significant change in medication adherence for patients participating in the SS program.
- Participation in the SS had a positive effect on patients' understanding of the use of medications:
  - 42.9% rated their overall knowledge of the medicines they were taking higher at follow-up.
  - 35.7% rated their knowledge about how they should store their medicines higher at follow-up.
  - 35.7%) rated their knowledge about the importance of medication dosage higher at follow-up.
- Overall, the average ratings of knowledge by SS participants in the initial survey were relatively high, at 7.3 for overall knowledge of medicines, 9.3 for knowledge of medication storage and 8.9 for the importance of dosage on schedule.
- Patients' perception at the follow up showed that SS program delivers an impact on preventing a medicine-related problem and managing their medicines.
- At 6-month follow up, 90% of SS patients were required to continue with the program by the pharmacists.

3.1. Improvements in medication adherence

Medication adherence and patients' understanding and knowledge regarding the use of their medications was analysed to determine whether the SS program was effective in improving these measures. The Patient Survey and 6CPA program data each provided a measure of medication adherence, and the findings are presented below.

However, the service provided to patients by the SS program should result in high medication adherence, as the supply of medication is closely monitored by the pharmacist, supplied in quantities less than the originally prescribed amount. Low medication adherence, or a decrease in measures of adherence at 6-months follow-up for SS participants, may be more indicative of poor compliance with the program, rather than a program effect. Unfortunately, the evaluation did not monitor program compliance, so the following measures of adherence should be interpreted with caution.

In addition, the MedsIndex scores may be impacted due to the SS program service, rather than as an outcome of the program. Participation in SS could result in patients receiving a titrated dose of medication, more frequently, which may be seen as divergent to what was prescribed, therefore having a negative impact (i.e. lowering the score) on MedsIndex.

3.1.1. The Adherence to Refills and Medications Scale (ARMS)

The Adherence to Refills and Medications Scale (ARMS; Appendix C.1.1) has been designed to assess adherence with the filling/refilling of prescriptions and adherence to taking medications as prescribed. The ARMS has been validated for use in a chronic disease population, with good performance characteristics even among low-literacy patients[4]. The ARMS-12[5] Total score is based on 12 questions and has a possible range of 12 to 48, where a lower score indicates better adherence. The ARMS can be split into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16).

Between the initial and follow-up survey, out of 14 participants:

- three participants (21.4%) did not show any change in their ARMS score, and
- six participants (42.9%) had an increase in their score from initial to follow up, indicating a deterioration in adherence.

The ARMS scale was designed to assess adherence with the filling/ refilling of prescriptions and adherence with taking medications as prescribed.

There were no significant differences in the ARMS-12 total score or either of the measures in the Staged Supply cohort between the initial and follow up survey (Table 8). The average initial ARMS-12 score was 17.3, which indicates *'good'* overall medication compliance.

Table 8: Medication Adherence (initial and follow-up survey)

ARMS-12	N	Initial	Follow-up	Change from Initial to Follow-Up			
		Mean (SD)			95% CI		p-value
					Lower	Upper	
Total Score	14	17.3 (3.4)	17.9 (5.5)	0.6 (1.3)	-2.2	3.3	0.7
Adherence to taking medication	14	10.6 (2.0)	11.4 (3.5)	0.8 (0.8)	-1.0	2.5	0.4
Adherence to refilling medication on schedule	14	6.7 (1.7)	6.5 (2.4)	-0.2 (0.6)	-1.4	1.0	0.7

Source: HealthConsult Patient survey

3.1.2. MedsIndex

The MedsIndex score collected by participating pharmacists at patient registration and follow up was used as another measure of medication adherence.

A patient's 'MedsIndex' score is a number out of 100 measuring adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist. The number is formulated via the MedsIndex software, which provides a prompt for pharmacists to invite patients with a qualifying MedsIndex score to participate in a medication adherence program. The Pharmaceutical Society of Australia classified the MedsIndex score into four categories, which include:

- wLower than 70: Action required to improve compliance
- Lower than 80: Compliance can be improved
- Lower than 90: Compliance could be improved

[4] Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy pa ients with chronic disease. Value Health. 2009;12(1):118-123. doi:10.1111/j.1524-4733.2008.00400.x

[5] ARMS-12 has a possible range of 12 to 48, where a lower score indicates better adherence. Evaluation participants therefore had good overall adherence before and after participation in the StagedSupply service. Source: Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease. Value in Health. 2009 Jan 1;12(1):118-23.

- Greater than or equal to 90: Optimal

On average, there was a slight improvement in MedsIndex scores for SS patients between initial and 6-month follow up, where in general, the patients comply with their medicine but require some improvements for adherence (81.1 at the registration and 84.1 at follow-up).

Table 9 summarises MedsIndex scores for SS patients.

Table 9: Summary MedsIndex score (matched data)

SS patients MedsIndex (n=273)	Registration	6-month follow up
Mean (SD)	81.1	84.1
Median	91.0	94.0
Standard deviation	26.4	22.2

Source: 6CPA program data, HealthConsult analysis

Using the MedsIndex score to determine the impact of the program on SS patients is problematic due to the nature of the pharmacist intervention and the impact of a changed medication schedule on a patient's MedsIndex score. For example, where a pharmacist recommends a change in how the dose is administered, the MedsIndex may decrease as an artefact of the formula used to calculate the score, given the score is calculated is based on the dispensing history of a patient, compared to the expected dispensing activity, rather than a current medical chart.

3.2. Impact of SS on patients' understanding and use of medication

Both the Patient Survey and 6CPA program data provides measures regarding the impact of the SS program on patients' understanding and use of medication.

3.2.1. Self-reported patient understanding of medications

Participants were asked to rate their current knowledge of their medications, how they should store their medications and the importance of medication dosage and schedule on a scale of 1 (very low) to 10 (very high). Between the initial/registration and follow-up survey, out of 14 participants:

- six participants (42.9%) rated their overall knowledge of the medicines they were taking higher at follow-up, with the remainder either having no change (35.7%, n=5) or indicating deterioration (21.4%, n=3).
- five participants (35.7%) rated their knowledge about how they should store their medicines higher at follow-up, with the remainder either having no change (n=6, 42.8%) or indicating deterioration (21.4%, n=3).
- five participants (35.7%) rated their knowledge about the importance of medication dosage higher at follow-up, with the remainder either having no change (35.7%, n=5) or indicating deterioration (28.6%, n=4).

Overall, the average ratings of knowledge by SS participants in the initial survey were relatively high, at 7.3 for overall knowledge of medicines, 9.3 for knowledge of medication storage and 8.9 for the importance of dosage on schedule (Table 10). There were no significant differences in self-reported knowledge of medicines between initial and follow-up.

Table 10: Current knowledge of medications (initial and follow-up survey)

Measure	n	Initial	Follow-up	Change from Initial to Follow-Up			
		Mean (SD)			95% CI		p-value
					Lower	Upper	
Overall knowledge of medicines	14	7.3 (2.7)	8.0 (2.0)	0.7 (0.7)	-0.74	2.17	0.31
Knowledge about the storage of medicines	14	9.3 (0.7)	9.4 (0.7)	0.1 (0.3)	-0.45	0.74	0.61
Knowledge about the importance of medication dosage and schedule	14	8.9 (0.8)	8.7 (1.7)	-0.2 (0.5)	-1.28	0.85	0.67

Source: HealthConsult Patient questionnaire

Fifteen 15 patients provided feedback on the SS program. Five out of the 15 (33.3%) reported that the program improved their use of medication since the medication was always accessible from their local pharmacy. Participants also reported that they receive a restricted quantity of medication for the specified interval, and hence, they are unable to overdose on their medication.

> *"I get exactly what I need, I can't take them all at once"*

Of the 16 pharmacists who participated in the case studies, 10 (66.7%) reported that the SS program restricted medicines access to patients who are at risk of medication misuse. It was also reported to prevent adverse events eventuating from medicines misuse (overuse or underuse), doctor shopping, and use of illegal substances. Through these features, the SS program helped improve the use of medicines according to pharmacists.

> *"It's restricting use of medicines. Although it's a barrier it's there in place to stop them overusing the medication"*

Two pharmacists (13.3%) reported that the SS program has not had an impact on improving patients' understanding of medications. However, it was noted that patients on the SS program had a good understanding of their medications.

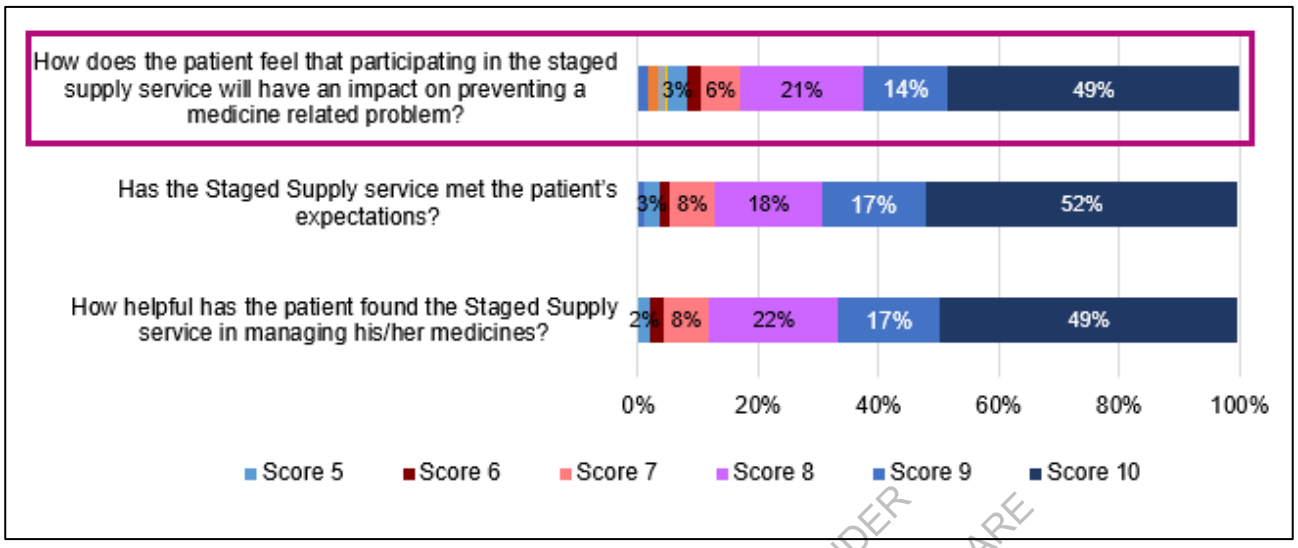
3.2.2. Patient perception of the impact of the SS program on medication-related problems

The 6CPA program data includes a question asking patients, on a score of 1 to 10, whether receiving the SS program has prevented a medicine-related problem.

From three key questions to review patient's perception on the SS program, around 50% respondents gave a full score of 10 (Figure 2). These include patient's perception that participating in SS will have an impact on preventing a medicine-related problem (49%), patient's perception

that the SS meet expectations (52%), and patient's perception that SS was helpful in managing their medicines (49%).

Figure 2: SS patients' perceptions of the program in preventing and helping their problem



Source: 6CPA program data (n=273), HealthConsult analysis

3.3. Pharmacists' view on the impact of SS on optimising patients' understanding and use of medicines

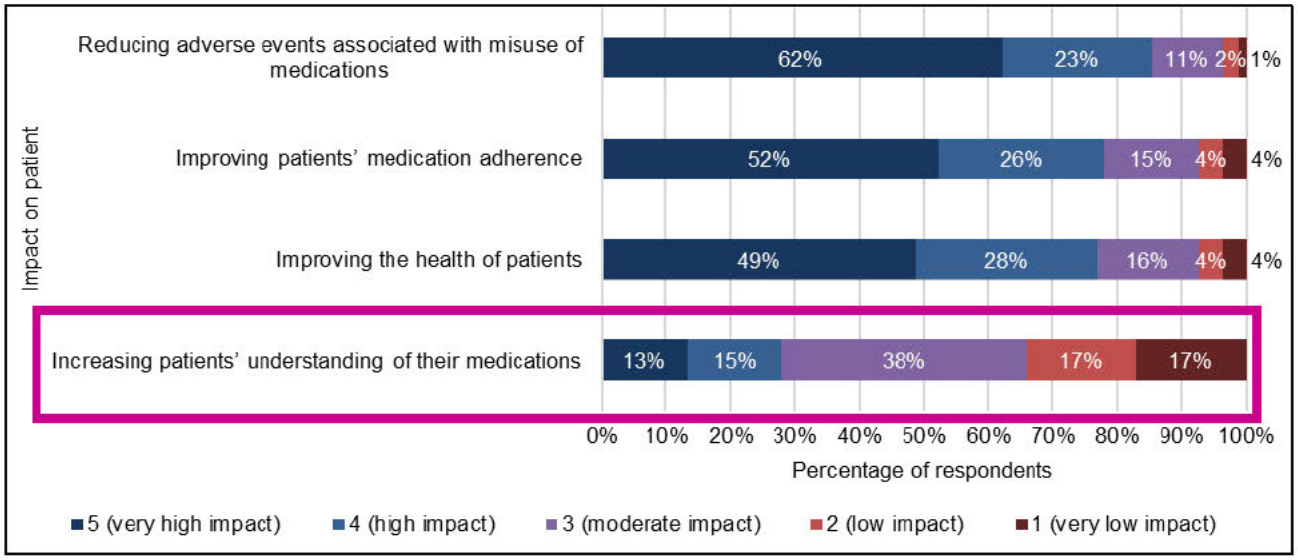
Pharmacists views on the impact of the SS program on patients' understanding and use of medications was captured through the pharmacist survey, case study visits and through the 6CPA program data.

3.3.1. Pharmacist perception of the impact of the program on patients effective use of medications

In the Pharmacist Survey, pharmacists were asked to report on the extent to which they believed the SS program had impacted patients' understanding of their medications. Out of the 82 pharmacists who completed the SS pharmacist survey, almost two-thirds (65.8%, n=54) reported that the SS program had at least a moderate impact on increasing patients' understanding of their medications (Figure 3, see pink box). Of the 82 pharmacists who completed the SS pharmacist survey and were asked whether the SS program had impacted patients' understanding of their medications:

- eleven pharmacists (13.4%) reported a '*very high'* impact,
- twelve pharmacists (14.6%) reported *'high impact*', and
- thirty-one pharmacists (37.8%) reported a *'moderate'* impact.

Figure 3: SS impact on patients' understanding of their medications according to pharmacists



Source: HealthConsult Pharmacist Survey, n=82

Out of 82 pharmacists that responded to the SS pharmacist survey, 67 provided open-ended responses to the question: *What is working well with the provision of SS services?*. Of the 67 pharmacists, 16 (23.9%) reported a reduction in medication and substance abuse because of this service. Pharmacists noted that the program prevented medication abuse since patients were unable to overdose on their medications. Three of the 67 participants (4.5%) also reported that the SS program assists pharmacists with monitoring patients' medication use.

From the interviews with 16 pharmacists (case study visits, n=15), pharmacists described the SS program as a 'good adherence tool' where patients were encouraged by their pharmacists to collect their medications according to their prescribed schedule. Ten (62.5%) of the 16 case study participants reported that patients' compliance/ adherence to medicines improved because of this program. Through regular documentation of patient visits and their doses, pharmacists were able to assess compliance and in the case of non-compliance, pharmacists were able to "escalate" the issue to the prescriber.

3.3.2. Patients recommended to continue with the SS program

The 6CPA program monitoring also captures the number of patients recommended to continue with the program at the 6-months follow up. Out of 237 SS patients who completed data collection at the registration and follow up, 213 patients (90%) were recommended to continue with the program by the pharmacists, and only 24 patients (10%) who was not required to continue. This finding indicates widespread belief in the benefits of program participation.

4. Patient Health Outcomes

This Chapter presents findings related to the evaluation question:

"Does the program improve the health outcomes of patients?"

The health outcomes of patients were measured using patient questionnaires as well as pharmacist surveys and interviews.

Key findings

- There were no significant differences in the number of symptoms reported in SS patients (medication attributed or in total) between initial and follow-up in measuring side-effects associated with misuse of medications.
- Most of SS patients (91%) did not change the dose between initial and 6-month follow up.
- There were no significant differences in the presentations to health care services at initial and follow-up for patients who received SS program services based on Patient Survey data (n=14).
- In term of GP visit because of problems related to medications, there was a reduction before and after the program based on 6CPA program data (n=273).
- Most pharmacists (96.3%, n=79 of 82) reported that the SS program had at least a moderate impact on reducing adverse events associated with the misuse of medications.
- Most pharmacists (92.7%, n=76 of 82) reported that the SS program had at least a moderate impact on improving the health of patients.
- Of the 67 pharmacists, 17 (25.4%) noted improvements in patients' health outcomes as a result of this program.

4.1. Reduction in adverse events associated with misuse of medications

Indicators to address adverse events associated with misuse of medication in SS program patients was measured in the Patient Survey and in the 6CPA program data. The Patient Survey used Generic Assessment of Side Effects (GASE) and the 6CPA program data recorded actions taken by the Pharmacist at the registration and follow up to develop and update a service agreement between the pharmacist and the patient.

4.1.1. Assessment of side effects

The GASE measure asks participants to rate the severity of 36 side effects on a scale of 0 (not present) to 3 (severe). Participants were also asked to determine if each side effect was related to their current medications. Measuring side-effects was used as a proxy tool to assess medication mismanagement by monitoring for change in the included range of symptoms between initial and follow up (due to limited availability of validated instruments to measure AEs at the time of project design).

There were no significant differences in the number of symptoms reported in SS program patients (medication attributed or in total) between initial and follow-up (Table 11). There were also no significant differences in the total score (medication attributed or in total), indicating the severity of symptoms did not change between initial and follow-up.

Table 11: Reduction in adverse events (initial and follow-up survey)

GASE	n	Initial	Follow-up	Change from Initial to Follow-Up			
		Mean (SD)			95% CI		p-value
					Lower	Upper	
Symptom Count	14	15.6 (9.1)	17.6 (9.0)	2.1 (1.7)	-1.6	5.8	0.3
Medication Attributed Symptom Count	14	7.7 (9.0)	9.3 (9.6)	1.6 (1.4)	-1.4	4.5	0.3
Total Score	14	29.4 (22.0)	31.2 (21.5)	1.8 (5.2)	-9.4	13.0	0.8
Medication Attributed Total Score	14	16.6 (20.6)	18.8 (20.8)	2.2 (3.1)	-4.4	8.9	0.5

Source: HealthConsult Patient survey

There were no significant differences in the proportion of patients who reported specific symptoms[6] at initial compared to follow-up. In summary:

- The most reported symptoms at initial assessment (78.6%, n=11) were: fatigue, loss of energy; insomnia, sleeping problems; irritability, nervousness; and muscle pain. Symptoms such as anxiety/ fearfulness and depressed mood were also reported by ten patients (71.4%).
- Between initial and follow-up, the incidence of muscle pain as a reported symptom decreased in two patients. The incidence of depressed mood, anxiety/ fearfulness, irritability/ nervousness, insomnia/ sleeping problems, and fatigue/ loss of energy had increased between initial and follow-up. However, this difference is not statistically significant, only representing a one to two patient increase due to the small sample size.

4.1.2. Action taken by the pharmacist

As part of the program, community pharmacists recorded the action taken based on patient's condition at the registration and follow up in the 6CPA program data. At the registration, the pharmacist developed service plan and/or agreement for the patient. The most common action taken by the pharmacist was a service agreement to be executed in the next six months by both pharmacist and patient (65%), followed by a plan of communication between prescriber or other healthcare professionals and patient (18%), a plan developed and provided to GP (9%), and a plan developed and provided only for the patient (7%).

Table 12: Action by the pharmacist at registration

Action taken by the pharmacist	Total	%
Staged Supply plan/record developed and provided to GP	243	9%
Staged Supply plan/record developed and provided to patient	187	7%
Staged Supply plan/record of communications with prescriber, other healthcare professions and/or the patient	482	18%
Staged Supply service agreement developed and executed by both pharmacist and patient	1,800	65%
Other	39	1%
Total	**2,751**	**100%**

Source: 6CPA program data, HealthConsult analysis
Note: Program data only covers period 4 and period 5

These actions taken by community pharmacists were updated at 6-month follow up to identify whether further actions / recommendations are required based on the information collected at the

[6] GASE complaints measured: headache; hair loss; dry mouth; dizziness; chest pain; palpitations, irregular heartbeat; breathing problems; low blood pressure, other circulation problems; abdominal pain; nausea; vomiting; constipation; diarrhoea; reduced appetite; increased appetite; difficulty urinating; problems with sexual performance or sex organs; painful or irregular menstruation; skin rash or itching; tendency to develop bruises; fever, increased temperature; abnormal sweating; hot flashes; convulsions or seizures; fatigue, loss of energy; tremor; insomnia, sleeping problems; nightmares or abnormal dreams; back pain; muscle pain; joint pain; agitation; irritability, nervousness; depressed mood; thought about suicide; and anxiety, fearfulness.

registration. At the follow up, 52% of patients had service plan or record updated, followed by service plan or record communications updated (24%), pharmacists verbally consulted with the GP (17%), and pharmacists referred patients to the GP due to issue being identified (5%).

Table 13: Action by the pharmacist at follow up

Action taken by the pharmacist	Total	%
Staged Supply plan/record updated	647	52%
Staged Supply plan/record communications updated	305	24%
Pharmacist verbally consulted with the GP	211	17%
Pharmacist referred patient to GP due to issues being identified	68	5%
Other	23	2%
Total	**1,254***	**100%**

Source: 6CPA program data, HealthConsult analysis
*One SS patient may have more than one action taken by the pharmacist
Note: Program data only covers period 4 and period 5

4.2. Medication profile changes as a result of the intervention

The 6CPA program data captures the information regarding the medication and dose for people participating in the Staged Supply (SS) program, at both registration and six months follow up. This data was used to determine whether the intervention changed the medication profile of participants.

4.2.1. Change in dose

Out of 237 patients who completed the data collection between registration and follow-up (matched patient ID), 215 patients (91%) did not change the dose and 22 patients (9%) did change the dose. No detailed information was provided in the data regarding the nature of the change (i.e. increase or decrease the dose). Based on the cross-tabulation data, of the SS patients who did change the dose, 23% were referred to their GP due to issues related medication use.

Table 14: Change in dose between initial and follow up

Dose between initial and 6-month follow up	No. of SS patient	Pharmacist referred patient to the GP due to identification of medication issue
No change in dose	215	Yes = 5 (2%) No = 210 (98%)
Change in dose	22	Yes = 5 (23%) No = 17 (77%)
Total	**237**	-

Source: 6CPA program data, HealthConsult analysis

4.3. Health service utilisation due to medication misuse

To understand whether participation in the SS program impacted patients requiring Emergency Department (ED) presentations, hospital admissions or GP visits related to misuse of medication, self-reported recount was used in the Patient Surveys at initial and follow-up. The Patient Survey collected information on the number of GP visits, hospital admissions and ED presentations, and specialist attendance in the preceding six months.

4.3.1. Hospital presentations/admissions and/or GP visits related to misuse of medication (self-reported)

The initial and follow up patient survey collected information on the number of GP visits, hospital admissions and ED presentations, and specialist attendance in the preceding six months. There were no significant differences (p-value ≥0.8) in the presentations to health care services at initial and follow-up for patients who received SS program services (Table 15).

Table 15: Preceding 6 months of health care service use at initial and follow up

Presentations to specified health service	N*	6 months prior Initial		6 months before Follow-up		Change from initial to follow-up			
		Mean (SD)	Total**	Mean (SD)	Total**	Mean (SD)	95% CI		p-value
							Lower	Upper	
GP Visits	13	3.6 (3.7)	47	3.6 (6.8)	47	0.0 (2.1)	-4.7	4.7	1.0
Hospital Admissions	14	0.4 (1.3)	5	0.3 (0.6)	4	-0.1 (0.4)	-1.0	0.8	0.9
ED Presentations	14	0.1 (0.5)	2	0.2 (0.6)	3	-0.1 (0.2)	-0.4	0.5	0.8

Source: HealthConsult SS Participant Survey – Initial and Follow up surveys
*Number of respondents matched across initial and follow up
**Number of presentations summed across all individuals

Patient-reported specialist services used during the 6 months prior to the initial and follow up service include psychologist, Community Pharmacotherapy Program (CPOP), respiratory physician, next step drug and alcohol services, physiotherapist, and dietician. There was no reported reduction in specialist service use between the initial and follow up periods.

4.3.2. GP visits related to medication problems

The 6CPA program data also collects information from patients regarding whether the patient visit a GP in the past 6 months because of problems with their medication. This information was collected at registration and follow-up.

Based on SS program patients who completed data collection at registration and follow up (n=237), 47% or 112 patients visited the GP in the last six months at the registration. The figure dropped to 32% or 76 patients who visited the GP in the last six months at follow up or during the program. Table 16 summarises GP visit of SS patients related to medication problems.

Table 16: GP visit of SS patients related to medication problems at registration and follow-up

GP visit related to medication problems	At registration	At follow up	p-value
Yes	112 (47%)	76 (32%)	0.000
No	125 (53%)	161 (68%)	
Total	**237 (100%)**	**237 (100%)**	-

Source: 6CPA program data, HealthConsult analysis

It is important to place the health service utilisation findings in context with the characteristics of the patient cohort, as these patients are vulnerable and are likely to have increased utilisation of health services when left to self-manage[7].Therefore, it would be expected that without intervention (i.e. the SS program) health service utilisation would increase and any deviation from this would be observed as a beneficial outcome. On that basis, these results indicate the program is effective at

[7] Pharmacy Guild of Australia. (2011) Professional Pharmacy Services: Staged Supply. Accessed 19 July 2016. Available from: http://www.guild.org.au/pps/content.asp?id=1425

preventing health service utilisation given the cohort is eligibility is based on a history, or risk, of medication misuse.

4.4. Improvements in patient-reported quality of life

Patient-reported QoL was assessed by the AQoL-4D, a multi-attribute utility instrument comprised of 12 items across 4 dimensions. The weighted AQoL-4D domain utility scores for each dimension (independent living, relationships, mental health, and physical senses (i.e., seeing, hearing, and communication) are scaled between a 0.00 (worst health state) and 1.00 (best health state).

There was no change in the average weighted AQoL-4D utility score at the initial assessment compared to follow-up (mean (SD): 0.4 for both; Table 17). Based on population norms derived for the AQoL in the Australian population, scores of 0.4 are both indicative of being in 'poor health'.[8]

The largest overall change, albeit not significant (p value=0.1), was observed in the mental health dimension, which increased on average by 0.2 from 0.6 at initial to 0.8 at follow-up. There were also no significant differences between initial and follow-up for the AQoL dimensions of independent living, relationships, and physical senses.

Table 17: Patient-reported QoL (initial and follow-up survey)

AQoL-4D Weighted Score	n	Initial	Follow-up	Change from Initial to Follow-Up			
		Mean (SD)			95% CI		p-value
					Lower	Upper	
AQoL Utility Score	14	0.4 (0.3)	0.4 (0.3)	0.04 (0.1)	-0.1	0.2	0.6
Independent Living	14	0.9 (0.3)	0.8 (0.3)	-0.03 (0.1)	-0.2	0.1	0.7
Relationships	14	0.7 (0.3)	0.7 (0.3)	0.0 (0.09)	-0.2	0.2	1.0
Senses	14	0.8 (0.2)	0.8 (0.1)	0.04 (0.1)	-0.1	0.1	0.5
Mental Health	14	0.6 (0.3)	0.8 (0.1)	0.2 (0.1)	-0.02	0.3	0.1

Source: HealthConsult Patient survey, n=14

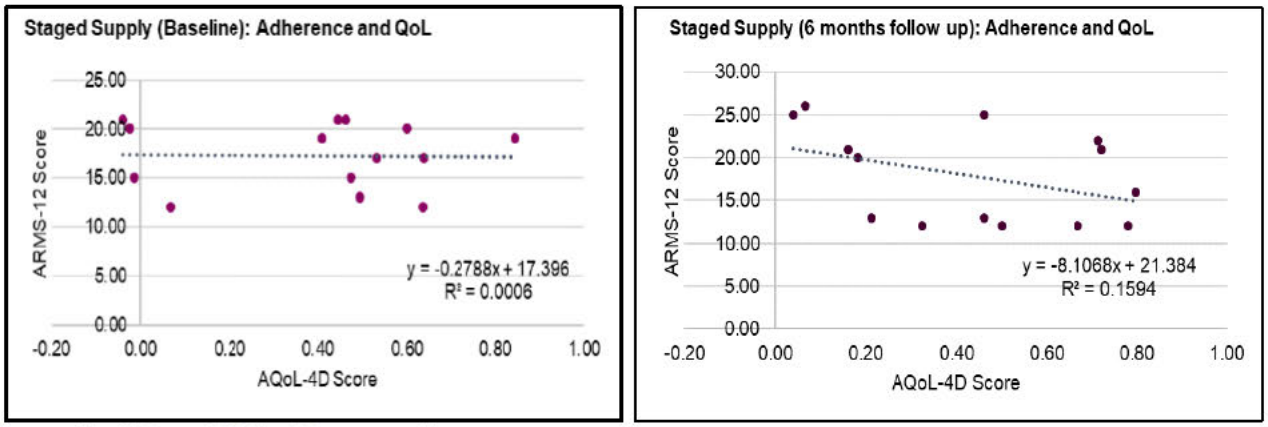
4.4.1. Adherence and quality of life

The average ARMS-12 score at baseline was 17.29, which indicates "good" overall medication compliance.[9] The score slightly increases at 6 months follow-up to 17.86. From the data, only 20% of patients on SS are referred for non-adherence (albeit unintentional). This would suggest that the SS population has higher medication adherence, which corroborates with trial results. There is a limitation due to sample size that the results of the SS trial and its 14 participants are reflective of the Australian SS population for adherence. In addition, the association between adherence and quality of life is not statistically significant at baseline. Meanwhile, at 6 months follow-up, the negative trendline shows that lower ARMS-12 score is associated with quality of life.

[8] Based on mean AQoL utility score by self-reported health status, from: Hawthorne G, Osborne R. Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure. Australian and New Zealand journal of public health. 2005 Apr;29(2):136-42

[9] ARMS-12 has a possible range of 12 to 48, where a lower score indicates better adherence. Evaluation participants therefore had good overall adherence before and after participation in the StagedSupply service. Source: Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease. Value in Health. 2009 Jan 1;12(1):118-23.

Figure 4: Adherence and QoL (Initial and follow-up)

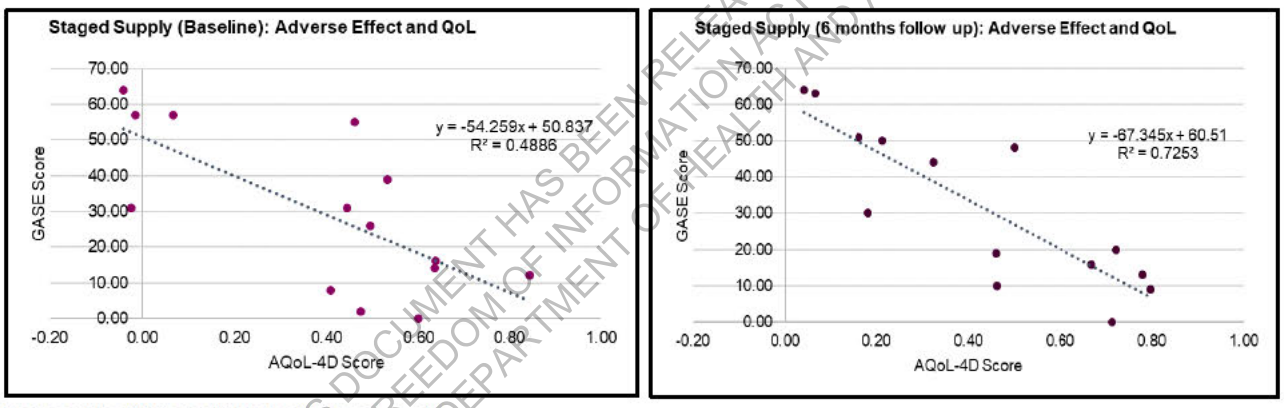


Source: HealthConsult Patient Survey, n=14

4.4.2. Side effects and quality of life

There was a slight increase in the GASE score from baseline to follow-up (29.43 to 31.21, respectively). However, this was not statistically significant. There were also no significant differences in the total score (medication attributed or in total), indicating the severity of symptoms did not change between baseline and 6 months follow-up visits.

Figure 5: Side Effect and Quality of Life (Initial and follow-up)



Source: HealthConsult Patient Survey, n=14

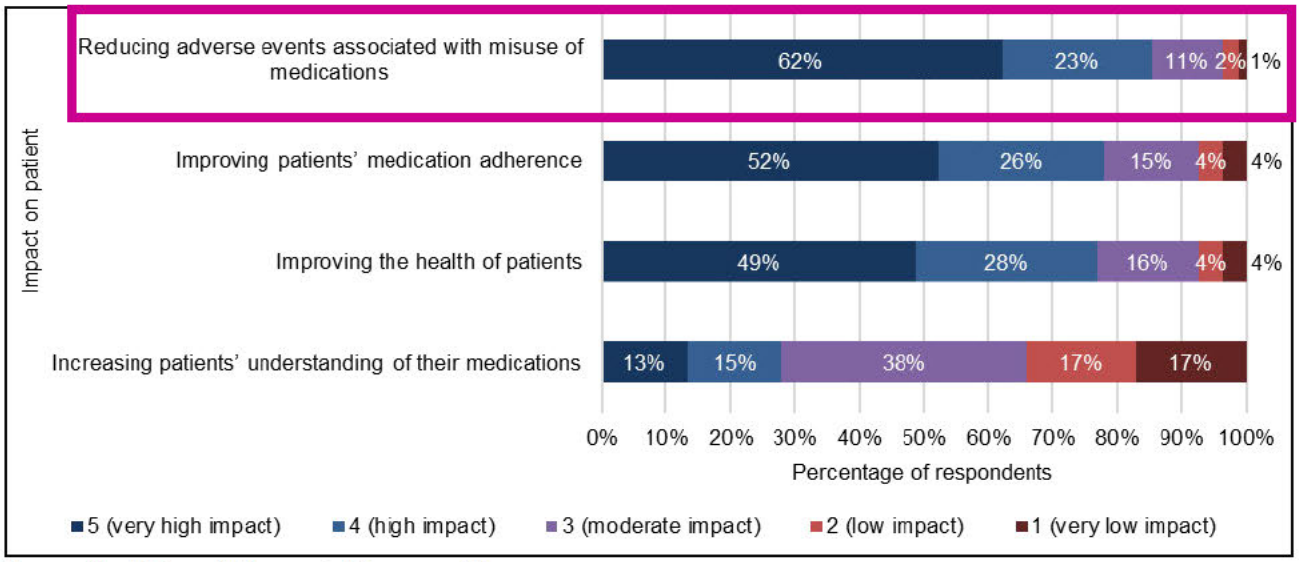
4.5. Perceived effectiveness for improving health outcomes

The Pharmacist Survey included questions that captured pharmacist views on program effectiveness on the overall health of participating patients.

Most pharmacists (96.3%, n=79 of 82) reported that the SS program had at least a moderate impact on reducing adverse events associated with the misuse of medications (Figure 6, see pink box). Of the 82 pharmacists who completed the SS pharmacist survey and were asked whether the SS program had an impact on reducing patients' adverse events associated with the misuse of medications:

- fifty-one pharmacists (62.2%) reported a '*very high*' impact,
- nineteen pharmacists (23.2%) reported *'high impact*', and
- nine pharmacists (11.0%) reported a *'moderate'* impact.

Figure 6: SS impact on reducing adverse events according to pharmacists

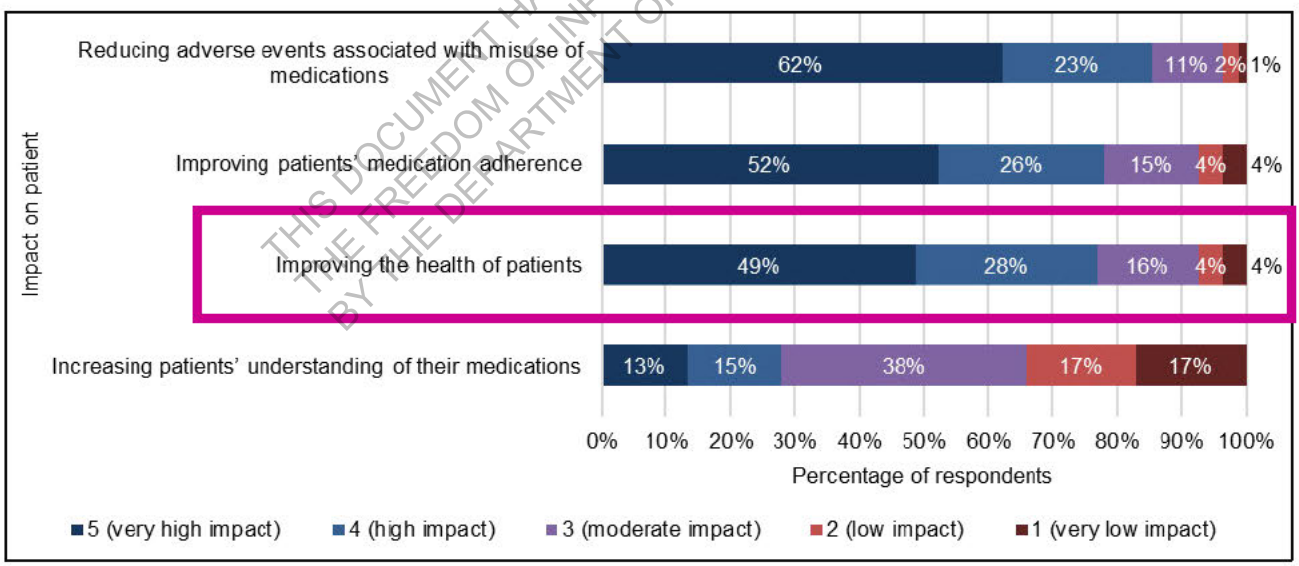


Source: HealthConsult Pharmacist Survey, n=82

Most pharmacists (92.7%, n=76 of 82) reported that the SS program had at least a moderate impact on improving the health of patients (Figure 7Figure 6, see pink box). Of the 82 pharmacists who completed the SS pharmacist survey and were asked whether the SS program had an impact on improving the health of patients:

- forty pharmacists (48.8%) reported a '*very high*' impact,
- twenty-three pharmacists (28.0%) reported *'high impact'*, and
- thirteen pharmacists (15.9%) reported a *'moderate'* impact.

Figure 7: SS impact on improving the health of patients according to pharmacists



Source: HealthConsult Pharmacist Survey, n=82

Out of 82 pharmacists that responded to the SS pharmacist survey, 67 provided open-ended responses to the question: *What is working well with the provision of SS services?*. Of the 67 pharmacists, 17 (25.4%) noted improvements in patients' health outcomes as a result of this program. Pharmacists noted that the program improved patients' health outcomes as the program "reduced harm and diversion", helped "beat addictions", "prevent[ed] medication misuse and adverse events" and "increased patient safety". One pharmacist reported that the program enabled patients "to live a fuller life".

From the interviews with 16 pharmacists (case study visits, n=15), pharmacists reported mixed reviews on the impact of the SS program on patients' health outcomes. Three of the 16 pharmacists (18.8%) reported positively on the effect of this program, stating that health outcomes improved since the program prevented patients from misusing medications. Two pharmacists also reported that they noted improved coherence and functioning because of this program and their patients stated that they felt better.

Conversely, one pharmacist reported that there was minimal improvement in health outcomes. Some patients were able to completely wean off their medications, however, others remained on their medications long-term. Another three pharmacists suggested that the impact on health outcomes is unknown and not explicitly visible.

5. Cost-Effectiveness

This Chapter presents findings related to the evaluation question:

"Is the SS program cost-effective?"

Key findings

- The cost-effectiveness analysis (CEA) of the SS program was unable to be completed due to the lack of identified effectiveness indicators.
- The alternative approach of cost benefit analysis shows that the program resulted in a reduction of GP visits, equating to two GP visits for every ten patients.

5.1. Determine cost and benefit for Staged Supply

In the absence of sufficient parameters to measure the effectiveness of the SS program, an alternative approach to a CEA was implemented by analysing cost and benefit of the program.

5.1.1. Cost per intervention

The objectives of the SS program are to improve medication adherence and reduce the risk of self-harm or harm to others through accidental or intentional misuse of medication. To support the collection of patient information and monitoring within the program's delivery a new fee structure was implemented and pharmacies delivering the program are able to claim weekly provision fees of $8.12 at first visit and $4.12 for each following week per patient that meet the eligibility criteria. This fee structure summed to $111.12 per six months of program duration per patient. From 1 July 2018, an additional $31.90 for both the collection of patient data at time of service (registration) and at the mandatory six- month follow-up can also be claimed as per the SS program guidelines.

The total number of SS program services that can be conducted and claimed under the 6CPA has risen from four to 15 patients per calendar month. Despite the unchanged eligibility criteria patients are not precluded from receiving the SS program services however, pharmacists will be unable to claim this remuneration for the service as provided under 6CPA.

Table 18 presents the program costs used in the economic evaluation. Note that the fee for collecting the outcomes data of $31.90 at registration and again at follow-up was excluded from the economic evaluation, as it is not part of the SS program service delivery in actual practice.

Table 18: Summary of cost inputs used for the economic evaluation

Program cost	Fee ($) and used in economic evaluation
Staged Supply service fee	$111.12

Source: 6CPA Staged Supply program data.

5.1.2. Benefit per intervention

To determine benefits of the program, consideration was given to the evaluation tools used, both in the Patient Survey data and in the 6CPA program data. These include parameters with the likelihood that the SS program would have a direct impact on the outcomes, and availability of data points (at registration and follow-up).

There were five parameters identified that potentially could be used as the effectiveness indicator for the economic evaluation. Each parameter was evaluated for feasibility based on the relationship to the SS program's aims, characteristics, and whether the analysis identified a

significant change in the indicator that could be attributed to the program. **Unfortunately, the analysis was unable to determine a suitable effectiveness parameter** (Table 19).

Table 19: Summary of feasibility of the benefit parameters for the CEA

Parameter and data source	Description that aligns with the program aim	limitation	Feasibility for the CEA
Adjusted Quality of Life (AQoL-4D) – Patient Survey	Measure the change of patient's quality of life between registration and follow up by looking four dimensions (independent living, relationship, senses, mental health).	The outcome is not statistically significant, and the sample is relatively small (n=14) compared to the total program participants. Hence, the CEA will be potentially biased.	Not feasible
Adherence to Refills and Medication Scale (ARMS-12) – Patient Survey	Measure the change of patient's adherence in taking and refilling medications life between registration and follow up.	The outcome is not statistically significant, and the sample is relatively small (n=14) compared to the total program participants. Hence, the CEA will be potentially biased.	Not feasible
Self-reported hospitalisation, ED presentation, and GP visit – Patient Survey	Identify the change of patients' GP or hospital visits in the last six months because of problems with their medicines. The information was collected at the registration and follow up.	The outcome is not statistically significant, and the sample is relatively small (n=14) compared to the total program participants. Hence, the CEA will be potentially biased.	Not feasible
Change in dose between the registration and follow up – 6CPA program data	Measure the change of dose in SS patients. This information used to determine whether the intervention changed the medication profile of program's participant.	The question in the 6CPA program did not specify whether the change was increasing or decreasing the dose, and thus there was no sufficient information to measure improvements.	Not feasible
MedsIndex score – 6CPA program data	Measure patient's adherence and compliance to a particular medicine, via comparison of the quantity prescribed with how much is dispensed by a pharmacist.	The outcome is potentially biased due to the impact of a changed medication regimen on the calculation of the MedsIndex (see section 3.1.2)	Not feasible

Sources: 6CPA program data, 6CPA Patient Survey, HealthConsult analysis.

5.1. Cost-effectiveness analysis

Due to the lack of suitable benefit parameters, a CEA was not performed to measure the cost effectiveness or the program. An alternative approach was implemented to analyse cost and benefits by using GP service utilisation from the 6CPA program data.

5.2. Cost-benefit analysis

5.2.1. GP visit related to medication problems

As mentioned in section 4.3.2, there was a significant reduction in GP visits for SS program patients at 6-months follow-up compared to registration. The parameter was based on a question in 6CPA program data of "*In the last six months, did the patient visit a GP because of problems with their medicine?*". The reduction of 38% (or from 112 to 76) was also statistically significant ($p<0.001$), and thus, was used to determine cost and benefit of the program.

The analysis applied some specifications and assumptions, which include:

- The analysis assumed that a reduction in GP visit is the effect of the program.

- The analysis estimated the benefit using a quasi-experimental approach (before and after the program). The benefit referred to a ratio of 'Yes-No' of GP visits before and after the program.[10]
- The analysis focused on the cost to the Government of GP visits. The program costs (service provision and data collection cost per patient) were excluded and assumed to be a sunk cost.
- A decrease per GP visit represents cost-savings that refers to the MBS item number 23[11] ($39.75).

Table 20 summarises CBA using a quasi-experimental approach in the ratio of 10 patients. The information at registration represents the period of six months prior to participation in the SS program. It shows that 47% of SS program patients visited the GP because of issues related to their medication. The ratio before the program was rounded to 5-5, or for every 10 patients, 5 patients visited the GP.

On the other hand, the information at follow-up represents six months of program participation and shows only 32% of SS program patients visited the GP because of issues related to their medication. The ratio after the program was rounded to 3-7 or 3 patients out of 10 patients that visited the GP.

Table 20: Summary of cost-benefit analysis of the program in GP visits

GP visit before and after the program	Information in the 6CPA program data	Summary and cost saving as a result of the program
Before the program (registration) • Data (in %) • Ratio (rounded out of 10)	• Yes (47%) and No (53%) • [5-5] -> for every 10 SS patients, 5 visited the GP due to problems with medication	• There is a saving of two SS patients who did not visit the GP due to the program. • The savings equal to $79.50 for every 10 patients that are in the program.
After the program (follow-up) • Data (in %) • Ratio (rounded out of 10)	• Yes (32%) and No (68%) • [3-7] -> for every 10 SS patients, 3 visited the GP due to problems with medication	

Source: 6CPA program data (n=237), HealthConsult analysis

The analysis highlights that the program resulted in a reduction of at least two GP visits for every 10 patients in the SS program or equal to a saving of at least $79.50 per 10 patients every 6-months.

What this means is that for 10 patients in the SS program over a 6-month period, the cost of having those patients in the SS program would be $1,111.20 (i.e. 10 patients x $111.12 per six months). However, the SS program would have cost $1,031.70 for the 6-month period if on average one GP visit was prevented for two patients out of the 10 patients in the program. This, however, does not account for any change in utilisation of hospital services.

5.2.2. Utilisation of hospital services

The survey results from participants on health service utilisation was self-reported, and there were a small number of respondents. Those that responded suggested that hospital admissions decreased at follow-up, however, this was not statistically significant (possibly due to the small number of respondents (n=14)). Therefore, to gain a greater understanding of the probable use of hospital services, based on medication misadventure, insights are drawn from statistics published by the Australian Institute of Health and Welfare (AIHW).

[10] Frequency of visits is not available (it is a Yes/No question). Therefore, "yes" is assumed to be at least 1 GP visit within the previous 6-months.
[11] MBS Online. Item 23 http://www9.health.gov.au/mbs/fullDisplay.cfm?type=item&q=23

Deaths induced by drug use are more likely a result of a pharmaceutical drug than an illegal drug.[12] The death rate from benzodiazepines rose from 1.9 per 100,000 population in 1997 to 3.2 deaths per 100,000 population in 2020.[10] Over the past decade, there has been a rise in deaths with a prescription drug present. The hospitalisation rate for benzodiazepines and opioids are 18.2 hospitalisations per 100,000 population and 26.0 hospitalisations per 100,000 population respectively, where around 2 in 3 hospitalisations for benzodiazepines (67% or 3,100 hospitalisations) or opioids (63% or 4,200) involved an overnight stay.

In 2019-20, for patients who stayed overnight in hospital, the national average length of stay was 4.2 days and the average cost per separation of care was $5,335.[13] Therefore, per 100,000 persons in the population at 18.2 hospitalisations for benzodiazepines alone (excluding opioids), the cost of hospital admissions would be estimated at $97,097.

On the basis that the cost of having a patient in the SS program is $222.24 for 12-months, then 436 patients (note: $97,097 divided by $222.24 rounded down) could be in the SS program over 12-months, and the program would be cost neutral to Government if hospitalisations were avoided (i.e. 18.2 hospitalisations per 100,000 persons). Given the survey participants reported no statistically significant change in health service utilisation, despite it being expected that utilisation would increase for a control cohort (i.e. similar clients not in the SS program), then it is reasonable to deduce that there is a cost saving benefit from the program.

However, it is important to acknowledge that the SS program would not prevent all 18.2 hospitalisations (for benzodiazepines) per 100,000, but it is reasonable to expect a proportion of this group would be eligible and could participate in the SS program. Therefore, if the SS program prevented at least one hospitalisation as described above (valued at $5,335), the benefit is the equivalent cost of 24 years of SS program participation for one person ($5,335 divided by $222.24).

[12] AIHW (2023) https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/drug-types/non-medical-use-of-pharmaceutical-drugs#Deaths
[13] IHPA (2021) National Hospital Cost Data Collection Report 2019 – 20. Available: https://www.ihacpa.gov.au/sites/default/files/2022-08/NHCDC%20Round%2024%20Report_0_0.pdf

6. Barriers and Enablers

This Chapter presents findings related to the evaluation question:

"What are the barriers and enablers to providing an effective patient-centred SS program and how can it be strengthened?"

The barriers and enablers of the SS program were measured using the pharmacist survey, pharmacy profile survey and case studies/pharmacist interviews. Patient and pharmacist experience and satisfaction with their involvement in the program were used to identify barriers and enablers, as well as identify areas for program improvement. In addition, the pharmacist survey and pharmacy profile survey were used to capture perspectives from pharmacy owners.[14]

Key findings

- Patient feedback and satisfaction with the SS program was mixed. The majority (87.5%) of patients that completed the patient survey were satisfied with the program, however, some found the program as '*inflexible*' and '*inconvenient*' and removed their ability to independently manage their medications.
- Patients reported no significant differences in the domains of effectiveness, side effects, convenience, and global satisfaction, between initial and follow-up patient surveys (TSQM).
- The majority (58%) of surveyed pharmacists reported the reimbursement amount for conducting the program was insufficient. However, the additional payments for registration and follow up data collection was sufficient.
- Three-quarters of pharmacists (74.4%) reported that the SS program had at least a moderate impact on expanding their role within the primary health care team including improved integration with the local allied health team and increased opportunity to collaborate with GPs.
- Pharmacists reported that the SS program helped with professional development by encouraging pharmacists to improve their clinical knowledge, led to other career pathways such as working in community mental health and exposed pharmacy graduates and trainees to complex patients.
- Pharmacists appreciated being able to spend more time with their patients which removed them from performing only dispensing services.
- Time was identified as a critical barrier due to the complexity and vulnerability of the patients involved. Patient complexity is linked to other barriers identified by the pharmacists such as patient reluctance to engage, patients accessing more than one pharmacy, and patients not completing their course of care or follow-up.
- Pharmacists highlighted issues with the administration requirements and reporting burden.
- Identified opportunities for program improvement included increasing the monthly cap on the program for individual pharmacies, increasing the total reimbursement to assist with the administration requirements, and increasing patient awareness of the program.

[14] The reason for distinguishing between "pharmacists and pharmacy owners" is to account for two different surveys in the study – one targeted at pharmacy owners (who are pharmacists) and then pharmacists (not owners, but support 6CPA programs in community pharmacies).

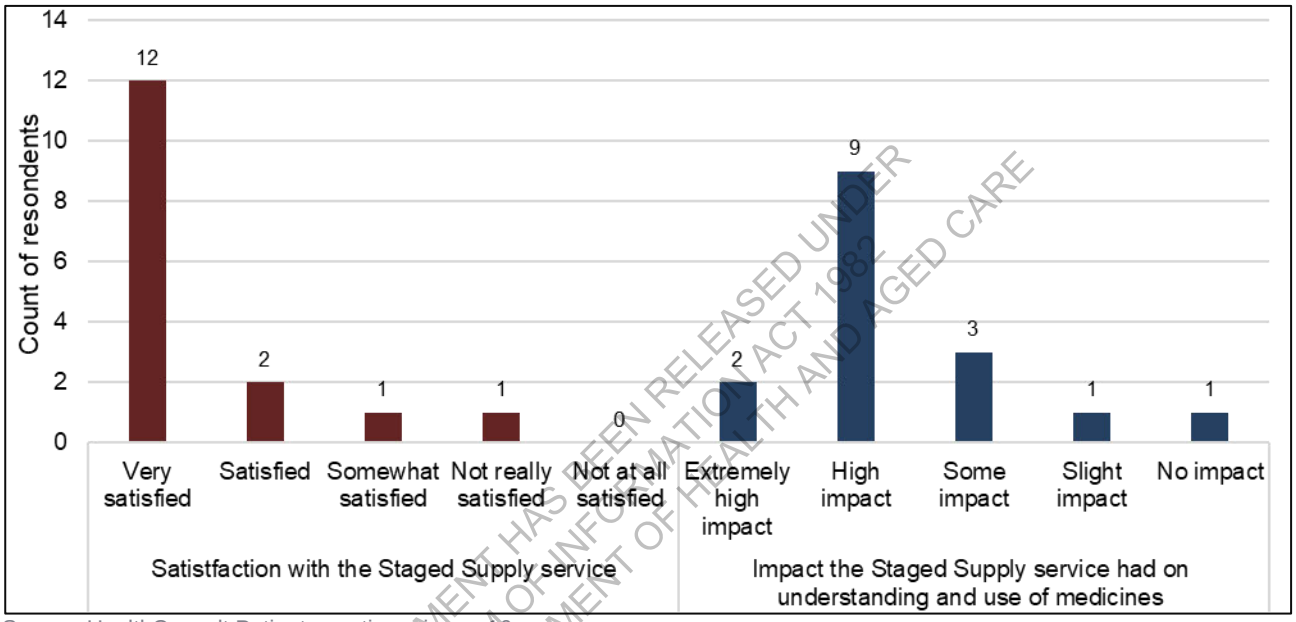
6.1. Patients' experience and satisfaction with SS program

A key enabler of the SS program is whether patients report a positive experience and are satisfied with the service the program provides. Patient experience was measured using a series of questions included in the Patient survey and a validated tool for patient satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM) score, also included in the Patient survey.

6.1.1. Patient-reported experience and satisfaction

Of the 16 respondents who completed a SS follow-up survey, 14 (87.5%) reported that they were *'very satisfied'* or *'satisfied'* with the program, and 11 (68.8%) reported the SS program had an *'extremely high'* or *'high impact'* on their understanding and use of medicines (Figure 8).

Figure 8: SS program service satisfaction and impact on understanding and use of medicines



Source: HealthConsult Patient questionnaire, n=16

Fifteen participants provided feedback on the features of the SS program that they liked. Eight of the 15 participants (53.3%) described the service as *'convenient'* since it forms a part of their life routine, and the medications are available for them to pick up when they arrive at the pharmacy. One participant reported that they enjoyed the regular contact with their pharmacist and described their pharmacist as *'friendly'* and *'understanding'*.

Thirteen participants provided feedback on whether changes are required to the SS program. Nine of the 13 (69.2%) reported that no changes are required while three participants described the SS program as '*inflexible'* and '*inconvenient'*. One participant stated that this program removes their ability to independently manage their medications.

6.1.2. Proportion of patients that reported being satisfied overall with the SS program

The TSQM (Appendix C.1.1) score is a reliable and valid instrument to assess patients' satisfaction with medication, providing scores on four scales – side effects, effectiveness, convenience, and global satisfaction[15].

[15] TSQM Version 1.4 is comprised of 14 questions that provide scores on four scales: effectiveness (3 items), side effects (5 items), convenience (3 items) and global satisfaction (3 items). Atkinson MJ, Sinha A, Hass SL, et al. Validation of a general

The TSQM explored patient satisfaction and perceived value of the service provided through the SS program by measuring changes in the domains of effectiveness, side effects, convenience, and global satisfaction, from initial to follow-up (Table 21). In each domain, the average score increased from initial to follow-up. The largest change was a 7.9-point increase (95% CI -3.8 to 19.6) in the Global Satisfaction domain, from 63.1 (initial survey) to 70.9 (follow-up survey). However, there were no statistically significant changes in any of the domains.

Table 21: Patient satisfaction (initial and follow-up survey)

TSQM score	n	Initial	Follow-up	Change from Initial to Follow-Up			
		Mean (SD)			95% CI		p-value
					Lower	Upper	
Effectiveness	14	65.1 (20.4)	67.9 (22.1)	2.78 (5.39)	-8.9	14.4	0.6
Side Effects	13	69.2 (32.7)	76.4 (31.3)	7.21 (7.55)	-9.2	23.7	0.4
Convenience	13	72.2 (15.0)	73.9 (16.3)	1.71 (6.61)	-12.7	16.1	0.8
Global Satisfaction	14	63.1 (19.9)	70.9 (19.1)	7.86 (5.42)	-3.8	19.6	0.2

Source: HealthConsult Patient questionnaire

6.2. Pharmacist experience and satisfaction with the SS program

The experience of the pharmacist in delivering SS program is critical to the effectiveness of the program and pharmacists and pharmacy owners are well-placed to identify barriers and enablers related to the program implementation.

6.2.1. Pharmacist reimbursement

In the survey, pharmacists were asked to provide their views on the payment for delivering the program. Eighty-two pharmacists completed the SS survey including 52 pharmacists who conducted a follow-up service.

Of the 82 pharmacists who completed the SS survey and shared their views on the payments for **conducting the SS program**:

- Thirty-four (41.5%) thought the payment for delivery of SS program services was sufficient or mostly sufficient depending on the patient. The remaining 48 pharmacists (58.5%) thought the payment was not enough, or mostly not enough depending on the patient.

Of the 82 pharmacists who completed the SS survey and shared their views on the payments for the **collection of patient registration data**:

- Forty-three (52.4%) thought the payment for collecting patient registration was sufficient or mostly sufficient depending on the patient. The remaining 39 pharmacists (47.6%) thought, the payment was not enough, or mostly not enough depending on the patient.

Of the 52 pharmacists who indicated they had conducted six-month follow-up SS program services and shared their views on the payments for **collecting six months follow up data**:

- Thirty pharmacists (57.7%) thought the payment for collecting six months' follow up data was sufficient or mostly sufficient depending on the patient. The remaining 22 pharmacists (42.3%) thought the payment was not enough, or mostly not enough depending on the patient.

measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease. Health Qual Life Outcomes. 2004;2:12.

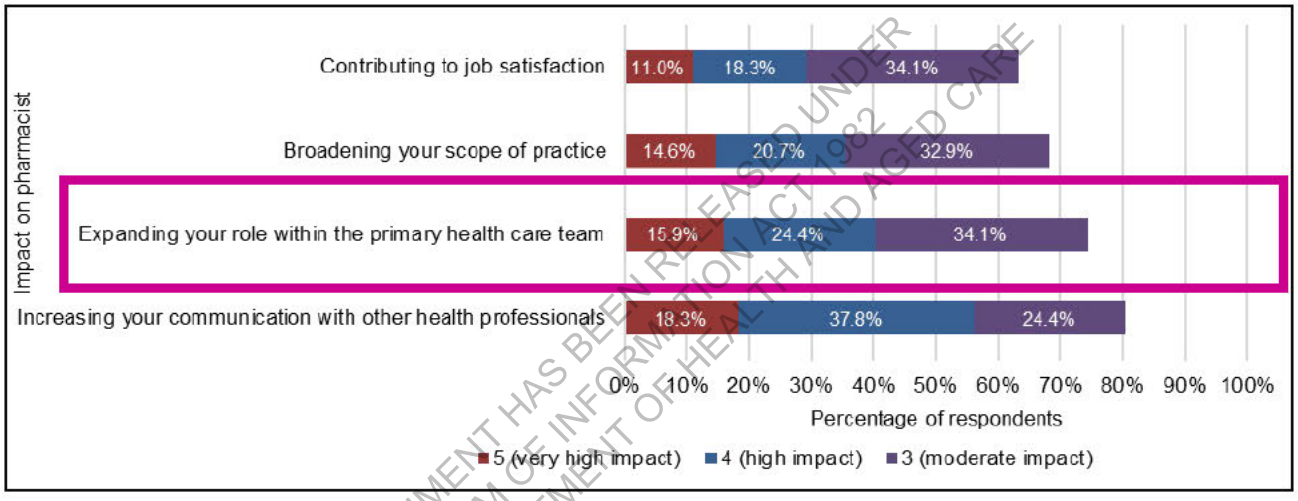
6.2.2. Pharmacist role within the primary health care team

The SS program may require increased communication between the participating pharmacists and other health professionals, predominantly general practitioners (GPs). This could lead to opportunities for pharmacists to broaden their role within the primary health care team, potentially leading to improved career satisfaction, and could be viewed as another enabler of the SS program.

Three-quarters of pharmacists (74.4%, n=61 of 82), reported that the SS program had at least a moderate impact on expanding their role within the primary health care team (Figure 9, see pink box). Of the 82 pharmacists who completed the SS pharmacist survey and were asked whether the SS program had an impact on expanding their role within the primary health care team:

- thirteen pharmacists (15.9%) reported a '*very high*' impact,
- twenty pharmacists (22.4%) reported *'high impact*', and
- twenty-eight pharmacists (34.1%) reported a *'moderate'* impact.

Figure 9: SS program's impact on pharmacist roles



Source: HealthConsult Pharmacist Survey, n=82

Pharmacists who participated in the case study interviews provided different examples of how their role expanded within their primary health care team due to the SS program:

- improved integration with the local allied health team
- enhanced knowledge of their contribution to the primary care system
- improved relationships with GPs and other allied health professionals
- better collaboration with GPs to identify suitable referrals to other health care services
- increased opportunities to provide education to doctors and allied health professionals
- increased occasions to identify patients with complex health issues leading to a GP referral.

One pharmacist reported that the SS program made no difference in the role of pharmacists with the primary health care team.

6.2.3. Pharmacist satisfaction

Pharmacists who participated in the case studies provided mixed reviews on the impact of the SS program on career development and pathways, and communication with other health professionals. Three case study participants suggested that there was minimal to no impact on these aspects by the SS program.

The following describes the program's effect on career development/pathways and communication with health professionals.

Impact on career development and pathways

Pharmacists reported that the SS program helped with professional development by encouraging pharmacists to improve their clinical knowledge and expanding their skills by undertaking this specialised role. Several pharmacists acknowledged the role of the SS program in improving their clinical knowledge. Being able to answer patients' questions and recommending new treatments was their motivation for their ongoing learning.

Pharmacists at all levels of experience were able to participate in this program. It was reported that this new skill set led to other career pathways, such as working in community mental health services. Pharmacy trainees and graduates also found the SS program rewarding and engaging since it provided exposure to different types of patients.

The program also offered job satisfaction and pharmacists enjoyed and felt rewarded when identifying interventions through the SS program. By formalising the SS program under the 6CPA, pharmacists reported that they felt acknowledged and appreciated for their skills and service. Offering this program gave them a sense of purpose since they were responsible for creating a positive impact (e.g., made patients feel better, improved compliance) on their patient's life.

Pharmacists also appreciated being able to spend more time with their patients which removed them from performing only dispensing services. This, along with offering a patient-centred service, helped to build rapport and develop a closer relationship with patients.

While many case study participants reported positively on the impact of the SS program, some suggested that providing this program does not open career pathways. Some pharmacists also stated that this program is *"not intellectually stimulating"* and was offered only to benefit patients, not for career satisfaction.

Impact on communication with other health professionals

Case study/ interview participants reported increased communication among pharmacists and with GPs, community nurses and other health care professionals. This increase in communication encouraged: the exchange of ideas, discussions of patients' health care issues (e.g., complex medication issues) and improved trust and partnerships with healthcare professionals. The formalised documentation of medication issues and interventions assisted in the referrals process and improved accountability. Pharmacists reported that communication with other health professionals was already established before the availability of the SS program however participation *"forced more, and improved contact"*.

Some case study participants also reported difficulties with contacting GPs and hospital specialists to discuss findings from the SS program consultations, such as discrepancies in prescriptions. It was reported that communication with GPs depended on the existing relationships with health care providers and the *"doctor's attitude to pharmacists"*. Also, doctors were the most frequently contacted health care professional and there was minimal communication with allied health services. Two pharmacists stated that the program did not impact their communication with other health professionals.

6.3. Barriers to implementation

During the pharmacist surveys and case study interviews, pharmacists identified several barriers to implementing the SS program within their pharmacies.

6.3.1. Time

Time was a consistent theme across the both the surveys and case study interviews. In the survey, pharmacists were asked to provide their views on the time taken to deliver specific aspects of the

SS program (Figure 10). Eighty-two pharmacists completed the SS survey including 52 pharmacists who conducted a follow-up service.

Of the 82 pharmacists who completed the SS survey and shared their views on the time taken for conducting the SS program:

- Forty-six (56.1%) believe conducting a SS program service takes an appropriate amount of time for all or most patients.19 pharmacists (23.2%) believe it took too long for all or most patients. The remaining 17 pharmacists (20.7%) indicated conducting a SS service took long for some patients, but not for others.

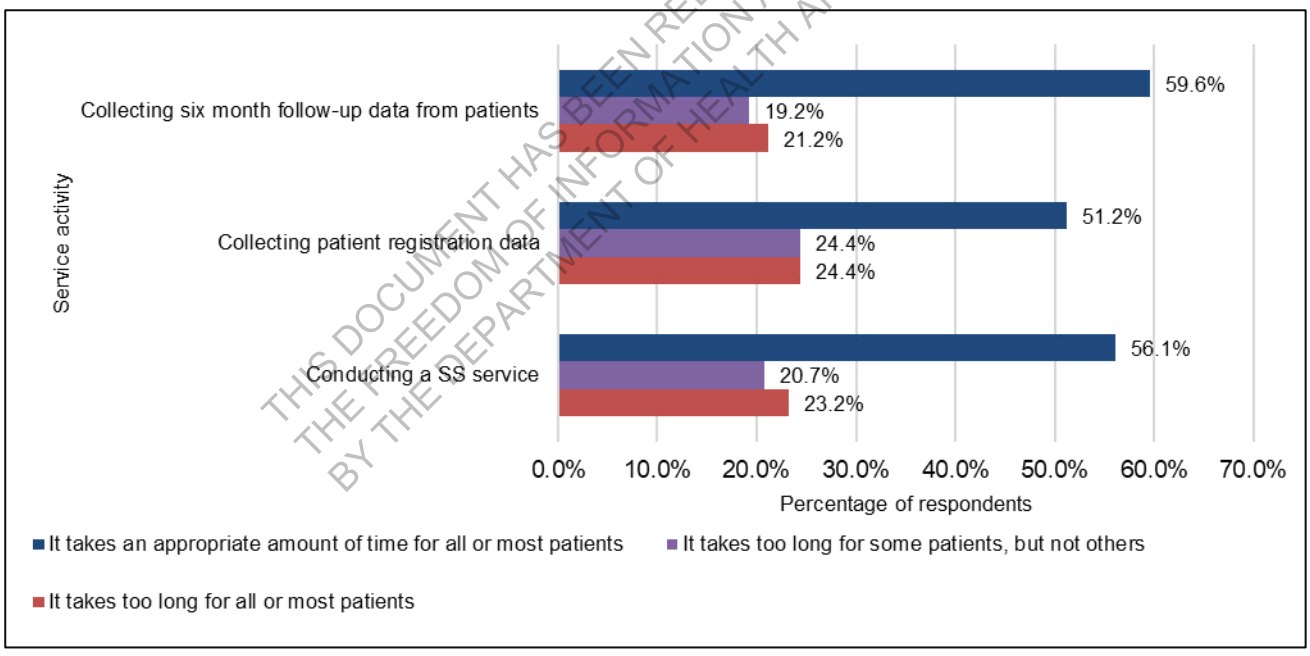
Of the 82 pharmacists who completed the SS survey and shared their views on the time taken, and the payments for the **collection of patient registration data**:

- Forty-two (51.2%) believe collecting patient registration data for a SS program service takes an appropriate amount of time for all or most patients. Twenty pharmacists (24.4%) believe it took too long for all or most patients. The remaining 20 pharmacists (24.4%) indicated that collecting patient registration data took long for some patients, but not for others.

Of the 52 pharmacists who indicated they had conducted a six-month follow-up SS service and shared their views on the time taken for **collecting six months follow up data**:

- Thirty-one pharmacists (59.6%) believe collecting six-month follow-up data took an appropriate amount of time for all or most patients. Eleven pharmacists (21.2%) believe it took too long for all or most patients, while 10 pharmacists (19.2%) indicated it took too long only for some patients, but not others.

Figure 10: Pharmacists' perception of time taken to complete face-to-face client activities



Source: HealthConsult Pharmacist Survey, n=82, and n=52 pharmacists who conducted a follow-up service

6.3.2. Other barriers

Pharmacists who participated in the case studies reported the following **barriers** to conducting the SS program:

- insufficient incentives (e.g., reimbursements) to conduct initial and follow-up services
- potential customers are unaware of the SS program and its benefits

- different pharmacists offer initial and follow-up services for patients which affects the consistency of personnel conducting assessments
- patient sensitivity and vulnerability, and patients do not like admitting to non-compliance
- patients do not return to the pharmacy once they finish the program, creating challenges with conducting follow-up services
- patients view the SS program *"as a regulatory mechanism that takes away their freedom and flexibility to self-manage medications"*
- patients move to different pharmacies without notifying their pharmacist or prescriber
- inadequate staff to support the program
- program is available only to those with a government-issued concession card. Pharmacists charge patients who do not meet this requirement which discourages uptake of this program
- having to contact the prescriber for every occasion (e.g., public holidays) where more than the prescribed quantity is required to be dispensed
- insufficient time to implement and sustain the program.

6.4. Opportunities and enablers

In terms of **enablers** to implement/ operate the SS program, pharmacists noted that the SS program helped build rapport with patients and increased affordability for them by being able to remove patient charges for the service. The program also encouraged a *"more proactive health care approach"* and as such, pharmacists saw value in this program. Although patients did not like being part of the program, they were reported to be appreciative of it and were grateful when they were able to cease their medication. Since both pharmacists and patients valued the program, it was noted that this made it easier for pharmacists to *"sell this service"*.

Case study participants also provided the following **suggestions to overcome barriers**:

- suitably incentivise the initial and follow up services to encourage and improve standardisation of SS programs provided across pharmacies
- increase advertising of the SS program to increase awareness and patient acceptability of this service
- provide more flexibility in the quantity that is allowed to be dispensed at each patient visit during public holidays and other special circumstances
- increase the yearly cap allowing pharmacies to offer this program to more patients.

From the interviews with 16 pharmacists (case study visits, n=15), pharmacists reported that the SS data and claims submission portals were easy to use, however, others suggested further improvements are required to streamline the process. Pharmacists stated the following issues that impact negatively on the administrative/operational requirements of the program:

- patients' health outcomes are manually added to the portal
- patient data is required to be entered twice (data collection and claims submission)
- some collected and recorded information (e.g., time of administration) is not relevant
- data and claims submissions are time-consuming and tedious
- there is insufficient capacity (e.g., staff and time) to enter information on initial and follow up data
- the data collection form is *"too clunky"*.

Pharmacists participating in the case studies (n=15) reported the following recommendations to overcome the above-mentioned issues with administrative/ operational requirements of the SS program:

- merge and streamline data entry requirements (program data collection and claims submission) “to remove double handling”
- reduce the number of administrative requirements so pharmacists can spend more time providing patient care
- develop an easier claiming system that is user friendly.

7. Conclusion and Recommendations

This Chapter presents conclusions of the evaluation of the 6CPA SS program and presents recommendations to support the programs under 7CPA.

7.1. Was the SS program effective in improving patients' understanding and use of their medications?

The evaluation found there was no significant change in medication adherence for patients participating in the SS program. Participation in the SS program had a positive effect on patients' understanding of the use of medications.

7.2. Does the SS program improve the health outcomes of patients?

There were no changes in patient reported QoL or number of side-effects between initial and follow up surveys. There were no significant differences in the presentations to health care services at initial and follow-up based on Patient Survey data (n=14), however, this indicates the program may have been effective at preventing health service utilisation given the cohort eligibility is based on a history, or risk, of medication misuse. This conclusion is supported by a reduction in the number of patients reporting a GP visit due to medication problems in the previous 6 months at follow-up compared to registration (6CPA program data).

Pharmacists reported positive impacts on reducing adverse events associated with the misuse of medications, however, no significant improvements were observed.

7.3. Is the SS program cost-effective?

In terms of cost-effectiveness, there was a lack of parameters to determine incremental of cost-effectiveness ratio (ICER) of the program. An alternative approach of CBA was applied and resulted in cost savings due to a reduction in GP visits.

7.4. What are the barriers and enablers to providing an effective patient-centred SS program? Can it be strengthened?

Patients reported they are satisfied with the SS program and see value gained by participation. Pharmacists identified some barriers to implementation and areas for improvement related to time, reimbursement, and complexity of the patient cohort. Improvements could include increasing the cap to allow for more patients to access the program and increase awareness and acceptance of the program.

7.5. Suggested changes to the SS program

Suggested changes that could be made to the SS program, and the 6CPA programs more broadly include:

- Increasing the patient cap to allow a greater number of patients to participate.
- Increase the total reimbursement associated with administration and reporting requirements to encourage greater compliance.
- Changes to patient monitoring so individuals can be managed across multiple pharmacies.

- Limited patient awareness and acceptance was identified as a barrier and pharmacists felt that recruitment to the program was impacted because patients were sensitive to conversations regarding non-compliance. Increased advertising and marketing of programs to patients and health care professionals could assist with patient acceptance of the program when offered by a pharmacist.
- There is a low adherence to pharmacists meeting the follow up requirements across all 6CPA programs. The pharmacist's survey suggested that 60% of pharmacists are either not conducting follow ups or only doing so for a small number of patients. The reasons for not conducting follow ups included difficulties scheduling appointments for follow up data collection, insufficient incentive due to the size of the fee, and follow ups occurring less formally and more often during routine contact with patients. The requirement of a formal follow-up should be reviewed.
- Build in the completion of health outcomes data by patients in receipt of Commonwealth funded CPA program. This could be using a phone app or email that sends an alert for completion every 6 months – many PREMs and PROMs are now conducted this way – this could be setup as part of the patient joining the CPA program. This would provide both monitoring and evaluation data.
- The main measure included in the health outcomes data to measure changes in medication adherence is the patient's average MedsIndex score. However, this measure has not been validated so it cannot be assumed that it accurately measures medication adherence and may not be suitable for all 6CPA programs. Until validated, the utility of the MedsIndex score is limited. Consider adopting an alternative measure to the MedsIndex score (e.g. the ARMS measure recommended by HealthConsult when advising on the design of the 6CPA data collection for new and expanded programs) for measuring medication adherence prior to inclusion in the data collection for 7CPA or conducting a study to validate MedsIndex as measure of medication adherence.
- Consider the inclusion of identifying data elements such as name, date of birth and address in the patient administration process so that a control group could be created by linking CPA program data to other national dataset (e.g. PBS, MBS, ED presentations and hospitalisation data).

7.6. Changes to 6CPA under new 7CPA

The SS priority area was established under the Better Community Health Initiative of the 4CPA and 5CPA between the Pharmacy Guild of Australia and the Commonwealth Government. The SS initiative was continued under the 6CPA (1 July 2015 to 30 June 2020), as part of the PPI Program directed at improving medication compliance through community pharmacies in Australia.

The 7CPA commenced 1 July 2020 and is a 5-year agreement in place until 30 June 2025 between the Commonwealth Government, the Pharmacy Guild of Australia, and the PSA. Over the five years of the program, the 7CPA agreement provides approximately $18.3 billion to community pharmacies for dispensing PBS medicines which equates to an increase of around 9% relative to 6CPA (i.e., $16.8 billion).

As a new undertaking under the 7CPA, Key Performance Measures (KPM) were developed as an evaluation framework to assess the impacts of the 7CPA. The KPMs aim to help identify whether objectives and health outcomes have been achieved effectively and efficiently under the agreement. No other evaluation mechanisms existed under previous CPAs.

The 7CPA agreement will better support pharmacies to receive payments to dispense medicines subsidised under the PBS. This addresses one of the barriers to implementing and conducting the SS program as reported by pharmacists.

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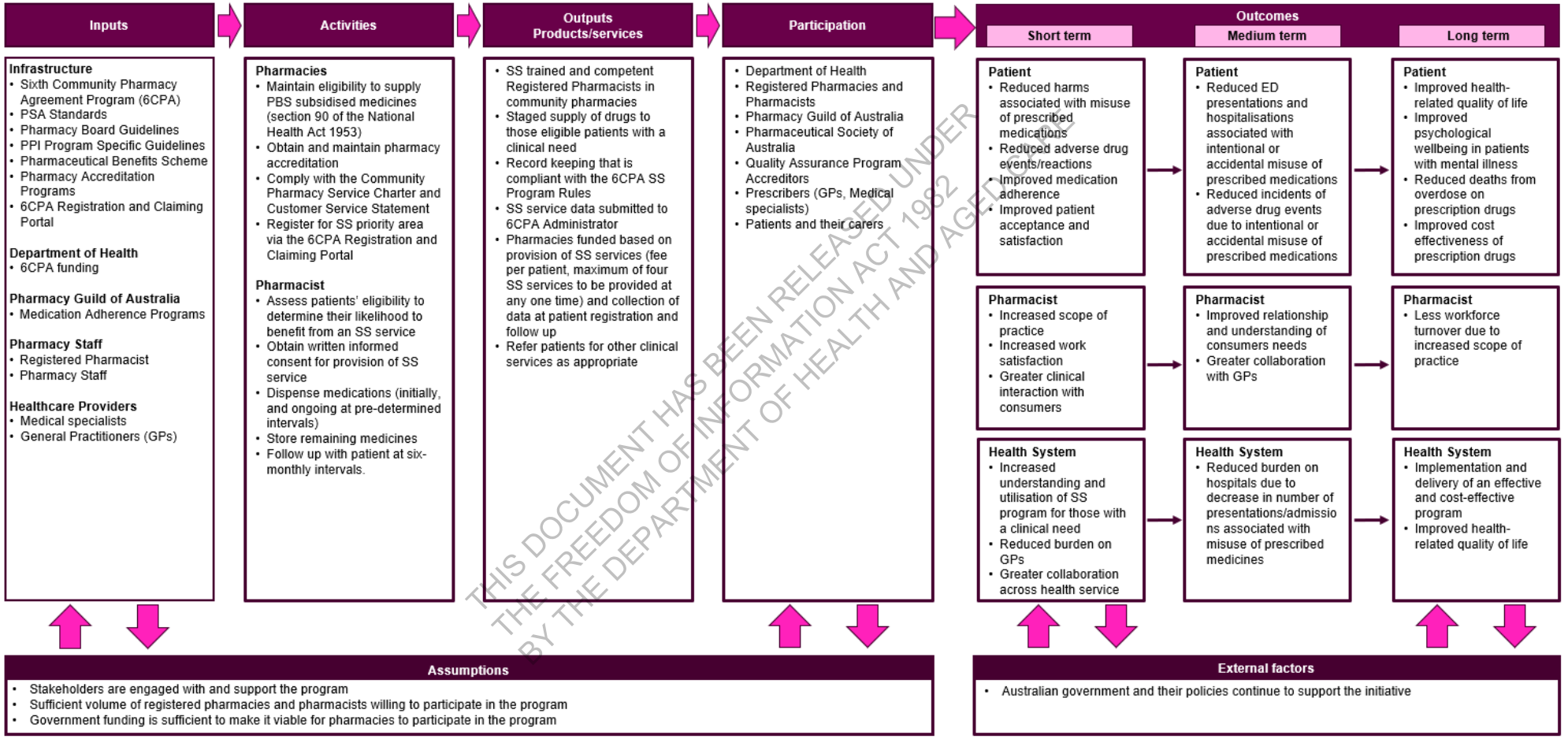
Appendix A: Program logic model

Figure A. 1: Logic Model for the SS Program



Appendix B: Evaluation Framework

Table B. 1: Staged Supply program evaluation framework

Evaluation questions	Key performance indicators (KPIs)	Data source & analysis
KEQ 1: To what extent is the SS program effective in improving patients' understanding and use of their medications?	3.1 Improvements in **medication adherence** • ARMS scale • Proportion of people with improved medsindex score at F/U by reason for program entry.	Patient survey – ARMS 6CPA program data - MedsIndex at initial and follow up Analyse MedsIndex by reason for staged supply
	3.2 Proportion of patients that self-reported **improvements in their understanding of, and use of**, medication, as a result of SS program • Self-reported knowledge and understanding • Program has prevented medication-related problems (pharmacist reported)	Patient survey – knowledge and understanding 6CPA program data - On a scale of 1 to 10, does the patient feel that receiving the Staged Supply program has prevented a medicine related problem for them? (distribution of scores)
	3.3 Proportion of **pharmacists** that perceived that the SS intervention has resulted in **optimising patient's effective use of prescription medicines** • Pharmacist perception of the impact of the program on patients effective use of medications • Pharmacist reported degree of how helpful the program is in managing patients' medicine • Number of patients with recommended continuation of the program.	Case study site visits Pharmacist survey 6CPA program data - On a scale of 1 to 10, how helpful is the Staged Supply service in managing patient's medicine? (F/U) Is continuation of the Staged Supply service recommended for this patient? (F/U) (number of SS service continuations recommended, by medication class or reason for staged supply)
KEQ 2: Does the program improve the health outcomes of patients?	4.1 Improvements in number/proportion of **adverse events** associated with misuse of medications • Patient reported impact of medication-related side-effects • Pharmacist perception of patients having problems with their medicines	Patient survey – GASE (qualify limitations of instrument to measure AEs) 6CPA program data - Has the patient had any problems over the past month with their medicine? (F/U)
	4.2 Proportion of patients whose medication profile changes as a result of the SS intervention • Change in medication	6CPA program data
	4.3 Health service utilisation due to medication misuse (stratified by reason for SS) • Self-reported decrease in hospital presentations/admissions and/or GP visits related to misuse of medication • Pharmacist reported GP or hospital visit because of problems with their medicine	Patient survey - Self-reported GP attendance, hospital attendance, specialist attendance (improved, no change, decreased) 6CPA program data - In the last six months, did the patient go to the GP or hospital because of problems with their medicine? Has the patient had any problems (F/U) (one option is "had to go to doctor or hospital because of problems with medicines)
	4.4 Improvements in patient-reported QoL • stratified by reason for SS	Patient survey - Health-Related QoL Measures (AQoL 4D)
	4.5 Perceived effectiveness of the SS program to improve health outcomes of patients reported by pharmacists	Pharmacist survey

Evaluation questions	Key performance indicators (KPIs)	Data source & analysis
KEQ 3: Is the SS program cost-effective?	5.1 Costs and benefit of the SS program • Cost (i.e., the standard cost of all interventions based on costing study) per unit change in effectiveness indicator for all effectiveness measures (e.g., adherence, adverse events) for all SS cohorts (single (i.e., SS only) and pairs (i.e., SS plus another 6CPA program)) • Comparison of fees paid relative to cost per intervention • Cost per patient involved in the program (informed form output of an activity-based costing study) • Cost per unit change in patient-reported QoL • Benefit from relevant parameters before and after the program.	6CPA program data (patient survey n/a due to low response numbers) Patient survey - Self-reported GP attendance, hospital attendance, specialist attendance (improved, no change, decreased)
KEQ 4: What are the barriers and enablers to providing an effective patient-centred SS program and how can it be strengthened?	6.1 Patient experience and satisfaction with SS program • Proportion of patients that reported to be satisfied overall with the SS program • Pharmacist perspective on patient satisfaction	Patient survey - Patient-reported satisfaction using validated tool completed at 6-month follow up (TSQM v1.4) 6CPA program data - On a scale of 1 to 10, has the Staged Supply program met the patient's expectations? Stakeholder interviews Case study site visits Pharmacist survey
	6.2 Pharmacist experience and satisfaction • Perceived cost-effectiveness of the SS program by key stakeholders, pharmacies and pharmacists • Proportion of pharmacists that report that the intervention has resulted in an expansion of their role within the primary health care team • Reported experience and satisfaction levels with providing the SS program by pharmacists including impact on career development and pathways, and communication with other health professionals • Reported experience and satisfaction levels with providing the SS program by pharmacies including administrative/operational requirements/impacts	Stakeholder interviews Case study site visits Pharmacist survey
	6.3 Perceived barriers to implement and/or operate the SS program	Stakeholder interviews Case study site visits Pharmacist survey
	6.4 Perceived enablers to implement and/or operate the SS program and identified opportunities for improvement by pharmacists and key stakeholders	Stakeholder interviews Case study site visits Pharmacist survey

Appendix C: Evaluation Methodology

C.1. Data collection

This evaluation drew from multiple data sources, including patient surveys, pharmacist and pharmacy profile surveys, case studies/pharmacist interviews and 6CPA evaluation data.

C.1.1. Patient Surveys

Patient surveys were administered before initial intervention and at 6 months follow-up, which took approximately 10-15 minutes to complete. HealthConsult provided a $30 supermarket voucher to all patients on receipt of completed follow-up questionnaires. Pharmacists provided patients with the voucher following completion of the follow-up questionnaire.

The surveys included validated scales and bespoke measures of medication adherence, QoL and patient satisfaction as outlined below:

Adherence to Refills and Medications Scale (ARMS)

Developed and evaluated by Kripalani et al. (2009) among low-literacy patients with chronic disease[16], the ARMS scale was designed as a self-report measure of medication adherence. Based on the paper describing the development and evaluation of the scale, there was a single aggregate measure (represented as the mean of all twelve questionnaire items) as well as two subscales: one of which pertains to taking medications as prescribed while the other refers to factors relating to refilling medications on schedule. The original validation paper suggested the use of 12 questions.

The **ARMS-12** total score is based on 12 questions and has a possible range of 12 to 48, where a lower score indicates better adherence. The ARMS can be split into two measures: adherence to taking medication as prescribed (with a possible range of 8 to 32), and adherence to refilling medication on schedule (with a possible range of 4 to 16).

Treatment Satisfaction Questionnaire for Medications (TSQM)

Treatment Satisfaction Questionnaire for Medications (TSQM v1.4) consists of 14 items and measures the domains of effectiveness, convenience, side effects and global satisfaction. Each domain is scored a value by adding the TSQM items in the domain and then transforming the score on a scale ranging from 0 to 100. TSQM permits comparisons across medication types and patient conditions. TSQM v1.4 was used given the reduced number of questions compared to other tools such as the Patient Satisfaction with Pharmacist Services Questionnaire (22 items).

Generic Assessment of Side Effects (GASE)

Information on the Generic Assessment of Side Effects (GASE) was collected to:

- develop a comprehensive profile of patient-reported side effects before and after administration of a given 6CPA service
- critically assess what changes, if any, could be attributed to the services provided.

The GASE was chosen because it collects information relating to a wide range of side effects commonly reported as part of clinical trial participation.

The GASE measure asks participants to rate the severity of 36 adverse events on a scale of 0 (not present) to 3 (severe). Participants were also asked to categorise each side-effect as to if it related

[16] S Kripalani et al Development and Evaluation of the Adherence to Refills and Medications Scale (ARMS) among Low-literacy Patients with Chronic Disease, Value in Health Vol.12 No.1 2009 Available at https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1524-4733.2008.00400.x

to the medications received or not. Based on the instructions from the developer of the instrument, the response recorded can be coded into one of four different composite scores:

(1) Symptom count: A per-person count of the number of items that an individual endorsed as 'mild', 'moderate', or 'severe'.

(2) Total score: A sum of the endorsed symptoms with increasing numerical values allocated to increasing levels of symptoms.

(3) Medication-attributed symptom count: A per-person count of the number of items an individual endorsed as 'mild', 'moderate', or 'severe' and which were identified by the respondent as being associated with medication use.

(4) Total Score (attributed): A sum of the endorsed symptoms identified as being attributed to medication use, with increasing numerical values allocated to increasing levels of symptoms.

In addition to the scoring algorithms above, changes in the type and frequency of commonly experienced side effects were also assessed for each program in the initial and follow-up questionnaires.

The Assessment of QoL - AQoL-4D

The Assessment of QoL was determined using the AQoL-4D questionnaire. This questionnaire consists of 12 questions. These questions can be coded into four domains based on psychometric (unweighted) scoring. The domains assessed by the AQoL-4D are

(5) Independent living – self-care, household tasks and mobility

(6) Relationships – friendships, isolation, and family role

(7) Mental health – sleeping, worrying, pain

(8) Senses – seeing, hearing, and communication.

The questions can also be aggregated into health state utility score estimates which can be used in economic evaluations for calculating Quality Adjusted Life Years (QALYs). The utilities are considered to be preference weights and in theory, should reflect peoples' preferences more accurately than unweighted surrogates. The AQoL utility score is obtained by weighting the items and then applying a multiplicative function to obtain an index that is transformed on a life-death utility-scale. The utility score is presented on a scale where the upper boundary, 1.00, represents the best possible HRQoL, death equivalent HRQoL is represented by 0.00, and the lower boundary, -0.04, represents an HRQoL state worse than death. The weighted AQoL-4D domain utility scores for each dimension (independent living, relationships, mental health, and physical senses (i.e., seeing, hearing, and communication) are scaled between a 0.00 (worst health state) and 1.00 (best health state).

Single item questions

6CPA participant knowledge

In addition to the validated measures used above, the survey also collected responses to individual questions which asked participants to rate their knowledge of, a) medication storage, b) knowledge of the importance of medication dosage and schedule, and c) overall knowledge of medications taken. Participants were asked to complete this question at initial and follow up where they rated their knowledge on a scale of 1 (very low) to 10 (very high).

Compliance with actions resulting from program participation

Participants were asked to rate (1 (unlikely) to 10 (very likely)) their likelihood of following the actions identified in their SS at initial assessment as well as rate how well they felt they followed the actions at follow up.

Service satisfaction and impact

Participants were asked to rate their satisfaction with the service on a 5-point scale from very satisfied to not at all satisfied. Participants were also asked what impact the service had on their understanding and use of medicines on a 5-point scale from very high impact to no impact.

C.1.2. Pharmacist surveys

From November 2018 to April 2019, 1,549 pharmacies across Australia registered patients for the SS program. The location of pharmacies that submitted registrations for SS services in Australia was derived by assigning each pharmacy to the most reported suburb of the 6CPA registrants (Appendix F: 6CPA Program Data, Table 24).

Between October 2018 and April 2019, 170 pharmacies consented to participate in the 6CPA evaluation by returning the evaluation consent form. Almost all pharmacies that participated in the evaluation (160 out of the 170, 94.1%) indicated that they provided SS services (Appendix F: 6CPA Program Data, Table 25).

The pharmacy survey (Appendix C.1.3) was distributed to all pharmacies that provide the in-scope 6CPA program service, regardless of their participation in this evaluation. Data was collected on the type of pharmacy, dispensing model, location, number of staff and work hours, and type 6CPA program service offered.

A total of 128 pharmacists completed the pharmacist survey (Appendix E: Pharmacist Survey and Case study Findings, Table 22). Of the 128 pharmacists, 83 pharmacists reported that they had conducted a SS service, and 82 of those completed the SS section of the survey.

The Pharmacist Survey was administered to participating pharmacies at follow up to explore program impacts and perceptions. The survey consisted of 98 questions designed to elicit pharmacist views of the four programs administered as part of the 6th Community Pharmacy Agreement. The content of the survey elicited responses that could be loosely characterised into the following topic areas:

- The extent to which the program participation impacts patient understanding, adherence, and overall health
- The extent to which the program impacts pharmacist job satisfaction, the scope of practice, communication, and their role within a primary healthcare team
- The time taken and opinions about the time taken to complete aspects of the 6CPA program (e.g., registration, service, claims submission, and follow-up)
- Opinions surrounding the payment provided to complete aspects of the 6CPA program
- If the pharmacist conducts the six-month follow-up assessment and any identified reason why they may not
- Pharmacist perception of patient satisfaction with the service delivered.

The content of the questionnaire was similar across the four programs with minor variations in content required to identify participant responses for program-specific items.

The questionnaire was reviewed and endorsed by the Pharmacy Guild and promoted for dissemination. Dissemination occurred in three separate stages, staggered from March 2019 to January 2020. The first stage involved the dissemination of an invitation email and link to the survey to pharmacies and pharmacists who had consented to participate in the evaluation study. These pharmacists were targeted directly using their email addresses provided upon completion of the pharmacy consent form. It was thought that respondents would be more likely to provide candid replies if their preferred email address was used.

The second stage was to send an invitation email to all pharmacies identified by the Guild as providing one or more of the 6CPA programs evaluated. This circulation list was initially provided to HealthConsult for pharmacy recruitment for the evaluation, but separate consent was later provided to use it for the dissemination of the questionnaire. Overall, more than 5,000 pharmacies

were contacted during this stage. This version of the questionnaire was also publicised by the Pharmacy Guild as well as the Pharmaceutical Society of Australia (PSA) using Twitter and their fortnightly newsletter.

The last stage involved paid dissemination of the questionnaire link to a cohort of early-career pharmacists as well as publicising the content via the PSA LinkedIn page.

C.1.3. Pharmacy Profile Surveys

The pharmacy profile survey was designed to solicit information related to general pharmacy characteristics. This was done to describe participating pharmacies and to provide the ability to assess if pharmacy attributes contributed to patient outcomes and patient improvement. Nine questions were posed to the managing pharmacist or pharmacist-owner surrounding pharmacy characteristics.

The pharmacy survey was collected from all pharmacies that participated in the 6CPA evaluation along with a representative sample of pharmacies nationally. Responses were solicited using Survey Monkey although occasionally pharmacies were followed up and responses were received over the phone. The pharmacy profile survey collected information on the following topic areas:

- **Location:** Postcode
- **Type:** Independent, franchise, banner, friendly society group, buying group
- **Co-location:** Standalone, shopping centre, or co-located with another facility
- **Dispensing type:** Forward pharmacy, traditional pharmacy, semi-forward pharmacy
- **Pharmacy programs currently offered:** 6CPA programs currently offered by your pharmacy
- **Size:** Number of pharmacy staff currently employed

C.1.4. Case Studies/Pharmacist Interviews

Semi-structured interviews were conducted as part of 15 case study visits with 16 pharmacists who had consented to be part of the 6CPA evaluation. These interviews were completed between February and May 2019 and represented pharmacies in four states across a representative group of metropolitan, regional, rural, and remote services. The interviews varied in duration but mostly lasted between 45 minutes and one hour. The topic areas discussed during the site visit interviews were as follows:

- **Patient experience and outcomes:** Impact on patient's understanding, quality use of medications, overall patient-reported satisfaction, reduction in the impact of adverse events associated with medications.
- **Impact of program participation on the pharmacist workforce:** Satisfaction with providing the service, impact of the 6CPA programs on pharmacist's carer satisfaction/pathways for advancement. In addition, how provisioning of 6CPA services has impacted the pharmacist's role (in terms of both communication as well as stature) within a primary healthcare team.
- **Operational effectiveness:** Identification of barriers to the implementation and operation of each 6CPA program. Barriers can be identified as financial, logistical, practical, or ideological.
- **Financial viability:** Cost-effectiveness, as well as questions tailored specifically to financial costs associated with provisioning of each 6CPA program relative to the remuneration received.
- **Current program rules:** Specific questions relating to aspects of 6CPA program implementation (feasibility of data collection, follow-up, claim submission).

Appendix D: Patient survey findings

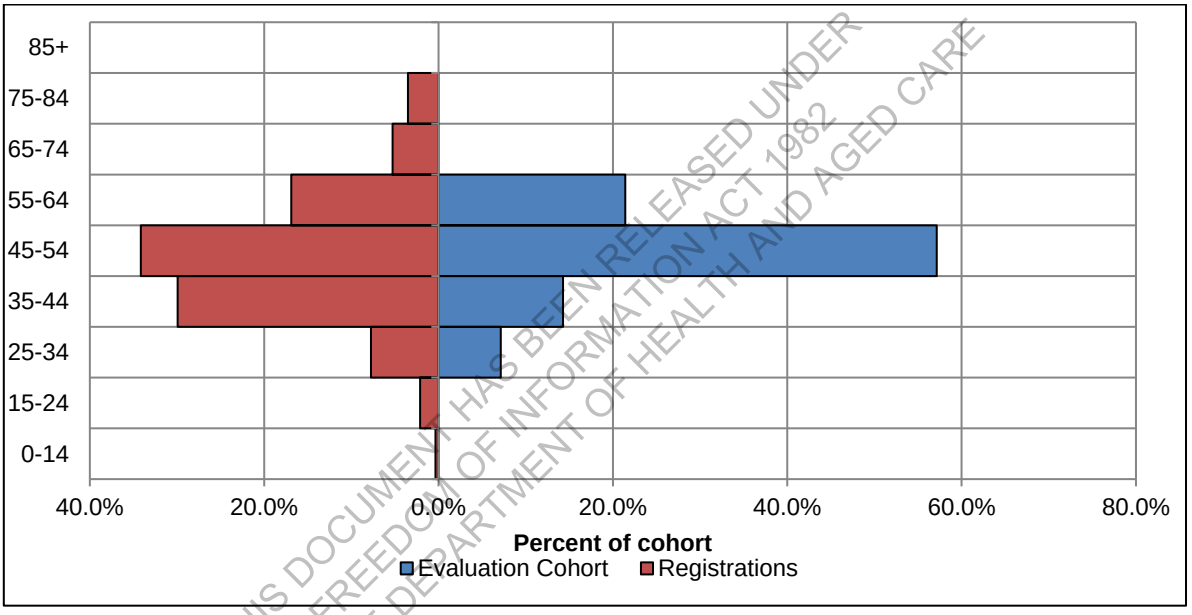
D.1. Patient characteristics

There were five females (35.7%) and nine males (64.3%) in the evaluation cohort compared to even gender representation in the registration data. The 6CPA registration data had 50% females and 50% males (Appendix F: 6CPA Program Data).

There was an overrepresentation of individuals in the 45-54 age category in the evaluation cohort compared to the registration data, however, the evaluation cohort is too small to draw any conclusions (Appendix D: Patient survey findings, Figure D. 1).

There was an overrepresentation of individuals in the 45-54 age category in the evaluation cohort compared to the registration data.

Figure D. 1: Comparison of age characteristics between the 6CPA evaluation cohort and the 6CPA registrations for Staged Supply between November 2018 and April 2019



Source: 6CPA Registration data; HealthConsult patient survey - matched initial and follow-up individuals (n=14)

Appendix E: Pharmacist Survey and Case study Findings

The evaluation collected pharmacists' opinions on the effectiveness of the in-scope 6CPA programs via an online survey. A total of 128 pharmacists completed the **pharmacist survey** (Table 22).

Of the 128 pharmacists, 83 pharmacists reported that they had conducted a SS service, and 82 of those completed the SS section of the survey.

Table 22: Summary of location and number of pharmacists and pharmacies involved in the pharmacist survey

State/Territory*	Geographical location of pharmacies			Total
	Major city	Regional	Remote	
ACT	1	0	0	1
NSW	30	16	0	46
QLD	8	7	1	16
SA	14	2	0	16
TAS	0	2	0	2
VIC	16	8	0	24
WA	19	4	0	23
Total	**88**	**39**	**1**	**128**

Source: HealthConsult Pharmacist Survey
*There were no respondents from NT

Case study site visits were conducted at 15 pharmacies across four states in Australia. Table 23 summarises the geographical location of the pharmacies where 16 pharmacists were interviewed as part of this evaluation.

Table 23: Profile of pharmacies involved in the case study site visits

State/Territory*	No. of pharmacies	Geographical location of pharmacies		No. of pharmacists interviewed
		Metropolitan	Regional/ remote	
NSW	4	2	2	4
QLD	3	1	2	3
VIC	4	2	2	5
WA	4	2	2	4
Total	**15**	**7**	**8**	**16**

Source: HealthConsult Case study site visit data
*There were no pharmacies involved in the case studies from ACT, NT, SA, and TAS

Appendix F: 6CPA Program Data

Pharmacies across Australia registered patients for the SS program.

Table 24: Derived* locations of pharmacies providing SS services in Australia

State/Territory	Geographical location of pharmacies			Total
	Major city	Regional	Remote	
ACT	25	0	0	25
NSW	212	155	0	367
NT	0	1	0	1
QLD	212	121	6	339
SA	116	52	10	178
TAS	0	62	1	63
VIC	260	106	1	367
WA	163	39	7	209
Total	**988**	**536**	**25**	**1,549**

Source: 6CPA Period 4 registration data
*Locations were derived by assigning each pharmacy to the most reported suburb of the 6CPA registrants

Pharmacies that participated in the evaluation (160 out of the 170, 94.1%) and indicated that they provided SS services are presented in Table 25.

Table 25: Pharmacies that participated in the evaluation and provided SS services

State/Territory	Geographical location of pharmacy			Total
	Major city	Regional	Remote	
ACT	2	0	0	2
NSW	31	17	0	48
NT	0	1	0	1
QLD	15	12	2	29
SA	7	5	0	12
TAS	0	5	0	5
VIC	21	7	0	28
WA	27	8	0	35
Total	**103**	**55**	**2**	**160**

Source: 6CPA Period 4 registration data

HealthConsult

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Design, implementation and evaluate the new and expanded 6CPA programs

Finalisation of the Cost Review

14 July 2021

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Executive Summary

HealthConsult was engaged by the Australian Government Department of Health (the 'Department') to conduct an:

'*activity-based costing project on the new and expanded community pharmacy programs funded under the Sixth Community Pharmacy Agreement (6CPA)*'.

The objective was to provide input into the possible revision of the current 6CPA fees in the context of refining the programs moving forward. The study was conducted in two Waves. Wave 1 covered Dose Administration Aids (DAA) and Staged Supply (SS) services and Wave 2 included MedsCheck, Diabetes MedsCheck and Home Medication Review (HMR) services. This report brings together the work from both costing waves, along with suggestions for future fee options.

ES 1 METHODOLOGY

The methodology was designed to derive a representative cost for the provision of the services within each of the five selected programs using a bottom-up activity-based costing approach. It incorporated primary data collection from 57 study sites comprised of 20 DAA and SS sites, 20 MedsCheck and Diabetes MedsCheck sites and 17 HMR service providers (12 independent practitioners and five pharmacy employed practitioners). Process maps and supporting data collection tools identified relevant resource units used to perform the activities in each of these services. Data about staff mix, activity time, local hourly rates, the frequency-of-occurrence and consumable costs were obtained via face-to-face interviews. The process maps and activity definitions were developed and refined through pilot site interviews and consultations/workshops with a pharmacist target group.

A representative cost model was developed from the site-based data, to aid in the consideration and selection of representative costs for the services for each of the five programs, including the associated Health Outcomes (HO) data collection. There was considerable variation between sites, and either the median or the 40th percentile site cost from each program group was selected as the representative cost to mitigate the effect of high and low-cost outlier sites. HMR cost analyses for independent practitioners and pharmacy employed practitioners were performed separately, both including and excluding travel time.

ES 2 OUTCOMES OF THE COSTING STUDIES

Table ES.1 compares the derived representative costs for services within each of the five in-scope 6CPA programs.

Table ES.1: Comparison of the representative costs for services within each of the five in-scope 6CPA programs

Fee Description	6CPA Fee (Jul 2017)	6CPA Fee (Jul 2018)	6CPA Fee (Jul 2019)	Representative Cost	Variation to Jul 2019 Fee
Provision for weekly DAA service	$6.00	$6.08	$6.17	$11.60	+$5.43 ↑
Provision for weekly Staged Supply service	$7.90	$8.01	$8.12	$5.28	-$2.84 ↓
Each additional provision of a Staged Supply service during the week	$4.00	$4.06	$4.12		+$1.16 ↑
Provision of a MedsCheck service	$64.70	$65.61	$66.53	$37.62	-$28.91 ↓
Provision of a Diabetes MedsCheck service	$97.05	$98.41	$99.79	$52.09	-$47.40 ↓
Provision of an HMR service - independent practitioner excluding travel time	$216.66	$219.69	$227.77	$231.66	+$3.89 ↑
Provision of an HMR service - independent practitioner including travel time	$216.66	$219.69	$227.77	$318.10	+$98.41 ↑
Provision of an HMR service – pharmacy-employed practitioner excluding travel time	$216.66	$219.69	$227.77	$177.37	-$50.40 ↓
Provision of an HMR service - pharmacy-employed practitioner including travel time	$216.66	$219.69	$227.77	$215.69	-$12.08 ↓
Health Outcomes data collection					
DAA – patient registration	$31.90	$31.90	$31.90	$21.82	-$10.10 ↓
DAA – follow-up	$31.90	$31.90	$31.90	$16.26	-$15.64 ↓
SS – patient registration	$31.90	$31.90	$31.90	$21.82	-$10.10 □
SS – follow-up	$31.90	$31.90	$31.90	$16.26	-$15.64 □
MedsCheck/ Diabetes MedsCheck – patient registration	$31.90	$31.90	$31.90	$15.05	-$16.85 ↓
MedsCheck/ Diabetes MedsCheck – follow-up	$31.90	$31.90	$31.90	$16.80	-$15.10 ↓

Source: 6th Community Pharmacy Agreement; Program Rules Dose; Administration Aids and Staged Supply; Effective 1 July 2017; 6th Community Pharmacy Agreement; Program Rules MedsCheck and Diabetes MedsCheck; Effective 2 October 2018 and HealthConsult activity-based costing study undertaken July/August 2018 for DAA and SS; and HealthConsult activity-based costing study undertaken from November 2018 to January 2019 for MedsCheck, Diabetes MedsCheck and HMR.
Representative costs have not been indexed, they are reported per the Wave 1 and Wave 2 study findings

The costing study showed that the current fees for service provision and data collection for each of the programs do not reflect the representative cost of service provision:

- **For DAA**, the July 2019 6CPA weekly service fee of $6.17 represents a 47% contribution to the representative cost of $11.60.
- In contrast, the 2019 6CPA service fees for **MedsCheck** ($66.53) and **Diabetes MedsCheck** ($99.79) are about 77% and 92% higher respectively than the representative costs ($37.62 for MedsCheck and $52.09 for Diabetes MedsCheck).
- For **Staged Supply**, the representative cost of delivering any Staged Supply service ($5.28) is lower than the current 6CPA fee for the first weekly service ($8.12) but higher than the fee for subsequent services during the week ($4.12). Pharmacies receive less than the representative weekly cost for patients receiving Staged Supply each day of the week ($32.84 c.f. $36.96). For patients receiving Staged Supply every second day, the representative weekly cost is comparable to the current 6CPA fees ($18.42 c.f. $18.48).
- For **HMR** the 6CPA service fees are 31% less than the representative cost of independent practitioners delivering the service including travel expenses ($219.69 c.f. $318.10). The 6CPA service fee is comparable to the representative cost of pharmacies delivering the service including travel expenses ($219.69 c.f. $215.69). The difference in the derived representative cost between independent HMR practitioners and those based in a pharmacy is largely due to:
  - additional time spent performing the service; generally, in the patient interview, interview preparation and report writing activities
  - additional travel time
  - an additional overhead component to recognise the cost of maintaining access to essential resources such as therapeutic guidelines and compendiums and the additional costs of maintaining a home office.

- Depending on the program, the costing study also showed the 6CPA fees for **collecting patient data** at registration and follow-up ($31.90) is at least 46% higher than the representative cost at registration, and at least 89% higher than the representative cost at follow-up.

ES 3 CONCLUSIONS

The current DAA fee does not cover the full cost to pharmacies for delivering each DAA pack. Patient and process complexities appear to be the reason for most of the difference, including:

- patient admissions and discharges from hospital and follow up concerning regiment changes
- changes in a patient's medications by their GP
- delivery of DAA packs to patients who experience difficulty collecting their medications
- multiple conversations with patients and family members concerning DAA service consent
- providing patients with lists of scripts that have, or are about to expire
- following up patients who have not picked up their DAA packs.

When these circumstances and situations occur, considerable additional effort is required by way of extra process steps (that are not required for a routine service) that add extra time to the standard activities. The impact of this additional effort is included in the representative cost, in proportion to the frequency that these circumstances and situations occur.

Current Staged Supply fees distinguish between the provision of the first and subsequent staged supply services each week. This costing study found no notable difference in the costs of these instances outside of dispensing, which has been excluded to avoid double-counting. The tiered fee structure means that the fee and cost are nearly identical for a patient that collects three times per week ($16.36 versus $15.84, a difference of only $0.52). Consequently, based on 2019 fees, it would appear that pharmacies are over-compensated for patients that collect their medicines once or twice per week and under-compensated for patients that collect their medicines four or more times per week.

The results indicate that the cost of a study site's time and resources to provide MedsCheck and Diabetes MedsCheck services are lower than the current level of funding.

At sites, HealthConsult observed that a liberal interpretation of the criteria under which a MedsCheck can be performed makes it possible for a proportion of pharmacies to pursue MedsCheck 'targets', mostly imposed from 'head-office', which are presumably in place to maximise pharmacy revenue.

HealthConsult considers that there may be value in:

- further reviewing the patient eligibility criteria used for each pharmacy's MedsCheck claim to assist in identifying the extent of the practice
- reviewing the MedsCheck eligibility criteria to help ensure that the patients receiving the service are those that will benefit the most
- exploring the introduction of a compliance/audit program of the patients who receive a MedsCheck service (potentially with random spot checks) to deter pharmacies that are primarily chasing volume targets.

The Diabetes MedsCheck patient consultation takes longer to complete due to the typically more complex clinical needs of the patient cohort, as well as (in some cases) the completion of some physical tests. The decision about conducting tests during the consultation was driven by differences in approach or perception of the purpose of the face-to-face patient consultation. For example, some pharmacists:

- see the Diabetes MedsCheck process as an intervention, and they perform some tests including blood pressure, glucose monitoring, cholesterol level, and in one instance they performed an HBA1C test
- see the Diabetes MedsCheck as an educational process.

Some study sites did not undertake the collection and submission of Health Outcomes data. There was a common perception amongst non-completers that it took too long to gather and enter this data, and it was not worth the fee (note the study data do not support this perception). Pharmacies reported that the process was cumbersome and data fields are inflexible and rigid.

For HMR services, independent practitioners appear to spend more time than their pharmacy employed counterparts in interview preparation and research, conducting the interview and writing the report. The current 6CPA fee does not appear to adequately cover independent practitioner's time, effort and resources required for HMR services. As identified via the costing study, travel time has a significant impact on the cost of delivering HMR services in patient's homes. Travel time is integral to providing home-based services and should be considered in 7CPA fee deliberations.

Although outside of the scope of the costing study, in designing 7CPA program refinements, consideration could also be given to providing education to GPs about the availability and benefits of the HMR service. HMR practitioners reported that the referring GP's knowledge of, and regard for, HMR services, turnover in local GPs, and the local GPs approach, all had a direct impact on the number of HMRs that they performed. It may also be worth considering other trigger points for patients to access HMR services (e.g. discharge from hospital may be an appropriate point in time to trigger an HMR for eligible patients where there has been a change in medication regime).

ES 4 OPTIONS FOR MOVING FORWARD

The current fees do not reflect the actual cost of providing the services. Consideration could be given to revising and simplifying service fees to reflect better the representative cost of service delivery inclusive of a reasonable margin.

Collection and submission of Health Outcomes data was not well embraced by the site visit pharmacies. They saw little relevance, thought it was an uneconomical use of their time and flagged that the process was far from user friendly. The findings indicate that not all pharmacies are implementing data collection and patient follow-up services as intended under the program models. Further, the follow-up rate suggests that pharmacies do not see follow-up as essential for attaining patient outcomes. Thus, consideration should be given to whether the collection of Health Outcomes data should be continued or revamped to achieve the desired outcome.

1 Introduction and Purpose of the Study

On the 29th August 2017, the Australian Government Department of Health (the 'Department') engaged HealthConsult to:

'conduct an activity-based costing project on the new and expanded community pharmacy programs funded under the Sixth Community Pharmacy Agreement (6CPA)'

This Chapter briefly describes the in-scope programs, the history of changes under the 6CPA to reflect the budget measure and outlines the methodology for the project.

1.1 OVERVIEW OF THE 6TH COMMUNITY PHARMACY AGREEMENT (6CPA)

In May 2015, the Australian Government and Pharmacy Guild of Australia (the 'Guild') entered into the 6CPA, which provides around $18.9 billion in remuneration for community pharmacies, as well as support to the pharmaceutical supply chain (with a further $372 million provided for chemotherapy compounding fees). Up to $1.26 billion in funding is available under the 6CPA for evidence-based, patient-focused professional pharmacy programs and services, comprising:

- $613 million for the continuation of some programs and services from 5CPA
- $50 million for a new pharmacy trial program
- up to $600 million for new and expanded community pharmacy programs.

The 6CPA includes three key funding elements:

- community pharmacy remuneration
- ensuring that all Australians have timely access to the Pharmaceutical Benefits Scheme (PBS) listed medicines, that they require regardless of the cost of the drug or where they live
- programs directed at improving consumer management of their medications and delivering primary health care services through community pharmacy.

The 6CPA Pharmacy Practice Incentive (PPI) program provides a financial incentive to pharmacists to deliver compliance initiatives. As part of the 6CPA, there are several continuing PPI Programs directed at improving medication compliance through community pharmacies in Australia. The continuing programs include:

- Medication Adherence Programs
  - Dose Administration Aids (DAAs)
  - Clinical Interventions (CIs)
  - Staged Supply (SS)
- Medication Management Programs
  - Home Medicines Reviews (HMR)
  - Residential Medication Management Reviews (RMMR)
  - MedsCheck and Diabetes MedsCheck
- Rural Support Programs
  - Rural Pharmacy Workforce Program
  - Rural Pharmacy Maintenance Allowance
  - Aboriginal and Torres Strait Islander (ATSI) Programs
  - Quality Use of Medicines Maximised for ATSI People (QUMAX)
  - S100 Pharmacy Support Allowance
  - ATSI Workforce Program (Pharmacy Assistant Traineeship Scheme and Pharmacy Scholarships Scheme)

- eHealth:
  - Electronic Prescription Fee

Under 6CPA, all programs and services need to be reviewed by the Medical Services Advisory Committee (MSAC) for clinical and cost-effectiveness and the health benefits they offer to the community. This process is being used to ensure pharmacy programs and services are assessed against the same standards of evidence as for other health professions. It supports a consistent approach to informing investment that delivers the greatest benefit to consumers.

1.2 IN-SCOPE PROGRAMS FUNDED UNDER 6CPA

As a result of measures announced in the 2017/18 Budget, the following new and expanded programs have been rolled out from 1st July 2017:

- Dose Administration Aids (DAA) – new;
- Staged Supply (SS) – new;
- MedsCheck – expanded;
- Diabetes MedsCheck – expanded; and
- Home Medicine Reviews (HMR) – expanded.

Medical Services Advisory Committee (MSAC) considered an evaluation of literature and the available data for these programs in November 2016 and April 2017 and concluded that there were insufficient data and empirical evidence to support a determination of their cost-effectiveness.

As a result of this finding, and the Budget Measures, the Department sought assistance with the design, implementation and evaluation of the new and expanded community pharmacy programs, which includes the conduct of an activity-based costing exercise (this project) for the five in-scope programs.

This section presents a high-level summary of the aims of each in-scope program.

1.2.1 Dose Administration Aids (DAA) – new program

The DAA priority area was established under the Better Community Health Initiative of the Fourth Community Pharmacy Agreement (4CPA) and Fifth Community Pharmacy Agreement (5CPA) between the Guild and the Commonwealth Government. The DAA initiative was continued under the 6CPA, as part of the PPI Program directed at improving medication compliance through community pharmacies in Australia.

The Pharmaceutical Society of Australia (PSA) *Guidelines for pharmacists providing dose administration aid services* (November 2017) define DAA to be a 'tamper evident, well-sealed device or packaging that allows for organising doses of medicine according to the time of administration'. According to the PSA guidelines and standards (PSA, 2017), the DAA initiative aims to promote the quality use of medicines by improving adherence and medication management and reducing medication misadventure.

1.2.2 Staged Supply (SS)

The SS priority area was established under the Better Community Health Initiative of the 4CPA and 5CPA between the Guild and the Commonwealth Government. The SS initiative was continued under the 6CPA, as part of the PPI Program directed at improving medication compliance through community pharmacies in Australia. The PSA's *Standards and Guidelines for pharmacists providing stages supply services (November 2017) define SS to be a 'clinically indicated, structured service involving the supply of medicines to a patient in periodic instalments as requested by the prescriber or carer'*.

The SS programs aim to improve medication adherence and to reduce the risk of self-harm or harm to others through accidental or intentional misuse, abuse or diversion of prescribed medicines.

1.2.3 MedsCheck

MedsCheck is an in-pharmacy, patient-centred service that includes a review of a patient's medicines, focusing on education and self-management.

The MedsCheck service aims to:

- identify problems that the patient may be experiencing with their medicines
- help the patient learn more about their medicines including drugs that affect medical conditions
- improve the effective use of medications by patients
- educate patients about how to best use and store their medications.

1.2.4 Diabetes MedsCheck

Diabetes MedsCheck is an in-pharmacy, patient-centred service that provides a review of medications with a focus on the patient's type 2 diabetes medicines management, monitoring devices, education and self-management. The service targets patients who are unable to get timely access to diabetes education or health services in their community.

The Diabetes MedsCheck service aims to:

- optimise a patient's effective use of medicine through improving understanding of, and compliance with, their diabetes medication therapy
- improve a patient's effective use of blood glucose monitoring devices through training and education
- improve blood glucose control
- reduce the risk of developing complications associated with type 2 diabetes.

1.2.5 Home Medicine Reviews

The HMR program was designed to enhance the quality use of medicines and reduce the number of adverse events and associated hospital admissions or medical presentations, by assisting consumers to better manage and understand their medication by an accredited pharmacist conducting a review in the patient's home.

The objectives of HMR are to:

- achieve safe, effective, and appropriate use of medicines by detecting and addressing medicine-related problems that interfere with desired patient outcomes
- improve the patient's quality of life and health outcomes using a best practice approach that involves cooperation between the GP, pharmacist, other relevant health professionals and the patient (and where appropriate, their carer)
- improve the patient's and health professional's knowledge and understanding of medicines
- facilitate cooperative working relationships between members of the healthcare team in the interests of patient health and wellbeing
- provide medication information to the patient and other healthcare providers involved in the patient's care.

1.3 AIMS AND OBJECTIVES

This project provides a robust measurement of the actual cost to community pharmacies of providing the five in-scope services as well as examining the level of current fee compensation.

The cost study results will inform the 7CPA 'fee setting' processes (assuming funding continues for the programs). Participating pharmacies in this study clearly understood the value to their sector in providing actual costs into the Department's considerations for 7CPA funding model design.

1.4 PURPOSE OF THE DOCUMENT

To determine the service delivery costs associated with the new and expanded 6CPA programs, HealthConsult has been engaged to conduct a detailed costing study to determine the actual costs of delivering each program. In addition to establishing 'standard' program delivery costs, the study identified 'cost variation factors' for pharmacies and consumers to better estimate the costs.

Costing data is collected in two waves:

- ***Wave 1*** (DAA and SS programs) – comprising 20 pharmacies that consented to participate in the study from a pool of 120 randomly selected and invited pharmacies, completed from fieldwork carried out during July and August 2018
- ***Wave 2*** (MedsCheck, Diabetes MedsCheck and HMR programs) – comprising 20 pharmacies that consented to participate in the study from a pool of 128 randomly selected and invited pharmacies (targeting non-Wave 1 study participants). And, ten independent (HMR accredited) pharmacists that consent to participate in the study from a pool of 58 randomly selected pharmacists, completed from fieldwork carried out from November 2018 to January 2019.

This document looks at the combined results of both Wave 1 (DAA and SS programs) and Wave 2 (MedsCheck, Diabetes MedsCheck and HMR programs).

2 Methodology

This Chapter summarises the approach taken to derive a 'representative' cost for each of the activities involved in delivering an end-to-end service for each of the five 6CPA programs, for a single instance of service. The Chapter provides a detailed overview of the methodology use and data limitations.

2.1 DEFINING KEY ACTIVITIES

For each of the five 6CPA programs, HealthConsult visited three Guild nominated pilot sites to understand the approaches and the activities each pharmacy had adopted. The three pilot sites were mostly consistent in their approach to these services, and their operations were similar. The site visits involved validating process maps, and activity definitions that were developed from the 6CPA Guidelines, which were refined based on feedback and then circulated to a larger target group of pharmacists. Feedback was used to finalise the data collections tools (see Appendices A to E for the process map and activity definitions for each program), that facilitated the face-to-face sites visits across pharmacies located within Australia.

2.2 COSTING METHODOLOGY

The methodology was designed to derive a representative cost per:

- 'weekly pack' cost for the DAA program
- 'patient collection' cost for the SS program
- 'service' cost for MedsCheck
- 'service' cost for Diabetes MedsCheck
- 'service 'cost for HMR services

In addition to validating the process maps and activity dictionaries with pilot sites, these data collection tools were tested with experienced pharmacists through workshops. Primary data collection was completed in two waves:

- ***Wave 1:*** 20 pharmacies from a pool of 120 randomly selected pharmacies located in New South Wales, Victoria, Queensland and Tasmania (covering DAA and SS).
- ***Wave 2:*** 20 pharmacists from a pool of 160 randomly selected pharmacies and 17 HMR providers (12 independent practitioners and five pharmacy employed practitioners) from a pool of 60 randomly selected providers in New South Wales, Victoria, South Australia and Western Australia (covering MedsChecks, Diabetes MedsChecks and HMRs)

HealthConsult managed the selection of participants from the random pools, and the Guild facilitated the distribution of study invitations and the consent process.

Activity-based costing in the study takes a bottom-up approach; this means that the costing focuses on building up costs from the atomic level and determining staff times, resources and known associated costs for activities. Sites were provided with the final process maps and the associated data collection tools before each visit. During each face-to-face visit, HealthConsult collected data (via interview and observation) about staff time spent on each activity, staff roles and their hourly rates, the frequency of occurrence of each activity, and the costs of consumables and software. These data were then used to develop a methodologically consistent time and cost estimate for each site.

Activity duration data were collected in one of two ways:

- ***Direct measurement*** – using a stopwatch to measure how long each activity takes to perform.
- ***Magnitude estimation*** – asking the pharmacy staff' to estimate the 'average' activity duration, taking into account historical interactions over a reasonable period (typically three to twelve months) and drawing on pharmacy specific knowledge about their clients and processes. In many cases, sites would provide a range of values, indicating the shortest, longest and average activity duration.

Direct measurement is preferred for high volume activities that are performed consistently, such as packing and checking DAA blister packs. Site visits were arranged to coincide with each site's DAA packing schedule and Staged Supply patient visits to maximise the number of observations (patient interactions were not observed directly).

Infrequently performed and highly variable activities are not considered good candidates for observation due to the potential for misleading results during the relatively short site-visit' timeframe. Thus, magnitude estimation is preferred for infrequent activities where the opportunity to observe sufficient activity volume is limited. This was especially relevant to Medscheck, Diabetes MedsCheck and HMRs services. Details on the specific data collection technique by activity for each program can be found in Appendix F.

2.3 COSTING PARAMETERS

This section describes the cost calculation parameters

2.3.1 Labour unit costs, on-costs and overheads

The costing approach derived unit costs by matching local resources to local effort, and resource consumption based on each site's data, to best represent local practices and processes. The resulting labour costs reflect the different types of staff involved in service delivery and the mix of staff roles and (seniority in roles) performing similar activities vary across the pharmacy sites. Sites were asked to consider the end-to-end process for delivery of the following:

- a DAA service
- a Staged Supply service
- collection and submission of Health Outcomes data (DAA and SS)
- MedsCheck service
- Diabetes MedsCheck service
- collection and submission of Health Outcomes data (MedsCheck and Diabetes MedsCheck)
- an HMR service.

The labour cost of each activity was calculated by multiplying the number of minutes that each staff member spent on the activity by their corresponding rate (which varied within pharmacies and across the sites). Pharmacies were asked for labour rates that excluded on-costs and made no allowance for overheads. Rates for independent HMR practitioners were based on an average pharmacist hourly rate derived from all study sites with known rates as most HMR practitioners are remunerated through the 6CPA claim only.

DAA, SS, MedsCheck and Diabetes MedsCheck' site's base labour costs were transformed into an estimated fully absorbed unit cost, by adding on-costs at 25% to allow for superannuation, paid leave, public holidays, payroll tax and so on, and by adding pharmacy overheads at 15%. There is ample evidence to support a typical salary on-cost rate of around 25% of direct salary. Overheads can vary considerably, but a representative number of 15% of direct salary costs was chosen to reflect the resources needed to make a person productive (e.g. supervision, shop space, furniture, general equipment, internet, light, power, insurances). Thus, the combined uplift of 40% on labour rates is considered reasonable for the labour-intensive activities studied in this study.

Slightly different assumptions were made for HMR provider base labour costs, by adding on-costs at 25% (per DAA, SS, MedsCheck and Diabetes MedsCheck) and by adding overheads at 21% (6% higher than for DAA, SS, MedsCheck and Diabetes MedsCheck).

The higher overhead percentage for HMR practitioners recognises the in-home nature of HMR service delivery and that:

- independent practitioners incur home office costs (e.g. computer, printer, internet) when not at a patient's home, including costs of maintaining access to current therapeutic guidelines, the Australian Medical Handbook; Aged Care Compendium and costs relating to the maintenance and operation of motor vehicles
- pharmacy employed practitioners also incur additional costs relating to the maintenance and operation of motor vehicles.

2.3.2 Non-labour costs

Non-labour costs relate mostly to DAA and SS services, and to a lesser degree for Diabetes MedsChecks. No significant non-labour items were identified for MedsChecks and HMRs (non-material amounts fall into the overhead allowance).

For non-labour costs, the unit cost was used directly or extrapolated from annual costs and service volumes (primarily consumables and software costs). Indirect non-labour costs such as rent are included in the overhead allowance.

For pharmacies that packed DAAs on site (18 of 20 sites), consumables related to packing materials, in most cases this was a blister pack, a foil back sheet, a printed header with medication timings (e.g. breakfast, lunch, bed-time), gloves and so on. For pharmacies that outsourced packing, these costs were replaced with the service fee from the third-party provider. Only one site relied entirely on outsourced packing (MPS packettes), and one site used a combination of on-site and third-party packing.

Software costs relate to applications that manage various aspects of DAA services, such as indicating to the packing technician which medicines should be packed in each compartment and manage the printing of customised header cards. Pharmacies reported using:

- Webstercare software system
- Webstercare and MedsPro software system
- Unspecified DAA software system.

Pharmacies using the standalone version of Webstercare packed their DAAs from the patient's medication profile, and they stored the balance of dispensed medications in individually labelled patient containers. Pharmacies using the Webstercare and MedsPro system also packed their DAAs from the patient's medication profile, but the MedsPro system provided greater visual assistance for packing technicians (including photographs of each tablet), and the system recorded each packed medication. The balance of dispensed medications for each patient is stored in the system, which allows the drug stock to be maintained centrally. Sites that used the MedsPro software module had a higher software cost.

Staged Supply consumables were less significant and usually related to plain boxes in which patients collected their medication. Pharmacies reported that they encouraged patients to bring back the packaging so that it could be reused. Not all SS sites provided consumable costs as they viewed them to be minimal or immaterial.

Diabetes MedsChecks consumables mostly related to blood glucose tests and included items such as testing strips, lance sets, swabs, antiseptic wipes, band-aids and gloves. A small number of pharmacies incurred additional costs for performing an HBA1C or a cholesterol test. Not all

pharmacies performed tests during service consultations, for example, blood glucose tests (many pharmacies treat Diabetes MedsCheck as a patient education intervention).

2.3.3 Frequency of occurrence

The 6CPA service cost calculations apply a site-specific 'frequency of occurrence' concept to allow for the activities that are performed more, or less, frequently in the delivery of each instance of service. A percentage of less than 100%, applies to activities that are only performed in a proportion of instances, (e.g. where follow up happens for 10 out of 20 patients – the frequency of occurrence would be 50%).

Not all pharmacies collected and submitted health outcomes (HO) data (note that the HMR program doesn't require it). Pharmacists are required to collect data at the initial patient registration and follow-up (six months later). Registration and follow-up are separate activities and have separate fees associated with them. Low levels of engagement with the HO process resulted in a reduced number of data points. In a small number of instances, the pharmacist estimated the time needed to provide the follow-up HO data collection based upon their experience of the initial data HO data collection.

The collection of Health Outcomes data process is nearly identical for both MedsCheck and Diabetes MedsCheck and pharmacists were asked to gauge activity time for one of the services; the same approach was taken for pharmacies providing DAA and SS services. The implementation of HO data was a recent initiative when the DAA and SS fieldwork was being undertaken, and not all sites had been through the full health outcomes process. The timing resulted in a reduced number of data points.

2.3.4 General observation and comments

Not all sites could provide time or unit costs for every activity in isolation, most sites grouped at least some activities to help them make better estimates of resourcing due to individual pharmacy processes where steps were often blended. This situation highlights that activities for these programs are not truly independent of one another at a site level, which is overcome by initially deriving all costs on a per-site basis for each of the services. This ensures that the full cost implications of efficiencies (or inefficiencies) that are introduced in early process steps are captured in later process steps.

Some pharmacies could not provide unit costs (e.g. hourly rates, cost of software or consumables), reasons varied, sometimes this information was controlled at a head-office location, sometimes the pharmacy may have been owned by pharmacists who did not draw a salary. For these sites, average unit costs from the remaining study sites were used. This was deemed appropriate as there was little variation in the overall hourly rates, consumables and software costs. Independent HMR practitioners received most of their income from 6CPA claims as they do not receive a salary. Thus an average pharmacist hourly rate, derived from all study sites and all services with a known hourly rate was used as a proxy.

Site data was collected via face-to-face site visits, and most activity time information was estimated during Consultant facilitated pharmacist interviews and based upon the pharmacist's professional judgement. Interviews allowed the pharmacist to go through the process in detail, allowing them to provide their estimates on how long it took to complete each activity and who completed each task. Pharmacists would typically report either average times or a range of times taken for each activity; thus, the average time (or mid-point for a range) has been used to calculate the cost for each site. For some programs, several observation time points were captured and recorded during the site visit (mostly related to DAA packing process). In these cases, the median observation times have been used in calculating site-specific cost.

DAA and Staged Supply service costs do not include the cost of dispensing to avoid double counting. This is because every script that is presented by a patient has a charge that is levied to provide the medication which covers the cost of dispensing.

At some sites, MedsCheck, Diabetes MedsCheck and HMR services were provided on weekends. Additional staff costs associated with weekend hourly rates and shift penalties have been included in the derived site costs.

2.3.5 MedsCheck specific observations

During the MedsChecks site visits, pharmacy level differences were noted in the type of patients that they focused on; patients fall into one of two categories, those:

- commencing a new medication for the first time
- with complex clinical conditions and take five or more medications.

Patients commencing a new medication are generally more straightforward:

- their MedsCheck service is easier and quicker to perform
- there is often nothing to report to the GP
- patient follow-up is often not required.

It takes less time to perform MedsCheck service for these patients, and there is evidence that member pharmacies of some pharmacy groups with 'head office MedsCheck targets', found it easier to achieve their target from this patient cohort.

Conversely, patients who have complex clinical conditions and that are taking five or more medications are more complicated and take longer. These patients often:

- have chronic conditions
- require follow-up
- require additional information for their assessment.

The outcome is that there is a notable variance across the study sites in the time and cost of a MedsCheck, which was often dependent on the type of patient that each pharmacy pursued.

2.3.6 HMR specific observations

There were variation in practitioner' activities depending on how the individual was employed; HMR practitioners fell into three broad categories, those:

- operating independently
- operating independently and contracted by a medical practice
- employed within a pharmacy.

Independent practitioners reported little or no involvement in patient follow-up (*Activity 11* - nominated pharmacy addresses the medication management plan and recommendations as required). It was interesting to note that up to 50% of patients chose not to have a copy of their HMR report sent to their local pharmacy, this was considered to be mostly price-conscious patients who did not frequent a particular pharmacy, and patients do not want their local pharmacy to know the outcomes of their HMR review.

Independent practitioners in medical practices often performed activities generally considered to be carried out by GPs. These activities included identifying the clinical need (*Activity 1*); assessing patients against 6CPA eligibility criteria (*Activity 2*), and obtaining patient consent and completing the referral (*Activity 3*). Additionally, the practitioner generally attended the post-HMR Review meeting between the GP and the patient (*Activity 10*); other HMR practitioners rarely did this.

Other significant factors that contributed to time variation between practitioners were generally related to the characteristics of that practitioner's patient cohort, such as:

- the complexity of patients' medical conditions
- the rarity of medical conditions infrequently encountered patient tests and other circumstances that require significant practitioner research
- if family members and carers present during the HMR interview
- the need for translators in interviews for non-English speaking patients.

HMR referral volumes varied, both between practitioners, and over time, for individuals, and are understood in many cases to be correlated to the referring GPs knowledge of, and regard for, HMR services. Practitioners reported that changes in local GPs and the local GPs approach had a direct impact on the number of HMRs that they performed. Changes to the referral process may assist in improving patient access to HMR Services, e.g. discharge from hospital may be an appropriate point in time to trigger an HMR for eligible patients, as they will often have had a change in medication and therefore at greater risk of medication error. Additionally, increased GP education may positively impact on patient access to HMR services.

Independent practitioners are required to maintain access to specific Pharmacy resources including Therapeutic Guidelines, the Australian Medical Handbook (AMH); the Aged Care Compendium and in some cases the Children's Compendium; end of life procedures and so on. Unlike pharmacies, where these resources are shared and support all pharmacy services, for independents, these costs are directly related to providing HMRs.

Some independent practitioners flagged that they regularly paid a part of their HMR fee to a pharmacy or medical centre as a 'spotters' or 'finders' fee, where that pharmacy or centre was the receiver of the GP's HMR referral.

Travel has a significant impact on the cost of delivering HMR services in patient's homes. Travel costs are accounted for in two ways:

- Time spent travelling to, from and between patients – included in the labour cost
- Costs of maintaining and operating motor vehicles – included in the overhead allowance.

This report presents HMR costs including, and excluding, the labour cost of time spent travelling.

3 Outcomes

This Chapter presents the derived representative cost for each of the services within the five 6CPA programs. It also shows the representative cost in comparison to the 6CPA fee (current at the time of the study). Details about resource, time and cost estimates for each of the participating sites can be found in the Appendices of the Wave 1[1] and Wave 2[2] costing reports (study sites are not identified in the parameters tables in the Appendices, and they have been scrambled from service to service, i.e. site in 1 in MedsCheck is not the same site as site 1 in Diabetes MedsCheck).

3.1 DAA COSTS

This section presents the derived representative cost of DAA and comparisons to the relevant 6CPA fee (current at the time of the study).

3.1.1 Derived representative cost of DAA services

Table 1 summarises the cost for the weekly provision of a DAA service by study site. The average cost across all sites was $15.14, and the median cost was $13.12. HealthConsult considered the 40th percentile at $11.60 to be the appropriate and representative value, and it avoids the effect that an isolated cluster of particularly high-cost sites might have on the result.

[1] HealthCost: Wave 1 Costing Report 26th October 2018
[2] HealthCost: Wave 2 Costing Report 15th February 2019

Table 1: Representative cost for Provision of weekly DAA Service

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost - Defined activities	$11.13	$6.92	$8.02	$6.13	$11.16	$5.71	$7.40	$8.00	$8.58	$7.36	$10.07	$5.71	$15.75	$17.71	$12.14	$24.28	$10.31	$8.36	$17.97	$6.50
Labour cost – Patient and process complexities	$3.74	$6.63	$1.79	$0.68	$3.20	$2.21	$1.93	$1.58	$1.66	$3.07	$4.21	$8.19	$3.36	$1.98	$5.29	$1.69	$0.06		$1.23	$1.68
Consumables	$2.21	$0.84	$1.50	$0.66	$2.02	$1.15	$0.15	$1.91	$0.62	$0.64	$7.50	$0.85	$1.19	$5.00	$1.39	$1.73	$0.87	$1.16	$1.44	$1.10
Software	$0.67	$0.09	$0.25	$0.35	$0.59	$0.08	-	$0.27	$0.48	$0.55	-	$0.20	$0.52	-	-	$0.76	$0.02	$0.15	$0.21	$0.24
Total	**$17.75**	**$14.48**	**$11.56**	**$7.82**	**$16.97**	**$9.15**	**$9.48**	**$11.76**	**$11.33**	**$11.62**	**$21.78**	**$14.95**	**$20.82**	**$24.69**	**$18.82**	**$28.46**	**$11.26**	**$9.67**	**$20.85**	**$9.52**

Determination of representative cost	Cost of Provision of weekly DAA service
Average cost of all 20 sites	$15.14
Median cost of all 20 sites	$13.12
Representative cost (40th percentile)	**$11.60**

Source: HealthConsult activity-based costing study undertaken July/August 2018.
Please note that the numbers in this table may not add due to rounding

3.1.2 Comparison of DAA derived cost to 6CPA fees

Table 2 compares the 6CPA DAA fee and the representative cost from the costing study. The result shows that the provision of a single weekly DAA pack costs pharmacies $11.60, which is $5.60, or 93.3% higher than the 2017 fee of $6.00

Table 2: Comparison of derived representative cost to 6CPA fee for DAA

Fee Description	6CPA Fee	Representative Cost	Variation
Provision for weekly DAA service	$6.00	$11.60	+$5.60 ↑

Source: 6th Community Pharmacy Agreement; Program Rules Dose; Administration Aids; Effective 1 July 2017; and HealthConsult activity-based costing study undertaken July/August 2018.

The outcome accords with a commonly held view of pharmacies that the current fee does not recognise all of the costs of providing a DAA service. Note that the representative cost excludes dispensing (to avoid double-counting) but includes some additional patient and process complexities that consume significant pharmacy resources (*please refer to Appendix A, section A.3*). These additional costs were identified in the pilot site and workshop discussions and then validated during the site visits and they include: delivering DAAs to patients incapable of attending the pharmacy in person, following up on missing scripts, pack changes due hospital admittance and discharge, and extended or multiple conversations with patients and family to discuss DAA consent and more. Addressing these issues with relevant parties is essential to be able to provide the correct DAA pack to the patient.

When these circumstances and situations occur, considerable additional effort is required by way of extra process steps (that are not needed for a routine service) and take more time to the standard activities. The impact of this additional effort is included in the representative cost, in proportion to the frequency that these circumstances and situations occur.

3.2 STAGED SUPPLY COSTS

This section presents the derived representative cost of SS services compared to the relevant 6CPA fee (current at the time of the study).

3.2.1 Derived representative cost of SS services

Table 3 summarises the estimated cost for the weekly provision of a Staged Supply service by site. The average cost across all sites was $6.70, and the median cost was $5.54. HealthConsult considered the 40th percentile at $5.28 to be appropriate and representative, and this avoids the effect that an isolated cluster of particularly high-cost sites might have on the result.

Table 3: Representative cost for the provision of an instance of SS service

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost - Defined activities	$5.74	$1.78	$3.38	$4.83	$6.20	$12.68	$9.48	$5.13	$2.46	$4.29	$2.53	$5.26	$7.90	$6.67	$7.75	$3.59	$11.47	$5.54	$4.48	$11.97
Consumables	$0.34	-	-	-	-	-	$2.00	$0.35	$1.66	$1.00	$0.09		-	$3.57	$0.17	-	$1.00	-	$0.25	$0.34
Total	**$6.08**	**$1.78**	**$3.38**	**$4.83**	**$6.20**	**$12.68**	**$11.48**	**$5.48**	**$4.12**	**$5.29**	**$2.62**	**$5.26**	**$7.90**	**$10.24**	**$7.93**	**$3.59**	**$12.47**	**$5.54**	**$4.73**	**$12.31**
Determination of representative cost											**Cost of Provision of Staged Supply**									
Average cost of all 20 sites											$6.70									
Median cost of all 20 sites											$5.54									
Representative cost (40th percentile)											**$5.28**									

Source: HealthConsult activity-based costing study undertaken July/August 2018.
Please note that the numbers in this table may not add due to rounding

3.2.2 Comparison of SS derived cost to 6CPA fees

Table 4 shows a comparison between the 2017 SS fee structure and the representative cost from the costing study. The results show that providing a single SS instance (patient medicine collection) costs pharmacies $5.28, which is $2.62 less than the fee for the first weekly SS Service of $7.90, and $1.28 more than the fee for subsequent weekly SS services of $4.00.

Table 4: Comparison of derived representative cost to 6CPA fee for an SS service

Fee Description	6CPA Fee	Representative Cost	Variation
Provision of first Staged Supply service each week	$7.90	$5.28	-$2.62 ↓
Each additional provision of a Staged Supply service during the week	$4.00		+$1.28 ↑

Source: 6th Community Pharmacy Agreement; Program Rules; Staged Supply; Effective 1 July 2017; and HealthConsult activity-based costing study undertaken July/August 2018.

Current Staged Supply fees distinguish between the provision of the first and subsequent staged supply services each week. This costing study found no notable difference in the costs of these instances outside of dispensing, which has been excluded to avoid double-counting. The fee is higher than the cost incurred by the pharmacy in the cases where the patient collects their medicines once per week ($7.90 versus $5.28) or twice per

week ($11.90 versus $10.56). The fee and cost are nearly identical for a patient that collects three times per week ($15.90 versus $15.84); thus, pharmacies are under-compensated for the fourth and subsequent patient visits.

Consequently, it would appear that pharmacies are over-compensated for patients that collect their medicines once or twice per week and under-compensated for patients that receive their medications four or more times per week.

3.3 HEALTH OUTCOMES FOR DAA AND SS SERVICES

This section presents the derived representative cost of Health Outcomes for DAA and SS services and compares them to the relevant 6CPA fee (current at the time of the study).

The Health Outcome data collection requirement was only recently implemented at the time of the study; DAA commenced February 2018 and SS commenced in July 2018. Therefore, not all sites had been through the Health Outcomes process, which resulted in a reduced number of data points.

3.3.1 Derived representative cost of collection of data at patient registration

Table 5 summarises the estimated cost for the Collection of data at Patient Registration for patients at each site. The average cost across all sites was $24.24, and the median cost was $21.82. After closely reviewing the data, HealthConsult determined that while the data may include low-end and high-end values, they should be included in the calculation of the representative cost, since they largely cancel one another out. On that basis, the representative cost for the collection of data at Patient Registration set at the median cost, i.e. $21.82.

Table 5: Representative cost for the Collection of data at Patient Registration for DAA and SS

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost	$29.96	$17.73	$35.00	$19.54	$15.05	-	$14.93	$32.20	-	-	-	-	-	-	$34.37	$19.72	-	-	-	$23.92
Total	$29.96	$17.73	$35.00	$19.54	$15.05	-	$14.93	$32.20	-	-	-	-	-	-	$34.37	$19.72	-	-	-	$23.92

b	Cost of Coolection of data at Patient Registration
Average cost of sites that provided data	$24.24
Median cost of sites that provided data	$21.82
Representative cost (Median)	**$21.82**

Source: HealthConsult activity-based costing study undertaken July/August 2018.
Please note that the numbers in this table may not add due to rounding
Sites that were unable to provide data have been left blank

3.3.2 Derived representative cost of collection of data at Follow-up Service

Table 6 summarises the estimated cost for the Collection of data at Follow-up Service for patients at each site. The data shows the average cost across sites with data, was $19.05, and the median cost was $16.26. After carefully reviewing the data provided by just three sites, HealthConsult

determined to include all of the values in the calculation of the representative cost. On that basis, the representative cost for the collection of data at Follow-up Service is set at the median cost, i.e. $16.26.

Table 6: Representative cost for the Collection of data at DAA and SS Follow-up Service

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost	-	-	-	-	$16.26	-	-	-	-	$10.79	$30.10	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**$16.26**	**-**	**-**	**-**	**-**	**$10.79**	**$30.10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Determination of respresentative cost											**Cost of Collection of data at Follow Up Service**									
Average cost of sites that provided data											$19.05									
Median cost of sites that provided data											$16.26									
Representative cost (Median)											**$16.26**									

Source: HealthConsult activity-based costing study undertaken July/August 2018.
Please note that the numbers in this table may not add due to rounding
Sites that were unable to provide data have been left blank

3.3.3 Comparison of Health Outcomes derived cost to 6CPA fees

Table 7 compares the representative cost and the 6CPA fees for completing the Health Outcomes data collection.

Table 7: Comparison of derived representative cost to 6CPA fee for DAA and SS Health Outcomes services

Fee Description	6CPA Fee	Representative Cost	Variation
Collection of data at Patient Registration	$31.90	$21.82	-$10.10 ↓
Collection of data at Follow Up Service	$31.90	$16.26	-$15.64 ↓

Source: 6th Community Pharmacy Agreement; Program Rules Dose; Administration Aids; Effective 1 July 2017; and HealthConsult activity-based costing study undertaken July/August 2018.

Both of the HO data collections, i.e. the initial patient registration and the six-month follow-up, were $10.10 (32%) and $15.64 (49%) below the fee of $31.90 respectively. The Health Outcome data collection requirement was only recently implemented at the time of the study; DAA commenced February 2018 and SS commenced in July 2018. Therefore, not all sites had been through the Health Outcomes process, which resulted in a reduced number of data points; thus, caution is advised in interpreting these results.

3.4 MEDSCHECKS COSTS

This section presents the derived representative cost of MedsCheck services compared to the relevant 6CPA fee (current at the time of the study).

3.4.1 Derived representative cost of MedsCheck services

Table 8 summarises the estimated cost for the provision of a MedsCheck service for each site. The average cost across all sites was $39.75, and the median cost was $37.62. HealthConsult considered the median at $37.62 to be appropriate and representative, and this avoids the effect any 'outliers' either high or low sites might have on the result.

Table 8: Representative cost for the provision of a MedsCheck Service

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost - Defined activities	$73.21	$51.49	$50.31	$33.53	$57.87	$41.07	$36.31	$55.16	$40.32	$24.16	$25.17	$37.63	$68.10	$15.73	$20.59	$43.83	$35.81	$22.40	$36.61	$24.57
Consumables				$0.10								$1.00								
Total	**$73.21**	**$51.49**	**$50.31**	**$33.63**	**$57.87**	**$41.07**	**$36.31**	**$55.16**	**$40.32**	**$24.16**	**$25.17**	**$38.63**	**$68.10**	**$15.73**	**$20.59**	**$43.83**	**$35.81**	**$22.40**	**$36.61**	**$24.57**

Determination of representative cost	Cost of Provision of a MedsCheck service
Average cost of all 20 sites	$39.75
Median cost of all 20 sites	$37.62
Representative cost (median)	$37.62

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding.

3.4.2 Comparison of MedsCheck derived cost to 6CPA fee

Table 9 compares the 6CPA MedsCheck fee (current at the time of the study) and the representative cost. The result shows that the provision of a MedsCheck service costs pharmacies $37.62 (median), which is $27.99, or 42.7% lower than the 2018 fee of $65.61

Table 9: Comparison of derived representative cost to 6CPA fee for MedsCheck service

Fee Description	6CPA Fee	Representative Cost	Variation
Provision of a MedsCheck service	$65.61	$37.62	-$27.99 ↓

Source: 6th Community Pharmacy Agreement; Program Rules MedsCheck and Diabetes MedsCheck; Effective 2 October 2018;
and HealthConsult activity-based costing study undertaken from November 2018 to January 2019.

The results indicate that the cost of the study site's time and resources to provide a MedsCheck service are lower than the current level of funding. It is worth noting here that study sites tended to focus on one or other of two eligible patient groups:

- Patients commencing a new medication for the first time
- Patients that have complex clinical conditions and are taking five or more medications.

It takes less time to perform a MedsCheck service for patients in the first category, and they arguably receive less benefit from the MedsCheck service. The softer eligibility criteria for the first category also make it easier for pharmacies to reach what they described as MedsCheck 'targets', mostly imposed from 'head-office', which are presumably in place to maximise pharmacy revenue.

Conversely, some pharmacies actively targeted patients in the second category who have complex clinical conditions and that are taking five or more medications, and where the patient is more likely to experience positive health and medication management impacts from the service.

HealthConsult considers that there may be value in:

- further reviewing the patient eligibility criteria used for each pharmacy MedsCheck claim to assist in identifying the extent of the practice
- reviewing the MedsCheck eligibility criteria to help ensure that the patients receiving the service are those that will benefit the most
- exploring the introduction of a compliance/audit program of the patients who receive a MedsCheck service.

3.5 DIABETES MEDSCHECK COSTS

This section presents the derived representative cost of Diabetes MedsCheck services compared to the relevant 6CPA fee (current at the time of the study).

3.5.1 Derived representative cost of Diabetes MedsCheck service

Table 10 presents a summary of the estimated cost for the provision of a Diabetes MedsCheck service for each site. The average cost across all sites was $52.64, and the median cost was $52.09. HealthConsult considered the median at $52.09 to be appropriate and representative, and this avoids the effect any 'outliers' either high or low sites might have on the result.

Table 10: Representative cost for the provision of a Diabetes MedsCheck Service

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost - Defined activities	$53.52	$47.51	$33.44	$27.39	$31.24	$67.55	$129.03	$58.63	$67.20	N/A	$83.36	$53.70	$65.41	$41.51	$21.19	$41.20	$55.07	$46.85	$62.22	$48.72
Consumables		$2.50					$3.34	$1.00	$5.00	N/A	$1.00		$1.00	$0.33				$1.00	$1.00	$1.95
Total	**$53.52**	**$50.01**	**$33.44**	**$27.39**	**$31.24**	**$67.55**	**$132.38**	**$59.63**	**$72.20**		**$84.36**	**$53.70**	**$66.41**	**$41.84**	**$21.19**	**$41.20**	**$55.07**	**$47.85**	**$63.22**	**$50.67**

Determination of representative cost	Cost of Provision of a Diabetes MedsCheck
Average cost of all 20 sites	$52.64
Median cost of all 20 sites	$52.09
Representative cost (median)	$52.09

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding.

3.5.2 Comparison of Diabetes MedsCheck derived cost to 6CPA fee

Table 11 compares the Diabetes MedsCheck fee (current at the time of the study) and the representative cost from the costing study. The results show that providing a Diabetes MedsCheck service costs pharmacies $52.09 (median), which is $46.32 or 47% less than the 2018 fee of $98.41.

Table 11: Comparison of derived representative cost to 6CPA fee for Diabetes MedsCheck service

Fee Description	6CPA Fee	Representative Cost	Variation
Provision of a MedsCheck service	$98.41	$52.09	-$46.32 ↓

Source: 6th Community Pharmacy Agreement; Program Rules MedsCheck and Diabetes MedsCheck; Effective 2 October 2018; and HealthConsult activity-based costing study undertaken from November 2018 to January 2019.

Like MedsCheck, the results indicate that the cost of a study site's time and resources to provide a Diabetes MedsCheck service are lower than the level of funding. MedsCheck and Diabetes MedsCheck processes were very similar; but a notable difference is that the Diabetes MedsCheck patient consultation takes longer to complete due to the typically more complex clinical needs of the patient cohort, as well as (in some cases) the completion of some physical tests.

The decision about conducting tests during the consultation was driven by differences in approach or perception of the purpose of the face-to-face patient consultation; some pharmacists:

- see the Diabetes MedsCheck process as an intervention, and they perform some tests including blood pressure, glucose monitoring, cholesterol level, and in one instance they performed an HBA1C test
- see the Diabetes MedsCheck as an educational process.

In the latter case, patient consultations tended to take less time.

Generally, significantly fewer Diabetes MedsCheck were performed each month, accounting for around 20% of MedsCheck and Diabetes MedsCheck combined. Pharmacists reported that at least part of the variation was due to eligible Diabetes MedsCheck patients being picked up by the HMR program instead

3.6 HEALTH OUTCOME COSTS FOR MEDSCHECKS AND DIABETES MEDSCHECKS

This section presents the derived representative cost of Health Outcomes for MedsChecks and Diabetes MedsChecks services compared to the relevant 6CPA fee (current at the time of the study).

Some study sites did not undertake the collection and submission of Health Outcomes data. Anecdotally, there was a common perception amongst non-completers that it took too long to gather and enter this data, and it was not worth the fee (note the study data do not support this perception). In most circumstances, pharmacies had trialled the service before choosing to abandon it. Some pharmacies indicated that they saw this process as an uneconomical use of their time. The pharmacies that did collect and submit Health Outcomes data reported that they considered the process to be cumbersome, commenting that the data fields are inflexible and rigid. The consensus was that a better and more efficient process needs to be identified to capture this data into the future.

Additionally, some sites intend to collect the follow-up HO data but had not yet had the opportunity. As a result, 14 of 20 sites reported the collection and submission of initial HO information, and 8 of 20 sites reported the collection and submission of follow-up HO data. In a small number of

instances, the pharmacist estimated the time needed to provide the follow-up HO data collection based upon their experience of the initial data HO data collection. This situation has resulted in a reduced number of data points.

3.6.1 Derived representative cost of collection of data at patient registration

Table 12 presents a summary of the estimated cost for the collection of data at Patient Registration at each site. The average cost across all sites was $16.21, and the median cost was $15.05. After carefully reviewing the data, HealthConsult determined that while the data may include low-end and high-end values, they should be included in the calculation of the representative cost, since they largely cancel one another out. On that basis, the representative cost for the collection of data at Patient Registration is set at the median cost, i.e. $15.05.

Table 12: Representative cost for the Collection of data at Patient Registration of a MedsCheck and Diabetes MedsCheck

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost	-	-	$14.00	-	$13.13	$26.60	$10.73	$9.63	-	-	$21.50	-	$7.00	$18.38	$22.75	$25.20	$18.67	$15.87	$14.23	$9.33
Total	**-**	**-**	**$14.00**	**-**	**$13.13**	**$26.60**	**$10.73**	**$9.63**	**-**	**-**	**$21.50**	**-**	**$7.00**	**$18.38**	**$22.75**	**$25.20**	**$18.67**	**$15.87**	**$14.23**	**$9.33**
Determination of representative cost											**Cost of Collection of data at Patient Registration**									
Average cost of sites that provided data											$16.21									
Median cost of sites that provided data											$15.05									
Representative cost (Median)											**$15.05**									

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding
Sites that were unable to provide data have been left blank

3.6.2 Derived representative cost of collection of data at Follow-up Service

Table 13 summarises the estimated cost for the collection of data at Follow-up Service by site. The data shows that the average cost across sites with data was $17.19 and the median cost was $16.80. After carefully reviewing the data provided by just three sites, HealthConsult determined to include all of the values in the calculation of the representative cost. On that basis, the representative cost for the collection of data at Follow-up Service set at the median cost, i.e. $16.80.

Table 13: Representative cost for the Collection of data at Follow-up Service for MedsCheck and Diabetes MedsCheck

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20
Labour cost	-	$18.22	-	-	-	$26.83	-	-	$26.25	-	-	$11.29	$17.73	-	-	$15.87	-	-	$11.67	$9.63
Total	-	$18.22	-	-	-	$26.83	-	-	$26.25	-	-	$11.29	$17.73	-	-	$15.87	-	-	$11.67	$9.63
Determination of representative cost											Cost of Collection of data at Follow Up Service									
Average cost of sites that provided data											$17.19									
Median cost of sites that provided data											$16.80									
Representative cost (Median)											$16.80									

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding
Sites that were unable to provide data have been left blank

3.6.3 Comparison of Health Outcome costs to 6CPA fee

Table 14 compares the representative cost and the 6CPA fees (current at the time of the study) for undertaking the Health Outcomes data collection and submission.

Table 14: Comparison of derived representative cost to 6CPA fee for Health Outcomes for MedsCheck and Diabetes MedsCheck services

Fee Description	6CPA Fee	Representative Cost	Variation
Collection of data at Patient Registration	$31.90	$15.05	-$16.85 ↓
Collection of data at Follow Up Service	$31.90	$16.80	-$15.10 ↓

Source: 6th Community Pharmacy Agreement; Program Rules MedsCheck and Diabetes MedsCheck; Effective 2 October 2018; and HealthConsult activity-based costing study undertaken from November 2018 to January 2019.

The initial patient registration data collection and the six-month follow-up data collection unit costs were $16.85 (median) or 52% and $15.10 (median) or 7% below the current fee of $31.90 respectively.

Some study sites did not undertake the collection and submission of Health Outcomes data activities. There was a common perception amongst non-completers that it took too long to gather and enter this data, and it was not worth the fee (note this perception if not supported by the study data). The pharmacies that did collect and submit Health Outcomes data reported that they considered the process to be cumbersome, commenting that the data fields are inflexible and rigid. The consensus was that a better and more efficient process needs to be identified to capture this data into the future. Additionally, some sites intend to collect the follow-up HO data but have not yet had the opportunity. Similar sentiments were expressed about the DAA and SS Health Outcomes programs.

Based on a large number of broadly negative comments about the difficulties engaging in the HO data collection and submission process, there may be value in the Department of Health engaging with pharmacies with a view to rationalising the data elements that are captured, and improving the system interface for data submission. This could potentially lead to increased pharmacy utilisation and a richer pool of health outcomes data.

3.7 COST OF AN HMR

This section presents the derived representative cost of an HMR compared to the relevant 6CPA fee (current at the time of the study).

3.7.1 Derived representative cost of HMR service

Table 15 and Table 16 shows the costs of providing an HMR service for independent practitioners and pharmacy employed practitioners, respectively, Tables 6.5 and 6.6 show the per-service labour, consumables and travel time costs.

Table 15 shows the cost of completing an HMR by an independent practitioner. The average cost of an HMR was $267.94 without travel time costs and $344.77, including travel time costs, and the median was $231.66 without travel and $318.10, including travel. HealthConsult considers the

median costs of $231.66 and $318.10 (excluding and including travel time costs respectively) to be appropriate and representative, and this avoids the effect any 'outliers' either high or low sites might have on the result

Table 15: Representative cost for the provision of an HMR service by an independent practitioner

Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12
Labour cost - Defined activities	$446.52	$442.42	$285.91	$266.49	$223.01	$211.10	$240.32	$352.06	$171.82	$178.50	$186.91	$210.24
Consumables			$1.00									
Total excluding Travel Time	**$446.52**	**$442.42**	**$286.91**	**$266.49**	**$223.01**	**$211.10**	**$240.32**	**$352.06**	**$171.82**	**$178.50**	**$186.91**	**$210.24**
Other Activity: Travel Time	$127.75	$40.15	$88.36	$119.00	$69.66	$34.83	$69.66	$69.66	$69.66	$69.66	$139.31	$23.22
Total including Travel Time	**$574.27**	**$482.57**	**$375.27**	**$385.49**	**$292.66**	**$245.93**	**$309.97**	**$421.71**	**$241.48**	**$248.15**	**$326.23**	**$233.46**
Determination of a Representative Cost			**Cost of Provision of an HMR without Travel Time**					**Cost of Provision of an HMR with Travel Time**				
Average cost of all 12 sites			$267.94					$344.77				
Median cost of all 12 sites			$231.66					$318.10				
Representative cost (median)			**$231.66**					**$318.10**				

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding

Table 16 shows the cost of completing an HMR by pharmacy employed practitioner. The average cost of an HMR was $182.21 without travel time costs and $230.79, including travel time costs, and the median was $177.37 without travel and $215.69, including travel. HealthConsult considers the median costs of $177.37 and $215.69 (excluding and including travel time costs respectively) to be appropriate and representative, and this avoids the effect any 'outliers' either high or low sites might have on the result.

Table 16: Representative cost for the provision of an HMR service by a pharmacy-employed practitioner

Components	Site 1	Site 2	Site 3	Site 4	Site 5
Labour cost - Defined activities	$177.37	$255.41	$136.95	$158.47	$182.85
Consumables			$1.00	$1.00	
Total excluding Travel Time	**$177.37**	**$255.41**	**$137.95**	**$159.47**	**$182.85**
Other Activity: Travel Time	$38.33	$69.66	$34.07	$29.20	$69.66
Total including Travel Time	**$215.69**	**$325.06**	**$172.01**	**$188.67**	**$252.51**
Determination of a Representative Cost	**Cost of Provision of an HMR without Travel Time**			**Cost of Provision of an HMR with Travel Time**	
Average cost of all five sites	**$182.21**			**$230.79**	
Median cost of all five sites	**$177.37**			**$215.69**	
Representative cost (median)	**$177.37**			**$215.69**	

Source: HealthConsult activity-based costing study undertaken from November 2018 to January 2019.
Please note that the numbers in this table may not add due to rounding

3.7.2 Comparison of HMR derived cost to 6CPA fee

Table 7.4 compares the 6CPA HMR fee (current at the time of the study) and the representative costs from the costing study, and it includes comparisons of the 6CPA fee with independent practitioner service cost and pharmacy employed practitioner service cost, as well as the corresponding cost impact of including practitioners travel.

The results indicate that independent practitioners incurred higher costs (excluding travel time) per service than pharmacy employed practitioners, at $231.66 (median) and $177.37 (median) respectively. Independent practitioners also incurred higher costs per service (including travel time) than pharmacy employed practitioners, at $318.10 (median) and $215.69 (median) respectively.

Independent practitioners costs were higher the 2018 6CPA fee, by $98.41, including travel time and $11.97, excluding travel time. Pharmacy practitioner costs were lower than the 6CPA fee, by $4.00 including travel time and $43.32 excluding travel time

Table 17: Comparison of derived representative cost to 6CPA fee for an HMR service

Fee Description	6CPA Fee	Representative Cost	Variation
Provision of an HMR service by an independent practitioner **without** travel time	$219.69	$231.66	+$11.97 ↑
Provision of an HMR service by an independent practitioner **including** travel time	$219.69	$318.10	+$98.41 ↑
Provision of an HMR service by a pharmacy-employed practitioner **without** travel time	$219.69	$177.37	-$42.32 ↓
Provision of an HMR service by a pharmacy-employed practitioner **including** travel time	$219.69	$215.69	-$4.00 ↓

Source Accessed via website on 8 February 2019: http://6cpa.com.au/2018/06/indexation-of-service-fees-2018-19/;
and HealthConsult activity-based costing study undertaken from November 2018 to January 2019.

As identified via the costing study, travel time has a significant impact on the cost of delivering HMR services in patient's homes. Travel time is integral to providing home-based services and should be recognised in practitioners cost structures and be considered in 7CPA fee deliberations. Travel time may warrant further review to better understand the impacts of rural and metropolitan locations as well as the reasons for the increased significance on independent HMR practitioners compared to pharmacy practitioners.

Independent HMR practitioners appear to spend more time than their pharmacy employed counterparts in interview preparation and research, conducting the HMR interview and writing the HMR report. The 2018 6CPA fee does not appear to adequately cover independent practitioner' time, effort and resources required for HMR services.

Although out of the scope of the costing study, in designing 6CPA program refinements, consideration could also be given to providing education to GPs about the availability and benefits of the HMR service. HMR practitioners reported that the referring GPs knowledge of, and regard for, HMR services, turnover in local GPs and the local GPs approach had a direct impact on the number of HMRs that they performed. It may also be worth considering other trigger points for patients to access HMR services, e.g. discharge from hospital may be an appropriate point in time to trigger an HMR for eligible patients where there has been a change in medication regime.

4 Suggested improvements to 6CPA programs

This Chapter examines potential improvements to the monitoring programs' data collection processes and fee structure.

4.1 FEES

The costing studies and consultations revealed that the derived representative cost of performing the different program services varied considerably relative to the fees paid. Table 18 shows that while almost half of the program component fees are higher than the corresponding cost, the impact on overall expenditure would be significantly more if all fees were reset in line with the representative cost due to relative claims volumes.

Table 18: comparison of 6CPA fees to derived representative costs

Fee Description	6CPA Fee (July 17)	Updated 6CPA fee (July 18)	Representative Cost	Variation to the updated fee	Annual cost of administering the program	Potential financial impact per year
Provision for weekly DAA service	$6.00	$6.08	$11.60	+$5.52 ↑	$77,031,090	+$69,630,004 (+90.4%)[3] +98,962,233 (+128%)[4]
Provision for weekly Staged Supply service	$7.90	$8.01	$5.28[5]	+$2.73 ↑	$3,954,617	+$529,641 (+13.4%)[4]
Each additional provision of a Staged Supply service during the week	$4.00	$4.06		-$1.22 ↓		
Provision of a MedsCheck service	$64.70	$65.61	$37.62	-$27.99 ↓	$23,439,895[6]	-$6,368,291 (-27.2%)[4]
Provision of a Diabetes MedsCheck service	$97.05	$98.41	$52.09	-$46.32 ↓	$8,789,910[6]	-$2,793,259 (-31.7%)[4]
Provision of an HMR service - independent practitioner excluding travel time	$216.66	$219.69	$231.66	+$11.97 ↑	Not available to HealthConsult[7]	
Provision of an HMR service - independent practitioner including travel time	$216.66	$219.69	$318.10	+$98.41 ↑	Not available to HealthConsult[7]	
Provision of an HMR service - pharmacy employed practitioner excluding travel time	$216.66	$219.69	$177.37	-$42.32 ↓	Not available to HealthConsult[7]	
Provision of an HMR service - pharmacy employed practitioner including travel time	$216.66	$219.69	$215.69	-$4.00 ↓	Not available to HealthConsult[7]	
Health Outcomes Services						
DAA – patient registration	$31.90	$31.90	$21.82	-$10.10 ↓	$77,031,090	-$73,935[8]

[3] Increasing all DAA service fees to the representative cost (with no margin added given the representative cost is substantially higher than the current 6CPA fee). We have assumed that the volume of service claims, registrations and follow-ups; and the fees for data collection at initial registration and follow-up, all remain at current levels when modelling the potential financial impact of changes to service fees

[4] Changing all service fees to the representative cost inclusive of a 20% margin. We have assumed that the volume of service claims, registrations and follow-ups; and the fees for data collection at initial registration and follow-up, all remain at current levels when modelling the potential financial impact of changes to service fees

[5] As part of the costing study the recommendation was made to change the system of reimbursement and eliminate separate payments for weekly and additional provisioning. Given the change in the process and method of reimbursement, the change to representative cost is modelled jointly across both fee types.

[6] Based on an estimated annualised cost using available program monitoring data, consistent with the Task 5 Options Papers. For MedsCheck and Diabetes MedsCheck estimates, we have apportioned registration and follow-up costs across the services based on the proportional volume of each service type (about 73% MedsCheck and 27% Diabetes MedsCheck).

[7] HealthConsult has not been provided with data on the volume of HMR services or claims, and as such are unable to estimate the current cost of administering the program per year

Fee Description	6CPA Fee (July 17)	Updated 6CPA fee (July 18)	Representative Cost	Variation to the updated fee	Annual cost of administering the program	Potential financial impact per year
DAA – follow-up	$31.90	$31.90	$16.26	-$15.64 ↓		(-0.1%)[8]
SS – patient registration	$31.90	$31.90	$21.82	-$10.10 □	$3,954,617	-$1,785,692 (-5.5%)[8]
SS – follow-up	$31.90	$31.90	$16.26	-$15.64 □		
MedsCheck/ Diabetes MedsCheck – patient registration	$31.90	$31.90	$15.05	-$16.85 ↓	$32,229,805	-$1,785,692 (-5.5%)[8]
MedsCheck/ Diabetes MedsCheck – follow-up	$31.90	$31.90	$16.80	-$15.10 ↓		

Source: 6th Community Pharmacy Agreement; Program Rules Dose; Administration Aids and Staged Supply; Effective 1 July 2017; 6th Community Pharmacy Agreement; Program Rules MedsCheck and Diabetes MedsCheck; Effective 2 October 2018 and HealthConsult activity-based costing study undertaken July/August 2018 for DAA and SS; and HealthConsult activity-based costing study undertaken from November 2018 to January 2019 for MedsCheck, Diabetes MedsCheck and HMR

The costing study showed that the current fees for service provision and data collection for each of the programs do not reflect the cost of service provision:

- **For DAA**, the current 6CPA weekly service fee ($6.08) represents a 52% contribution to the representative cost ($11.60).
- In contrast, the 6CPA service fees for **MedsCheck** ($65.61) and **Diabetes MedsCheck** ($98.41) are about 75% and 89% higher respectively than the representative costs ($37.62 for MedsCheck and $52.09 for Diabetes MedsCheck).
- For **Staged Supply**, the representative cost of delivering any Staged Supply service ($5.28) is lower than the current 6CPA fee for the first weekly service ($8.01) but higher than the fee for subsequent services during the week ($4.06). Pharmacies receive less than the representative weekly cost for patients receiving Staged Supply each day of the week ($32.37 compared to. $36.96). For patients receiving Staged Supply every second day, the representative weekly cost is comparable to the current 6CPA fees ($18.16 compared to $18.48).
- For **HMR** the 6CPA service fees are 31% less than the representative cost of independent practitioners delivering the service, including travel expenses ($219.69 compared to $318.10). The 6CPA service fee is comparable to the representative cost of pharmacies delivering the service, including travel expenses ($219.69 compared to $215.69). The difference in the derived representative cost between independent HMR practitioners and those based in a pharmacy is largely due to:
  - additional time spent performing the service; generally, in the patient interview, interview preparation and report writing activities
  - additional travel time
  - an additional overhead component to recognise the cost of maintaining access to essential resources such as therapeutic guidelines and compendiums and the additional costs of maintaining a home office.
- Depending on the program, the costing study also showed the 6CPA fees for **collecting patient data** at registration and follow-up ($31.90) is at least 46% higher than the representative cost at registration, and at least 89% higher than the representative cost at follow-up.

Thus consideration should be given to revising and simplifying service fees to reflect better the representative cost of service delivery inclusive of a reasonable margin.

4.2 HEALTH OUTCOMES

The collections and submission of Health Outcomes data were not well embraced by pharmacies that were visited during both Wave 1 and Wave 2 study site visits. They saw little relevance and thought it was an uneconomical use of their time and flagged that the process was far from user

[8] Decreasing all fees for data collection to the representative cost inclusive of a 20% margin. We have assumed that the volume of claims and service fees remain at current levels when modelling the potential final impact of changes to fees for initial registration and follow-up. We have also assumed that the volume of data collection at initial registration and follow-up remains at current levels.

friendly. These findings are back up by the monitoring data. It was found that pharmacies conduct substantially fewer follow-up consultations than expected under the rules for all programs. Based on monitoring data, the rate of follow-up against that expected could be as low as:

- 28% for Staged Supply
- 27% for DAA
- 17% for MedsCheck/Diabetes MedsCheck.

In the pharmacist survey and interviews, the main reasons pharmacists cited for not conducting follow-ups are difficulty arranging a suitable time with participants, insufficient remuneration given the effort required, and a perception that the follow-up process does not fit into the general structure of pharmacist-patient interactions.

The monitoring data reveals that as of November 2018, not all pharmacies had collected patient health outcomes data at registration, as intended:

- For **DAA**, only 29% of pharmacies that submitted a service claim had collected any health outcomes data at patient registration.
- For **Staged Supply**, only 14% of pharmacies that submitted a service claim had collected any health outcomes data at patient registration.
- For **MedsCheck/Diabetes MedsCheck**, only 47% of pharmacies that submitted a service claim had collected any health outcomes data at patient registration.

In addition to pharmacies not collecting health outcomes data at patient registration, as of November 2018 most pharmacies are also not conducting follow-up services:

- For **DAA,** only 8% of pharmacies that had submitted a service claim had conducted six-month follow-up services (28% of pharmacies that collected any health outcomes data at patient registration).
- For **Staged Supply**, only 10% of pharmacies that had submitted a service claim had conducted six-month follow-up services (15% of pharmacies that collected any health outcomes data at patient registration).
- For **MedsCheck/Diabetes MedsCheck**, only 9% of pharmacies that had submitted a service claim had conducted six-month follow-up services (20% of pharmacies that collected any health outcomes data at patient registration).

These findings indicate that not all pharmacies are implementing data collection and patient follow-up services as intended under the program models. Further, the follow-up rate suggests that pharmacies do not see follow-up as important for attaining patient outcomes.

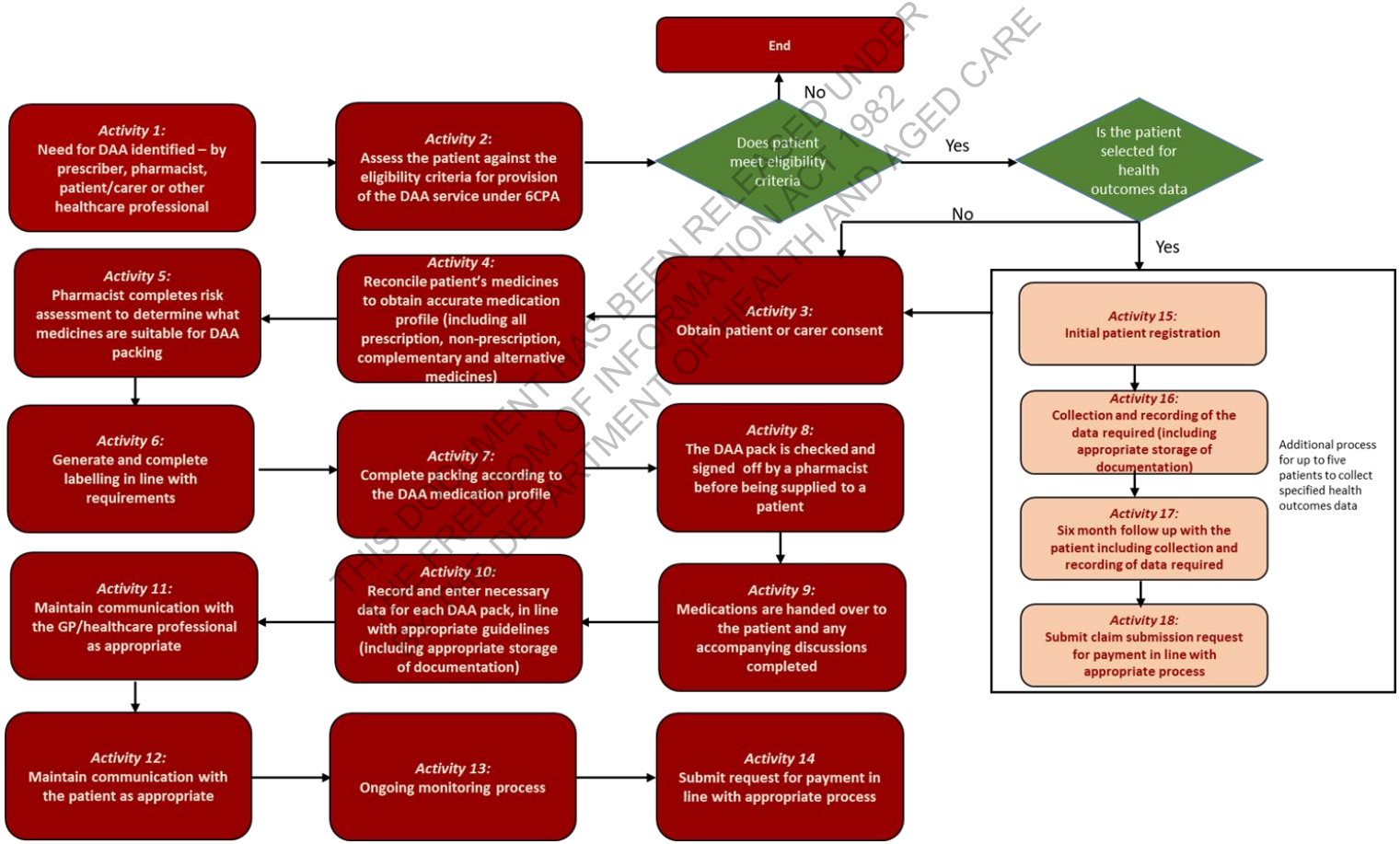
Consideration should be given to whether the collection of Health Outcomes data is an activity that should be continued as part of the 6CPA programs, or revamped to make it more streamlined to achieve the desired outcome.

Appendix A : DAA process map and activity definition

The Appendix presents the process map and activity dictionary definitions derived for DAA services as part of the project infrastructure

A.1 DAA PROCESS MAP

Figure A.1: DAA Process map



A.2 ACTIVITY DICTIONARY DEFINITIONS FOR DAA SERVICES

HealthConsult has identified the following activities for the DAA process. Please note the definitions do not include DAA services provided under the Quality Use of Medicines for Aboriginal and Torres Strait Islander People (QUMAX) program. Definitions along with relevant 6CPA guidelines are set out below.

- ***Activity 1***: Identify the need for DAA (need can be identified by the prescriber, pharmacist, patient/carer or other healthcare professional). Pharmacists undertake a needs analysis to identify factors that may contribute to non-adherence, medication errors and so forth, and also determine the suitability of DAA. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 2:*** The pharmacist assesses the patient against the 6CPA eligibility criteria (as specified in the 6CPA Program Rules) for DAA, including that the patient:
  - has a valid Medicare or DVA card; has a Government issued concession card; lives at home in a community setting; and
  - has difficulties managing medicines due to literacy or language issues, physical disability or cognitive difficulties

  OR,
  - is taking five or more prescription medicines and is experiencing difficulties with medication management.

  The assessment also takes into account the ability of the patient to use the DAA and will involve the patient's carer where applicable. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 3***: The pharmacist obtains consent from the patient or the patient's carer before providing a DAA service. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 4***: Undertake a reconciliation of the patient's medicines to obtain an accurate medication profile that includes all prescription, non-prescription, complementary and alternative medicines. The medication profile should capture (at a minimum) the brand name; generic name; form, strength; dose and dosage regime of each medicine. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 5***: The pharmacist completes a risk assessment to determine the suitability of the medicines for inclusion in the DAA and applies professional judgement to determine which medicines should be packed and any related actions to be taken. Relevant data is entered into pharmacy systems and checked. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 6***: Create label/packing record for the DAA. Label DAAs in line with relevant legislative requirements and 'pharmacy registering authority' guidelines. Labels should include the name of the patient; contact details for the pharmacy; active ingredients in the medicine; directions for use of the medication; explanation of manufacture's mark; storage requirements; date and day of the week each DAA is to be used; date of packing; and cautionary advice labels (including keep out of the reach of children). The resources measured will be labour and consumable resources (units of time by the pharmacist/suitably qualified staff member, consumable cost of labels, any other identified consumables).
- ***Activity 7***: Complete a medication synchronisation process to ensure adequate prescriptions and medications to fill the DAA for the patient. Pack the DAAs according to the medication profile on a periodic basis, ensuring that the number of medications within each compartment of the DAA pack is visible. DAA packing staff follow appropriate hand hygiene processes. Store the DAA in an area protected from heat, light and moisture which meets relevant legislative requirements (considering possible physical or chemical interaction between

medicines close to one another). The resources measured will be labour and consumable resources (units of time by pharmacist/suitably qualified staff member, consumable cost of the DAA container, any other identified consumables or the costs incurred to have the DAA packed by a third party).

- ***Activity 8***: The pharmacist checks that the patient details are correct and that the DAA has been accurately packed according to the patient's medication profile before supplying to the patient. The pharmacist initials the DAA packing record once checking is complete, and records the details of the checking pharmacist. Note that where a third party completes DAA packing, the supplying pharmacist retains responsibility for checking the DAA pack. In some instances, the preparation of check sheets and delivery records may also be needed. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 9***: The medications are handed over to the patient or carer. This activity may include:
  - discussions with patients/carers about DAA medications and use of the DAA
  - preparation of signing sheets to record who collected the DAA (patient/carer/family member)
  - clarification around the cost of the medicines provided
  - resolving issues (for example – outstanding prescriptions).

  The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 10***: Prepare documentation detailing each packed DAA including: patient details; patient medication regimen; details about physical patient constraints; specific prescriber requests; the type of DAA and packing intervals; verification that DAA has been checked (including checking pharmacist); details about risk assessments and decisions; the date the DAA patient profile was completed/updated; and record of changes made.

  Note that the 6CPA rules require that additional data be collected and documented (refer to Attachment A, section 1, of the 6CPA Program Rules Dose Administration Aids). Documentation required under 6CPA is to be maintained for seven years.

  This activity includes updating patient account records and reconciling patient prescriptions.

  The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 11***: Ongoing communication with relevant healthcare professionals (GP) about the initiation of the DAA; maintenance of DAA profiles; provision of prescriptions; mechanisms for communicating changes; concerns with adherence; difficulties with using a DAA; managing transition care; and so on. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 12***: Ongoing communication with the patient about medicines in the DAA pack; how to use the DAA and avoid rupturing blister seals; storing DAAs; what to do if the DAA is damaged; advice on medicines not in the DAA; and arrangements for the ongoing supply of medications; and so on. Pharmacists encourage patients to discuss difficulties such as physical (e.g. swallowing difficulties or visual challenges) in using their DAAs and adhering to their medication regimen. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 13***: Ongoing pharmacist monitoring of the patient to detect and address any issues or problems with the use of their DAA (especially when a patient initiates to use of a DAA) including regular re-assessments at agreed intervals. This monitoring process includes making recommendations about GP review intervals and asking the patient to return the 'empty' DAA (to monitor unused medicines and adherence). The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).

- ***Activity 14***: Monthly claims submission via the claiming portal (www.6cpa.com.au), in line with the specified processes. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).

  The following additional 'health outcome data collection' activities are performed for up-to-five selected patients:

- ***Activity 15***: Health outcome monitoring information is collected at the initial meeting with the patient. The specified data elements are in Attachment A of the Program Rules for DAA. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 16***: Enter the specified health outcome monitoring information into 6CPA portal form. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 17***: Undertake six-monthly patient follow-up, data collection and data entry for health outcomes. The specified data elements are in Attachment A of the Program Rules for DAA. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).
- ***Activity 18***: Monthly claims submission via the claiming portal (www.6cpa.com.au in 2017/18), in line with the specified processes. The resources measured will be labour (units of time by pharmacist/suitably qualified staff member).

A.3 PATIENT AND PROCESS COMPLEXITIES

During the workshop and the pilot and costing study visits, some patient circumstances and situations were acknowledged to require considerable additional effort beyond what is captured in the basic DAA activities (defined in 2.2). The patient 'circumstances' are listed below, and their impact is included in the cost modelling by:

- firstly, confirming and quantifying only the 'additional' staff time or other resources required (i.e. over and above time already allocated to Activity 1 to Activity 18 in section 2.2)
- secondly, confirming the frequency of occurrence of each patient circumstance and quantifying the volume (absolute or percentage) of the DAAs that were affected.

Some specific patient circumstances and process complexities were identified in the pilot and workshop stages, they were:

- Changes in a patients medication by GP, or as a result of hospital admission or discharge
- Sourcing out-of-supply medicines
- Organising for DAAs to be repacked (out-sourced packing only)
- Multiple conversations with patient/carer/family before patient consent to participating in DAA service
- Delivery of DAA packs (noting that DAA services cannot be claimed for an in-patient of public or private hospital; day care facilities; transitional care facilities; or residents of a government-funded aged care facility or patients in a correctional facility).
- Other (please specify)

Further specific patient circumstances and process complexities were identified during the costing of the study sites (see below).

- Incorporating additional one-off medications into DAA packs, such as antibiotics to assist special needs patients, specifically those living in Group Home settings
- Following up with patients who have failed to collect their DAA packs (follow up generally via phone call)

- Reordering/restocking of shelves for medications for pharmacies who use the MedsPro system
- Generating a list of what scripts are expiring and need to be replaced for the following month and providing the list to the patient
- Preparation of separate additional pack for medications that require refrigeration
- Follow up with patients with outstanding accounts (especially those who have packs delivered)

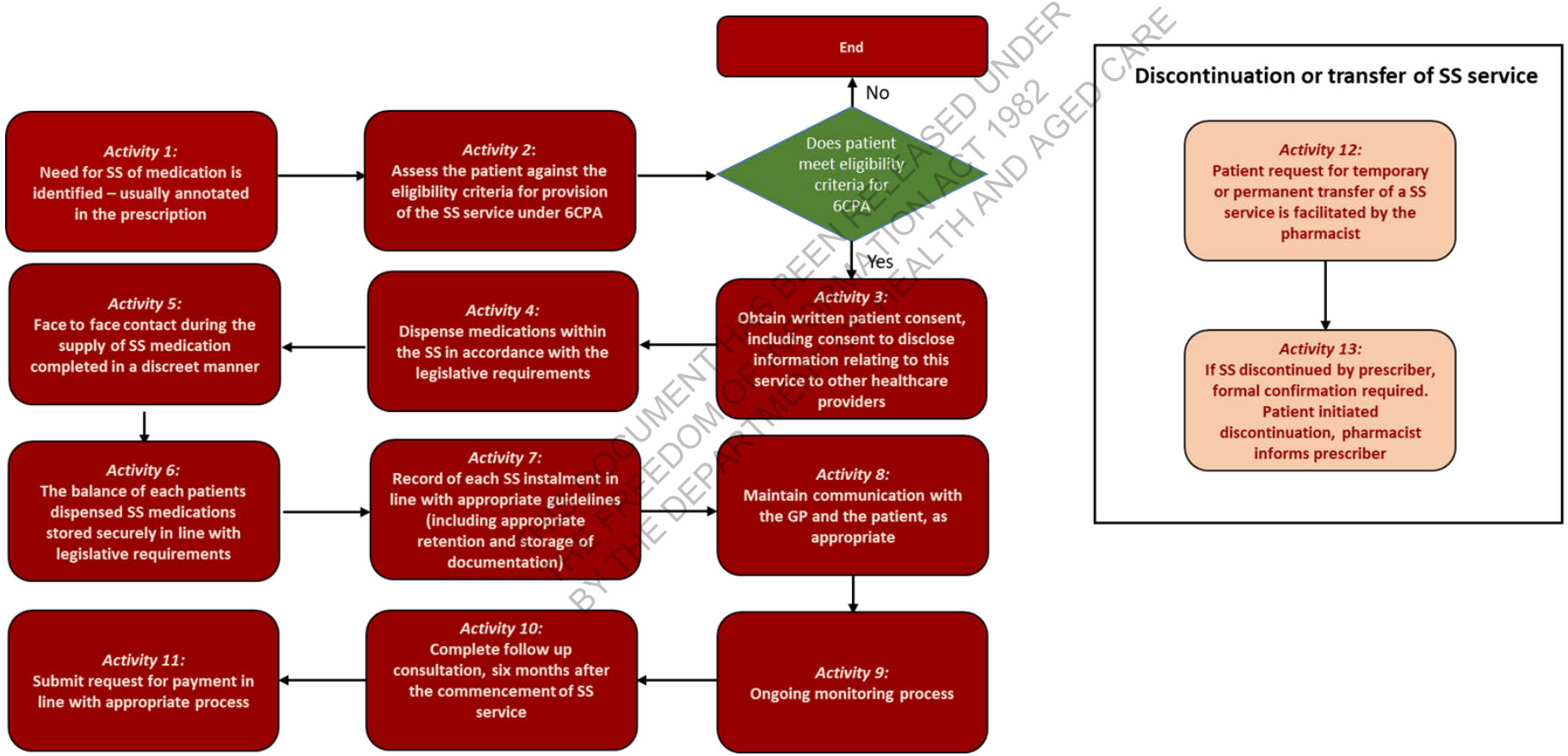
The same process of capturing the data and costing their impact was applied

Appendix B : SS process map and activity definitions

The Appendix presents the process map and activity dictionary definitions derived for SS services as part of the project infrastructure

B.1 SS PROCESS MAP

Figure B.1: Process map for SS



B.2 ACTIVITY DICTIONARY DEFINITIONS FOR SS SERVICES

HealthConsult has identified the following activities for the SS process. Definitions along with relevant 6CPA guidelines are set out below.

- ***Activity 1***: Identify the need for SS (need can be identified by the prescriber, pharmacist, patient/carer or other healthcare professional). Usually, prescribers request staged supply by 'annotating' the prescription. Pharmacists may also identify a need from the evidence of overuse, or while performing MedsCheck, Diabetes MedsCheck or Home Medicines Review services. The resource measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 2***: The pharmacist assesses the patient against the 6CPA eligibility criteria (as specified in the 6CPA Program Rules) for SS. The 6CPA Program Rules allow for up to four medicines to be provided under SS for eligible patients (valid Medicare or DVA card; Government issued concession card; lives at home in community setting; has been referred for SS by prescriber; and has been prescribed one or more of opioid analgesics, antipsychotics, anxiolytics, hypnotics and sedatives, antidepressants or psycho-stimulants). The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 3***: The pharmacist obtains written consent from either the patient or the patient's carer before providing the SS service, which includes permission to disclose information relating to the service to other healthcare providers. Health outcome monitoring information is collected at patient registration/commencement. The specified data elements are in Attachment A of the Program Rules for SS. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 4***: Dispense medicines in line with the legislative requirements, including where relevant, those applicable to controlled substances. The patient may sign a printed SS schedule to acknowledge staged supply requirements. The resources measured will be labour and consumables (units of time by pharmacist/suitable identified staff member, consumable cost of the SS containers, any other identified consumable).
- ***Activity 5***: The pharmacist consults face-to-face with the patient as part of the SS service, discreetly in a manner to protect patient dignity. For dosing that is supervised in the pharmacy, the medicine is provided in a suitable container, and the dose is confirmed on the supply record. Take-away doses supplied in a labelled container that meets legislative requirements. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 6***: Label the balance of the patient's dispensed SS medicines with the patient's details and store securely according to legislative requirements and ensuring patient privacy. The resources measured will be labour and consumables (units of time by pharmacist/suitable identified staff member, consumable cost related to storage of medicines, any other identified consumables).
- ***Activity 7:*** Prepare documentation in line with legislative requirements, detailing each supply instalment for each patient. Documentation required under 6CPA is maintained for seven years. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 8***: Communicate all relevant issues to the prescriber, including: initiation details (if not initiated by prescriber); transfer of service; discontinuation of service; patient behaviour issues; patient request to amend SS arrangements; patient request for additional supply; omission of staged supply directions on prescription; presentation of prescription from alternative prescriber; evidence of patient obtaining additional medicine from another pharmacy; and any other issues or concerns. This activity also includes ongoing communication with the patient.

The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).

- ***Activity 9***: Regular review of patient SS records is completed to ensure that the arrangements are effective and in accordance with the agreement. Discussion of identified issues with the patient and prescriber as appropriate. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 10***: Complete six-monthly patient follow-up, data collection and data entry for health outcomes. The specified data elements are in Attachment A of the Program Rules for SS. Documentation required under 6CPA is maintained for seven years. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 11***: Complete monthly claims submission via the claiming portal (www.6cpa.com.au), in line with the specified processes. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).

Requests for transfer or discontinuation of an SS service occur very rarely. When they do occur, the following activities are performed.

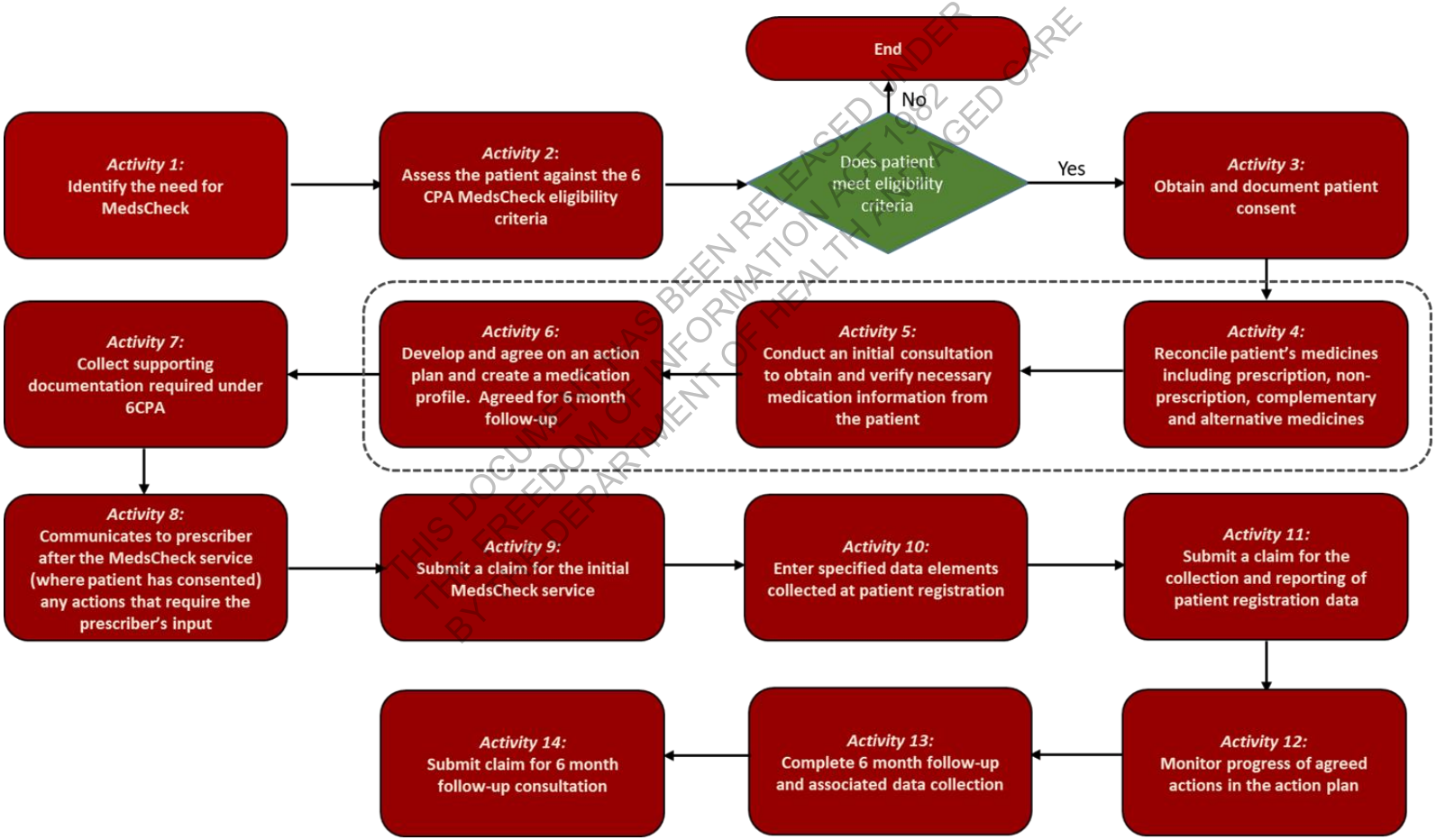
- ***Activity 12***: The pharmacist assists in facilitating the permanent or temporary transfer of patient service to another pharmacy, after receiving a request from the patient. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).
- ***Activity 13***: Where an SS service is to be discontinued (e.g. at the patient's request) the pharmacist informs the prescriber to enable consideration of appropriate options for continuation of care and to request formal confirmation from the prescriber. The resources measured will be labour (units of time by pharmacist/suitably qualified member of staff).

Appendix C : MedsCheck process map and activity definition

The Appendix presents the process map and activity dictionary definitions derived for MedsChecks services as part of the project infrastructure

C.1 MEDSCHECK PROCESS MAP

Figure C.1: MedsCheck process map



C.2 ACTIVITY DICTIONARY DEFINTIONS FOR MEDSCHECK

HealthConsult has identified the following activities, their key components and associated definitions:

- ***Activity 1***: Identify the need for a MedsCheck service (need can be identified by the prescriber, pharmacist, patient, carer or other healthcare professional). Ultimately, pharmacists ratify the need to complete a MedsCheck.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 2***: Assess patient against the 6CPA eligibility criteria (as specified in the 6CPA Program Rules) for MedsCheck. To meet the eligibility criteria the patient:

  - has a valid Medicare and/or DVA card; is living at home in a community setting; AND
  - has not received a MedsCheck, Diabetes MedsCheck, Home Medicines Review (HMR) or Residential Medication Management Review (RMMR) in the previous 12 months; AND
  - is taking five or more prescription medications;

  OR

  - has had a recent significant medical event or new diagnosis with the potential to impact on the patient's medication adherence or knowledge of their medicine regimen and may increase the risk of medication misadventure,

  OR

  - is taking a medication associated with a high risk of adverse events

  MedsCheck services are not available to in-patients of public or private hospitals, day hospital facilities, transitional care facilities, to residents of an Aged Care Facility or patients in a correctional facility.

  NB: it should be noted that a person who identified as an Aboriginal or Torres Strait Islander person who is eligible for a Medicare care, but does not hold either a Medicare card or Concession care will still be eligible for this program.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 3***: Obtain informed patient consent before providing a MedsCheck service. Document consent in the patient record.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 4***: Reconcile patient's medicines. The reconciliation includes all prescription, non-prescription, complementary and alternative medicines. For 6CPA, the minimum data collected should include brand name; generic name; form, strength; and dose and dosage regimen. Confirm the medication profile with the prescriber.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 5***: Conduct initial consultation with the patient, this provides an opportunity to:

  - understand the patient's concerns and beliefs about their medicines
  - assess medication adherence
  - discuss medication use (e.g. management of chronic conditions, lifestyle factors)
  - discuss current and alternative medication forms (e.g. tablet versus liquid)
  - educate on correct medication delivery and monitoring devices.

- ***Activity 6***: Develop an action plan with the patient during the consultation. The action plan lays out agreed patient goals and recommended follow-up actions for each person (patient, pharmacist, prescriber, another healthcare provider). The plan also details an agreed date for a six-monthly patient progress review discussion.

  Complete a medication profile for the patient, giving a copy to the patient, and retaining a copy for the pharmacy.

Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 7***: Gather and record any additional supporting information required under 6CPA for MedsCheck services per Attachment A of the Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 8***: Communicate with the prescriber post MedsCheck (where the patient has provided consent) to advise of actions that require their input or if there is a need for additional services (e.g. HMR or DAA).

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 9***: Submit monthly claims for initial MedsCheck service via the claiming portal (www.6cpa.com.au).

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 10***: Enter the specified data elements collected at patient registration and specified in Attachment A of the 6CPA Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 11***: Submit monthly claims for collection of data at patient registration via the claiming portal (www.6cpa.com.au).

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 12***: Monitor progress against the action plan (defined in Activity 5).

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 13***: Collect data elements for the six-month follow-up consultation. Specified in Attachment A of the 6CPA Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be pharmacist or experienced/qualified staff member time.

- ***Activity 14***: Submit monthly claims for collection of data at six-monthly patient follow-up via the claiming portal (www.6cpa.com.au)

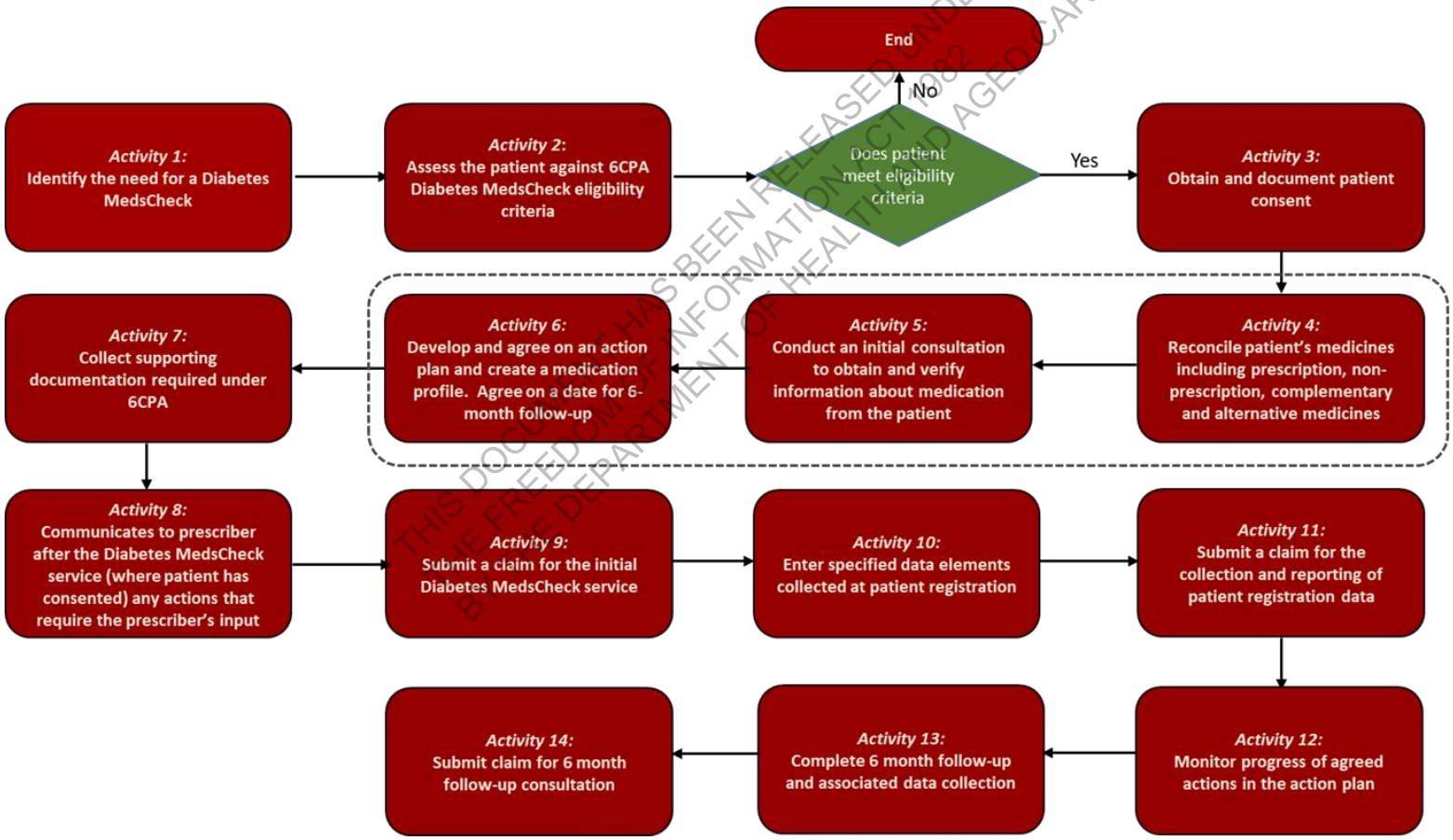
  Measurable resources expected to be a pharmacist or experienced staff member time.

Appendix D : Diabetes MedsCheck process map and activity definitions

The Appendix presents the process map and activity dictionary definitions derived for Diabetes MedsCheck services as part of the project infrastructure

D.1 DIABETES MEDSCHECK PROCESS MAP

Figure D.1: Process map for Diabetes MedsCheck



D.2 ACTIVITY DICTIONARY DEFINITIONS FOR DIABETES MEDSCHECK

HealthConsult has identified the following activities, their key components and associated definitions

- ***Activity 1***: Identify the need for a Diabetes MedsCheck service (need can be identified by the prescriber, pharmacist, patient, carer or other healthcare professional). Ultimately, pharmacists ratify the need to complete a Diabetes MedsCheck.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 2***: Assess patient against the 6CPA eligibility criteria (as specified in the 6CPA Program Rules) for Diabetes MedsCheck. To meet the eligibility criteria the patient:

  - has a valid Medicare and/or DVA card; is living in a community setting;
  - has not received a MedsCheck, Diabetes MedsCheck, Home Medicines Review (HMR) or Residential Medication Management Review (RMMR) in the previous 12 months;
  - is unable to gain timely access to existing diabetes education/health services in their community;

  AND

  - had recent been diagnosed with type 2 diabetes (in last 12 months)

  OR

  - has less than ideally controlled type 2 diabetes

  Diabetes MedsCheck services are not available to in-patients of public or private hospitals, day hospital facilities, transitional care facilities, to residents of an Aged Care Facility or patients in a correctional facility.

  NB: it should be noted that a person who identified as an Aboriginal or Torres Strait Islander person who is eligible for a Medicare care, but does not hold either a Medicare card or Concession care will still be eligible for this program.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 3***: Obtain informed patient consent before providing a Diabetes MedsCheck service. Document consent in the patient record.

  Measurable resources expected to be limited to qualified pharmacist' time

- ***Activity 4***: Reconcile patient's medicines. The reconciliation includes all prescription, non-prescription, complementary and alternative medicines. For 6CPA, the minimum data collected should include brand name; generic name; form, strength; and dose and dosage regimen. Confirm the medication profile with the prescriber.

  Measurable resources expected to be limited to qualified pharmacist' time

- ***Activity 5***: Conduct initial consultation with the patient to review:

  - clinical measurements such as blood glucose levels
  - patient's use of a blood glucose monitor
  - risk factors associated with poorly controlled diabetes
  - changes to lifestyle that will help the patient control their diabetes and improve overall health.

- ***Activity 6***: Develop an action plan with the patient during the consultation. The action plan lays out agreed patient goals and recommended follow-up actions for each person (patient, pharmacist, prescriber, another healthcare provider). The plan also details an agreed date for a six-monthly patient progress review discussion.

  Complete a medication profile for the patient, giving a copy to the patient, and retaining a copy for the pharmacy.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 7***: Gather and record any additional supporting information required under 6CPA for Diabetes MedsCheck services per Attachment A of the Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 8***: Communicate with the prescriber post-Diabetes MedsCheck (where the patient has provided consent) to advise of actions that require their input or if there is a need for additional services (e.g. HMR or DAA).

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 9***: Submit monthly claims for initial Diabetes MedsCheck service via the claiming portal (www.6cpa.com.au).

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 10***: Enter the specified data elements collected at patient registration. Specified in Attachment A of the 6CPA Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 11***: Submit monthly claims for collection of data at patient registration via the claiming portal (www.6cpa.com.au).

  Measurable resources expected to be a pharmacist or experienced staff member time.

- ***Activity 12***: Monitor progress against the action plan (defined in Activity 5).

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 13***: Collect data elements for the six-month follow-up consultation. Specified in Attachment A of the 6CPA Program Rules for MedsCheck and Diabetes MedsCheck.

  Measurable resources expected to be pharmacist or experienced/qualified staff member time.

- ***Activity 14***: Submit monthly claims for collection of data at six-monthly patient follow-up via the claiming portal (www.6cpa.com.au)

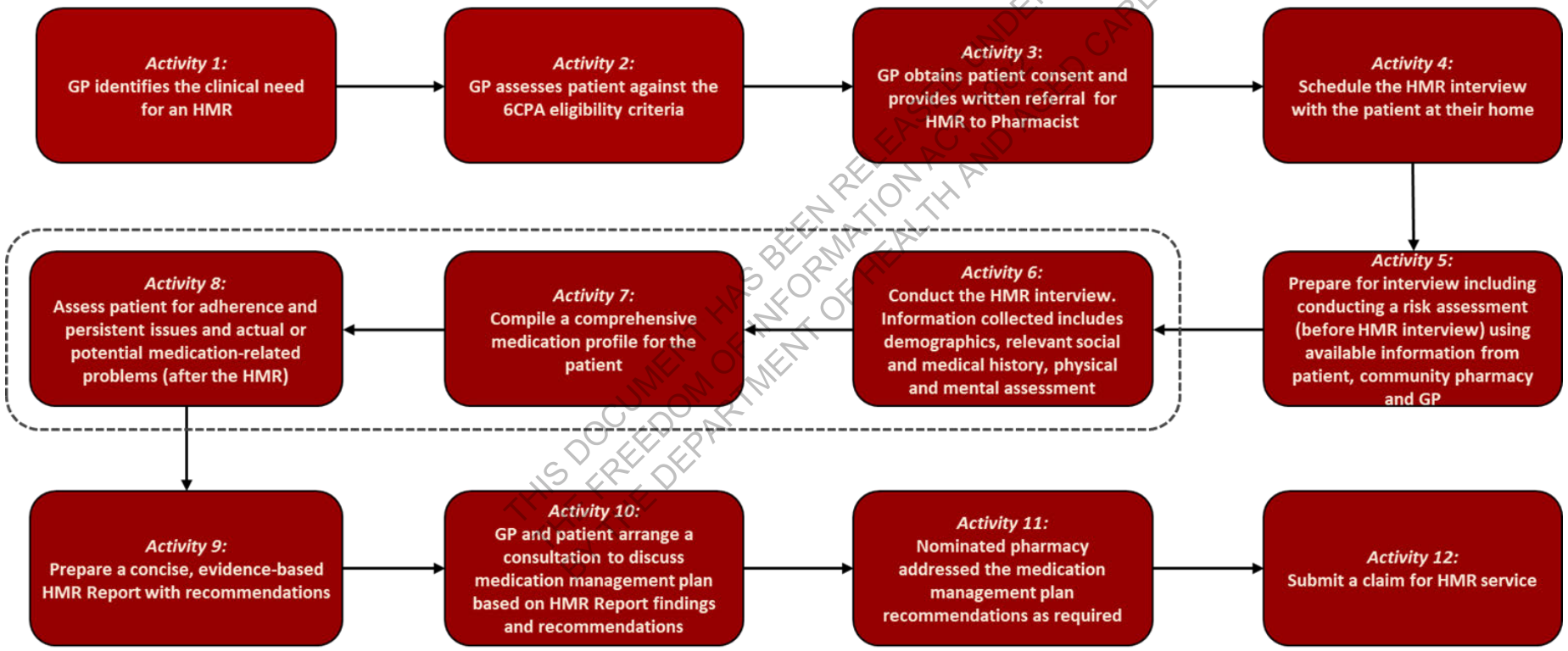
  Measurable resources expected to be a pharmacist or experienced staff member time.

Appendix E : HMR process map and activity definitions

The Appendix presents the process map and activity dictionary definitions derived for HMR services as part of the project infrastructure

E.1 HMR PROCESS MAP

Figure E.1: HMR process map



E.2 ACTIVITY DICTIONARY DEFINITIIONS FOR HMRS

HealthConsult has identified the following activities, their key components and associated definitions

- ***Activity 1***: **The GP identifies** the clinical need for an HMR.

  No resources to be measured for this activity as no pharmacy resources are involved.

- ***Activity 2***: **The GP assesses** patient against the 6CPA eligibility criteria (as specified in the 6CPA Program Rules) for Diabetes MedsCheck. To meet the eligibility criteria, the patient

  - has a valid Medicare and/or DVA card; is living in a community setting;
  - is at risk of or experiencing medication misadventure;

  AND

  - GP confirms that there is an identifiable clinical need and the Patient will benefit from a HMR Service

  The service is not available to in-patients of a public or private hospital, day facilities, transition care facilities or to residents of an aged care facility.

  No resources to be measured for this activity as no pharmacy resources are involved.

- ***Activity 3***: **The GP advises** the patient what is involved in an HMR. Written consent from the patient or the patient's carer is required to initiate the HMR referral process. Patient consent allows the Community Pharmacy or the accredited pharmacist to access patient data; it also allows for a copy of the HMR report to be supplied to the patient's usual Community Pharmacy.

  A referral is made to the patients choice of their usual Community Pharmacy or to an accredited Pharmacist who meets the patient's needs.

  No resources to be measured for this activity as no pharmacy resources are involved.

- ***Activity 4***: Schedule the HMR interview with the patient at their home (unless another nominated location is approved) and advise the referring GP. The HMR interview should be completed in a timely manner, within two to four weeks of receiving the referral.

  Measurable resources expected to be limited to accredited pharmacist' time

- ***Activity 5***: Interview preparation including completing a risk assessment (prior to the HMR interview) using the best available information from the patient, community pharmacy and the referring GP.

  Measurable resources expected to be limited to accredited pharmacist' time

- ***Activity 6***: Conducts the HMR interview with the patient at their home. The interview introduces the patient to the purpose and aims of the HMR. Gather and record data (during the HMR) including:

  - demographic and personal information
  - relevant social history
  - medical history
  - patient assessment
  - information required to complete medication profile.

  Measurable resources expected to be limited to accredited pharmacist' time

- ***Activity 7***: Compile a medication profile for the patient, which includes:

  - all current medicines, including prescription and non-prescription, complementary medicines, compliance aids, therapeutic devices and appliances
  - dose, strength, form, administration and duration of each therapy.
  - medicines and the frequency of administration (where necessary)
  - short-term medicines (e.g. antibiotic courses)

- medicine administration instructions.

Measurable resources expected to be limited to accredited pharmacist' time.

- ***Activity 8***: Assess patient 'post HMR' for adherence and persistence; and actual or potential medication-related problems. Medication-related problems can be described as "any undesirable event experienced by the patient that is thought to involve drug therapy, and that actually or potentially interferes with the desired patient outcome".

  Measurable resources expected to be limited to accredited pharmacist' time.

- ***Activity 9***: Prepare a concise, evidence-based HMR Report with recommendations. The HMR Report includes:

  - the date, time and place of the patient interview
  - the name of the referring GP and HMR service provider
  - details of the patient's nominated community pharmacy, if consent granted
  - details of other healthcare providers contacted as part of the HMR process
  - advice and resources provided to the patient during the HMR interview
  - general comments on the patient's ability to manage and administer all medicines
  - details of any assessments conducted during the HMR interview
  - any medicines prescribed by other GPs, specialists, other authorised prescribers or alternative medicine practitioners
  - details of medicine not taken in accordance with GPs instructions
  - details of any issues identified and resolved during the course of the interview, including suggested medication management strategies
  - recommendations for resolution or prevention of identified medication-related problems.
  - The HMR Report is sent to the referring GP and a copy to the patients nominated community pharmacy.

  Measurable resources expected to be limited to accredited pharmacist' time.

- ***Activity 10***: The GP and the patient arrange a consultation to discuss a medication management plan based on the HMR Report findings and recommendations.

  No resources to be measured for this activity as no pharmacy resources involved (unless the pharmacist requested to attend).

- ***Activity 11***: Address the medication management plan recommendations as required.

  Measurable resources expected to be limited to qualified pharmacist' time.

- ***Activity 12***: Submit a monthly claim for HMR service via the claiming portal (www.6cpa.com.au)

  Measurable resources expected to be a pharmacist or experienced staff member time.

E.3 TRAVEL

Travel was not picked up during the development and pilot review process for an HMR and it is not in the process map (Figure E.1). This issue was raised almost immediately when site visits began and travel time data was collected for all practitioners. Travel time varied considerably affected by distance (most relevant for rural operators) and time (with factors such as traffic most relevant for metropolitan operators). Travel time and resources are incorporated into the cost modelling. Currently, HMR practitioners can only claim travel related expenses where the round trip is more than 200km

Appendix F : Data collection technique

The Appendix presents detail on the data collection technique by activity for each program

Table F.1 presents the data collections technique by activity for DAAs

Table F.1: Data collection technique by activity for DAA

Activity	Data gathering approach
Act 1 - Need Identified	Magnitude estimation
Act 2 - Assess patient	Magnitude estimation
Act 3 – Consent	Magnitude estimation
Act 4 - Reconcile	Magnitude estimation
Act 5 - Profile	Magnitude estimation
Act 6 - Dispensing	Combination of direct measurement (1 of 20) and magnitude estimation
Act 7 - Packing	Combination of direct measurement (16 of 20) and magnitude estimation
Act 8 - Checked/signed	Combination of direct measurement (4 of 20) and magnitude estimation
Act 9 - Handed over	Magnitude estimation
Act 10 - Record data	Magnitude estimation
Act 11 - GP Communication	Magnitude estimation
Act 12 - Patient Communication	Magnitude estimation
Act 13 - Monitoring	Magnitude estimation
Act 14 - Payment	Magnitude estimation

Table F.2 presents the data collections technique by activity for SS

Table F.2: Data collection technique by activity for Staged Supply

Activity	Data gathering approach
Act 1 - Need Identified	Magnitude estimation
Act 2 - Assess	Magnitude estimation
Act 3 - Obtain Consent	Magnitude estimation
Act 4 - Dispense	Magnitude estimation
Act 5 - Face to Face Contact	Combination of direct measurement (4 or 20) and magnitude estimation
Act 6 - Balance Stored	Magnitude estimation
Act 7 - Record SS Instalment	Magnitude estimation
Act 8 - Maintain Comm.	Magnitude estimation
Act 9 - Monitoring	Magnitude estimation
Act 11 - Payment Request	Magnitude estimation
Act 12 - SS Transfer	Magnitude estimation
Act 13 - SS Discontinued	Magnitude estimation

Table F.3 presents the data collections technique by activity for MedsChecks

Table F.3: Data collection technique by activity for MedsChecks

Activity	Data gathering approach
Activity 1: Identify the need for MedsCheck.	Magnitude estimation
Activity 2: Assess the patient against the 6 CPA MedsCheck eligibility criteria	Magnitude estimation
Activity 3: Obtain and document patient consent	Magnitude estimation
Activity 4: Reconcile patient's medicines including prescription, non-prescription, complementary and alternative medicines	Magnitude estimation
Activity 5: Conduct an initial consultation to obtain and verify necessary medication information from the patient	Magnitude estimation
Activity 6: Develop and agree on an action plan and create a medication profile. Agreed for six-month follow-up	Magnitude estimation
Activity 7: Collect supporting documentation required under 6CPA	Magnitude estimation
Activity 8: Communicates to prescriber after the MedsCheck service (where the patient has consented) any actions that require the prescr ber's input	Magnitude estimation
Activity 9: Submit a claim for the initial MedsCheck service	Magnitude estimation
Activity 10: Enter specified data elements collected at patient registration	Magnitude estimation
Activity 11: Submit a claim for the collection and reporting of patient registration data	Magnitude estimation
Activity 12: Monitor progress of agreed actions in the action plan	Magnitude estimation
Activity 13: Monitor progress of agreed actions in the action plan	Magnitude estimation
Activity 14: Submit a claim for six-month follow-up consultation	Magnitude estimation

Table F.4 presents the data collections technique by activity for Diabetes MedsChecks

Table F.4: Data collection technique by activity for Diabetes MedsChecks

Activity	Data gathering approach
Activity 1: Identify the need for Diabetes MedsCheck.	Magnitude estimation
Activity 2: Assess the patient against the 6 CPA Diabetes MedsCheck eligibility criteria	Magnitude estimation
Activity 3: Obtain and document patient consent	Magnitude estimation
Activity 4: Reconcile patient's medicines including prescription, non-prescription, complementary and alternative medicines	Magnitude estimation
Activity 5: Conduct an initial consultation to obtain and verify necessary medication information from the patient	Magnitude estimation
Activity 6: Develop and agree on an action plan and create a medication profile. Agreed for six-month follow-up	Magnitude estimation
Activity 7: Collect supporting documentation required under 6CPA	Magnitude estimation
Activity 8: Communicates to prescriber after the Diabetes MedsCheck service (where the patient has consented) any actions that require the prescr ber's input	Magnitude estimation
Activity 9: Submit a claim for the initial Diabetes MedsCheck service	Magnitude estimation
Activity 10: Enter specified data elements collected at patient registration	Magnitude estimation
Activity 11: Submit a claim for the collection and reporting of patient registration data	Magnitude estimation
Activity 12: Monitor progress of agreed actions in the action plan	Magnitude estimation
Activity 13: Monitor progress of agreed actions in the action plan	Magnitude estimation
Activity 14: Submit a claim for six-month follow-up consultation	Magnitude estimation

Table F.5 presents the data collections technique by activity for HMRs

Table F.5: Data collection technique by activity for HMRs

Activity	Data gathering approach
Activity 1: GP identifies the clinical need for an HMR	Magnitude estimation
Activity 2: GP assesses patient against the 6CPA eligibility criteria	Magnitude estimation
Activity 3: GP obtains patient consent and provides written referral for HMR to Pharmacist	Magnitude estimation
Activity 4: Schedule the HMR interview with the patient at their home	Magnitude estimation
Activity 5: Prepare for interview including conducting a risk assessment (before HMR interview) using available information from the patient, community pharmacy and GP	Magnitude estimation
Activity 6: Conduct the HMR interview. Information collected includes demographics, relevant social and medical history, physical and mental assessment	Magnitude estimation
Activity 7: Compile a comprehensive medication profile for the patient	Magnitude estimation
Activity 8: Assess patient for adherence and persistent issues and actual or potential medication-related problems (after the HMR)	Magnitude estimation
Activity 9: Prepare a concise, evidence-based HMR Report with recommendations	Magnitude estimation
Activity 10: GP and patient arrange a consultation to discuss medication management plan based on HMR Report findings and recommendations	Magnitude estimation
Activity 11: Nominated pharmacy addressed the medication management plan recommendations as required	Magnitude estimation
Activity 12: Submit a claim for HMR service	Magnitude estimation