HEALTH POLICY ANALYSIS

Commonwealth Department of Health

Evaluation of PHN After Hours Program

Volume 4: Appendices

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Appendix 1 – Evaluation methods

This Appendix sets out the methods used in the evaluation. These were set out in more detail in the evaluation plan.

Purpose of the evaluation

The purpose of the evaluation is to assess both processes and outcomes of the PHN After Hours Program, and address two fundamental questions: How well is the Program being delivered, and Is the Program still the right response?

The objectives of the evaluation are to assess the extent to which:

Program theory and evaluation questions

The key evaluation questions were specified by the Department of Health in Request for Quotation (RFQ). These are listed in Table 1, together with some additional questions that the evaluation explored.

Several issues were specified by the Department to be out of scope for the evaluation. These were:

- the impact of the Program on population health
- the clinical appropriateness of after-hours services supported by the Program
- the effectiveness of other after-hours programs.

Table 1 – Key evaluation questions, additional question and proposed data sources

Key evaluation question	Additional question
Program implementation	
1. How well did PHNs identify gaps and needs for after-hours services? 2. How well did PHNs design and implement after-hours models? 3. What PHN after-hours models have been implemented relatively well and less well? Why?	1.1 What information sources and measures have PHNs used to assess existing provision/access to after-hours services and assess gaps? 1.2 In what ways could information sources be improved? 2.1 How did PHNs set priorities for program? 2.2 How did this vary across PHNs? 2.3 Having decided on priority areas, what processes did PHNs adopt to design and commission after-hours services? 2.4 What are the lessons from successful examples of design and commissioning? 3.1 What are the characteristics of after-hours services that have been commissioned, in terms of: the way after-hours need is addressed, target groups, geographic catchments, after-hours services delivered/reach of the commissioned service, outcomes achieved? What are the lessons from examples of commissioned services that have been most successful?
Program delivery	

Key evaluation question	Additional question
4. To what extent have the expected Program outcomes been achieved? 5. What models have worked relatively well and less well, in what contexts, and why? 6. How well (efficiently) have PHNs used their after-hours funding? 7. Is there a Program spending trend/ceiling for each PHN? 8. To what extent is the Program value for money?	4.1 Has the program reduced demand for hospital services? 4.2 What is the evidence that the program has impacted access to after-hours services? 4.3 What mechanisms have supported/commissioned services triggered to improve access to after-hours services? In what contexts are these mechanisms likely to be triggered? What is their likely impact on after-hours access? 7.1 What contexts and factors have contributed to underspending in the program? To what extent does this reflect variation in need and service gaps between geographic regions? 8.1 What are the estimated costs per output and costs per outcome (including avoided emergency department presentations) for commissioned services and other PHN initiatives? How are these impacted by the contexts in which they are delivered? How do these contexts vary across PHNs?
Questions concerning appropriateness	
9. To what extent is the funding allocated to each PHN proportionate to their after-hours primary health care needs? 10. To what extent did PHN models integrate/align with existing after-hours services? 11. To what extent were PHN models appropriate to consumers and service providers?	9.1 What are the best ways of measuring needs/ relative needs for after-hours services and the gaps/ relative gaps in these services after PIP and MBS supported services are considered? 9.2 What is the relationship between services commissioned by PHNs and those provided under other government-funded services, e.g. MBS and State Government services? For 10: See also 5. 11.1 What are consumer and service provider perspectives on PHN support initiatives?
Contextual questions	
12. To what extent has the PIP After Hours Incentive affected the availability and access to after-hours services in each PHN? 13. To what extent have changes to the MBS urgent after-hours items affected the availability and access to after-hours services in each PHN? 14. How have PHNs responded to any changes to these MBS items and changes in the supply of medical deputising services?	12.1 Across each PHN and geographic subregions (SA3), how many practices are receiving PIP After Hours Incentives by the incentive scheme tier, and what is the estimated practice population for these practices? How many practices are not participating in the PIP After Hours incentive? 13.1 Across each PHN and geographic subregions (SA3), how have trends in claiming for MBS after-hours items changed from the periods before the recent changes in rules for claiming urgent after-hours items? 14.1 What are the changes PHNs made in their approach to the PHN After Hours Program since the 2018 changes in rules for claiming urgent after-hours items? What reasons have PHNs offered for making these changes? 14.2 Does the program supplement or complement services provided under the MBS?

A program theory aims to describe how a program is intended to work in achieving its objectives. An initial logic model was developed for the PHN After Hours Program as part of the evaluation plan. This was refined further and is included in the main report (Volume 2, Chapter 2).

The evaluation approach was to develop an understanding of how the program activities operate at Department and PHN levels. This included creating an understanding about how different contexts between PHNs affect these activities, and consequently the outputs of these activities.

The evaluation also sought to examine how the inputs/activities relate to commissioned services and functions delivered by the PHN itself. These activities are beyond the aspects of program management activities undertaken by PHNs and reflect the intervention strategies through which the Program directly or indirectly affects access to after-hours services and the functioning of the local network of after-hours services. These are described in the main report.

Measures to address evaluation questions

This section sets out the measures and data used in the evaluation.

The focus of the evaluation questions varies according to whether they relate to inputs and processes, activities or services, and outputs and outcomes. In each case, there are associated measures that we used to address the questions.

Inputs, processes and activities

The measures used to reflect the inputs, processes and activities comprised of a mix of quantitative and qualitative sources. These include:

- Measures of resource inputs, such as funding.
- Qualitative data drawn from documents (e.g. activity plans), surveys and interviews to create descriptions of program management activities, for example, needs and gap assessment processes, development of plans, priority setting, and design and commissioning of services.

Outputs

Outputs were largely assessed through quantitative measures. These measures cover the period for which the program was in place. They included:

- Estimates of volume of after-hours activity delivered through the program, or reach of initiative, measured by unit of activity or other suitable measure where non-direct patient-facing services are being delivered.
- Funding and activity commissioned outside of the After Hours Program, including other after-hours programs.

Outcomes

Outcomes were assessed using a mix of quantitative and qualitative measures. Some of the analysis will be reported in the final report. These outcome measures will be analysed over time to assess the impact of the program. The outcome measures are being accessed at a granular geographical level to be able to attribute an observed effect to the actions of PHNs. The data that are being analysed include:

- Services delivered to patients, both numbers and distribution, within and across PHNs.
- After-hours services delivered through other programs, including MBS, PIP and Healthdirect.
- Measures of patient experience with after-hours services over time.

- Measurement of access to care by assessing the number and distribution of potentially preventable hospitalisations (although this will be attributable to more than just after-hours care).
- Measurement of demand management and assessment of impact of any health literacy or other strategies by assessing the number of patients attending an emergency room with minor conditions.
- Measures of diverting patients to different pathways by assessing impact on GP activity both in hours and after hours and impact on other services (e.g. deputising services).

Table 1 shows the data sources for each evaluation question and describes the measures proposed to address these questions. The measures will be derived from the data sources described below.

Data sources

A range of quantitative and qualitative data sources have been used to inform the evaluation. These are summarised in Table 2.

Table 2 – Evaluation data sources/approaches

Data	Source	Nature of information analysed
PHN Activity Work Plans (AWPs) and 12-month monitoring reports	Department of Health	PHN plans covering the period from July 2015 to current 12-monthly reports covering the same period (to June 2020)
PHN and commissioned provider survey	Primary collection	Information about process of conducting needs assessment, approach to commissioning services and expected outcomes. Information not obtainable from AWPs or monitoring reports. The survey was issued in March 2020 with responses requested by May 2020.
Interviews with national stakeholder organisations and other key personnel	Primary collection	Perspectives on the value of the After Hours Program, identified and explored issues relating to the approach, planning, outcomes and effectiveness of the Program. Most interviews were conducted between February and March 2020.
Interviews with PHNs and service providers	Primary collection	Provided greater detail on approaches to needs assessment, design and implementation. Explored the relationship with other programs and success of the initiatives. Impact on local relationships, spill-over benefits to other PHN activities, wider system benefits. Interviews were conducted between April and June 2020.
Case studies Including interviews with: • PHN personnel • Service providers • GPs and practices • Local and national stakeholders	Primary collection	The case studies allowed the issues above to be explored in greater detail. They helped to identify factors that contribute to success of the program at a local level. We were able to obtain wider perspectives from a range of stakeholders. Case study interviews were conducted between March and June 2020.
MBS items	Medicare Statistics online	Monthly data for relevant MBS items, disaggregated by state, were downloaded from the Medicare Statistics sites maintained by Services Australia (2020). Additional

Data	Source	Nature of information analysed
		data related to demographic characteristics of beneficiaries were also downloaded.
	AIHW	Supplementary excel tables related to an AIHW publication on MBS subsidised items GP and other services (AIHW 2020c). These data include data at PHN and SA3 on the total of GP related afterhours items, including unadjusted and aged standardised rates.
	Department of Health	A monthly times series (July 2011-December 2019) for counts of selected MBS items grouped to high level After hours categories, summarised at the SA3 level. Equivalent annual data for Australia, summarised by age group and sex to facilitate indirect standardisation.
PIP After Hours Incentive data	Department of Health	Monthly PIP After Hours Incentive payments 2010–2019, summarised at the PHN level, including number of practices receiving payment. Data up to 2018 were available through a Department of Health publicly release and the more recent data provided by the Department.
Emergency department data	AIHW	Supplementary excel tables related to an AIHW publication on ED services (Australian Institute of Health and Welfare, 2020d). These data include data at PHN and SA3 on low urgency after-hours ED presentations, including unadjusted and aged standardised rates.
	Department of Health	Additional analysis was conducted using the Department of Health holding of the National non-admitted patient emergency department (NAPED) data collection.
Potentially preventable hospitalisations (PPHs)	AIHW	Supplementary excel tables related to an AIHW publication on PPHs (Australian Institute of Health and Welfare, 2019b). These data include data at PHN and SA3 on low urgency after-hours ED presentations, including unadjusted and aged standardised rates.
	Department of Health	Additional analysis was conducted using the Department of Health holding of the admitted patient emergency care (APC) data collection.
Telephone helpline and GP helpline data	Healthdirect	Time series summarising number of calls by in-hours, after-hours sociable and after-hours unsociable periods (based on time of presentation) summarised at SA3 level (or available regional geography). Time series summarising outcomes of calls by in-hours, after-hours sociable and after-hours unsociable periods (based on time of presentation) summarised at SA3 level (or available regional geography).
Patient experience survey	Australian Bureau of Statistics	Patient views on primary care services, after-hours care, emergency department attendances and other related services summarised for relevant geography classifications. Published data.

PHN Activity Work Plans (AWPs) and monitoring reports

PHNs are required to submit their plans for use of the After Hours Program funding in their AWPs. The AWPs are subject to approval by the Department of Health. The PHNs submit to the Department 12-month monitoring reports against a standard template. The AWPs cover the period from the start of the program in 2015 through to the current two-year plans (2019–21). The monitoring reports are available up to 2018–19. The Department of Health provided access to the AWPs and the performance reports. The information from these documents was used to extract information about the activities funded under the Program and the planned expenditure.

PHN survey

There are two components of the PHN survey. The first part of the survey explored overall aspects of their needs assessments and planning processes, program delivery and co-design, program outcomes, and factors that have detracted from or contributed to program success. The second component explored individual AH program activities that were listed on the PHNs' AWPs and that have been commissioned for the 2019–20 financial year. This part of the survey requested information about the duration of individual service operations, coverage, target population groups, impact on AH demand, output measures, service volume and PHNs' perspectives on the success of their AH activities. The survey has been used as a tool to supplement information that was obtained from the interviews, AWPs and monitoring reports. The survey instrument is included in Appendix 2.

The Department of Health informed the PHNs that the evaluation was being conducted and that they should expect a request for interview and receive a survey. PHNs were asked to provide a contact. The PHN survey was then distributed to the Chief Executive Officers or key PHN contacts of the 31 PHNs with a covering letter explaining the purpose of the survey.

Because the survey was being conducted during the period of the COVID-19 pandemic, it was agreed with the Department of Health that a flexible approach would be adopted in relation to timescales for submission of the surveys. Partial responses were received from two PHNs and one PHN did not complete the survey.

Table 3 shows the number of PHNs contacted and the number of surveys completed.

Table 3 – PHN surveys

Number of survey contacts and recipients	Survey completion
Number of PHNs contacted	31
Number of PHN surveys completed	30

Note: The number of PHN surveys completed includes two partially completed surveys.

PHN and national stakeholder interviews

In addition to the survey, all 31 PHNs received an email request to participate in an interview about the PHN After Hours Program. The interviews were intended to supplement the PHN responses to the survey. The topic guide is included in Appendix 2. The topics covered in the interviews were:

- program background and context
- after-hours provision within the PHN
- the needs assessment process
- approaches to program design and implementation
- program delivery and commissioned activities
- funding
- views about the impacts and success of the Program and suggestions for how the Program could be improved.

The Department of Health also provided a list of national stakeholders to interview. A range of national stakeholders were approached and interviewed as part of the evaluation.

Table 4 sets out the number of PHNs and national stakeholders contacted, and the number of interviews conducted.

Table 4 – Interview with PHNs and national stakeholders

Organisation type	Number of organisations or providers interviewed
National stakeholders approached	11
National stakeholder interviews conducted	11
Number of PHNs approached	31
Number of PHN interviews conducted	29

The interview topic guides for the PHNs can be found in Appendix 2.

Case studies

Eight PHN areas were selected as case studies. The case studies allowed for more in-depth exploration of the evaluation questions and a basis for testing theories on why particular models emerged. The case studies are presented in Volume 3 of the report.

The case studies were purposely selected to represent a variety of contexts and delivery models within the Program, including diversity of geography, populations served and range of service provision available locally. The Hunter New England and Central Coast PHN and Tasmania PHN were included as two of the case studies due to their unique service models.

The criteria used to select the case studies were:

- include Hunter New England and Central Coast PHN, and Tasmania PHN
- at least one PHN that includes remote and very remote SA3s
- at least one PHN that includes outer regional SA3s
- at least one PHN that includes major metropolitan SA3s that have relatively high levels of socio-economic disadvantage (ABS Index of Relative Disadvantage Deciles 1-3)
- at least one PHN that includes major metropolitan SA3s that have median levels of socio-economic disadvantage (ABS Index of Relative Disadvantage Deciles 4-6)
- at least one PHN that includes major metropolitan SA3s that have low levels of socio-economic disadvantage (ABS Index of Relative Disadvantage Deciles 7-10)
- at least one PHN from each state and territory except the ACT.

The PHNs selected in accordance with the above criteria are listed in *Table 5*.

Table 5 – Case Study sites

PHN code	PHN
PHN108	Hunter New England and Central Coast
PHN202	Eastern Melbourne
PHN302	Brisbane South
PHN307	Northern Queensland
PHN401	Adelaide
PHN503	Country WA
PHN601	Tasmania
PHN701	Northern Territory

The Department of Health approached each case study site initially. This was followed up with a formal request to participate and a subsequent agreement from all eight PHNs to take

part in the evaluation. Following initial discussions with each case study PHN about their regions and specific approaches to AH service delivery, the focus of each case study was determined and agreed upon. The case studies were generally focused on either a specific service or locality within the PHNs. In one case – Eastern Melbourne – it was agreed that the case study would focus on all the activities within the Program given the approach the PHN has taken to the implementation of the Program.

The case studies were conducted by reviewing relevant documents and reports (including any local evaluations of programs) and interviews with PHN staff and other stakeholders. The intention was to conduct these interviews in person and visit the localities, however, due to the COVID-19 pandemic and travel restrictions, all the interviews were conducted by phone or video. Almost all interviews were conducted with two members of the evaluation team. Members of the evaluation team took notes, and, after receiving permission from the interviewees, these discussions were also recorded.

The interviews generally included the following individuals or groups:

- PHN senior officers and staff responsible for conducting needs assessments and management of service provider contracts
- commissioned service providers (as many as possible depending on the number of different schemes within the PHN and the geographical or program focus of the case study)
- GP practices
- consumer organisations
- hospital services
- state/territory representatives
- clinical and community council representatives.

PHNs nominated key contacts from relevant organisations and made initial contact to alert the potential respondents to the work, after which the evaluation team followed up with a request for an interview. In the event that the evaluation team did not receive a response from a key provider contact, they sent a follow-up request within a set period of time. The respondents were provided with an information sheet about the evaluation. Interviews were conducted via video or teleconference.

The case study interviews sought to establish the interviewee's role in the PHN and in after-hours care and to gauge their perspectives on after-hours services within the PHN and the effect of the Program on the provision and demand for care. Commissioned providers were asked to outline the commissioning process, co-design, and the management and monitoring of the contract with the PHN. Some stakeholders provided further documentation and information about their services.

Table 6 presents the number of interviewees consulted by role at each case study site.

Table 6 – Interviewees by role and by case study

Case study site (PHN and focus)	Interviewees:		
	PHN	Commissioned services	Other
CS1: Eastern Melbourne – all services across the PHN	2	7	2
CS2: South Brisbane PHN – Jimboomba	2	3	5
CS3: Perth South PHN – 50 Lives 50 Homes After Hours Service	1	1	5
CS4: Adelaide – 'Lived experience' service	2	3	4
CS5: Hunter New England and Central Coast – GP Access	2	5	5
CS6: Tasmania – GP Assist	7	6	14

Case study site (PHN and focus)	Interviewees:		
	PHN	Commissioned services	Other
CS7: Northern Queensland – Tablelands and Bowen	2	2	10
CS8: Northern Territory – Alice Springs	5	5	3
Total interviewees	**23**	**32**	**48**

Commissioned provider surveys

In addition to a request for interview, commissioned providers operating in the case study areas received a formal request to complete a survey. The survey instrument is included in Appendix 2.

The surveys were distributed to providers within the case study PHN regions. The survey focused on gathering information on the providers' activities, the duration of the service(s), geographical coverage, if and/or how the program focus has changed, target population groups, how the service(s) has affected AH demand, patient and volume measures, program objectives, how successful the service has been at achieving the intended objectives, and factors that have detracted from or contributed to the service's success.

Table 7 shows the number of commissioned providers contacted and the number of surveys completed.

Table 7 – Commissioned provider surveys

Commissioned providers	Survey completed
Number of providers contacted and asked to participate	43
Number of surveys fully completed	30
Number partially completed	7
Response rate (including partial completion)	86%
Response rate (excluding partial completion)	70%

The findings from the surveys are included in the main report (Volume 2).

Appendix 2 – Interview topic guides and surveys

PHN survey

PHN After Hours Program questions
1. Contact details: • PHN • Name • Position • Phone • Email
2. Please briefly describe the processes that PHN has taken in assessing needs for after-hours services and determining priorities, since the commencement of the program in 2015.
3. What data sources were used in the needs assessment process? We have listed some of the common data sources that may have been used, but you may wish to also identify other sources. Can you also describe any major limitation with these data that significantly reduced its usefulness in assessing needs? • Demographic data (e.g. Census, Estimated Resident Populations): • Practice Incentive Program (PIP) data: • Other information about practice arrangements for after-hours coverage (e.g. PHN survey): • MBS claims related to after-hours items: • Data acquired from Medical Deputising Services that operate within the PHN: • Data acquired from after-hours telephone services: • Emergency department attendances: • Other data source 1, please describe: • Other data source 2, please describe: • Other data source 3, please describe:
4. What other comments or suggestions would you like to offer about data sources available for assessing needs and priorities?
5. Please describe how the PHN has approached consultation with stakeholders around needs and priorities for after-hours services.
6. Please describe how the PHN decided on priorities for the program.
7. What were the top priorities identified for the program?
8. Please describe the process through which the PHN developed specifications for services to be commissioned under the program.
9. Did the process involve co-design? If yes, then please describe which stakeholders were engaged and how they were engaged in this process.
10. What outcomes is the PHN aiming to achieve through the program? For each of these can you describe how the PHN is tracking progress, including specification of any performance measures. • Outcome 1: Approach 1: Achieving 1: • Outcome 2: Approach 2: Achieving 2: • Outcome 3: Approach 3: Achieving 3: • Outcome 4: Approach 4: Achieving 4: • Outcome 5: Approach 5: Achieving 5:
11. What have been the top three (3) factors that have facilitated the success of the PHN After Hours program in this PHN? • Success factor 1:

PHN After Hours Program questions
• Success factor 2: • Success factor 3:
12. What have been the top three (3) factors that have adversely impacted the success of the PHN After Hours program in this PHN? • Failure factor 1: • Failure factor 2: • Failure factor 3:

PHN AWP questions
1. Can you confirm this is one of the PHN AH Program activities? • Yes • No
2. Was this commissioned service or activity in operation at the commencement of the PHN After Hours program in 2015? • Yes • No
3. Which geographic catchments does the commissioned service/activity operate in? • Whole of PHN • Other – can you list the regions/towns/suburbs in which the service/activity operates?
4. Which population groups are specifically targeted by the commissioned service/activity? (select all that apply) • Not applicable – activity does not involve direct patient services • Not specifically targeted at any group – intended for the general population • Aboriginal or Torres Strait Islander people • People living in residential aged care • Homeless people • People with mental health needs • People at risk of domestic violence • People with palliative care needs • Aged care • Children or young people • People with chronic conditions • Culturally & linguistically diverse groups • Other – please describe
5. Please describe how the services delivered by this commissioned service have an impact on the demand for or provision of after-hours primary care.
6. Which of the following statements describes how this commissioned service/activity impacts the demand for or provision of after-hours primary care? Please select all that apply Funding provided by the PHN supports the commissioned service to: • Improve patient/family/carer efficacy/health literacy to manage health issues and recognise when and what options are available to seek after-hours care • Improve patient and community awareness of options for after-hours primary care • Directly support after-hours telephone triage and advice services • Support general practices to expand their provision of after-hours services • Improve effectiveness of medical deputising services and their relationships with practices • Support other service providers (e.g. pharmacies) to expand/improve after-hours services • Address geographic barriers to accessing after-hours care • Increase or improve provision of services tailored for vulnerable patient groups • Improve knowledge and capacity of service providers across the PHN to direct patient to appropriate pathways or to access services • Improve infrastructure and practice for information sharing following a patient accessing an after-hours service (e.g. communicating details back to a patient's regular general practice)

PHN AWP questions
• Other, please describe
7. What measures does the PHN use to monitor the outputs delivered and outcomes achieved by this commissioned service/activity? Also, for the most recent financial year, can you provide information available about the level of these outputs or outcomes? Examples of "outputs" could include: Number of client contacts/service events, number of clients assisted. For commissioned organisations/activities providing support to other organisations this could include: Number of organisations which have been directly supported, number of participants in training workshops. If there are more than three outputs or outcomes monitored, report on the top three outputs or outcomes of importance. Description of Measure Volume or quantity delivered for most recent year/FY • Measure of outputs 1: • Measure of outputs 2: • Measure of outputs 3: • Measure of outcomes 1: • Measure of outcomes 2: • Measure of outcomes 3:
8. In your assessment, how successful has the commissioned service/activity has been in achieving its objectives? Please describe key issues you consider to be have been important in facilitating the success of the commissioned service/activity, or issues that have adversely impacted its success.

Commissioned provider survey

Questions pertaining to the commissioned provider service(s)
1. Name of service/organisation:
2. Contact details: • Name • Position • Phone Number • Email
3. Which service(s) is commissioned under the PHN After Hours Program?
4. Which PHN does the service operate in? (This could be more than one PHN)
5. Were the specific services/activities funded under the PHN After Hours Program already in operation at the commencement of the program in 2015? • Yes • No
6. When did the funding for your PHN After Hours Program service begin? • 2015–16 • 2016–17 • 2017–18 • 2018–19 • This current financial year 2019–20
7. Was your organisation involved in a co-design process with the PHN related to the services funded under the PHN After Hours program? If so, can you describe your organisation's involvement in this process. • No • Yes. Please describe the organisation's involvement in co-design.
8. Has the focus of services funded under the PHN After Hours Program changed since 2015 or since the service has been funded? • No • Yes. Please describe how the focus has changed.
9. Which geographic catchments does the commissioned service/activity operate in?

- Whole of PHN
- Other. Please list the regions, towns or suburbs in which the service/activity operates.

10. Which population groups are specifically targeted by the commissioned service/activity (tick all that apply)
    - Not applicable – activity does not involve direct patient services
    - Not specifically targeted at any group, intended for the general population
    - Aboriginal or Torres Strait Islander people
    - People living in residential aged care
    - Homeless people
    - People with mental health
    - People at risk of domestic violence
    - People with palliative care needs
    - Aged care
    - Children or young
    - People with chronic conditions
    - Culturally & linguistically diverse groups
    - Alcohol and drug services
    - Other, please describe.
11. Can you describe how your service is affecting the demand for or provision of after-hours primary care.
12. Which of the following statements describes how your service affects the demand for or provision of after-hours primary care? Please tick all that apply.
    - Improve patient/family/carer efficacy/health literacy to manage health issues and recognise when and what options are available to seek after-hours care
    - Improve patient and community awareness of options for after-hours primary care
    - Directly support after-hours telephone triage and advice services
    - Support general practices to expand their provision of after-hours services
    - Improve effectiveness of medical deputising services and their relationships with practices
    - Support other services providers (e.g. pharmacies) to expand/improve after-hours services
    - Address geographic barriers to accessing after-hours care
    - Increase or improve provision of services tailored for vulnerable patient groups
    - Improve knowledge and capacity of service providers across the PHN to direct patient to appropriate pathways or to improve knowledge and capacity of service providers across the PHN to direct patient to appropriate pathways or to access services
    - Improve infrastructure and practice for information sharing following a patient accessing an after-hours service (e.g. communicating details back to a patient's regular general practice)
    - Improving management of clinical condition or cohort in hours to avoid utilisation of services during after-hours period
    - Other, please describe
13. In relation to the services being delivered under the PHN After Hours Program, please complete the table below setting out:

    A. What measures you use to monitor the outputs delivered and outcomes achieved by the service.
    B. The level of output or volume of service you have delivered or expect to deliver in the most recent year.
    C. How successful the organisation has been in achieving the outputs and outcomes.

    A B C

    - Measure of outputs 1:
    - Measure of outputs 2:
    - Measure of outputs 3:
    - Measure of outcomes 1:
    - Measure of outcomes 2:
    - Measure of outcomes 3:
13. In your assessment, how successful has your service been in achieving the following objectives?

Not Effective | Limited Effectiveness | Moderate Effectiveness | Very Effective | N/A

- Improving the availability of after-hours GP services.
- Improving access to after-hours primary health care through supporting effective planning, coordination and support.
- Increasing the efficiency of after-hours primary health care.
- Increasing the effectiveness of after-hours primary health care.

14. What have been the top three (3) factors that have facilitated the success of this service with respect to after-hours primary care?
    - Factor 1:
    - Factor 2:
    - Factor 3:
15. What have been the top three (3) factors that have adversely impacted the success of this service with respect to after-hours primary care?
    - Factor 1:
    - Factor 2:
    - Factor 3:

Questions pertaining to the PHN After Hours Program
16. In your assessment, how successful has the PHN After Hours Program been in achieving the following program objectives? Not Effective | Limited Effectiveness | Moderate Effectiveness | Very Effective | N/A • Improving the availability of after-hours GP services. • Improving access to after-hours primary health care through supporting effective planning, coordination and support. • Increasing the efficiency of after-hours primary health care. • Increasing the effectiveness of after-hours primary care.
17. What have been the top three (3) factors that have facilitated the success of the PHN After Hours Program in this PHN? • Factor 1: • Factor 2: • Factor 3:
18. What have been the top three (3) factors that have adversely impacted the success of the PHN After Hours Program in this PHN? • Factor 1: • Factor 2: • Factor 3:
19. What are the top three (3) improvements that could be made to the PHN After Hours Program in this PHN? • Improvement 1: • Improvement 2: • Improvement 3:

Topic guide – PHN interviews

Topic	Question
Introduction	• Introduction of researcher and describe the project and its purpose. • Outline: • Remind the participant(s) that participation is voluntary, that they do not have to take part, and that there will be no repercussions if they choose not to do so.

Topic	Question
	• Describe what participation in the interview involves. • Remind the participant that they can withdraw from the interview at any time, and that they do not have to answer any further questions. • Outline confidentiality/anonymity provisions, that is, that the PHN and individuals responding on behalf of the PHN will not be named in any reporting of results to any parties. • Outline how the PHN will be informed of the results of the research when it is finished. • Provide details on who to contact in case of any concerns or questions that may arise after the interview. • Seek permission to audio record the interview. • Check whether the participant(s) has/have any questions. • Seek verbal consent for participation.
Approach to identifying gaps and needs for after-hours services	• What process did the PHN adopt? • What sorts of information did they use? • What challenges were encountered? • Which organisations did they work with and how?
Design and implementation	• Describe the process of developing the service design specifications based on the needs assessment. • What gaps was the PHN trying to fill? • How did the PHN prioritise the needs that should be addressed? • Who did the PHN work with on design and implementation? • What worked well and less well in implementation? • How were the specifications developed? • How did the PHN go about the commissioning process? • Were the services pre-existing or completely new services and providers?
Program delivery	• Have the services commissioned or activities delivered what was expected? • What models/projects worked well? • What worked less well? • What are the reasons for the differences? • How has the process changed over time? • What learnings have there been?
Funding/Spend	• Has the PHN always used all the funding provided? • If not, what were the reasons for under or overspends? • Does the PHN feel it received value for money in what was delivered? • Has this changed over time? • Does the PHN feel that the funding allocated to the PHN is appropriate given the level of need? • Does the PHN feel that it has used its after-hours resources in line with the need for after-hours services among its population?
Impact on other services	• How did the After Hours Program impact on other services locally (including hospital services)? • Has it been beneficial? • Has it influenced the provision of other services? • How have the other aspects of after-hours funding impacted on access to after-hours services locally (PIP, MBS after hours, deputising services)?

Topic	Question
	• How do local GPs view the After Hours Program?
Impact on local population and patients	• Has the program made a difference to the PHN population? • Has it had any wider benefits in relation to patients?
Future recommendation	• Are there plans for how services will be sustained long-term? • How does the PHN plan to support after-hours services over the next few years?
Anything else?	• Opportunity to raise other points that should be considered in the evaluation.

Appendix 3 – Background to the PHN After Hours Program

Regional primary care support organisations

Primary Health Networks have evolved from a two-decade approach by the Commonwealth to develop regional support organisations for general practice and, subsequently, primary care more broadly.

Divisions of General Practice

During the early 1990s, the GP community in Australia was expressing concerns over the lack of a voice in planning, the absence of local structures involved at the local level, poor links with other health providers, diminished roles in hospitals, maldistribution of the workforce across urban, rural and remote areas, and inappropriate funding mechanisms to promote population health and quality assurance activities (Hutton, 2005).

In December 1991, the General Practice Consultative Council (including membership from the Australian Medical Association, RACGP and the Commonwealth Government) met to consider proposals to enhance general practice in Australia. Out of these deliberations, a proposal for the establishment of local Divisions of General Practice, under the control of GPs, was put forward and subsequently piloted by the Commonwealth Government.

By 1994, 120 Divisions of General Practice were in operation across Australia with over 90% of GPs being members of their local division (Harris & Zwar, 2014). Divisions were independent legal entities (companies limited by guarantee), governed by a Board and operated under funding contracts with the Commonwealth Department of Health. Divisions could also source funding from state/territory health services. In the context of the after-hours PIP payments and MBS items framework that existed at the time, the Divisions had a role in working with their GP members and local hospitals and health services to improve access to after-hours care.

Some Divisions of General Practice established after-hours cooperatives, clinics and even after-hours home visit services, often in conjunction with state and territory health services. For example, the After Hours Primary Medical Care Program was introduced in 2001 by the Federal Government with funding of $43 million over four years. The purpose of the Program was to improve access to quality after-hours primary medical care and progress systemic reform by trialling key interventions, including shared care arrangements with hospitals. The evaluation of this Program was completed in 2002 (AHA Consulting, 2002).

It is from the establishment of these initial intermediate regional structures between government and local primary care providers that Australia's primary care landscape has evolved over the past three decades (Nicholson et al., 2012).

Medicare Locals

The 2009 report of the National Health and Hospitals Reform Commission (NHHRC) recommended that "service coordination and population health planning priorities should be enhanced at the local level through the establishment of Primary Health Care Organisations" (National Health and Hospitals Reform Commission, 2009). In 2010, following the release of the first comprehensive National Primary Health Care Strategy (Department of

Health and Ageing, 2010), the Commonwealth Government instigated a transition from the 120 Divisions of General Practice to a smaller number of new regional primary care organisations called Medicare Locals. The objective of the new organisations was to broaden their purview of primary care services and align with local hospital networks in an overall plan to better integrate primary care services at the regional level. Other countries were also working with regional primary care organisations during this period, including 32 Primary Care Organisations in New Zealand with shared governance (including clinicians, community and Maori groups) and 152 Primary Care Trusts in the UK transitioning to smaller GP-led collaborations (Nicholson et al., 2012). As with the Divisions, Medicare Locals were independent legal entities (companies limited by guarantee) operating under funding contracts with the Commonwealth Department of Health. As their remit was primary care more broadly, while still retaining a major focus on general practice, their Board membership and programs included allied health and other primary care activities.

The Commonwealth Government began establishing the Medicare Locals in 2010 and charged them with building up after-hours arrangements within their designated regions. Sixty-one Medicare Locals were established in two tranches over 2011–12. While many were formed by a group of Divisions of General Practice, in some cases the Divisions continued as separate legal entities becoming members of the new Medicare Local company. In other cases, Divisions of General Practice decided to continue as service providers, including some Divisions of General Practice running after-hours GP clinics with funding from the Medicare Locals. The Department ceased the PIP After Hours Incentive payments and instead provided funding for after-hours services directly to the Medicare Locals to administer from July 2013.

The Medicare Locals were responsible for supporting practices in after-hours delivery and commissioning additional after-hours services to address regional gaps. The stated objective for this funding included reducing avoidable hospital admissions, lowering healthcare costs, increasing primary care access to patients with non-life-threatening conditions that require attention after hours, improving local health network provider integration, and promoting continuity of care (Jackson, 2014).

The Medicare Locals had scope to develop and implement after-hours services most applicable to their local communities. Most continued with funding support in line with the previous PIP payments (Neil et al., 2016). However, the existence of imposed additional administrative burdens, tight implementation timelines and sensitivities around the replacement of the Divisions of General Practice, provided a basis for potential ill feelings between the GP community and the newly formed Medicare Locals (Neil et al., 2016).

Medicare Locals had very limited ability to restructure the scope and allocation of the transferred after-hours PIP funding.

Primary Health Networks

Following changes in government and recommendations of the Horvarth review of Medicare Locals in 2014 (Horvath, 2014), a decision was taken to replace the 61 Medicare Locals with a smaller number of larger organisations called Primary Health Networks. The Commonwealth Department of Health invited competitive proposals to establish each PHN. PHNs were again independent legal entities (companies limited by guarantee) governed by a Board and operating under a funding contract with the Department. A key change from Medicare Locals was that PHNs would commission services and not be direct service providers themselves.

The majority of PHNs (but not all) were formed from a group of Medicare Locals. Some Medicare Locals decided to continue as service providers. All PHNs commenced at the same time, in July 2015.

Some of the measures proposed by the Jackson review (Jackson, 2014) were implemented, including:

- the introduction of a new PIP After Hours Incentive payment

- the redirection of PIP after-hours funding to the Commonwealth Department from Medicare Locals
- funding for PHNs to work with local stakeholders to plan, coordinate and support population-based after-hours services.

The PHNs' stated role is to work collaboratively with other organisations to focus on population-based service solutions aimed at addressing gaps in after-hours care (Jackson, 2014). PHNs receive funding from the Department to commission primary care services under multiple funding schedules.

An initial evaluation of the PHN After Hours Program was completed in 2018, with funding under the Program continuing to 2020–21 (Ernst & Young, 2016). Given the evaluation was undertaken early in the Program, the long-term effects of the initiatives of the PHNs could not be effectively assessed. The reviewers recommended that greater attention be given to engagement with GPs and other service providers in establishing service solutions with potential for longer-term sustainability.

Primary care after-hours services

Medical Benefits After Hours items

Specific higher rebate MBS items have existed for emergency after-hours attendances since the 1990s, with increased MBS rebates introduced in 2001–02 and 2004–05 (Parliamentary Budget Office, 2015). On 1 March 2007, some minor changes were made to the emergency after-hours MBS items for GPs, other medical practitioners and sports physicians (Department of Health and Ageing, 2007) including:

- replacement of the term 'emergency' with the term 'urgent'
- allowing requests for urgent attendances, including surgery consultations, to be taken up to two hours prior to commencement of an after-hours period
- allowing regular providers of after-hours services to use the urgent after-hours home visit items.

New items were introduced in November 2008 for urgent out-of-surgery attendances during 'transitional hours', which were deemed to be 6–8 pm on weekdays and 12–1 pm on Saturdays (Department of Health and Ageing, 2008).

On 1 May 2010, there was a restructure of primary care items, which reduced the number of after-hours items. The intention of these changes was to simplify the administration of the items (Medicare Benefits Schedule Review Taskforce, 2017a). For example, the integration of previously introduced transitional hours items into broader after-hours items and unsociable hours.

In 2015, the Federal Government established the MBS Review Taskforce to better align the MBS with contemporary clinical evidence and practice and improve health outcomes for patients. The Taskforce also sought to identify whether there were any services that were obsolete, outdated or potentially unsafe.

Among other issues, the Taskforce reviewed and provided advice on urgent after-hours MBS items (Medicare Benefits Schedule Review Taskforce, 2017c) and made recommendations to support the provision of high quality, urgent after-hours services (see also section on previous reviews of after-hours for further details).

On 1 March 2018, new arrangements for MBS-funded urgent after-hours services were introduced. The new arrangements included the introduction of four urgent after-hours-only MBS items (585, 588, 591, 594) and the removal of two existing urgent after-hours items (597 and 598). Vocationally registered and vocationally recognised GPs and GP registrars would receive a higher MBS rebate for urgent after-hours visits compared with non-vocationally recognised (non-VR) doctors working in metropolitan areas, with a gradual introduction of a fee reduction for urgent after-hours items provided in metropolitan areas by non-VR doctors.

Practice Incentives Program (PIP) After Hours Incentive

The Practice Incentives Program (PIP) was introduced on 1 July 1998 to provide funding to general practices unrelated to the volume of MBS payments and to encourage changes to general practice that would support improved access, quality and outcomes of care. To be eligible for PIP payments, the general practice must be accredited or registered for accreditation with accreditation achieved within 12 months and then maintained. While most practices are accredited, not all practices seek or obtain accreditation. Approximately 11% of practices are not accredited. A range of incentive payments exist, including a tiered after-hours incentive to encourage general practices to provide access to high-quality after-hours care. Access may be through an after-hours cooperative arrangement or an accredited medical deputising service.

Under the initial arrangements for the PIP After Hours Incentive, practices received funding dependent on the nature of the after-hours coverage. Three tiers were specified, and the number of patients weighted by age and gender to reflect different needs of population groups. These weightings are known as standardised whole patient equivalent (SWPE) values. The design was revised in July 2015 when the responsibility for the payments reverted to the Department of Health from Medicare Locals. The new system introduced five levels. In the latest published figures on the PIP After Hours Incentive for the second payment period in 2018, over 5,000 practices received some level of payment, representing around 69% of all practices.

Other provision

Healthdirect

Established in 2007, Healthdirect is a nurse triage and advice service. The After Hours GP (AHGP) helpline was added in 2011 and refocused on the after-hours period in 2015. The Jackson review had recommended terminating the GP Helpline service and to use the funding for PIP payments. However, the Commonwealth Government decided to leave the service in place but restrict its period of operation to only after hours (Neil et al., 2016).

Healthdirect established the National Health Services Directory in 2012 and is responsible for its maintenance. The Directory lists Australian general practices and other services, their hours of operation and what arrangements the practice has in place. If available, the next open appointment is stated with links to electronic booking engines. While listings state whether fees are payable, they do not outline the actual gap payment required.

The Healthdirect helpline is staffed by registered nurses and takes calls 24/7 across the country, with the exception of Victoria and Queensland. Callers are advised on how to manage their health issue(s) depending on the urgency of their situation and the services available locally. If required, the nurse triage service can offer a call-back from a GP within 15 minutes to an hour depending on their assessed urgency. The GP service operates only in the after-hours period. This form of telehealth is currently limited by the inability of the GPs to prescribe medicines during their consults.

Other telephone triage services

Ambulance and other emergency services have a variety of arrangements within each state to deal with secondary triage of emergency calls for health care, with Healthdirect managing secondary triage for Western Australia and NSW (with the GP Access triage service also managing secondary triage in the Hunter Valley). In Victoria, Queensland, South Australia and – soon – Tasmania, the respective ambulance service uses an alternative nurse triage service.

Two of the case studies in this report focus on PHN investment in local telephone triage services and their relationship to Healthdirect and after-hours GP services, namely GP Assist funded by Primary Health Tasmania and GP Access funded by Hunter New England and Central Coast PHN using their PHN AH funding (see Volume 3). These services vary in the way they integrate with emergency services, emergency departments and local GP services, but both provide a nurse/GP-based triage service for calls initially made to Healthdirect.

There is also a large number of after-hours telephone advice lines across Australia covering mental health, family violence, parenting, poisons information and other issues.

After-hours primary care providers

There are a range of bulk-billing, after-hours home visiting, clinic-based and telehealth services available in major urban areas. Many of these are recognised medical deputising services. These services do not exclusively use general practitioners. With the COVID-19 extension of MBS telehealth items in March 2020, many of these services expanded their services to offer telephone and/or telehealth consultations.

My Emergency Doctor launched in 2016 and, via an app, offers 24/7 telehealth consultations with an Emergency Department specialist. Unless funded via a third-party organisation, access to the service requires a credit card with a fee payable of $250 in hours and $280 after hours. Provided a GP referral is given, a bulk-billed telehealth service is available. A small number of PHNs have entered into funding contracts with My Emergency Doctor for specific geographical locations and/or target populations in specified settings (e.g. residential aged care).

The COVID-19 expansion of bulk-billed Medicare telehealth items in March 2020 has led to an emergence of new providers and service models, in both the "in-hours" and after-hours periods.

Changes to the GP MBS telehealth item eligibility were introduced in late July 2020. Subject to a set of exceptions, patients must now have had a face-to-face consultation with the GP or practice in the previous 12 months.

Urgent-Care Centres

In line with international developments, some states and territories in Australia have established urgent-care centres (UCCs) to address the rising demand for non-acute ED presentations. The aim is to divert ED attendances from hospitals to these centres and enable most patients with minor injury or illness to be treated in a timely manner. UCCs are designed to deal with minor illnesses and injuries. Many can perform minor procedures such as suturing, fracture management and plastering.

In Australia, a variety of services called 'urgent-care centres' have been developed, largely by state governments but also by the private sector. They vary in their staffing – most involve GPs, but some are staffed by nurses. Most have ready access to imaging and pathology and are in metropolitan areas or regional towns.

There is no accepted definition of what an urgent-care centre is and what services it provides across the different localities within Australia. Some small rural hospitals have lower-acuity EDs that are badged as urgent-care centres. These UCCs are not diverting patients from the ED or providing alternative provision. For example, in Victoria, smaller rural health services provide emergency care through their urgent-care centres. There are 50 urgent-care centres located at local hospitals, with care provided by nurses and supported by local on-call doctors . These services may not be open 24 hours a day. Urgent-care centres provide care for minor injuries and illness. In an emergency, they can provide initial resuscitation and limited life support to patients in a critical condition, before the patient is transferred to a larger hospital.

A variety of arrangements now exists in Australia that fall within the scope of urgent-care centres, including:

- In **Western Australia,** the WA Department of Health and PHNs are piloting a network of urgent-care centres. Currently, 125 urgent-care centres are operating across the Perth metropolitan area and the Bunbury region. These centres are GP practices that have access to diagnostic services and typically remain open 7 days a week from 8 am to 8 pm. They are not co-located at hospitals and patients are charged fees. Walk-in access to the services is possible, but patients can book online through the National Health Services Directory or be booked by Healthdirect if access to one of the centres is considered suitable for a caller.

The Commonwealth Department of Health recently provided capital and operational funding support to **St John Ambulance in WA** to establish four urgent-care centres across the metropolitan area in Armadale, Cannington, Cockburn and Joondalup. The centres typically remain open 7 days a week from 8 am to 10 pm, with radiology, pathology and follow-up treatments such as plaster casts, urgent dental and suturing available onsite. Walk-in access is available, with the possibility of direct referral from the ambulance triage, or through their secondary triage service provided by Healthdirect.

Stakeholders have recently raised concerns around the level of planning and coordination required and the impact on existing GP practices.

- In **South Australia**, the SA Department of Health and Adelaide PHN have established four Priority Care Centres across metropolitan Adelaide to provide care for patients with urgent but non-life-threatening conditions, who would otherwise seek care from a hospital emergency department. They are GP-led centres with additional care and support provided by acute care nurses. The services are free of charge and have access to imaging and pathology, pharmacy services and community-based health services for follow-up care. Access to the centres is by GP, community health service, ambulance service or ED referral. Walk-in patients are not accepted. The services are open 7 days a week.
- In **NSW**, select public hospitals have established Urgent-Care Centres (including Westmead, Auburn and Blacktown) as a way to provide urgent care at emergency departments and streamline the management of non-complex, low-acuity patients presenting to the emergency department, and free up resources to manage more critically ill patients. These services are free of charge and provided by a team of hospital doctors, nurses and allied health staff. The centres provide for walk-in access, with suitable low-urgency patients presenting to the ED being streamed to the centres. At Mona Vale, the urgent-care centre is not part of an ED but transfers patients to hospital, if necessary.
- In **Queensland**, there are only a few Urgent-Care Clinics, with concerns that the term may be confusing and that people seeking care may misinterpret the service as an ED. There are also concerns that the centres are in competition with GP practices. The Wynnum-Manly Community Health Centre was previously referred to as an Urgent-Care Centre. It provides 24-hour access to primary care and has access to imaging and other support services.

The Caloundra Minor Illness and Injuries Clinic on the **Sunshine Coast** was established to provide urgent-care services when the ED at Caloundra Hospital was closed and the new Sunshine Coast University Hospital opened in 2017. The clinic was previously referred to as an Urgent-Care Centre. The clinic operates from 7 am to 9 pm and is managed by GPs employed by the Local Health District. Imaging and pathology services are available.

At the **Cairns** Private Hospital, an After Hours General Practitioner Clinic has been established and is open during the week from 6–10 pm. The service takes bookings and after the MBS rebate, the out-of-pocket payment by patients is about $50.

- In the **ACT**, four nurse walk-in centres have been established to provide free health care for minor injuries and illnesses. The existing centres are in Belconnen, Gungahlin, Tuggeranong, and Weston Creek, with a fifth walk-in centre to be integrated with a community health centre in Dickson by 2021. The centres are open from 7.30 am to 10 pm daily, including public holidays. No appointment is needed. All walk-in centres are led by advanced practice nurses and nurse practitioners with experience in treating people with minor injuries and illnesses. There are no doctors at the clinics.
- In **Tasmania**, a feasibility study was proposed by the State Government on Urgent-Care Centres in Launceston and Hobart.
- In **NT**, the Palmerston GP Super Clinic is open 7 days a week from 8 am to 8 pm. The Palmerston Urgent-Care After-Hours Service is operated in conjunction with the clinic and is open from 10 pm – 8 am, 7 days a week. This service is free of charge and accepts walk-ins only.

- **Australia-wide**, private organisations have established Urgent-Care Centres in various forms. For example, the Healius group has partnered with GPs, dentists, specialists and other health professionals to provide health services in more than 70 medical centres nationally. These centres are open for extended hours 365 days a year and offer appointment and walk-in services. They provide both acute and chronic care, with pathology, radiology and pharmacy services onsite. Some of the centres bulk bill.

Previous reviews of primary care after-hours arrangements

In August 2014, a review of after-hours care was announced (Jackson, 2014). Box 1 provides further details.

Box 1 – 2014 Review of after-hours care

In 2014, the Department of Health commissioned a review of primary care after-hours services. The review examined the variety of ways in which after-hours services were being delivered, including services commissioned by Medicare Locals, medical deputising services, practices providing after-hours services funded through the MBS and an After-Hours GP Helpline.

The review highlighted several issues around after-hours services, including geographical variations in service provision, poor coordination across providers, lack of access to services for vulnerable populations and a general lack of consumer awareness.

Specifically, the review found that reliance on Medicare Locals to both fund and commission after-hours services across regions was largely unsuccessful. Several practices reported increased administrative burden and complicated after-hours contracts that did not incentivise them to deliver after-hours services. The review recommended that the Commonwealth Government resume responsibility for funding practice after-hours services through a new PIP After Hours Incentive model. To address additional community-specific gaps in after-hours care, the review recommended that the Commonwealth Government fund the newly established PHNs to work with local stakeholders and providers to commission necessary services within their regions.

Other key recommendations included:

- Focusing on patient triage to better direct patients to the appropriate medical services.
- Prioritising patients in both residential aged care facilities and palliative care settings as these are vulnerable groups that need additional after-hours support.
- Reintroducing quality improvement measures into future payment models to both promote and reward practices for providing high-quality patient care.
- Promoting better coordination and communication within the local health network by requiring Medical Deputising Services and practices to adhere to a 24-hour turnaround time of sending health summaries to patients' home practices as a part of the accreditation process.
- Reviewing the Medical Deputising Services funding scheme and assessing whether this service may be better suited to a case mix model.
- Working across agencies to raise awareness of after-hours services and improve health literacy across Australia.

In July 2015, the 61 Medicare Locals in Australia were dissolved and 31 PHNs were established. As a result of Jackson's 2014 review of after-hours arrangements, the Department of Health re-introduced a revised version of the PIP After Hours Incentive scheme that comprised of five different payment tiers that account for the level of practices' after-hours service provision. In order to ensure that any outstanding gaps in after-hours care were addressed throughout the diverse regions across Australia, the Department also established the PHN After Hours Program (Armstrong et al., 2016) which provides after-hours funding to all

of the PHNs across Australia. Funding for the program began in 2015 and has been extended until 2021.

The Department of Health commissioned a review of the PHN After Hours Program in 2015. The review was conducted by Ernst & Young and was finalised in November 2016. Box 2 provides additional information about the review and its findings.

Box 2 – EY Evaluation of the PHN After Hours Program (Ernst & Young, 2016)

To understand the state and progress made by PHNs in commissioning locally tailored solutions for after-hours services, the Department commissioned a review of the Program. Though the review could not effectively assess the long-term effects and outcomes of the Program changes at that time, it identified key enablers and barriers and provided several recommendations to both the Department of Health and to PHNs. Reported enablers to service delivery included:

- Strong partnerships and engagement with community health providers and local stakeholders.
- Knowledge of the existing community after-hours landscape and any potential challenges that may hinder planning and service delivery.
- Using the foundation of Medicare Locals to promote service continuity, foster existing provider relationships and evaluate program benefits to the community.
- Active evaluation of after-hours services to ensure that commissioned services are providing regional value.

Some program barriers included:

- Limited regional awareness of existing after-hours services.
- Challenges associated with rural and remote geography.
- A shortage of healthcare workers within certain regions.
- A wide variety of diverse AH challenges in communities located in a single PHN catchment.
- Limited awareness of existing data resources and a general lack of access to certain data sources.
- Inadequate time periods allocated to properly implement and establish after-hours services.

The report made recommendations to PHNs, including additional engagement of GPs, increased flexibility to allow for locally tailored solutions, greater data collection and monitoring of after-hours services for evaluation purposes, further education and usage of existing data resources (i.e. the PHN portal), promotion of collaborative service planning, and delivery methods that concentrate on long-term program sustainability and increased emphasis on the 'bigger picture' and how developing and supporting certain AH services affects overall demand for primary care.

The report also included a set of additional recommendations for the Department of Health. Some of these recommendations are listed below:

- Provide additional transparency around the existing national AH funding landscape and how these initiatives and activities align with AH PIP funding.
- Allow for additional time to plan and implement programs and establish longer funding cycles for PHNs and commissioned providers to co-design and implement AH solutions.
- Establish and encourage data sharing agreements.
- Allow for additional program flexibility so PHNs can design and establish more effective, targeted activities that aim to address system-wide issues that go beyond the defined AH period.
- Define the program objectives more clearly and the overall aims of the AH Program.

MBS Review Taskforce

In 2015, the Federal Government created the MBS Review Taskforce to ensure that all MBS services are up to date, clinically safe and helping to improve patient outcomes across Australia. In 2017, the Taskforce reviewed urgent after-hours primary care services that are funded by the MBS. From 2010 to 2015, the number of providers claiming after-hours services increased, and the Taskforce and the Government were concerned that providers were claiming after-hours services that were classified as 'urgent' due to the increased financial incentives associated with this MBS item. Health professionals were reimbursed $129.80 when they classified their service as urgent after-hours care (item 597) compared with $49 for a non-urgent after-hours care (item 5020).

The review concluded that many after-hours claims did not classify as urgent and that most urgent after-hours services were being provided by Medical Deputising Services. Due to this finding, the Taskforce recommended that urgent after-hours MBS items be reserved only for GPs who return to work during the after-hours period to see patients that require immediate, urgent care. The Taskforce recommended that after-hours clinics and medical deputising services should only be allowed to claim standard after-hours care items. Changes to the MBS urgent after-hours MBS item numbers were introduced on 1 March 2018. The new arrangements included the introduction of four new urgent after-hours-only MBS items (585, 588, 591, 594) and the removal of two existing urgent after-hours items (597 and 598). Vocationally registered and vocationally recognised GPs and GP registrars receive a higher MBS rebate for urgent after-hours visits, compared with non-vocationally recognised (non-VR) doctors working in metropolitan areas, with a gradual introduction of a fee reduction for urgent after-hours items provided in metropolitan areas by non-VR doctor (Medicare Benefits Schedule Review Taskforce, 2017b).

Other reports

Since the introduction of the PHN After Hours Program in 2015, several other reviews and reports have been conducted focusing on specific components of the Program.

In April 2016, the Deeble Institute, in collaboration with the Northern Queensland Primary Health Network and other stakeholders, conducted a review of after-hours models specifically designed for rural and remote regions. Though the review reiterated many of the findings from the 2014 review, it identified specific gaps in services, such as limited access to after-hours mental health and pharmacy services, poor internet connection in certain regions, and few transport options for residents. The review recommended solutions to these gaps, such as using risk predictive models to identify individuals that are at greater risk of hospitalisation and increasing the use of nurse practitioners and skill mix models to deliver care after hours (Armstrong et al., 2016).

The National Association of Medical Deputising Services commissioned Deloitte to conduct a review of after-hours care pathways. The review noted a reduction in the proportion of ED presentations that were lower acuity categories 4 and 5 (54% to 47% respectively of all emergency department presentations). This reduction coincided with an increase in access and usage of after-hours primary care. The report compared the cost of different after-hours pathways and highlighted the variation in costs. The authors identified specific priority groups – such as parents with small children, individuals with disabilities and the elderly – as high users of after-hours services. Due to potential difficulties in seeking after-hours care, the report recommended an increased focus on providing after-hours treatment options for these groups. The report also emphasised the need to ensure that patients access the most appropriate pathways. The report recommended that after-hours policy should support initiatives and services that promote awareness and access for patients for the benefit of both patients and the overall health care system (Deloitte, 2016).

Appendix 4 – PHN Programs and activities

PHN objectives

PHNs were established with the key objectives of:

- Increasing the efficiency and effectiveness of medical services for patients, particularly those at risk of poor health outcomes, and
- Improving coordination of care to ensure patients receive the right care in the right place at the right time.

In pursuing these objectives, PHNs are expected to develop collaborative working relationships with LHNs and public and private hospitals to reduce duplication of effort and resources, and to increase the PHN's ability to purchase or commission medical and health care services. PHNs are expected to undertake population health planning in conjunction with LHNs and jurisdictional organisations to identify key PHN priorities to improve health outcomes and reduce hospital pressure without duplicating efforts and initiatives of LHNs or state and territory governments.

Funding for PHNs considers several factors, including population, rurality and socio-economic factors. Where the Australian Government determines that additional policy outcomes can be best achieved by PHNs, the department may directly allocate additional funding through non-application-based processes when assessing these factors as well as any policy specific considerations.

Funding

PHNs can receive three forms of funding from the Commonwealth Department of Health:

Core funding

Core funding is provided to maintain the operations of PHNs and to flexibly address need. The funds are allocated to reflect the likely costs associated with population, geography and relative need, where relative need is influenced by likely health costs in accordance with social determinants (see Figure 1).

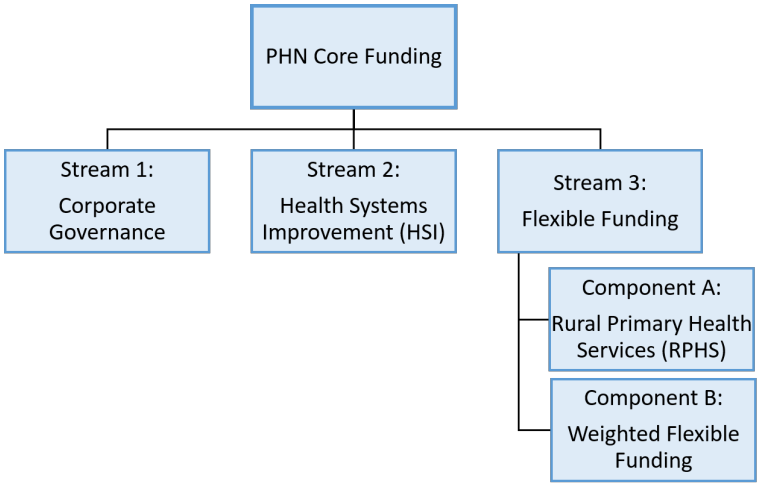

Figure 1 – PHN core funding streams

Core funding is provided in three streams, described below.

Corporate governance

To support the corporate and administrative costs of running a PHN, including support of communications, and the board, clinical councils and community advisory committees.

Health systems improvement

To support the delivery of core functions of the PHN, excluding commissioning activities, including population health planning, system integration, stakeholder engagement and support to general practice.

Flexible funding

To enable PHNs to commission the delivery of services to the region to address local community health needs having regard to priority areas determined by the government. The funds are provided to cover the direct care costs, not the contract management costs, related to commissioning.

Flexible funding has two components:

- Component A: Rural Primary Health Services, where funding is apportioned across regional and rural PHNs to increase access for rural and remote communities to a range of health services and activities.
- Component B: Distribution of funding according to population demographics.

Program funding

Program funding was initially provided to enable PHNs to continue programs previously managed by Medicare Locals to ensure the continuity of priority frontline services during the establishment phase. PHNs now have greater flexibility to commission program specific services, having completed the regional needs assessments for their areas and associated population health planning. It is expected that over time PHNs will deliver a broader range of activities in their regions.

Table 8 provides an overview of the funding for the 31 PHNs from their inception in 2015–16 through to 2021–22, including core and program funding.

Table 1 – Total PHN funding by schedule, 2015–16 to 2021–22

Primary Health Networks – funding by Schedule	2015–16 $m	2016–17 $m	2017–18 $m	2018–19 $m	2019–20 $m	2020–21 $m	2021–22 $m	TOTAL $m
Primary Health Networks Core Funding	289.5	301.8	283.1	297.7	277.7	277.6	0.0	1,727.4
After Hours	45.1	64.4	65.7	66.6	71.0	71.0	0.0	383.9
Primary Mental Health Care	298.0	365.1	425.2	506.1	514.5	502.8	461.2	3,072.8
Drug and Alcohol Treatment Services Program	0.0	71.2	93.7	101.7	107.3	45.1	45.1	464.1
Indigenous Australians' Health Program	69.0	67.6	67.6	68.5	69.5	70.4	0.0	412.6
National Psychosocial Support	0.0	0.0	7.7	23.7	145.4	24.4	0.0	201.2
Partners in Recovery	76.4	74.9	66.5	71.0	0.0	0.0	0.0	288.7
Continuity of Support	0.0	0.0	0.0	16.0	39.1	36.6	35.9	127.6
Community Health and Hospitals Program	0.0	0.0	0.0	0.0	15.6	11.4	8.8	35.8
Other	54.3	23.1	12.3	13.1	13.7	4.7	0.0	121.3

Primary Health Networks – funding by Schedule	2015–16 $m	2016–17 $m	2017–18 $m	2018–19 $m	2019–20 $m	2020–21 $m	2021–22 $m	TOTAL $m
Total	**832.3**	**968.0**	**1,021.8**	**1,164.3**	**1,253.9**	**1,044.1**	**551.0**	**6,835.5**

Core funding represents 25.3% of total funding over the 7-year period, with 60.8% of total funding allocated to mental health and drug and alcohol programs (i.e. Primary Mental Health Care, National Psychosocial Support, Partners in Recovery, Continuity of Support, Drug and Alcohol Treatment Services Program), and 6.6% to Indigenous Australian and broader population health programs aimed at chronic conditions (i.e. Indigenous Australians' Health Programme, Community Health and Hospitals Program).

The PHN After Hours Primary Care funding represents 5.6% of the total funding. During consultation with PHN representatives, commissioned providers and other key stakeholders, it became apparent that there is scope for significant overlap in the range and coverage of the after-hours funding schedule and the mental health, chronic care and other funding schedules. For example, mental health has been identified by some PHNs as a key area for improvement in after-hours primary care, in terms of pathways to access and service provision.

The relationship between after-hours and in-hours care was raised by many stakeholders during the review. There was an emerging view that improved access to care in hours can reduce the need for after-hours services. By improving service access and care management for people with chronic conditions during the in-hours period, the likelihood of needing urgent after-hours care for related complications may be reduced.

Commissioned services

The main report describes some of the core types of services commissioned by PHNs. The following section provides further details of the nature of the services commissioned by PHNs in 2019–20.

Residential aged care

Table 2 – PHN activities related to Residential Aged Care Facilities

PHN	Service	Activity
Adelaide	Camellia and Dandelion Projects	Aimed to increase GP access in after-hours period, reduce unnecessary hospital admissions and build capacity of aged care staff to better support their residents. Eldercare delivers the Dandelion Project at two sites in southern Adelaide, and Southern Cross Care delivers the Assess Treat Stay Project at two sites in the north and west regions of the PHN. Both involve GP and staff training, liaison work with local hospitals and ambulance services, and enhanced on-site clinical support.
Central and Eastern Sydney	Residential aged care facility and community-based service improvement projects	Aged care outreach services, such as Geriatric Flying Squadron (GFS), Hospital in the Home, SLHD Acute Care Team, and the Southcare Outreach Service. Funding sustained workforce and hours of extended service delivery of primary health care through aged care outreach teams. The commissioned services work with RACF staff to identify areas of education and training, develop partnerships and pathways to raise awareness, and ensure appropriate delivery of the outreach services.

PHN	Service	Activity
Country WA	After-hours support for disadvantaged/vulnerable and homeless populations project	An on-call service for Aboriginal nursing home residents in the Kimberley Region (Derby). Comprises supporting RACF personnel to improve their knowledge and coordination of care to maximise residents' health outcomes. Service also includes funding of a GP After Hours service in Geraldton and a nurse practitioner to visit residents across three aged care facilities in Geraldton.
Darling Downs and West Moreton	Home outreach care RACF project	Involves the development of decision support tools and care pathways for RACFs to help them provide timely and appropriate access to medical and/or nursing support for residents experiencing a change in health status during the after-hours period.
Eastern Melbourne	After-hours ED diversion project	Austin Hospital aimed to reduce the number of patients transferred to EDs from RACFs. The approach included engaging with the families of residents and RACF staff to promote alternatives to the ED. Triage guidelines/policies were developed alongside use of services such as My Emergency Doctor and Residential In Reach (RIRs). The PHN also funded the RACF redesign capacity-building project, which involved working with LHNs, GPs, MDS, RIRs and RACFs to increase the capacity of the workforce to manage patients more effectively outside hospital.
Gold Coast	InterAct service	Phone support to RACFs, GPs and ambulance service from nurses during select after-hours periods; after-hours clinical care advice to staff and residents; a range of educational, training and support for ambulance services, GPs, nurses, navigators and specialist palliative care services.
Hunter New England and Central Coast	Aged Care Emergency (ACE) program	A collaborative nurse-led model of care that provides support to RACF staff via telehealth, clinical guidance and education services. Aims to treat residents with non-life-threatening acute care needs at their facilities and avoid unnecessary ED presentations. Where an ED presentation was required, the ACE program aims to improve coordination of the care of the patient during their ED visit.
Murrumbidgee	After-hours RACF decision guidelines project	Update of acute care decision guidelines for RACFs and facilitating the uptake of these guidelines through training.
Nepean Blue Mountains	Access to after-hours primary health care services project	A pilot program in RACFs to adopt and use a telehealth doctor service for residents needing urgent medical care and assessment during the after-hours period.
South Western Sydney	The residential aged care capacity-building project	Rolling out of an RACF-GP communication toolkit. Targeted training of aged care staff to enhance

PHN	Service	Activity
		capacity and prevent avoidable hospital presentations.
Western NSW	The Telehealth in Residential Aged Care Facilities Program (TRAC)	Provided GP services to aged care residents in the management of chronic health issues, episode- and event-based care, and other ongoing clinical service needs through a video consultation model via Healthdirect secure clinics. Rolled out the Identify, Situation, Background, Assessment and Recommendation (ISBAR) effective clinical handover education program to aged care settings.
Western Queensland	RACF and palliative care after-hours strategy, better access to GPs in after hours and effective use of eHealth technology and systems project	After-hours services to the Warrawee RACF at St George Medical Centre. Adoption of new protocols at ED, general practices and the RACF. Included VMO privileges at the hospital, training and protocol development for the RACF, and new team care arrangements and connectivity. Additional elements including improving end-of-life and palliative care processes in the after-hours period.
Perth North, Perth South, Country WA	My Health Record expansion program	An enablement phase of My Health Record rollout that focused on older West Australians, in particular those living in RACFs. The WAPHA My Health Record team conducted a series of workshops in RACFs for residents, staff and families to increase awareness of My Health Record and identify ways to assist in a person's health care. This included the ability to upload a person's advance care plan.

Telehealth

Table 3 – PHN activities related to telehealth

PHN	Service	Activity
Country WA	After-hours primary health care	A telemedicine service that connected people directly with a doctor via phone or video during select after-hours periods. GPs could diagnose patients, prescribe medication, make referrals to specialists and, with the caller's consent, provide a summary of the consultation to the patient's regular GP.
Eastern Melbourne	Innovative after-hours telehealth	Commissioned My Emergency Doctor to provide after-hours telehealth across a specific area within the PHN catchment.
Gippsland	Maintain consumer access to after-hours primary care	Provided the whole of Gippsland with 24/7 virtual access to medical services via a video conferencing service through an app available on iOS and Android devices.
HNECC	The Small Town After Hours (STAH) program	A telephone medical support service for local hospitals in the New England area for use when the usual general practitioner VMO was absent/unavailable from the town. Intended to support management of patients presenting in triage categories 3–5.
Murray	Seasonal system strengthening	Service to address localised seasonal needs through telephone triage and advice services and telehealth service modalities.
Murrumbidgee	Wagga GP After Hours Service	Wagga GP After Hours Service provided after-hours primary health care to residents of Wagga. The activity also made use of telehealth options.
Northern Territory	After hours in regional hubs	Provided primary health after-hours clinics in certain areas throughout NT. The PHN implemented additional services in Katherine and Alice Springs, including extended opening pharmacy hours, after-hours telemedicine and after-hours doctor home visiting service.
Northern Territory	After-hours in remote communities	Remote primary health care after-hours call-out service.
Northern Queensland	After-hours disadvantaged services	Telehealth service provided through an MDS.
Western NSW	After-hours clinic in Bathurst and Dubbo	The After Hours phone service (operated by Marathon Health) was provided by local GPs for Bathurst, Dubbo and surrounding regions. The phone service was provided using an on-call phone system with the doctor deciding at the time if the person needs to be referred to the ED or if medical advice over the phone is sufficient. The service also offered after-hours service visits to RACFs.
Western Victoria	Access to after-hours urgent care	Commissioned a streaming and information service, Safety Link, to provide access to taxi transport assistance to and from urgent after-hours care for the entire PHN catchment.

Mental health

Table 4 – PHN activities related to mental health

PHN	Service	Activity
Adelaide	Northern and Southern After-Hours Walk-in Clinics	Two walk-in clinics in the outer northern and southern regions of the catchment. Aimed to improve access to integrated mental health care
Adelaide	Lived Experience Telephone Support Service (LETSS)	A telephone support service for people with mental health needs. Provided peer worker support after hours and links to services within normal hours.
Adelaide	After-hours extended mental health clinical services	After-hours psychological therapy services for adults with mental health needs.
Central Queensland, Wide Bay, Sunshine Coast	After-hours counselling, women's health clinic and continuing professional development for practice nurses	Service aimed to enhance access to after-hours women's mental health services by providing counselling services to at-risk women in Gympie via the Gympie Women's Health Service.
Country SA	Umoona – Step-down care and coordination service	Provided services and support to Aboriginal & Torres Strait Islanders with mental illness who are in recovery. The initiative focused on navigation support, psychiatric care, care management plans, and support from various health providers during the after-hours period.
Country SA	Headspace and psychological therapies extended access	A service run by Headspace aimed at improving young people's access to mental health services during the after-hours period.
Country SA	After-hours mental health access in the Fleurieu region	Enabled mental health providers in the Fleurieu region to operate during the after-hours period and offer service to vulnerable youths in the area.
Country WA	After-hours integrated mental health, suicide prevention, and drug and alcohol treatment services	Extended hours for mental health and alcohol dependency services for individuals and their families.
Country WA	After-hours support for disadvantaged/vulnerable and homeless populations	The service supported GP and nurse-led after-hours mental health services. This included a mental health nurse in the Goldfields to provide community mental health services.
Darling Downs & West Moreton	After-hours outreach	A program of early intervention, support and management for youths experiencing high stress and anxiety. The program included health promotion, counselling, referral services and suicide prevention.
Eastern Melbourne	AH Aboriginal mental health liaison officer and after-hours alcohol and drug clinician	Funded an Aboriginal mental health officer to support Aboriginal & Torres Strait Islander patients during the after-hours period and help them connect to mental health services. Service provided culturally safe

PHN	Service	Activity
		support and navigation and supported an AOD clinician during after hours.
Eastern Melbourne	After-hours mental health nurse and liaison service	A mental health nursing service at the community health centre serving the Box Hill community.
Eastern Melbourne	The Northern Mental Health: family intervention support trial	A community mental health clinic that identified families that may benefit from mental health intervention and service navigation.
Gold Coast	Mental health after hours – safe space	Community mental health service during the after-hours period. Provided a walk-in 'safe space' for individuals to speak to staff and receive support, referrals, service navigation, and mental health care planning.
Murrumbidgee	After hours – Family Violence Initiative	Provided after-hours crisis support for women experiencing family violence. It also supported expanding mental telehealth services to remote areas in the catchment.
North Western Melbourne	Mental health support for young people in the after-hours period	The initiative funded Headspace community centres to extend their opening hours into the after-hours period.
North Western Melbourne	Improving the mental health and wellbeing of older adults living in the community	Supported interventions to aid and enhance the wellbeing of older adults. The initiative increased access to after-hours palliative care, mental health services in RACFs and sought to improve patient referral pathways.
Perth North & Perth South	After-hours integrated mental health, suicide prevention, and drug and alcohol treatment services	Focused on developing relationships with providers and provided mental health and alcohol and substance abuse services.
South Eastern NSW	Supporting Aboriginal consumers and their families with mental health or drug and alcohol issues after hours.	This activity trialled service models to support Aboriginal & Torres Strait Islanders and respond to mental health and AOD issues after hours.
Western NSW	Regional after-hours services	Focused on capacity building and supported the implementation of electronic health records, increasing access to after-hours services, including mental health services and integrating telehealth solutions.
Western Sydney	Child and Youth Mental Health Support After Hours Project	Provided support to frequent ED attenders who present with mental health issues that did not warrant inpatient admission. The service sought to link these patients back to their regular GP, appropriate after-hours care or a mental health service.

Workforce and capacity building

Table 5 – PHN activities related to workforce and capacity building

PHN	Program	Activity
ACT	Innovative multidisciplinary care models in the after-hours period	The program delivered a multidisciplinary care model to support patient navigation through linkage coordinators, community health workers, and the primary care workforce. Service targeted particular groups, including older people, women and youths experiencing domestic violence, and individuals with complex health conditions and needs.
ACT	Scoping and delivery of Recognise, Respond, Refer	Sought to improve systems to recognise individuals who are experiencing domestic violence and associated referral pathways. Worked with general practices and commissioned providers to improve primary care ability to recognise and support individuals experiencing domestic violence.
ACT	Extended care paramedic pilot	Trained paramedics to treat patients with non-life-threatening injuries and conditions at the scene.
Brisbane North	After-hours pathways program	Focused on developing enhanced resources for clinicians to help them direct patients to the appropriate care. This service funded the development of patient care maps and the inclusion of available after-hours primary care services on the Pathways program portal.
Brisbane South	Domestic and family violence	The initiative was jointly funded and prioritised system integration and training general practice staff to better identify and support individuals experiencing domestic family violence.
Brisbane South	After-hours response	The initiative applied a place-based, integrated approach with the intent of reducing unnecessary ED presentations during the after-hours period.
Central and Eastern Sydney	RACF and community-based service improvement projects	Provided a mix of direct patient care services (see RACF activities above) and education, establishing integrated partnerships and streamlining clinical referral pathways to better support RACF staff residents and older individuals living at home.
Central Queensland, Wide Bay, Sunshine Coast	Patient management and referral system support for high-need, complex care clients to reduce avoidable hospital presentation after hours	Aimed to: enhance continuity of care; support local providers to increase the use of telehealth services; co-design and establish integrated models of care that focus on chronic disease management; support and implement nurse-led models of care; establish patient-centred management protocols and referral pathways to avoid hospital admissions; and establish resources for GPs, such as general practice liaisons, to provide support to local providers.
Central Queensland, Wide Bay,	Quality improvement workforce development and coaching	The project funded online and face-to-face coaching and education for local providers that focused on quality improvement.

PHN	Program	Activity
Sunshine Coast		
Country SA	Regional medication management support service	Educated primary health workers about medication optimisation. Activities aimed to improve coordination between health providers, reduce unnecessary hospital admissions due to poor medication management, increase workforce support of medication management via a therapeutic advice hotline, and promote continued education through digital health and technology avenues.
Country WA	Strengthening general practice in WA: Comprehensive Primary Care (CPC)	The CPC program focused on building capacity and capability in general practices by supporting the development of sustainable care models that promote high-quality, integrated, patient-centred care
Darling Downs and West Moreton	Home Outreach Care (RACF) – after hours	The initiative targeted individuals living in RACFs and supported the establishment of a collaborative framework for existing services to increase access to after-hours care and provided additional decision-making tools and frameworks to support staff and primary care staff in making appropriate care decisions.
Darling Downs and West Moreton	After -hours primary health care options	The initiative sought to improve consumer access to integrated after-hours primary care. The PHN collaborated with local providers across the region and focused on exploring further options to co-plan, co-design and co-commission care models to increase access to after-hours primary care services.
Eastern Melbourne	RACF redesign capacity building	The RACF capacity-building project supported collaboration between LHNs, GPs, MDSs and RACFs to increase the capacity and knowledge of the RACF workforce to care for residents to help decrease unnecessary hospital admissions.
Gippsland	Contingency planning for communities in remote locations	The initiative provided funding to support alternative AH service provision, facilitate increased use of telehealth by GP practices and bush nursing centres, and collaboration with Healthdirect to ensure the online directory is accurate in the region.
Gippsland	Facilitating a seamless patient experience	Gippsland Health Pathways is a portal that provides GPs with access to information about AH providers and includes patient resources on AH services.
Murray	Supporting the after-hours urgent-care workforce	Project one provided triage and care to patients presenting at UCCs with the assistance of a telehealth app. Project two provided scholarships for the RIPERN training program to nurses who were interested in providing support to UCCs after hours in small towns that have a limited number of GP practices available.

PHN	Program	Activity
Murray	Access to after-hours GP services	The aim of the initiative was to collaborate with GP practices to design and integrate after-hours models of care that include shared after-hours arrangements with the primary care workforce and provided additional focus on workforce recruitment and retention.
Murrumbidgee	After Hours Winter Strategy	Three streams were incorporated and aimed to reduce emergency admissions and respiratory deaths during winter months: 1. Funding GP practices to actively manage high-risk patients during winter months. 2. Marketing campaign to increase uptake of flu vaccines and hygiene. 3. Improve transition of care from hospital to community to reduce readmissions. Focus is on discharge planning with GPs, patients and carers.
Murrumbidgee	Decision guidelines in RACF in after hours	The project supported the update of acute care decision guidelines for residential care.
Murrumbidgee	Activities relating to palliative end-of-life care	The initiative supported palliative and end-of-life care. The service was focused on after-hours medication management protocols for rural and remote communities and telehealth support.
Nepean Blue Mountains	Building capability and capacity in the primary care workforce	The initiative supported training activities for health professionals in the primary health care workforce dealing with health needs in and after hours. Training activities focused on managing medical emergencies in primary care, clinical handover, chronic disease management and care planning.
North Coast	Reducing demand – provider focused	The program focused on chronic disease management, program integration, commissioned pulmonary rehab for rural patients, rapid access to GP support for RACFs, and developing innovative models for after-hours care.
North Western Melbourne	Improved access to culturally safe primary health care services during the after-hours period for CALD communities	The project supported access to primary care for those from CALD communities during the after-hours period.
North Western Melbourne	Improving the mental health and wellbeing of older adults living in the community	The project supported collaborative efforts by local providers to implement interventions that support wellbeing for older adults. Proposed methods included enhancing access to after-hours palliative care and supports for RACF residents, workforce development and capacity-building exercises for RACF staff, activities that focus on delaying frailty, and psychological service offerings for residents.

PHN	Program	Activity
North Western Melbourne	Improved access to culturally safe primary health care services during the after-hours period for the Aboriginal & Torres Strait Islander community	The initiative aimed to improve primary health access for Aboriginal & Torres Strait Islanders and provide a culturally safe space during the after-hours period.
Northern Queensland	Innovation	The initiative delivered workforce training, education programs, clinical education and general improvement in coordination and team-based care approaches. A core element of the project was aimed at using technology to improve access to education and evidence-based approaches to increase primary care provider engagement.
Northern Queensland	After-hours disadvantaged services	The program aimed to increase workforce capacity to deliver after-hours services in rural and remote areas. There was an emphasis on recruiting GPs and health workers in rural areas, improving service integration among RACFs, hospitals and GPs, developing nurse-led models of care, improving training, promoting workforce and upskilling, and increasing student experiences in rural areas.
Northern Sydney	Improved access to community-based services	The program supported continued efforts to monitor and consult with community health providers and stakeholders on after-hours services across the region. This included monitoring activity and patient outcomes.
Northern Sydney	Access, navigation and coordination	The project sought to build capacity by strengthening the after-hours provider network to support the roles of different services. Activities included professional development, implementation of digital health services and promoting active communication and integration among providers.
Northern Territory	Supporting Health Care Homes model implementation strategy	The project aimed to support the Health Care Homes model and specific elements of this model, including the NT HealthPathways service directory, which focused on patient journeys and pathways, digital health mapping, and electronic shared care planning.
Northern Territory	Health care system digital and innovation readiness	The project supported the implementation of digital health services and integration of this technology into existing health services. This included the development of a 10-year vision for NT Digital, Innovation and Technology.
Northern Territory	Health pathways expansion to improve safety and quality of after-hours care	The activity aimed to improve after-hours care by implementing and integrating health pathways that could be accessed at all times. The tool sought to decrease variation in care and provide additional clinical support with the hope of decreasing ED use during the after-hours period.

PHN	Program	Activity
Perth North, Perth South & Country WA	Advance Care Planning and My Health Record collaboration	WAPHA introduced this initiative to provide training and education on advance care planning to RACF residents, their families and staff members.
South Western Sydney	Enabling integrated care	This activity supported the facilitation and sharing of patient data to inform and improve service provision across a network of GP practices.
South Western Sydney	Residential aged care capacity building	This activity aimed to scale up a communication toolkit and implement training for aged care staff to develop the capacity to manage RACF residents' health needs.
Tasmania	Paramedic and community nurse project	Through community engagement and stakeholder consultations, the PHN focused on designing, piloting and testing a collaborative model that sought to reduce frequent use of ambulances services.
Tasmania	Needs assessment to determine requirements for the extension of the provision of mobile health clinics to vulnerable client groups	This activity involved a needs assessment of vulnerable groups in the after-hours period to inform future service commissioning by the PHN, including the existing mobile clinics.
Tasmania	After-hours system reform	This activity involved working with key stakeholders to explore options for a primary-care-led integrated after-hours service delivery model.
Western Queensland	Supporting fragile and remotely widespread after-hours primary care	The program allowed the PHN to fund four primary health staff members to provide support for health services and providers operating in the three main hubs throughout the WQPHN region.
Western Queensland	Mt Isa ED Avoidance Quality Improvement Program in General Practice	The project objective was to enhance chronic disease management and provide support to general practices to create a more well-coordinated and culturally supportive primary health system.
Western Queensland	SWHHS ED Avoidance Project	The program focused on supporting Roma hospital and general practice to improve primary care outcomes and encourage individuals to attend general practice and reduce category 4 and 5 presentations to the ED.
Western Sydney	Linking Kid's Asthma Care Project	The project provided support and appropriate alternatives to after-hours ED presentations for kids with non-complex asthma or viral wheeze. Comprehensive asthma management education was provided to GPs and ED staff to build capacity and competency.
Western Victoria	After-hours program coordination	This activity centred around PHN coordination of after-hours primary care activities, including the development and implementation of strategies, communications to support these strategies and procurement processes to deliver these approaches.

Appendix 5 – International approaches to after-hours care

Introduction

This section provides an overview of the key trends and directions being taken by governments internationally to improve the access to and capacity of their urgent and emergency care systems, particularly in relation to the provision of after-hours care.

The interface between GPs, ambulances and emergency departments is critical to a well-functioning urgent and emergency care system. While each service is generally characterised by a focus on particular patient groups, GPs, emergency departments and ambulance services are approached every day by people in the community with a myriad of routine, urgent and emergency care needs. Ultimately, the success of any system lies in:

1. Clearly signalling and effectively guiding and linking people to the most appropriate service and care professionals.
2. Ensuring sufficient capacity exists to meet the expressed needs of people presenting to these services.

Many countries are reviewing and reforming their urgent and emergency care systems in seeking to provide enough capacity to meet the growing demands for care from their populations. Increasing demand for emergency department care is being experienced in these countries, with reports of overcrowding and patients waiting outside in ambulances. In some countries, system performance has been focused on achieving waiting time targets for patients seeking services.

There is focus in many countries, including Australia, on the notion of inappropriate emergency department attendances, where it is considered that people presenting to the emergency department with routine and less-urgent care needs could be seen in more cost-effective and safe primary care settings. In England, the cost of inappropriate visits was estimated at nearly £100 million in 2011–12 (Berchet & Nader, 2016). This has led to a variety of hospital demand management policies, aimed at signalling and guiding patients with less-urgent care needs to primary care.

In tandem with hospital demand management, policy attention has also been given to ensuring there is sufficient availability and capacity in general practice and other primary care settings (e.g., pharmacy, nurse-led clinics) to manage patient demand. This is particularly pertinent outside normal working hours – in the evening, overnight and on weekends – where it is important that access to primary care services is maintained to meet those urgent health needs of the community that can't wait until care during normal hours.

There is an important interaction between access and capacity of primary care services in hours and after hours, where routine and more urgent care may be sought after hours because of the relative inconvenience, waiting times and costs of in-hours care. It is notable that in England the initiative to extend opening hours in general practice is aimed at improving access into the evenings and weekends not just for urgent care but also for routine care.

Comparative arrangements for after-hours care

Use of emergency departments

Much of the literature is taken up with assessing the relative impact of various after-hours interventions on emergency department usage, including services aimed at signalling, guiding and linking patients to appropriate services and specific care models, including home visits, clinic visits and virtual care. The evidence of the impact of each of the key models is conflicting, with one possible exception – general practices co-located with hospital emergency departments. The available evidence indicates that GP cooperatives providing clinics at or adjacent to an emergency department can reduce emergency department usage.

Access to comparable international data on population use of emergency departments is problematic, given variations in what constitutes an emergency department and the counting rules for usage across studies and countries. For example, the Organisation for Economic Co-operation and Development (OECD) report (Berchet & Nader, 2016) noted some countries (e.g. Australia) include both ambulatory attendances and visits that result in an inpatient stay within their ED data. Other countries (e.g. Switzerland or Germany) only include ED visits which lead to hospital admissions with a minimum of one stay and/or ED visits from patients already hospitalised. Baier et al. (2019) report a lower rate of ED usage for England than the OECD report indicate because their data excludes minor-injury and walk-in centres. For Germany, the rate is reported as higher in the Baier et al. study than that reported in the OECD report because their data include only ambulatory visits (patients who are not admitted), whereas the OECD report uses German data that includes only those patients who were subsequently admitted (Berchet & Nader, 2016).

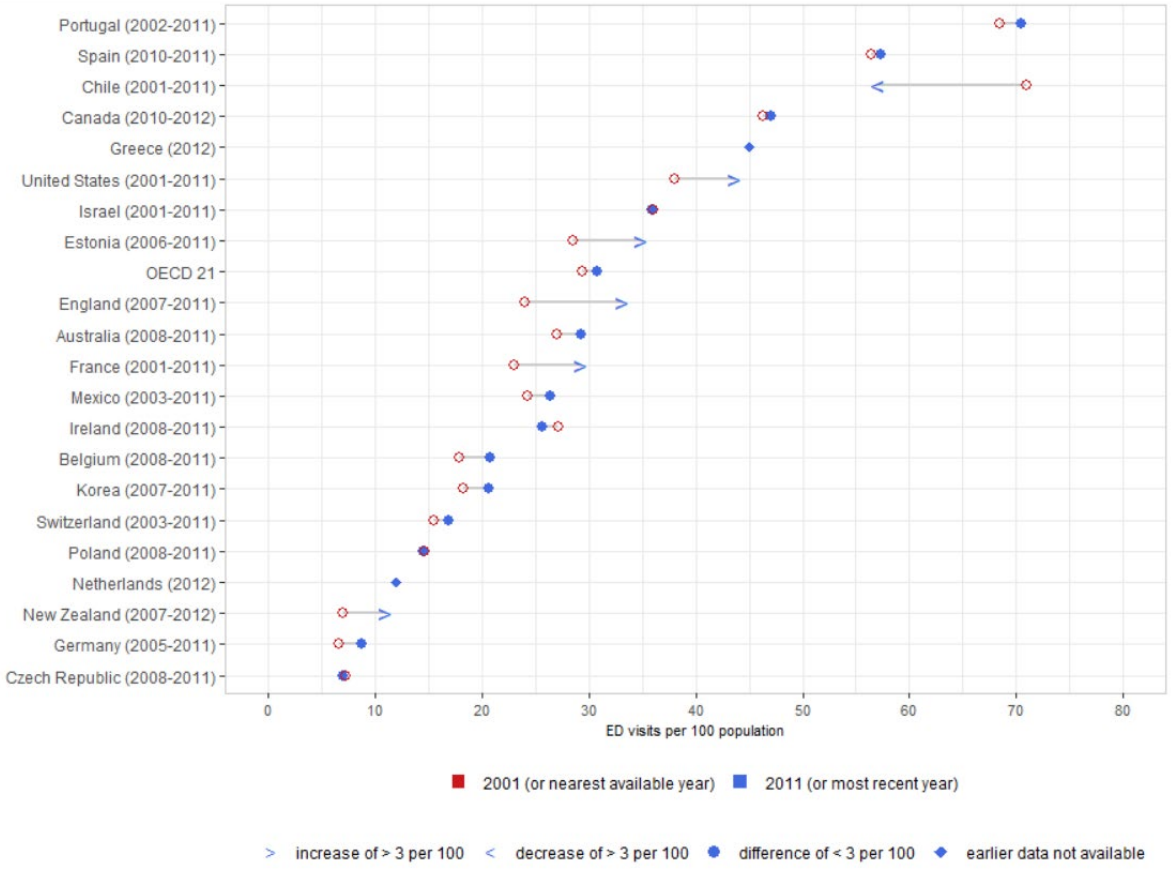

Figure **2** is based on the Berchet (2015) OECD report and shows the number of visits to emergency departments per 100 population for 2001 and 2011. Notwithstanding the data issues, a 10-fold variation in emergency department usage is evident between Portugal (70.5) and the Czech Republic (7.0) and rates of utilisation have increased for many countries over the decade. While ED use in Australia is close to the average across OECD countries contributing the data, it is noted that countries such as Canada (57.3) and Spain (47.6) have markedly higher rates of utilisation and the Netherlands (12.4) and New Zealand (10.9) have markedly lower rates. The rate of usage for Denmark (not reported by OECD or shown in the chart) is also markedly lower than Australia – 15.6 per 100 population in 2013 (Baier et al., 2019).

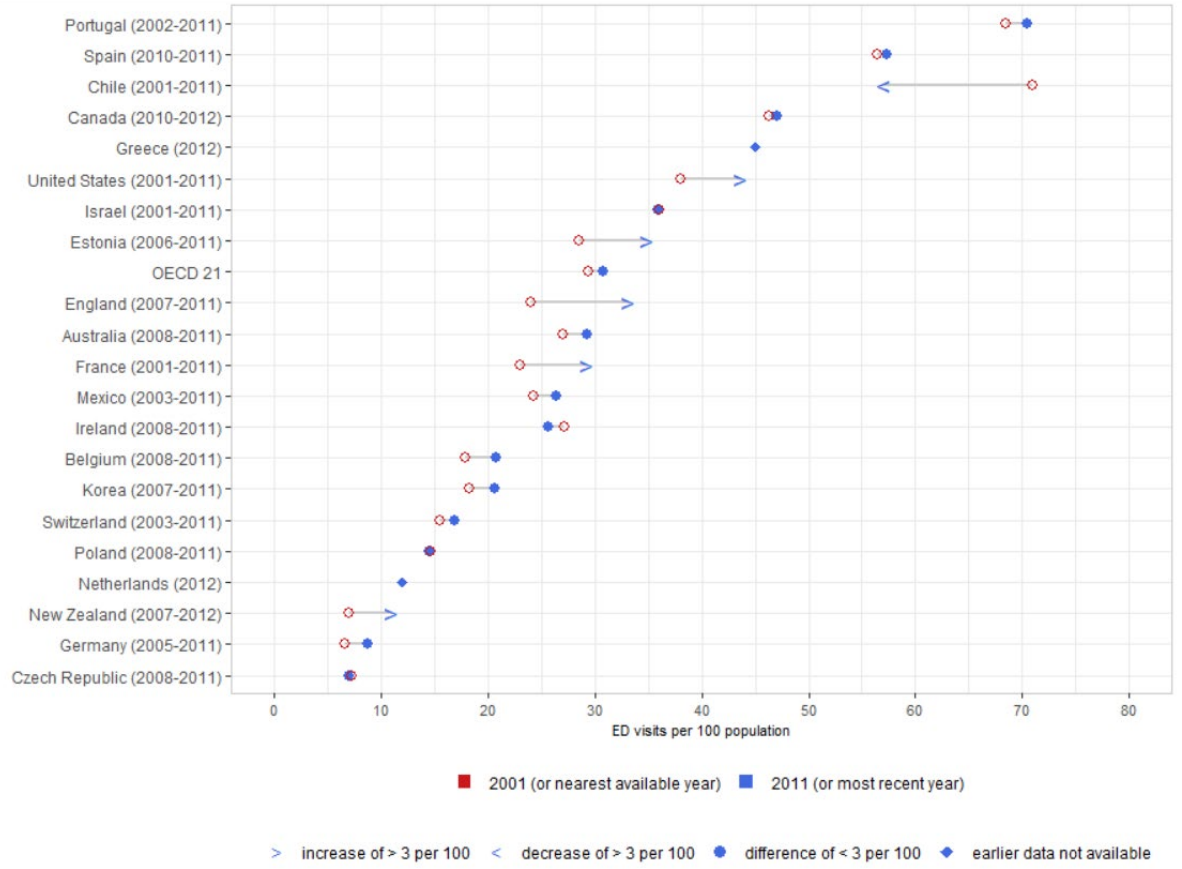

Figure 2 – Number of visits to emergency departments per 100 population, 2001 and 2011

Notes: Due to different definitions and identification of emergency care services is needed when comparing OEC countries. Some countries include both ambulatory and inpatient ED visits (e.g. Australia), while other countries (e.g. Switzerland or Germany) only include inpatient ED visits (ED visits which lead to hospital admissions with a minimum of one stay an/or ED visits from patients already hospitalised).

Source: Berchet (2015)

While the underlying factors contributing to these differences are not fully understood, they are likely to include differences in the use of primary care services, overall availability of hospitals and emergency departments, service-seeking behaviours of the population (Huibers et al., 2018), and other demographic differences. While organisations like the OECD report international GP consultation data, robust international data on after-hours urgent primary care use is not readily available. Recent studies attempting to assess patterns of after-hours health service use have noted the lack of internationally agreed standards in data collection and service definitions (Foster et al., 2020).

After-hours care in selected countries

A brief description and key characteristics of the after-hours primary care arrangements in selected countries is presented in Table 13, where the information is available (The Commonwealth Fund, n.d.).

The following characteristics are identified for each country:

- After-hours primary care coordinated at a regional population level.
- GPs are required to participate in the direct provision of after-hours care.
- Financial incentives are provided to encourage GPs to provide after-hours care.
- GPs play a central role in gatekeeping access to emergency department services.
- Primary care clinics co-located with or adjacent to hospital emergency departments.
- After-hours helpline(s) exist providing triage and/or advice.

The arrangements for the provision of after-hours care across this selection of higher-income countries vary. The impact of these and other aspects of the policy approach taken across countries is considered further below.

Table 1 – Key characteristics of after-hours care in selected countries[1]

Country	Description	Regional service	Mandatory provision	Financial incentives	GP gatekeeper	Co-located services	Telephone triage
Australia	• GPs required to ensure that after-hours care is available to patients but not required to provide care directly. • They must demonstrate processes in place for patients to obtain information about after-hours care and that patients can contact them in an emergency. • After-hours walk-in services are available and may be provided in a primary care setting or within hospitals. • Free access to emergency departments, these may be used for after-hours primary care. • Federal Government provides varying levels of practice incentives for after-hours care, depending on whether access is direct or provided indirectly through arrangements with other practitioners in the area. • Government also funds regional Primary Health Network support for and coordination of after-hours services, and there is an after-hours advice and support line.	Yes	No	Yes	No	Some	National
Canada	• After-hours care provided generally by physician-led (and mainly privately owned) walk-in clinics and by hospital emergency rooms. • Most provinces and regions have a free telephone service ('telehealth') available 24 hours a day for advice from a registered nurse. • Traditionally, primary care physicians not required to provide after-hours care, but many government-enabled group practice arrangements have requirements or financial incentives for providing after-hours care to registered patients. • In 2015, 48 percent of primary care physicians in Canada (67% in Ontario) reported having arrangements for patients to see a doctor or nurse after hours.	Yes	Some	Yes	No	-	Regional

Country	Description	Regional service	Mandatory provision	Financial incentives	GP gatekeeper	Co-located services	Telephone triage
Denmark	• After-hours care organised by the regions, mainly by collective agreement with GPs. • GPs can volunteer to take on more or less responsibility within this scheme and receive a higher rate of payment for after-hours than for normal care • Capitation does not apply to after-hours care. • First line of contact is a regional telephone service, with a GP (or a nurse, in the Copenhagen region) deciding whether to refer the patient for a home visit or to an after-hours clinic, usually co-located with a hospital emergency department. • Information on patient visits is sent routinely to GPs. There are walk-in emergency units in larger hospitals.	Yes	Yes	Yes	Yes	Most	Regional
England	• GPs are no longer required personally to provide after-hours care to their patients (a small minority still do) but must ensure that adequate arrangements are in place. • In practice, regional clinical commissioning groups contract mainly with GP cooperatives and private companies, both of which usually pay GPs on a per-session basis. • The General Practice Forward View, published in April 2016, established the requirement for clinical commissioning groups to commission and fund additional capacity to provide appointments in evenings and weekend, for routine as well as urgent care. • Serious emergencies are handled by emergency departments. Less-serious cases are seen in urgent-care centres or minor-injury units, staffed in a variety of ways – both nurse-led and GP-led centres. • Telephone advice is available on a 24-hour basis through NHS 111 for those with an urgent but not life-threatening condition.	Yes	No	-	No	Some	National

Country	Description	Regional service	Mandatory provision	Financial incentives	GP gatekeeper	Co-located services	Telephone triage
France	• After-hours care delivered by the emergency departments of public hospitals, private hospitals that have signed an agreement with the Regional Health Agency, self-employed physicians who work for emergency services, and medical homes financed by Social Health Insurance and staffed by health professionals on a voluntary basis. • Primary care physicians not mandated to provide after-hours care. • Emergency services accessed via the national emergency phone number, who determine type of response needed. • Feasibility of telephone or telemedicine advice undergoing experimentation, to include sharing information from patient's electronic medical record with the patient's primary care doctor. • Publicly funded, multidisciplinary health centres with self-employed health professionals (physicians and non-physicians) provide after-hours access to care in addition to more comprehensive care, generally on a fee-for-service basis.	Yes	No	-	No	-	National
Germany	• After-hours care organised by the regional associations of Statutory Health Insurance (SHI)-accredited physicians to ensure access to 24/7 ambulatory care. • Physicians obliged to provide after-hours care, with differing regional regulations. • In some areas (e.g. Berlin), after-hours care has been delegated to hospitals. Patients given a report of the visit to take to GP. • Tight network of emergency care providers (the responsibility of the municipalities). • After-hours care assistance available via a nationwide telephone hotline. • Payment for ambulatory after-hours care is based on fee schedules, with differences in the amount of reimbursement by SHI and Private Health Insurance.	Yes	Yes	-	No	-	National

Country	Description	Regional service	Mandatory provision	Financial incentives	GP gatekeeper	Co-located services	Telephone triage
Netherlands	• After-hours care organised at municipal level in GP 'posts', which are centres, typically run by nearby hospitals, providing primary care between 5 pm and 8 am. Nearly all GPs work for a GP post. • Specially trained assistants answer the phone and perform triage. GPs decide if patients need referral to hospital. • Doctors compensated for after-hours care at hourly rates and must provide a minimum 50 hours of after-hours care annually to maintain registration as general practitioner. • GP post sends information on patient's visit to regular GP. • No national medical telephone hotline.	Yes	Yes	-	Yes	Mostly	Regional
United States	• After-hours access to primary care is limited (39% of primary care doctors in 2015 reported having after-hours care arrangements), often being provided by emergency rooms. • From 2007, there were 12,000–20,000 urgent-care centres in the US providing walk-in after-hours care. • Most urgent-care centres are independently owned by physicians and 25% owned by hospitals. • Some insurance companies offer after-hours telephone advice lines	No	-	-	No	Some	-

[1] *A dash (-) indicates that the information was not provided. It does not indicate that the characteristic is absent in that country.*

Source: The Commonwealth Fund, n.d.

Literature review

A rapid review of the literature was undertaken to identify and assess the key trends and directions being taken by governments internationally to improve access, capacity, efficiency and effectiveness of their urgent and emergency care systems, particularly in relation to the provision of after-hours care.

The focus was on international review studies and concentrating mainly on approaches taken in middle and higher-income countries, typically characterised by those countries that are members of the Organisation for Economic Development and Cooperation (OECD). A summary of the findings from key review studies over the past 20 years is presented below in chronological order.

Comparing models of care

Leibowitz et al. (2003) undertook a review of the international literature on the effects of different models of out-of-hours primary care on outcomes as part of the national evaluation of the After Hours Primary Medical Trial that was previously carried out by the Australian Department of Health and Aged Care. The authors note at the time the move away from GP practices looking after their own patients after hours and towards the use of deputising services in Australia and the UK, the establishment of telephone triage and advice services in the US, and the proliferation of GP cooperatives in the UK offering a combination of telephone triage and advice services, primary care centres and home visits. The authors note the establishment of NHS Direct, the national UK telephone advice services and Healthdirect in Western Australia providing 24/7 advice and triage services to all people in the state.

The review identified the following six main non-mutually exclusive models of after-hours primary care services:

- Practice-based services, where GPs within their practice look after their own patients.
- Deputising services, where commercial companies employ doctors to provide after-hours care.
- Emergency departments, where primary care patients use these services after hours.
- Cooperatives, where GPs from different practices come together to form a not-for-profit entity to provide services to their patients after hours.
- Primary care centres, where patients attend a centre rather than be seen in their own home or in an emergency department after hours.
- Telephone triage and advice services, which provide telephone-based consultations for primary care patients seeking medical help after hours.

The review uncovered a few studies with a high-quality design, but the authors found difficulties in comparing and generalising the results given the different settings and contexts for the services concerned. Studies included were from the UK, Australia, Denmark, Ireland, Canada and the US. The outcomes considered were the impact on GP and ED workload, clinical outcomes and patient satisfaction.

In summary, the key findings of the review include:

1. **Deputising services tend to result in increased GP workload given the low use of telephone-based triage and advice and the reliance on home visiting. In some studies, in the UK and Denmark it was found that the integration of telephone consultation and GP cooperatives resulted in reduced face-to-face GP consults, including up to 50% fewer home visits.**
2. **There was little evidence of impact of the various models on emergency department workload, except where the GP was working in the emergency department. Here the evidence points to lower subsequent medical workload (fewer investigations, more**

appropriate prescribing, less admissions) for GPs compared with emergency department staff.

3. **Limited evidence of any advantage of one service model over another in terms of clinical outcomes, except in relation to prescribing patterns where the evidence suggested that deputising doctors may prescribe less appropriately than doctors working from a GP collaborative.**
4. **No conclusive differences between service models, except telephone consultations, where studies consistently showed lower patient satisfaction. There were indications in the UK that patients were becoming more accepting of primary care visits over home visits after hours.**

Reducing emergency department usage

Around a decade later, in Spain, Flores-Mateo et al. (2012) noted concerns over increased usage of emergency departments, with a large proportion of the increase attributed to 'inappropriate' or non-urgent visits. The authors suggest that the replacement of primary care with emergency department care has implications for continuity of care, diversion of resources from life-threatening situations to minor health issues, and the overloading of hospitals. A recent review of interventions to reduce use of emergency department by frequent users, who account for about 25% of all emergency department visits, was noted. The authors' review of the international literature was broadened to identify effective interventions to reduce emergency department use by the general population.

While similar supply-side interventions to Leibowitz were identified, including deputising services, GP cooperatives and telephone and advice services, several demand-side initiatives were also considered, including education, gatekeeping and cost-sharing arrangements. Like Leibowitz et al. (2003), the authors found the studies too heterogeneous to support quantitative pooling of results.

On the supply side, the authors argue there is clear evidence that increased numbers of primary care centres or doctors is associated with lower emergency department visits (Leibowitz et al., 2003). For example, the authors cite a study in Sweden where a primary care centre was established and visits to the emergency department were subsequently reduced by 40% (Sjonell, 1986). Further, where patients have an ongoing relationship with their GP, they are more likely to seek their opinion before attending an emergency department (Leibowitz et al., 2003). However, the authors indicate that studies specifically relating to after-hours services cited from Spain, the UK, the US, Belgium and the Netherlands do not provide consistent evidence that increased out-of-hours primary care reduced emergency department attendances.

On the demand side, the authors found little evidence of an impact on emergency department attendances from stand-alone education interventions, including those focused on educating patients regarding service usage. However, there are indications that multi-faceted interventions may be more effective.

The authors did find consistent evidence that cost-sharing arrangements are effective in reducing emergency department attendances for those who should not go to an emergency department, whereas those who should go are not deterred. The authors acknowledge that the differential impact of specific patient groups was not assessed, including those from lower socio-economic groups.

Finally, the authors found little evidence that gatekeeping arrangements had an effect on emergency department use. However, the authors considered only the gatekeeping arrangements of US Health Maintenance Organisations and did not consider the GP gatekeeping arrangements in the UK or Scandinavian countries (Flores-Mateo et al., 2012).

Morgan et al. (2013) undertook a review of the literature to identify non-emergency department interventions aimed at reducing emergency department use. However, in their study they excluded emergency department-based studies, telephone triage and

information, case management of complex patients, and studies without the use of a control group. They categorised the resulting studies into patient education on medical conditions and health care use, creation of additional non-emergency department capacity, pre-hospital diversion of low-acuity patients, managed care, and patient financial incentives.

Drawing from studies in the US, Canada and Europe, studies to increase non-emergency department capacity through new community clinics or existing GP practices revealed mixed effects with some studies finding significant decreases, others showing non-significant decreases, while on study found an increase in emergency department use. The authors reviewed two studies examining the effect of emergency services diversion of low-acuity patients away from emergency departments, one in the US (offering either home or clinic care to lower-acuity patients) and one in the UK (offering lower-acuity patients transport to a clinic without a home care option). Both studies found a reduction in emergency department presentations with an increase in non-emergency department service use.

Unlike Flores-Mateo et al. (2012), the authors identified studies that found significant reductions in emergency department use after patient education interventions, with reductions between 21% and 80%. However, consistent with Flores-Mateo et al. (2012), the authors found evidence from studies examining the effect of managed care in the US, Canada and Ireland that capitated payment of primary care physicians and GP gatekeeping was effective in reducing emergency department use. Similar findings were found for US studies exploring cost-sharing arrangements. The authors noted that both managed care and cost-sharing arrangements, while effective at reducing emergency department attendances, may also have unintended consequences.

Overall, Morgan et al. (2013) conclude that over two-thirds of the studies reviewed showed reductions in emergency department use through managed care and cost sharing arrangements. However, while effective at reducing emergency department attendances, these may also have unintended consequences.

Interventions to reduce emergency department use

Ismail et al. (2013) reflecting on the marked rise in emergency department attendances in the UK, investigated the extent to which low-acuity presentations could be directed to other, more appropriate, care services or self-care rather than the emergency department. Their literature search was confined to primary care service interventions, including GP clinics and cooperatives, community health centres, minor injury units, walk-in centres and urgent-care centres, and telephone triage systems. Clinical decision units and GP stations in emergency departments were excluded given the patient would have already undergone triage or received accident and emergency care before seeing the primary care practitioner. The authors note that it has been estimated that 15% to 40% of accident and emergency attendances are currently of low acuity and considered 'inappropriate' or 'avoidable'.

Most studies identified by the authors were European and Australian, with more than one-third involving UK-based interventions. The studies concerned the following interventions:

- *Telephone triage*. Variations in the effect of telephone triage systems on emergency department attendance were found, with a Cochrane systematic review of six systems finding no evidence of a significant reduction in emergency department attendances and other studies from the US and Canada demonstrating significant reductions. The authors indicate that the triage service design varies across the studies ranging from national triage lines, to local advice lines to telephone services embedded within GP cooperatives.
- *Walk-in clinics, minor-injury units and urgent-care centres.* The authors found limited studies, with no studies pertaining to urgent-care centres and two studies addressing walk-in clinics (but not meeting the quality criteria of the review) and minor-injury units and two review studies that considered walk-in clinics. Across these studies there was generally no significant reduction in emergency department attendance found.

- *Community health centres.* Only two US studies were identified and while they did not meet the quality criteria of the review, both studies found reductions in emergency department presentations.
- GP cooperatives and out-of-hours centres. While several studies were identified, none met the quality criteria of the review and collectively they presented conflicting evidence of the impact of GP cooperatives on emergency department attendance. One Irish and two Dutch studies found a significant reduction on lower-acuity patient attendances at emergency departments, while others showed no significant reductions in emergency department attendances, including one Dutch study reporting a non-significant rise in emergency department attendances.
- *Emergency nurse practitioner.* The authors reviewed one Australian study in which a nurse practitioner provided first line medical care for residents in an aged care facility. The authors found a 17% reduction in emergency department attendance by the residents in this study.

In conclusion, the authors note the paucity of robust studies in this area of research, with few quasi-experimental study designs. They indicate that the range of countries, settings and funding arrangements render the studies difficult to compare or generalise. They assert that no conclusive evidence was found to suggest that any of the interventions consistently reduce emergency department attendances (Ismail et al., 2013).

In Belgium, Van den Heede and Van de Voorde (2016) published a review of the effectiveness of interventions to reduce emergency department use. This review was undertaken in response to the growing usage of emergency departments and the consideration of three main groups of patients: those with non-urgent health needs, the elderly and frequent users. The authors made a distinction between interventions aimed at increasing the supply of primary care and those interventions aimed at increasing the access hours of primary care services. The authors relied heavily on many of the review studies already summarised earlier here.

For example, the authors note that the evidence regarding the relationship between increased supply of primary care and decreased use of emergency departments is conflicted, with one review (Flores-Mateo et al., 2012) concluding there is clear evidence of an association and another (Huntley et al., 2014) asserting the association only holds for US communities with poor primary care coverage. Similarly, the authors found a mixed picture for interventions seeking to increase after-hours primary care, with some studies providing evidence that increased access to primary care is linked to reduced emergency department use, while other studies indicate the opposite or no significant effect.

The authors note these findings are like previous reviews (Flores-Mateo et al., 2012; Ismail et al., 2013). Although mixed results were found by the author for the impact of walk-in centres and community centres, a review of medical home models in the US found a moderate association with reduced emergency department use. Relying largely on Ismail et al. (2013), the authors note the mixed results for the impact of telephone triage systems on emergency department use.

The author indicates a more favourable position for interventions where patients were transported to alternative locations, such as a minor-injury unit, rather than the emergency department or the patient was treated without transport. In New Zealand, Canada and the UK, models exist where practitioners can provide care at the scene and are less likely than conventional ambulance staff to transport the patient to the emergency department.

Case management interventions were considered, including studies from the US, Australia, New Zealand, Sweden, Canada, Scotland, the UK, Israel, South Africa and Taiwan. The evidence suggests that case management could reduce emergency department use but that further research is required to identify what aspects of case management are cost-effective. Other coordination activities were also reviewed by the authors with evidence of mixed results.

Like Flores-Mateo et al. (2012) and Morgan et al. (2013), the authors found the effect of education interventions on emergency department use is contradictory, with stand-alone education initiatives not as effective as multi-faceted interventions. The authors also reiterate that gatekeeping studies focus on managed care models in the US rather than the GP gatekeeping models in Scandinavia, and cost-sharing initiatives, while effective at reducing emergency department visits, were largely related to the US experience.

Upon reflection of the available evidence and the aim to address inappropriate emergency department visits, the authors identify preferred interventions, including the co-location of GP collaboratives and emergency departments coupled with telephone triage systems. Specific consideration of case management for frequent users and the elderly is also supported. The authors draw back from supporting additional points of access to urgent primary care and cost-sharing arrangements, given inherent unintended consequences (confusion regarding appropriate access to services, unmasking latent demand, barriers to entry for vulnerable groups) for patients.

OECD comparative studies

In 2015, the OECD explored the current trends in emergency department utilisation internationally and considered the key drivers, along with various national approaches to reduce demand for these services (Berchet, 2015). The authors describe the notion of 'inappropriate' emergency department visits as those characterised by low-urgency problems that require services other than emergency department services (e.g. telephone-based, primary care and community health). While definitions vary across countries, the authors identify that inappropriate emergency department visits can vary between over 50% (Belgium) to less than 15% (England) of total emergency department visits.

The authors identify mechanisms that have been used to manage visits to emergency departments by developing interventions aimed at reducing the overall demand for emergency care and reducing emergency department costs by improving pathways of care for inappropriate use. In terms of demand, the authors identify the use of telephone-based services, the organisation of after-hours primary care services, providing alternative sites for primary care of non-urgent conditions, community care for the elderly and people with chronic conditions or from lower socio-economic circumstances, financial incentives, and telemedicine. In terms of improving pathways, the authors identify GPs working in emergency departments, fast-track systems for non-urgent emergency department presentations and payment arrangements.

Telephone services are in evidence in the UK, France, Australia, Belgium and Denmark, with the authors noting the paucity of robust evaluation in terms of their impact on emergency department usage. Existing evidence in the United Kingdom was considered inconclusive.

In the Netherlands, Sweden, the United States, Ireland, Israel and Luxembourg, the authors found most studies suggested a negative relationship between the organisation of after-hours primary care services and patient attendance rates at emergency departments. In France, the authors note the reduced population coverage of after-hours primary care by GPs, after the mandate for doctors to participate in after-hours services was lifted in 2002. Networks or cooperatives of GPs had been established but covered only just over 20% of after-hours care, with wide variability in coverage across the country (Berchet, 2015).

Beyond telephone services and improved organisation of GP services, several new primary care service settings are emerging, including walk-in centres, minor-injury units and local emergency wards. The authors found conflicting evidence of the effect of these new service settings on emergency department utilisation in the UK, with possible contributing factors including the fact the new services meet a level of unmet demand and/or create a level of confusion to patients seeking primary care beyond their knowledge of the emergency department. This, coupled with patient risk aversion and incomplete information about the severity of their condition, may be important factors explaining persistent use of emergency department services (Berchet, 2015). Conversely, the experience of Ireland and NZ with these new service models indicates that their usage does reduce emergency department

visits, perhaps partially reflecting differences in unmet demand across health systems. Other models were identified in Norway (e.g. local emergency wards), Chile (e.g. primary care emergency services) and Canada (e.g. urgent-care centres).

Various forms of community care and health centres were identified by the authors, often targeted at the elderly and other vulnerable groups and involving multi-disciplinary care. Models in Australia, Italy, Ireland and the US were identified but an indication of their impact on emergency department visits was absent.

In terms of studies that focused on the impact of cost-sharing in relation to emergency department usage, the authors found mixed evidence. Further, they indicated that studies assessing the effect of removing payments at the point of care for primary care services were absent. These findings appear to be inconsistent with the observations made by Flores-Mateo et al. (2012) and subsequently Morgan et al. (2013), as outlined earlier. The authors reviewed cost-sharing arrangements in Belgium, Finland, Italy, Ireland, Portugal and the United States. In countries such as Belgium, the introduction of cost sharing for patients self-referring to the emergency department in 2007 did not result in reduced emergency department visits. However, cost-sharing arrangements in the US have been shown to reduce emergency department visits, albeit with some unintended consequences, particularly for vulnerable populations. In Canada, Denmark, Italy, Poland, Spain, United Kingdom, Germany and France the policy intention is largely to provide access to primary services free at the point of care.

The authors considered the use of home-based case management for chronic disease and teleconsultation services and found some evidence that the use of telemedicine in countries such as the UK, Norway and Australia may be effective in reducing emergency department usage, particularly for patients with long-term conditions. The use of information and communication technologies to improve patients' information around the most appropriate place of treatment was also noted, citing an example from Canada.

In terms of improving the pathways for patients seeking non-urgent primary care, the authors considered the use of GPs in emergency departments, where GPs act as a filter to prevent patients with non-urgent problems from receiving costly emergency department treatments. The authors considered models in England, the Netherlands and Switzerland and found mixed evidence that the involvement of GPs reduced emergency department visits and use, with one review finding that while GPs in emergency departments can lower the use of emergency services, they can also increase the number of primary care attenders to the emergency department (Cooke, 2004). The authors found strong evidence that fast-track systems are effective in managing non-urgent patients, reducing the use of emergency department resources by changing the way in which non-urgent patients are managed, and increasing patient satisfaction. Models from Canada, US, UK and France were considered.

A range of financial arrangements were considered in Japan, Canada, England and the US for paying for emergency department services, including incentives to enhance patient discharge from the emergency department, as well as to avoid emergency admission. Although these strategies do not directly affect emergency department presentations, the authors assert that financial incentives for providers have the potential to reduce the inefficient use of emergency services (Berchet, 2015).

Consistent with other commentators, the authors observe that countries with more robust after-hours primary care seem less likely to have a high volume of emergency department visits, as seen in Germany, New Zealand and the Netherlands. In contrast, countries with longer waiting times for a primary care appointment (as seen in England, the US and Canada) or where access to after-hours primary care outside emergency departments is limited (as seen in Greece and Chile) have higher rates of emergency department visits.

The OECD prepared a further paper in 2016 focused on the organisation of after-hours primary care across member countries and how access and quality of this care can be improved (Berchet & Nader, 2016). This was largely based on information collected through

a policy survey sent to all OECD members. From the 27 responses, seven non-mutually exclusive models for after-hours primary care were identified:

- practice-based services
- rota groups (where several GPs within a practice treat after-hours patients)
- deputising services
- emergency departments
- primary care centres
- general practice cooperatives
- retail clinics.

Table 14 summarise the countries that have established one or more of the main models of care in their after-hours service system. It is clear from the table that different models for organising after-hours primary care exist alongside one another in most countries. Of the 24 countries reporting the use of emergency department for after-hours primary care, 15 reported the emergency department is at least one of the dominant models. The findings from the survey indicate that emergency departments tend to more often complement rota groups and practice-based services to provide after-hours primary care than other models.

Table 2 – Main models of after-hours primary care based on the OECD policy survey

Main out-of-hours care models	Countries	Number
Practice-based services	Australia, Austria, Belgium, Canada, Chile, Czech Republic, Estonia, Finland, France, Germany, Greece, Mexico, Netherlands, Slovak Republic, Switzerland, Turkey, United Kingdom, United States	18
Rota groups	Australia, Austria, Belgium, Canada, Chile, France, Germany, Hungary, Iceland, Norway, Slovak Republic, Slovenia, Spain, Switzerland, Turkey, United States	16
Deputising services	Australia, Belgium, Chile, Hungary, Israel, Slovak Republic, Slovenia, United Kingdom, United States	9
Hospital emergency departments	Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Israel, Mexico, Netherlands, Poland, Slovak Republic, Slovenia, Spain, Switzerland, Turkey, United Kingdom, United States	24
Primary care centres such as after-hours walk-in primary care centres, minor-injury units or urgent-care centres	Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, France, Iceland, Israel, Luxembourg, Mexico, Norway, Poland, Slovak Republic, Slovenia, Spain, Switzerland, Turkey, United Kingdom, United States	21
General practice cooperatives	Australia, Belgium, Denmark, France, Netherlands, Switzerland	6
Retail or medical clinics	Belgium, Canada, Chile, Mexico, Netherlands, United Kingdom, United States	7

Source: Berchet and Nader (2016).

Only 9 of the 27 OECD countries reported having established deputising services. The authors note studies that indicate that deputising services are more likely to provide home visits and less likely to give clinic visits or provide telephone advice compared to general practice doctors, placing greater workloads on the after-hours GP workforce.

Larger-scale GP cooperatives were reported six OECD countries but are a dominant model in only 3 of these countries (Denmark, the Netherlands and Switzerland). In some of these countries, telephone triage and advice are integrated with the GP cooperative in signalling, guiding and linking patients to self-care, GP clinics, home visits or attendance at an emergency department. In the Netherlands and Denmark, the GP acts as the gatekeeper to

the emergency department, requiring patients with non-life-threatening conditions to be triaged by the telephone triage service before being able to access emergency department services. The authors note that the GP cooperatives in the Netherlands are increasingly integrated into hospital emergency departments.

Primary care centres, walk-in clinics, minor-injury units or urgent-care centres have been established in 21 of the countries, with three of these countries – Czech Republic, Israel, Poland – reporting this as one of the dominant models in their after-hours primary care system. The authors highlight that central authorities in Canada and the US do not promote the establishment of primary care centres, given their limited capacity to provide continuity of care and to coordinate service provision across the health care sector (Berchet & Nader, 2016). Other concerns include the generation of unwarranted demand for services and confusion for patients regarding appropriate service options.

A variant of primary care centres is the emergence of retail clinics located in commercial facilities, such as supermarkets and community pharmacies. For example, 85% of pharmacies in the UK now have a private consultation area where patients can discuss issues with the staff. The OECD survey indicates that retail clinics are now established in 7seven OECD countries, particularly in the US. The authors indicate that these clinics are not widely promoted by central authorities given the associated out-of-pocket costs for patients and the same continuity of care issues associated with primary care centres.

The authors identify key policy levers to improve access and quality of after-hours primary care, including:

- Organisational support: provide free space in facilities, administrative and technical resources, and extra health care resources (e.g. staff).
- Provision of financial incentives: higher fees or a lump sum payment to compensate GPs for providing after-hours services. This includes, for example, the Practice Incentive Payment system in Australia and its unique sophistication and levels of payment.
- Use of alternative workforce groups: extending scopes of practice for different health professionals, such as nurse practitioners, pharmacists and paramedics.
- Mandatory participation: making GP participation a condition of registration to practise; requirement to meet accreditation standards; a condition in contracts.
- Telephone triage and advice: telephone and web-based provision of medical advice and direction of patients to the most appropriate after-hours services.
- Advice services and health information infrastructure: data on the activities and outcomes delivered during after-hours primary care; information sharing between after-hours providers and the patient's usual primary care provider (e.g. GP).

Table 15 summarises the responses of countries participating in the OECD policy survey.

Table 3 – Policy levers to improve access to and quality of after-hours primary care

Country	Participation	Financial incentives	Telephone triage or advice or website	Use of other health professionals	Organisational support	Information sharing
Australia	Voluntary	Yes	Yes	Yes	Yes	Yes
Austria	Compulsory	Yes	No*	No	Yes	NR
Belgium	Compulsory	Yes	Yes	Yes	Yes	Yes
Canada	Compulsory**	Yes	Yes	Yes	Yes	Yes
Chile	NR	Yes	Yes	Yes	No	NR
Czech Rep.	Compulsory	Yes	Yes	No	Yes	Yes
Denmark	Compulsory	Yes	Yes	No	Yes	Yes
Estonia	Voluntary	Yes	No	No	No	Yes

Country	Participation	Financial incentives	Telephone triage or advice or website	Use of other health professionals	Organisational support	Information sharing
Finland	Compulsory	Yes	Yes	Yes	No	No
France	Voluntary	Yes	Yes	No	Yes	NR
Germany	Compulsory	Yes	Yes	Yes	No	NR
Greece	Voluntary	Yes	No	Yes	No	No
Hungary	Compulsory	NR	Yes	No	No	NR
Iceland	Compulsory***	Yes	Yes	No	No	Yes
Israel	Voluntary	No	Yes	No	No	Yes
Luxembourg	Compulsory	Yes	Yes	No	Yes	No
Mexico	Voluntary	Yes	No	No	NR	No
Netherlands	Compulsory	Yes	Yes	Yes	NR	NR
Norway	Compulsory	Yes	Yes	No	Yes	Yes
Poland	Voluntary	Yes	Yes	No	Yes	Yes
Slovak Rep.	Compulsory	NR	No	No	NR	Yes
Slovenia	Compulsory	Yes	Yes	No	No	NR
Spain	Compulsory	No	Yes	No	No	Yes
Switzerland****	Compulsory	Yes	Yes	Yes	No	Yes
Turkey	Compulsory	Yes	No	No	No	Yes
UK	Voluntary	Yes	Yes	Yes	No	NR
US	NR	Yes****	Yes	Yes	Yes	NR
Total	17 Compulsory	23 Yes	21 Yes	11 Yes	11 Yes	14 Yes

NR = non-response.

 # Other health professionals include paramedics, nurse practitioners and physician assistants.

** In Austria, a national telephone triage is under construction.*

*** In Canada, participation is compulsory in some circumstances.*

**** In Iceland, participation is compulsory in some cases, such as in rural areas.*

*****In Switzerland, out-of-hours (OOH) primary care is generally delivered by physicians. Paramedics may carry out minor treatments, but do not work on their own in the OOH setting. Participation for primary care providers (PCPs) is in principle compulsory, but cantons can define exceptional criteria.*

****** In the US, additional compensation is provided for PCPs in some places.*

Source: OECD Policy Survey 2015

Telephone triage and advice lines or website-based services are used to reduce GP workload, decrease inappropriate emergency department visits and support access to care in geographically challenged communities. The authors highlight the telephone triage systems in Denmark and the Netherlands, given their role in gatekeeping access to emergency department visits and through integration with GP cooperatives, their role in linking patients to face-to-face clinic visits, home visits, prescribing and emergency department visits, including the booking of ambulance transfers.

The authors note that perhaps the most effective way to improve primary care service availability after hours is to mandate the participation of GPs. They note that participation is voluntary in only 8 of the OECD countries participating in the survey.

In conclusion, the authors note **a tendency across OECD countries to shift after-hours primary care towards larger-scale organisations such as GP collaborations and to establish primary care centres**. They assert that **automatic information sharing between a patient's regular GP and after-hours service is essential for effective and safe care**. The authors suggest there is **strong evidence that integrating primary care facilities with hospital emergency departments reduces self-referrals to emergency departments.** To enhance workforce capacity, the authors suggest the use of mandatory participation by primary care services and the optimal use of the non-medical workforce. They suggest the use of **telephone triage could reduce demand for the primary care workforce**, **help avoid patient confusion of where to seek after-hours primary care and act as an effective linkage to appropriate services** (Berchet & Nader, 2016).

Recent studies of urgent and emergency care systems

Baier et al. (2019) published a study aimed at comparing urgent and emergency systems across Australia, Denmark, England, France, Germany and the Netherlands, analysing the payment systems of emergency departments and after-hours urgent primary care providers and identifying recent reform trends that may inform policy-making in other countries. The authors note that several countries are reforming their urgent and emergency care systems in response to growing emergency department visits, overcrowding and wait times. One issue central to these reforms is the effective management of non-urgent primary care after hours (NHS England, 2013), which account for about 20% (US) to 60% (Belgium) of total emergency department visits.

The authors identify that patients in need of urgent care can contact different providers, which, depending on the arrangements in each country, can include call centres, urgent primary care providers and emergency medical services or emergency departments. Variations in arrangements can include how patients contact the provider, where the service is located, what kinds of services are provided and who provides the care. The authors note that information of the system arrangements across countries is fragmented and current reforms are rarely set out in the literature.

Like the OECD report (Berchet, 2015), the authors resort to primary data collection, through a survey of the selected six countries, to better understand the organisation of emergency care, payments systems, and system challenges and reform of each country. The outcomes of the initial survey were subsequently reviewed and updated by national experts during the second half of 2017.

In Denmark, Germany and the Netherlands, clinic-based visits and home visits are coordinated through the same organisation, whereas in Australia, England and France they are operated independently. Larger-scale urgent primary care centres are being established to coordinate care across regions in Denmark, Germany and the Netherlands to, in part, reduce the load of GPs in the region – given participation in after-hours care provision is compulsory in each of these countries (Berchet, 2015). Increasingly, these centres are being located with hospital emergency departments to improve coordination between urgent and emergency care systems. The authors note that in 2014, 71 of the 122 primary care centres in the Netherlands were located at one of the 91 emergency departments across the country. In Australia, England and France, a range of out-of-hours clinics have been set up independent of home care services, including GP-type 24-hour clinics, minor-injury clinics, walk-in centres and urgent-care centres, which are increasingly located at or adjacent to hospitals or linked to hospitals.

The authors note that studies indicate that while the proliferation of new after-hours primary care services has improved convenience and accessibility of care, the impact on emergency department visits is unclear. In England there are concerns that multiple service options have led to complexity and patients are unsure of appropriate care pathways (NHS

England, 2013). The move to larger-scale organisations, with a regional focus, provides patients with a central contact point, and doctors with reduced workloads. These organisations are often supported by a call centre and have been shown to lower the number of home visits, but not necessarily emergency department usage. The authors indicate that co-location of the primary care clinics in hospitals might lead to fewer self-referrals to emergency departments (Baier et al., 2019).

Call centres

France is the only country of the six countries reviewed that has a single national telephone number for emergency and urgent health care calls. Call handlers can advise people to see their GP the next day, transfer their call to a home visit service or after-hours clinic, send the patient to the emergency department, or call an ambulance. In other countries, there are at least two types of call centre, including different regional numbers. In Australia, the authors note the main purpose of the call centre is to provide advice and information but not to arrange clinic or home visits, whereas in Denmark, England, Germany and the Netherlands, call centres coordinate all after-hours services and may link patients to specific services. For example, in Denmark the urgent-care hotline can book an appointment for a patient at the nearest emergency department and advise the patient of the waiting time so the patient can stay at home until the appointment (Baier et al., 2019). Although not the primary focus here, in England and the Netherlands, responses to emergency calls can include rapid response vehicles instead of an ambulance, which seek to treat the patient on the spot and can substitute for GP home visits. The authors assert that the aim in Australia is to transport the patient as fast as possible to the hospital and minimise care on the spot (Baier et al., 2019).

The authors note that some studies were able to show that closer collaboration between GP and emergency department triage functions can lead to reduced emergency department visits, with many emergency department self-referred patients able to be treated in urgent primary care clinics. The authors indicate that in Denmark the early results from the introduction of the emergency department gatekeeping function of the call centre has led to reduced emergency department visits, with a 27% drop in emergency department visits associated with an 11% increase in GP contacts in the Central Denmark Region (Baier et al., 2019).

Emergency departments

Several countries have concentrated emergency care at fewer hospitals in recent decades. In Denmark, the Netherlands, Germany and England, pathways of care for trauma, heart attack and stroke have been established that result in ambulances taking patients to designated hospitals with the necessary staff and equipment. In Denmark, large-scale structural reform introduced in 2007 has resulted in a reduction of hospitals with 24/7 emergency departments from 40 to 22, with greater concentration of specialist services. GP-led ambulances and nurse-led clinics have been established to compensate for the loss of local emergency department services. Efforts to steer non-urgent patients away from hospitals include the co-location of GP-led clinics, the use of financial incentives and GP gatekeeping. For example, in the Netherlands, patients pay to visit the emergency department but not the primary care clinic and in Denmark patients need a referral from the urgent-care call centre or a GP to enter an emergency department, except for an emergency.

Payment of providers

This review also explores the different payment systems across countries for urgent after-hours primary care and emergency department services across the six countries and notes a range of approaches, including:

- In Australia (Victoria) and Denmark, emergency departments are mainly paid by a global budget, whereas after-hours primary care is largely funded through a fee-for-service arrangement.

- In England and the Netherlands, emergency departments are paid as part of a case-mix funding system, with a separate payment for emergency department and inpatient services in the UK and a combined emergency department and inpatient payment in the Netherlands. Urgent primary care is largely paid based on a global budget.
- In France and Germany, both emergency department and urgent primary care are funded similarly, with a mixed-payment model involving a budget for service availability and a basic fee per case and additional fee for services.

The authors note that in Australia and England, a separate payment is made to hospitals for emergency department and inpatient services, whereas in Denmark, France, Germany and the Netherlands, only one case payment is made for emergency patients admitted as inpatients. England has recently been exploring the merits of a single payment for both urgent and emergency care (Baier et al., 2019).

The authors indicate that there are advantages and disadvantages in each funding approach. For example, one payment for patient admitted via the ED encourages an integrated pathway of care from the emergency department through the inpatient stay, whereas two separate payments makes sure the emergency department has a separate funding stream regardless of whether the patient is admitted or not (Baier et al., 2019). Regardless of payment approach, the authors indicate any reforms should not incentivise and shift from regular primary care to urgent primary care.

In conclusion, Baier et al reiterate what earlier review studies have stated regarding the paucity of robust evaluations and the heterogeneity of approaches and context taken in existing studies. However, based on the available evidence, the authors do put forward suggested measures that are important for countries in meeting reform objectives, including the reduction of emergency department visits, including:

- **Guidance of patients through the system** – for example, the establishment of a single phone number in France, the requirement that patients ring the urgent primary care number to book an emergency department visit in Denmark, the co-location of urgent primary care clinics with emergency departments in the Netherlands. The authors indicate any such changes should be accompanied with a public information campaign.
- **Reconfiguration of urgent and emergency care** – for example, the regional planning and co-location of larger-scale GP-led clinics at hospitals to divert care away from emergency departments and improve integration of the two service systems. The national hospital reform process in Denmark since 2007 is an example of a system-wide effort to harmonise urgent and emergency care and realise broader reform gaols.

Interestingly, recent communications with experts from Belgium reveal that a national telephone number was launched in February 2020 (https://www.health.belgium.be/en/health/need-call-doctor-call-1733), after about a decade of testing feasibility, testing triage protocols, testing rural versus urban settings, and regional piloting. The telephone number is being implemented within the emergency management dispatch centres, which allows non-emergency cases to be rerouted to urgent primary care and underestimated calls for primary care to be upgraded to the emergency management system. The national triage protocols include emergency and primary care and were validated in June 2019.

The plan is to role this out in tandem with a structured system of after-hours wards (wachtposten) over the next two years. These wards are to replace the existing GP-based services, which usually involve home visits after hours.

Reviews

Foster et al., 2020 undertook a recent study in the UK as part of a wider scoping review of after-hours services in Scotland. The aim was to identify the international literature relating to the demand, use and outcomes of after-hours medical care. The review identifies 105 studies, with more than half conducted in mainland Europe or Ireland, with the Netherlands

and Norway predominant, a third were set in the UK (mainly England) and a remaining few in Australia, NZ, the US and other countries.

The review concludes that while after-hours reforms and organisational changes internationally have led to different types of care being offered to patients, including greater use of telephone triage and advice and face-to-face contact at larger coordinated primary care centres, walk-in centres and minor-injury units, there is still a lack of evidence of their effect on overall after-hours service use. Consistent with other studies (Baier et al., 2019; Flores-Mateo et al., 2012; Van den Heede & Van de Voorde, 2016), the authors indicate that there is mixed evidence of the effect these models have on emergency department use. However, they suggest policy reform towards co-located models reduces emergency department demand, with some studies indicating that most self-referred patients can be treated by the primary care centres (Baier et al., 2019, p. 8). Interestingly, the authors assert that the literature highlights the inter-related nature of in-hours and after-hours services, indicating further attention should be paid to how changes in one setting may impact care in another setting. For example, existing studies provide observational evidence that anticipatory in-hours chronic disease management and palliative care may provide opportunities to reduce demand for after-hours urgent primary care (Baier et al., 2019).

Hong et al. (2020) have published a systematic review of studies in June 2020 looking at the association between improved access to after-hours primary care and emergency department and primary care utilisation. The authors noted Ismail et al. (2013) found conflicting evidence from their review of interventions to limit non-urgent ED utilisation and asserted that an update was justified given this review was undertaken in 2013.

Hong et al. identified 20 relevant cross-sectional and before-and-after studies, comprising 5 studies from the US, 3 from Canada, 2 each from Australia, Belgium, England, Ireland and the Netherlands, and 1 each from Scotland and Italy. The authors conclude that while there is relatively consistent evidence of increased usage of primary care from efforts to improve access to care, like Ismail et al. they found the evidence for reduced emergency department use is mixed.

One interesting observation Hong et al. make from their analysis of the studies is that while the effects of opening a separate after-hours clinic were mixed, the extension of clinic hours for existing GP practices was effective in reducing emergency department utilisation. This may indicate patient preferences for their regular GP or GP practice.

Irrespective of this, the authors do note from the studies reviewed that the reorganisation of primary care in the Netherlands was associated with a 10% to 25% increase in primary care usage and a reduction in emergency department use ranging between 8% during regular hours and 53% during after hours, suggesting a shift in the provision of care. In the Netherlands, the general practitioners were reorganised into larger regional general practitioner collaboratives that run triage telephone services and guide callers to appropriate AH services, including after-hours clinics within hospitals operated by the collaboration.

Key observations from literature

Approaches to managing service access

Countries employ a range of policy measures to manage demand and access to after-hours primary care, including price signals, consumer awareness and education, and professional triage and advice. The impact can be that service demand is reduced, delayed or transferred to an alternative after-hours service provider. Key policy trends are outlined below.

Triage and advice

Many countries have put in place a national or regional network of telephone-based (in some instances web-based) triage and/or advice services to help signal, guide and facilitate

access to appropriate after-hours care. The extent of these services varies, with some providing advice on appropriate options based on the patient's reported condition, while others provide a more integrated service with the capacity to book ambulances, make appointments at clinics and provide real-time information on emergency department waiting times. In some instances, telephone triage is part of an integrated service offering to callers, with GP collaboratives also providing virtual, clinic and home-based care with linkage, where indicated, to emergency department services. In a few countries, these services are co-located and further integrated into the emergency department, with shared triage processes. In some countries, further integration with emergency services triage functions aims to streamline public access and lever off existing infrastructure.

Cost sharing

In some countries, out-of-pocket payments exist for patients accessing after-hours primary care and/or emergency departments. There is some evidence, mainly from the US, indicating these price signals reduce or change the pattern of use of services. For example, differential payments for urgent primary care and emergency department care can provide an incentive to access GP services after hours. However, there can be unintended consequences for access to services for vulnerable patient groups in such approaches.

Awareness and education

Some countries have introduced education interventions, including those focused on educating patients regarding self-management of their conditions or increasing their awareness about their options for appropriate service usage. While the evidence of their impact on service demand is conflicting, there are indications that sustained and multi-faceted interventions may be more effective.

Policies to strengthen service capacity

Policies to strengthen after-hours primary care service capacity focus on ways to increase the participation of GPs in the provision of care, more efficient ways of providing GP-led care, and alternative ways to provide primary care. The key policy trends are outlined below.

Financial and non-financial incentives

Countries are providing a range of financial and non-financial incentives to encourage GPs and other primary care professionals to be available and provide care after hours. Most countries provide higher reimbursement to the professional and/or their practice, along with various forms of organisational support, including free use of facilities, help with administration and provision of support staff.

Mandatory participation of providers

Most higher-income countries have established mandatory requirements for GPs to participate in the direct provision of after-hours services, for example, as part of their ongoing professional registration or to maintain accreditation status. It is considered to be an effective policy means to establishing a sustainable after-hours workforce and may encourage greater GP collaboration in providing care at a regional level. There are indications that the level and sophistication of financial and non-financial incentives is heightened in countries where GPs are not required to participate directly in the provision of after-hours care.

Regional governance and service consolidation

Countries have been moving away from a reliance on individual GP practices providing after-hours care and looking to ways to facilitate and establish regional organisations to promote greater consolidation of services and encourage broader population approaches to the provision of after-hours care. These organisations vary in their role and function (e.g. GP cooperatives, clinical commissioning bodies, municipalities or local government and regional primary care governance bodies).

The consolidation of services has the potential to:

- Help alleviate issues over workforce availability by reducing the burden on participating GPs and other providers.
- Build sufficient scale to make clinic-based care provision sustainable and the availability of supporting services more viable, including radiology, pathology and pharmacy services.
- Create the opportunity to market a visible and available alternative to emergency department care at the regional level and align triage and advice functions.

There are indications that enrolment with a GP can enhance the capacity for planning, monitoring and managing regional provision of after-hours services.

Alternative models of care

In response to the challenges in maintaining adequate workforce availability to provide GP-centred after-hours care, some countries are promoting alternative arrangements in which other workforce groups are contributing more to the provision of after care (for example, community pharmacies, nurse-led urgent-care clinics). Some countries are also exploring less-intensive GP-led service models, including clinic-based and virtual primary care rather than home visits.

Implications for Australia

This section sets out where Australia fits in relation to this international context, by highlighting areas where after-hours primary care is more- and less-aligned with international trends. Three key policy aims are outlined below for consideration.

Signalling, guiding and linking patients to appropriate care

Australia has a national infrastructure for telephone information and advice called Healthdirect and an After-Hours GP Helpline that puts callers in touch with a registered nurse who assesses the caller's symptoms and can offer a follow-up phone or video call from a GP. At the end of the call, the caller will be offered a care advice summary, sent to the caller by SMS or email. While advice may be given regarding available after-hours primary care services, the helpline does not generally book the caller into the after-hours primary care service or dispatch an ambulance or arrange an emergency department visit. In some countries, online booking functionality and shared triage functions allow a more integrated approach for callers.

While the after-hours Primary Care Linkages initiative seeks to link Healthdirect to the different service arrangements operating locally within a PHN, the establishment and linking of this service to a regionally coordinated and scaled primary care service (e.g., GP cooperatives) that offer virtual, clinic and home-based services is perhaps a key missing link in many instances across Australia.

In some countries, the GP gatekeeping role in after-hours care would appear stronger than in Australia, with patients required to access a regional GP-led triage service (except for emergency cases) before being able to attend and access an emergency department. In other instances, GP/emergency department shared triage arrangements are operating where the services are co-located at the hospital.

Coordinating between urgent and emergency care systems

Some ambulance services in Australia are looking to establish secondary triage functions, to bring greater integration with other urgent-care triage and service provision systems for callers with non-emergency needs, although only NSW and WA currently use Healthdirect for this function. In some countries, a single telephone number has been created to deal with both emergency and urgent needs and links with appropriate services and, in other instances, shared triage protocols enable GP-led helplines to directly dispatch ambulances.

Australia has established a range of clinic-based primary care services in or near hospital emergency departments to increase integration of services but concerns still exist regarding

the implications for encouraging access to care after hours that could be provided during hours by the patient's GP. The Netherlands is addressing this issue by linking the requirement for GP gatekeeping of access to emergency departments with patient access to GP-led clinics co-located at emergency departments.

Currently, medical deputising services are one of the main after-hours providers in Australia. These services employ their own GPs and other doctors and have predominantly provided home visits until the recent introduction of MBS items for telehealth. Australia is one of only a few OECD countries that report having established deputising services. Evidence suggests that by focusing on after-hours home visits, overall GP workloads and primary care costs may be increased.

In some countries, responsibility for regional planning and funding for hospital and primary care services is located at one level of government, facilitating coordinated reforms to emergency and urgent-care systems. For example, in Denmark, the regional authorities are responsible for hospital and primary care. The regions negotiate collective contracts with general practitioners for services in their geographical area (including after-hours care), with general practitioners unable to access governments benefits for their services without an agreed contract in place.

In Australia, the situation remains fragmented, with state governments responsible for planning and funding ambulance services and hospital care (emergency system), whereas the responsibility for funding GP services (including after-hours services) lies with the Commonwealth Government and related population-based planning and commissioning strategies for after-hours care and other services (e.g., mental health) are located with the regionally based Primary Health Networks.

Building capacity for after-hours urgent primary care

Australia has a range of financial incentives to encourage GPs to organise and provide after-hours primary care, through PIP and MBS. Additional financial support is also provided to the PHNs to build capacity for population-based after-hours primary care. The After-Hours GP Helpline also contributes to primary care capacity.

The OECD considers that the most effective way to improve primary care service availability after hours is to mandate the participation of GPs. A survey by the OECD in 2015 indicated that voluntary GP participation in after-hours care is only available in Australia and a handful of other OECD countries. Most countries require some level of participation, for example, as a requirement for continuing professional registration.

Australia is advancing telemedicine across the health system, particularly in rural and remote communities, and the After-Hours GP Helpline provides some basis for substituting face-to-face consultations. The recent introduction of MBS items for telemedicine is now generating significant momentum for broader use. Countries such as the UK and Sweden have been exploring Digital Primary Care, with younger, mobile-savvy patients and others now accessing over 30,000 digital consultations a month in Sweden (Ekman, Thulesius, Wilkens et al., 2019).

Appendix 6 – Data sources and mappings

Table 2 lists the main information sources used for this report. This section provides more detail of data sources used in the descriptive analysis and statistical modelling presented in Appendices 7 and 8. These are summarised in Table 16. The additional detail includes the time period covered, frequency of reporting, nature of the disaggregation available by geography, demography and type of service, and summary measures available or derived from the data.

Table 4 – Details of data sources used for analysis

Source	Time periods	Frequency	Geography	Demography	Type of service	Summary measures
Medicare item statistics						
Medicare statistics (Services Australia, 2020)	Jan 2000 to Sept 2020	Month	State/Territory	Age/sex (annual only)	By MBS item	Count
AIHW	2013–14 to 2018–19	Year	SA3 PHN State/Territory	Age/sex	GP After-hours items total	Count Unadjusted & AS adjusted rates
Department of Health extract	Jul 2016 to Dec 2019	Day	SA3	Age/sex	Urgent Sociable Urgent Unsocial Non-urgent (see Table 17)	Count
	Jul 2011 to Dec 2019	Month				
Emergency Department presentations						
Australian Institute of Health and Welfare (2020d)	2015–16 to 2018–19	Year	SA3 PHN State/Territory	Age/sex	Low urgency presentations: (a) total (b) in after-hours period	Count Unadjusted & AS adjusted rates
Analysis of NAPED	2015–16 to 2018–19	Day Month Year	SA3	Age/sex	Low urgency presentations: (a) total (b) in after-hours period[1]	Count Unadjusted & AS adjusted rates[1]
Potentially preventable hospitalisations						
AIHW (2020a)	2012–13 to 2018–19	Year	SA3 PHN State/Territory	Age/sex	Low urgency presentations: (a) total (b) in after-hours period	Count Unadjusted & AS adjusted rates

MBS items were grouped into after-hours categories as described in Table 17.

1 Derived from analysis undertaken by HPA.

Table 5 – MBS items used to define sub-categories of after hour items

Urgent/Non-urgent	Group Label	MBS Items in group	
Urgent	Urgent after hours, sociable hours	585, 588, 591, 594	
	Urgent after hours, unsociable hours	599, 600, 92210*, 92216*, 92211*, 92217*	
Non-urgent	Non-urgent after-hours, any location, any practitioner	*GP consulting room:*	5000, 5020, 5040, 5060
		GP any location excluding consulting room or residential care:	5003, 5023, 5043, 5063
		GP residential care	5010, 5028, 5049, 5067
		Other practitioner consulting room:	5200, 5203, 5207, 5208 733, 737, 741, 745
		Other practitioner any location excluding consulting room or residential care:	5220, 5223, 5227, 5228 761, 763, 766, 769
		Other practitioner residential care	5260, 5263, 5265, 5267 772, 776, 788, 789

* COVID-19 Temporary MBS Telehealth Services introduced from 13 March 2020

Low-urgency after-hours ED presentations

Data on ED presentations were obtained through data published by the AIHW and analysis of the National Non-admitted Patient Emergency Department (NAPED) data held by the Department of Health. The analysis was of data from July 2016 to June 2019. Low-urgency presentations were defined using the same methods as reported by the AIHW (Australian Institute of Health and Welfare, 2020e) and is shown in the text box below.

Low-urgency ED presentation: Definition

An ED presentation is classified as low urgency when it meets the following conditions:

- Type of visit is 'emergency presentation'
- Allocated triage category 4 (semi-urgent: within 60 minutes) or 5 (non-urgent: within 120 minutes)
- The status of the patient at the end of the non-admitted patient ED service episode was that the patient did not die and was not admitted or referred to another hospital for admission. This includes patients who:

o did not wait to be attended by a health care professional

o left at own risk after being attended by a health care professional but before the non-admitted patient emergency department service episode was completed

o registered, were advised of another health service and left the ED without being attended by a health care professional.

- Arrived by transport other than ambulance or police/correctional services vehicle.

Source: Australian Institute of Health and Welfare, 2020e

Potentially preventable hospitalisations

Data on potentially preventable hospitalisations (PPHs) were obtained through data published by the AIHW and analysis of the Admitted Patient Care (APC) data held by the Department of Health. In the analysis of the APC, episodes were assigned to a PPH category

using the algorithm used for the National Healthcare Agreements (Australian Institute of Health and Welfare, 2019a).

Assignment of NAPED and APC episodes to SA3

In analysis of NAPED and APC, episodes were assigned to an SA3, either directly through the SA2 reported for the episode within the data collection or, where SA2 was not reported, mapping from postcode to SA3.

Missing data

Not all 'emergency department' services report patient level data through the NAPED data collection. Emergency departments not reporting patient-level data are almost all based in rural and remote Australia. The potential for this missing data to affect analysis was assessed, specifically by examining anomalies in reporting at hospital level. A small number of SA3 were excluded from the analysis because of these concerns. In general, the missing data will lead to under-estimates of reporting for SA3s in rural and remote Australia. As the analysis being conducted was using an interrupted time series approach, we considered that the missing data would not seriously affect the estimated models.

Calculation of an adjusted and age-sex adjusted rates

For the sub-categories of after-hours MBS items and the total of after-hours items, counts of services were used to generate unadjusted rates per 1,000 people, and – for monthly and annual totals only – age-sex adjusted rates. Age-sex adjusted rates were calculated using the direct standardisation method, with the Australian population for 2011 as the reference population. The same approach was also applied for low-urgency after-hours ED attendances and PPHs.

After hours were aligned with those applied within the MBS. Total presentations, unadjusted rates per 1,000 people and age standardised rates were calculated for each SA3.

Age and sex-adjusted rates were calculated monthly for each SA3, but for analysis of daily data, unadjusted rates per population were used.

PHN groupings

Throughout this report, PHNs have been grouped for reporting purposes, using the grouping shown in Table 18. The grouping is based on the proportion of the population in the PHN within the ASGC remoteness regions. Many PHNs have resident populations in more than one remoteness region. In grouping PHNs, the remoteness region(s) in which the PHN had the highest population was considered.

Table 19 provides more detail on the proportion of population by AGSC remoteness regions and the Modified Monash Model (MMM) categories.

Table 6 – Grouping PHNs by remoteness

#	Group description	PHN	Population within named remoteness area(s) %
1	**Major cities** (% of population in major cities ≥ 90%)	Adelaide	99%
		Perth South	99%
		Perth North	98%
		Gold Coast	98%
		Brisbane North	95%
		Brisbane South	96%
		Eastern Melbourne	96%

#	Group description	PHN	Population within named remoteness area(s) %
		South Eastern Melbourne	98%
		North Western Melbourne	98%
		South Western Sydney	90%
		Nepean Blue Mountains	90%
		Western Sydney	99%
		Central and Eastern Sydney	100%
		Northern Sydney	100%
		Australian Capital Territory	100%
2	**Major cities/inner regional** (ranked by % of population in city/inner regional, high to low)	Central Queensland, Wide Bay, Sunshine Coast	93%
		Hunter New England and Central Coast	90%
		South Eastern New South Wales	90%
		Darling Downs and West Moreton	85%
3	**Inner and outer regional** (ranked by % of population in inner/outer regional, low to high)[1]	North Coast	84%
		Western Victoria	69%
		Gippsland	100%
		Murray	100%
		Tasmania	98%
		Murrumbidgee	99%
		Western New South Wales	91%
		Country South Australia	79%
4	**Outer regional/remote** (ranked by % of population in remote areas, low to high)	Northern Queensland	89%
		Country WA	64%
		Northern Territory	100%
		Western Queensland	100%

Notes: 1 Country South Australia has a lower proportion of its population in inner/outer regional areas but has a high proportion of population in remote area (12%) so is included in this group and is ranked as more remote than others in the group.
Sources: Estimated resident population for June 2019 are from the ABS.stat site (Australian Bureau of Statistics, 2020) mapped to PHN boundaries 2017 (Department of Health, 2020)

Table 7 – Estimated resident population (ERP) June 2019 by PHN by Remoteness Area and Modified Monash Model (MMM) categories

Grouping	PHN	ERP June 2019 '000	Remoteness Area				MMM					
			Major cities	Inner regional	Outer regional	Remote/Very remote	1	2	3	4	5	6/7
Major cities	801 ACT	427	100%	0%	0%	0%	100%	0%	0%	0%	0%	0%
	102 Northern Sydney	954	99%	1%	0%	0%	99%	1%	0%	0%	0%	0%
	101 Central & Eastern Syd	1,654	100%	0%	0%	0%	100%	0%	0%	0%	0%	0%
	103 Western Sydney	1,021	99%	1%	0%	0%	99%	0%	0%	0%	0%	0%
	104 Nepean Blue Mts	383	86%	14%	0%	0%	86%	5%	2%	4%	3%	0%
	105 SW Sydney	1,031	90%	10%	0%	0%	90%	3%	4%	0%	3%	0%
	201 NW Melbourne	1,886	98%	2%	0%	0%	98%	1%	1%	0%	1%	0%
	203 SE Melbourne	1,616	98%	2%	0%	0%	98%	1%	0%	0%	0%	0%
	202 Eastern Melbourne	1,577	96%	4%	0%	0%	96%	3%	0%	0%	1%	0%
	501 Perth North	1,083	98%	2%	0%	0%	98%	2%	0%	0%	0%	0%
	502 Perth South	1,011	98%	2%	0%	0%	98%	1%	0%	0%	1%	0%
	301 Brisbane North	1,046	95%	5%	0%	0%	95%	4%	0%	0%	1%	0%
	302 Brisbane South	1,184	96%	3%	0%	0%	96%	1%	0%	1%	1%	0%
	303 Gold Coast	636	98%	2%	0%	0%	98%	2%	0%	0%	0%	0%
	401 Adelaide	1,247	99%	1%	0%	0%	99%	1%	0%	0%	0%	0%
Major cities/inner regional	306 C Qld, W Bay, Sunshine Coast	876	33%	58%	8%	1%	33%	34%	16%	3%	12%	1%
	108 Hunter NE & Central Coast	1,278	64%	26%	9%	0%	64%	3%	13%	9%	11%	0%
	106 South East NSW	631	52%	38%	10%	0%	52%	5%	12%	13%	18%	0%
	304 Darling Downs & W. Moreton	589	36%	54%	10%	1%	36%	28%	0%	13%	22%	1%
Inner and outer regional	109 North Coast	529	16%	71%	13%	0%	16%	1%	45%	18%	20%	0%
	206 Western Vic	662	30%	57%	12%	0%	30%	30%	10%	11%	18%	0%
	204 Gippsland	287	0%	79%	20%	1%	0%	0%	28%	39%	33%	1%
	205 Murray	623	0%	80%	20%	0%	0%	34%	25%	13%	28%	0%
	601 Tasmania	534	0%	67%	30%	3%	0%	63%	15%	1%	18%	3%

Grouping	PHN	ERP June 2019 '000	Remoteness Area				MMM					
			Major cities	Inner regional	Outer regional	Remote/Very remote	1	2	3	4	5	6/7
	110 Murrumbidgee	246	0%	61%	37%	2%	0%	1%	37%	22%	38%	2%
	107 Western NSW	310	0%	53%	37%	10%	0%	0%	46%	13%	31%	10%
	402 Country SA	505	10%	41%	36%	13%	10%	5%	28%	12%	32%	13%
Outer regional/ remote	307 Northern Qld	702	0%	12%	79%	9%	0%	62%	0%	12%	16%	9%
	503 Country WA	531	0%	36%	35%	29%	0%	16%	26%	5%	23%	29%
	701 NT	246	0%	0%	58%	42%	0%	56%	0%	0%	1%	42%
	305 Western Qld	62	0%	0%	12%	88%	0%	0%	0%	11%	1%	88%

Sources: ERPs for June 2019 are from the ABS.stat site(Australian Bureau of Statistics, 2020. These mapped to PHN boundaries 2017 (Department of Health, 2020). Populations at SA1 level from the 2016 Census are used to calculate proportions of population by MMM by PHN which are applied to the ERPs for June 2019.

Appendix 7 – Descriptive analysis

This appendix provides a descriptive overview of data, with a focus on trends.

MBS after-hours items

Table 20 summarises key measures for after-hours MBS items in the most recent financial years. There was a significant reduction in services in 2019–20, most likely reflecting the impact of COVID-19 from March 2020, which is explored further below. Undoubtedly, patterns of care will change in future years. For example, since March 2020, telehealth items have been used for about 18% of urgent after-hours services provided in unsociable hours. However, 2018–19 provides a basis for describing the overall shape of MBS-supported after-hours services, and the descriptions provided below have mainly focused on the 2018–19 data.

In 2018–19, there were 12.3 million after-hours services supported under MBS, which related to $750 million in benefit payments. Ten per cent of services related to urgent after hours (1.2 million), which accounts for 18.6% of benefits. Services and benefits declined in 2019–20 by about 10%.

Table 8 – After hours MBS items: 2018–19 and 2019–20

MBS item categories	Services		Benefits		
	'000	%	$m	%	$ per service
2018–19					
Urgent	1,214.3	9.9	138.1	18.4	114.0
Non-urgent	11,054.3	90.1	611.5	81.6	55.0
Total	***12,268.6***	***100.0***	***749.6***	***100.0***	***61.0***
2019–20					
Urgent	880.7	8.0	103.3	15.4	117.0
Non-urgent	10,173.7	92.0	568.8	84.6	56.0
Total	11,054.4	100.0	672.1	100.0	61.0

Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

Table 21 provides more detail on the nature of MBS-supported after-hours services. Urgent after-hours services include those undertaken in sociable hours (8% of services, 14% of benefits) and unsociable hours (2% of services, 4% of benefits).

In 2018–19, vocationally registered GPs accounted for around 52% of urgent after-hours services, but a higher proportion of services delivered in unsociable hours. Other practitioners, which include medical practitioners employed by medical deputising services, account for most of the balance of MBS-supported after-hours services.

About 97% of non-urgent after-hours services were delivered by vocationally registered GPs. MBS items do not identify where urgent after-hours services are delivered. However, this information is available for non-urgent after-hours items, where around 89% of services are delivered in a consulting room, 7% in residential care and the remaining 4% in other settings, principally the patient's home.

Table 9 – After-hours MBS items by selected subgroups: 2018–19 and 2019–20

MBS item categories	Services				Benefits			
	'000		%		$m		%	
	2019	2020	2019	2020	2019	2020	2019	2020
Urgent sociable hours								
Urgent, sociable hours, GP	372.8	309.7	3.0	2.8	48.3	40.7	6.4	6.1
Urgent, sociable hours, additional patient	120.7	86.5	1.0	0.8	5.1	3.7	0.7	0.6
Urgent, sociable hours, other practitioner	496.3	301.6	4.0	2.7	51.2	31.5	6.8	4.7
Urgent Unsociable hours								
Urgent, unsociable hours, GP	202.3	154.0	1.6	1.4	30.9	23.9	4.1	3.6
Urgent, unsociable hours, other practitioner	22.2	28.9	0.2	0.3	2.6	3.5	0.3	0.5
Non-urgent								
Non-urgent, consulting room, GP	9,585.6	8,535.4	78.1	77.2	513.6	462.5	68.5	68.8
Non-urgent, home, GP	367.9	342.1	3.0	3.1	28.8	27.0	3.8	4.0
Non-urgent, residential care, GP	754.3	814.2	6.1	7.4	53.8	58.6	7.2	8.7
Non-urgent, consulting room, non-GP	297.9	417.5	2.4	3.8	12.5	16.8	1.7	2.5
Non-urgent, home, non-GP	29.8	40.5	0.2	0.4	1.7	2.4	0.2	0.4
Non-urgent, residential, non-GP	18.8	24.0	0.2	0.2	1.1	1.5	0.1	0.2
Subtotals								
Urgent sociable hours	989.8	697.8	8.0	6.3	104.6	75.9	13.9	11.4
Urgent unsociable hours	224.5	182.9	1.8	1.7	33.5	27.4	4.4	4.1
Non-urgent	11,054.3	10,173.7	90.0	92.1	611.5	568.8	81.5	84.6

Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.
Note: "Home" includes items where the location of service is not a consulting room or a residential care facility.

Table 22 and the charts that follow show long-term trends in MBS-related after-hours services. Over the period to March 2018, there was a significant increase in claims for urgent after-hours services. Changes introduced to MBS since then have resulted in declines in these claims, and with the impact of COVID-19, services and benefits for urgent after-hours items are now close to the level observed in 2011–12. Non-urgent services and benefits have grown by an annual average of 5.5% and 6.8% respectively. Non-urgent services have also been affected by COVID-19.

Table 10 – After-hours MBS items: Services and benefits, 2011–12 to 2020–21

MBS item categories	Financial year ended 30 June:									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth [1]
Benefits $m										
Urgent	103.0	121.6	151.6	195.0	245.9	233.2	196.3	138.1	103.3	0.0
Non-urgent	336.1	375.9	419.2	468.1	520.3	561.0	596.1	611.5	568.8	6.8
Total	439.1	497.5	570.8	663.1	766.2	794.2	792.4	749.6	672.1	5.5
Services '000										
Urgent	817.0	946.8	1167.2	1475.5	1868.7	1780.7	1563.3	1214.3	880.7	0.9

MBS item categories	Financial year ended 30 June:									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth [1]
Non-urgent	6,618.9	7,215.0	7,929.1	8,647.7	9,527.4	10,140.5	10,733.1	11,054.3	10,173.7	5.5
Total	7,435.9	8,161.8	9,096.3	10,123.2	11,396.1	11,921.2	12,296.4	12,268.6	11,054.4	5.1

Source: Medicare Australia, Medicare Statistics on-line reports as at 25 November 2020. See Table 17.
[1] Annualised growth rate

Additional insights on the effect of the 2018 MBS changes and COVID-19 can be gained from the monthly time series shown in the following charts. The impact of COVID-19 on non-urgent after-hours services is clear in Figure 3, where monthly services were continuing to increase up to March 2020 and subsequently dropped by about 30%. Figure 4 shows the decrease was mainly in consulting room items, and, to a lesser extent, home visits.

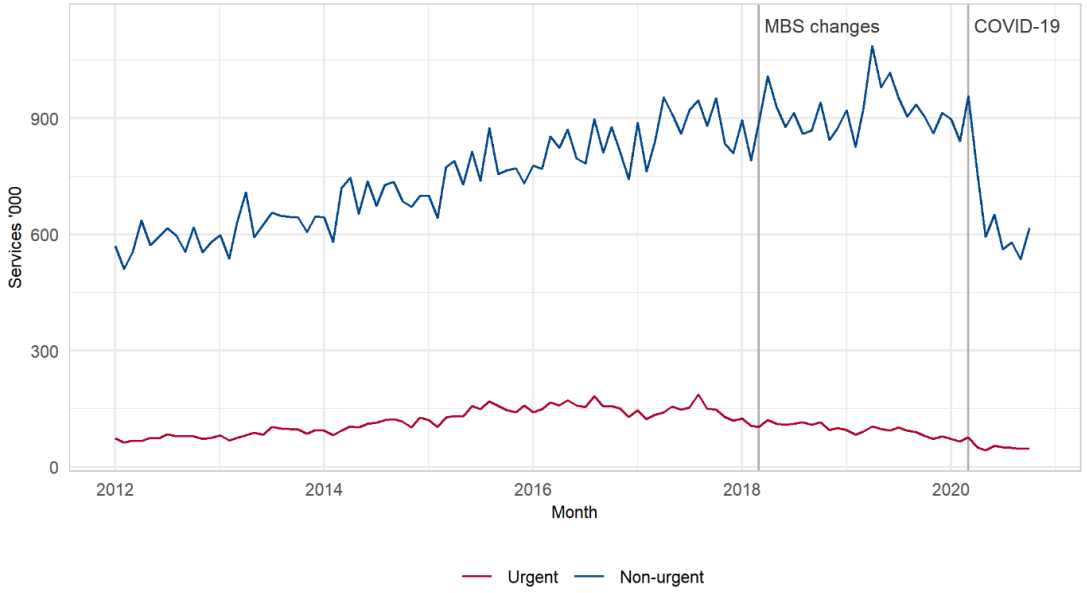

Figure 3 – Number of urgent and non-urgent MBS-supported services July 2011 to June 2020

Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

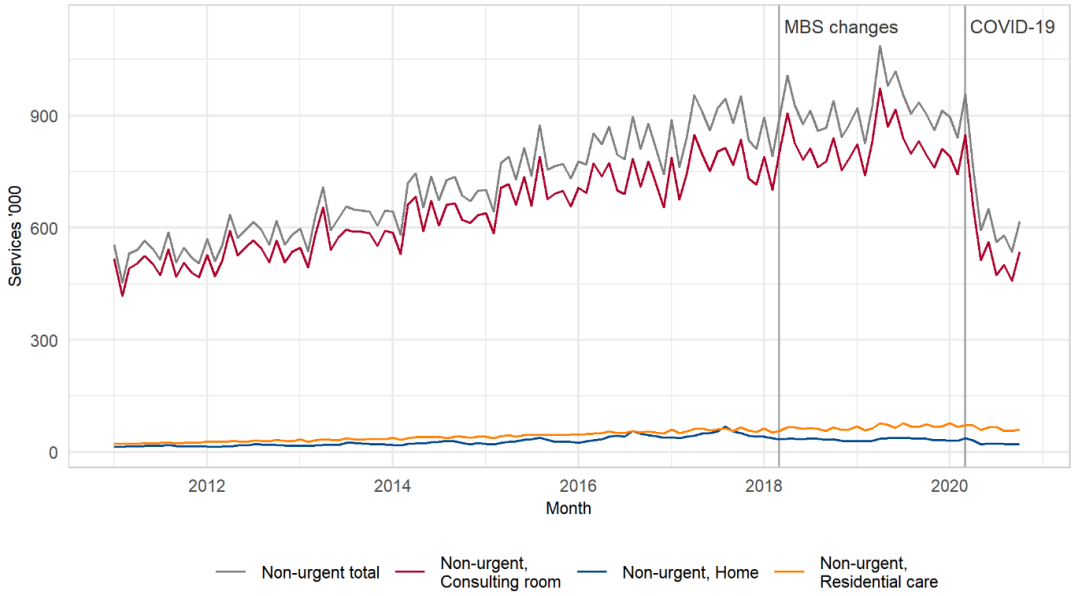

Figure 4 – Number of non-urgent MBS-supported services by location of where service is provided, July 2011 to June 2020

Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

Figure 5 shows the trends in urgent after-hours services related to sociable hours. These show major changes following the MBS changes, with significant declines in services claimed occurring up to March 2020. There have been further declines following March 2020. Across these periods, declines in services delivered by vocationally registered GPs have not been as steep as the drop in services delivered by other practitioners.

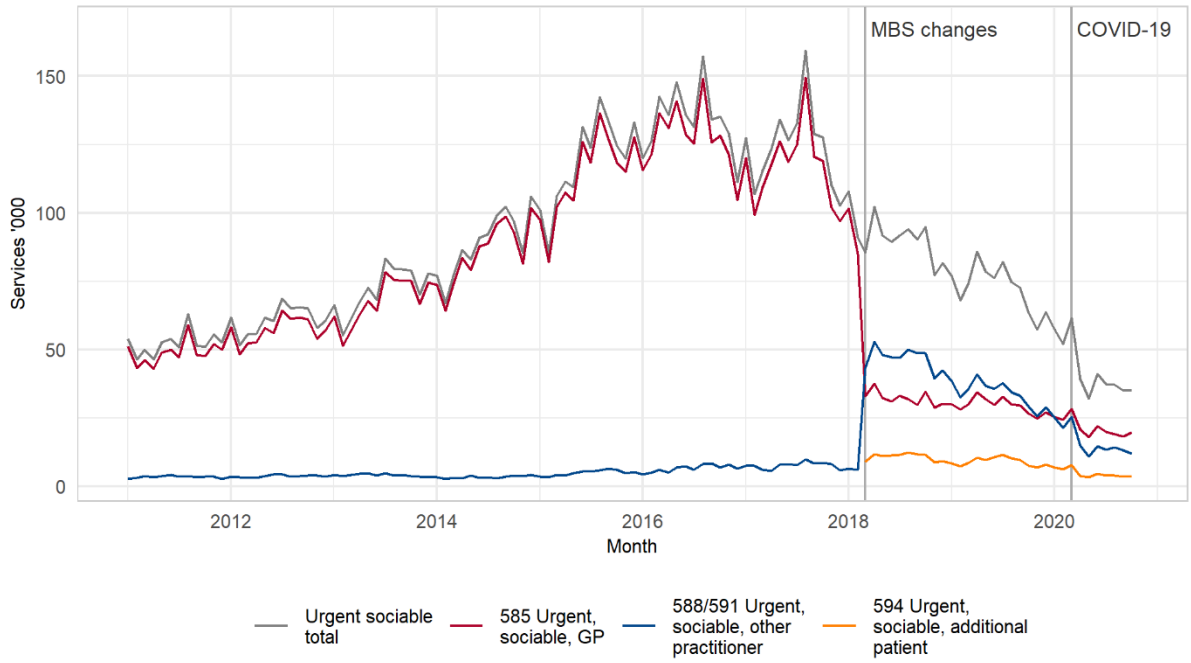

Figure 5 – Number of urgent MBS-supported services delivered in sociable hours by type of provider, July 2011 to June 2020

Note: Prior to March 2018, GPs and other practitioners were not fully differentiated from other medical practitioners in claims for urgent after-hours services in the sociable hours period. Item 588 was introduced in March 2018.
Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

Figure 6 suggests a slightly different pattern for urgent services in the unsociable hours, where there were declines in services delivered by vocationally registered GPs prior to March 2020, but a relatively steady level of services delivered by other practitioners. There was a drop in services in the two months following March 2020, but services levels have been relatively stable in following months. One factor affecting this may be the introduction of telehealth items (see Figure 7). Following their introduction, these items have accounted for about 18% of urgent after-hours services delivered in unsociable hours.

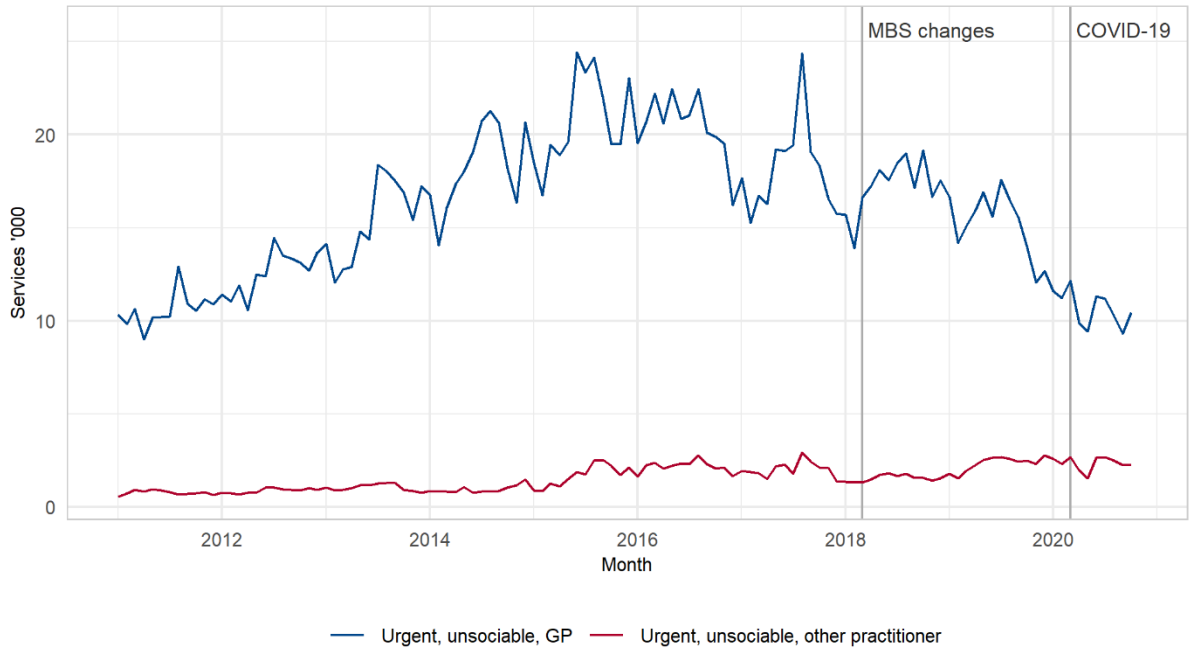

Figure 6 – Number of urgent MBS-supported services delivered in unsociable hours by type of provider, July 2011 to June 2020

Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

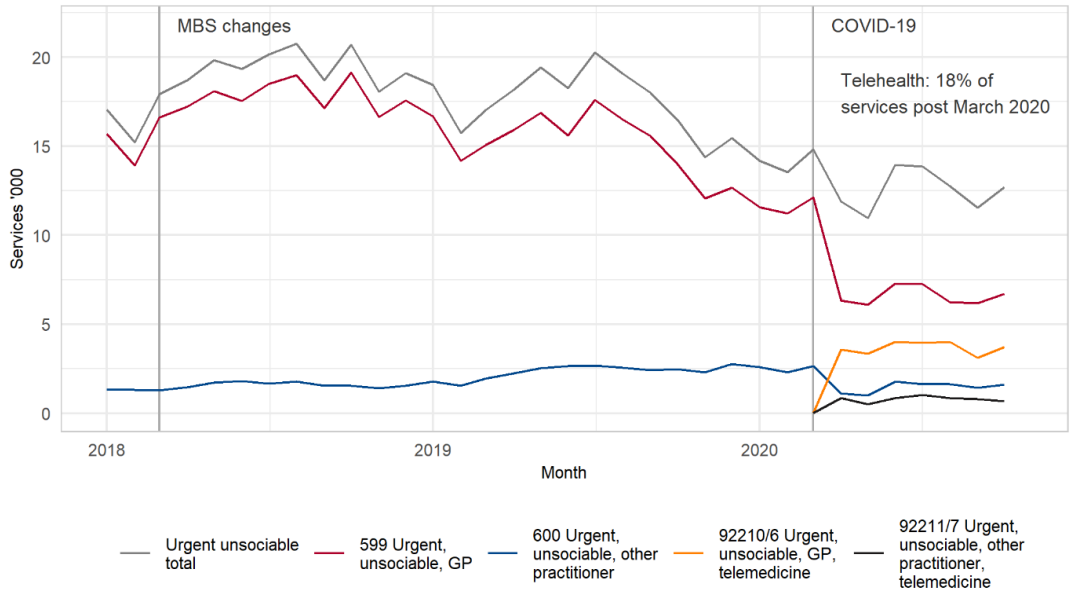

Figure 7 – Number of urgent MBS supported services delivered in unsociable hours, January 2018 to June 2020

Note: Telehealth items 92210/6 and 92211/7 were introduced in March 2020.
Source: Medicare Australia, Medicare Statistics online reports as at 25 November 2020.

Figure 8 and Figure 9 present data on the day of week on which an MBS service is provided, across the weeks of the year. Key points to note are that the mean number of after-hours services is much higher for Sundays compared with weekdays (around 6 times for non-urgent and 2 times for urgent) and, to a lesser extent, Saturdays (around 3.5 times for non-urgent and 1.5 times for urgent).

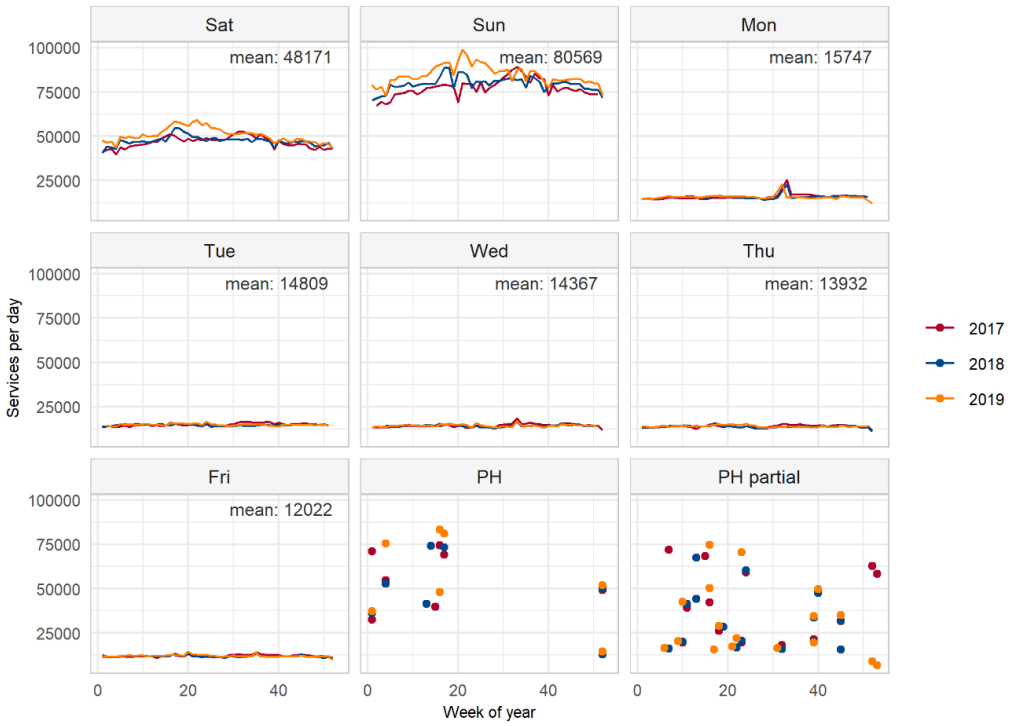

Figure 8 – Number of non-urgent MBS-supported services by day of week and public holidays, January 2017 to December 2019

Source: Extract and summary of selected MBS items provided by Department of Health and analysed by HPA.

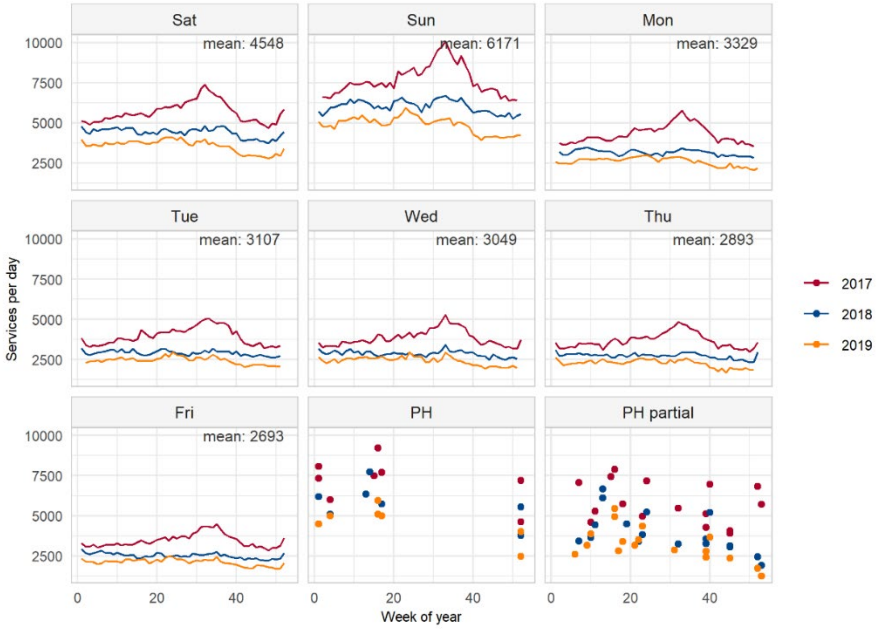

Figure 9 – Number of urgent MBS-supported services by day of week and public holidays, January 2017 to December 2019

Source: Extract and summary of selected MBS items provided by Department of Health and analysed by HPA.

Figure 10 and Figure 11 show trends in rates of after-hours MBS supported services by PHN and SA3 respectively. The charts highlight the significant variation reflecting the impact of both remoteness and socio-economic disadvantage.

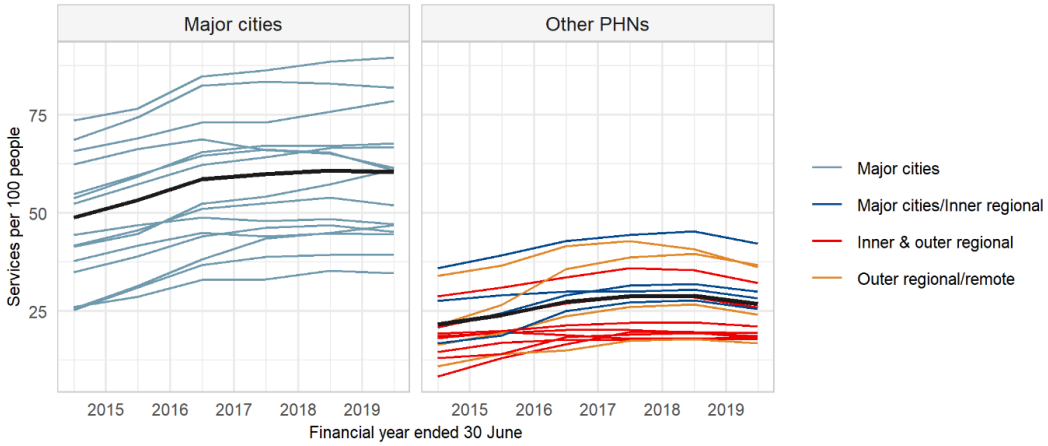

Figure 10 – After-hours GP services per 100 population, by PHN, July 2014 to June 2019

Source: Australian Institute of Health and Welfare (2020b). The grouping of PHNs is detailed in Table 22.

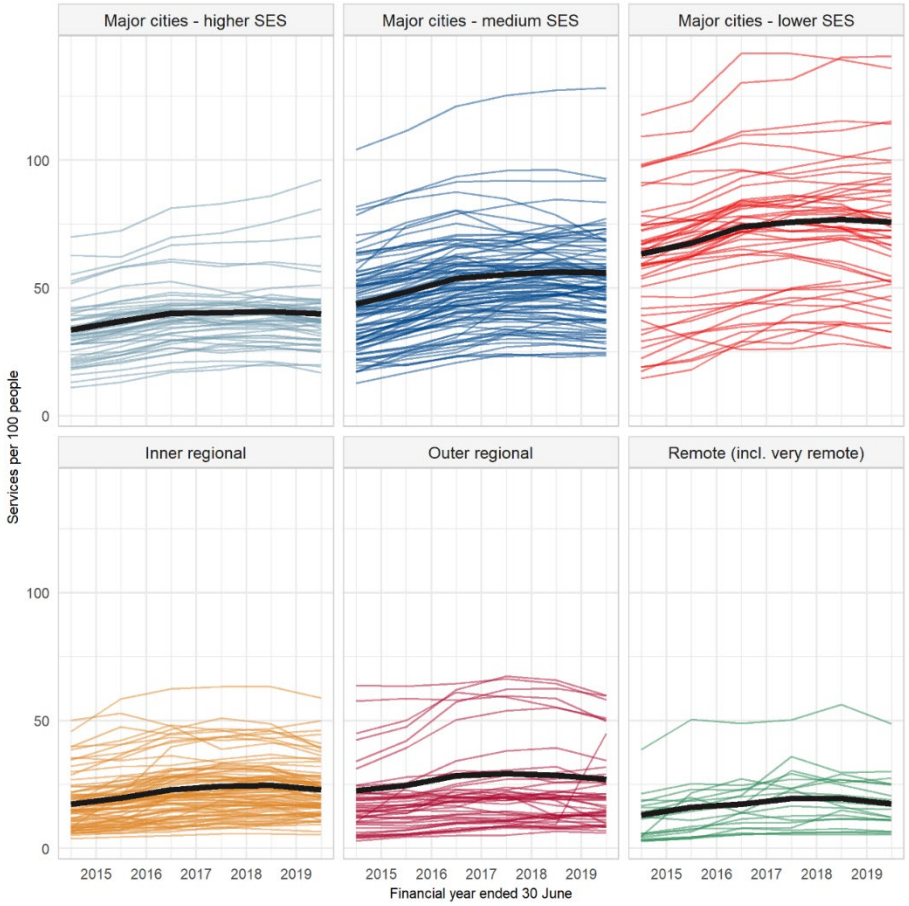

Figure 11 – After-hours GP services per 100 population, by SA3, July 2014 to June 2019

Source: Australian Institute of Health and Welfare (2020b).

PIP after-hours incentive

Figure 12 provides an estimate of practice participation in the PIP after-hours incentive by PHN.

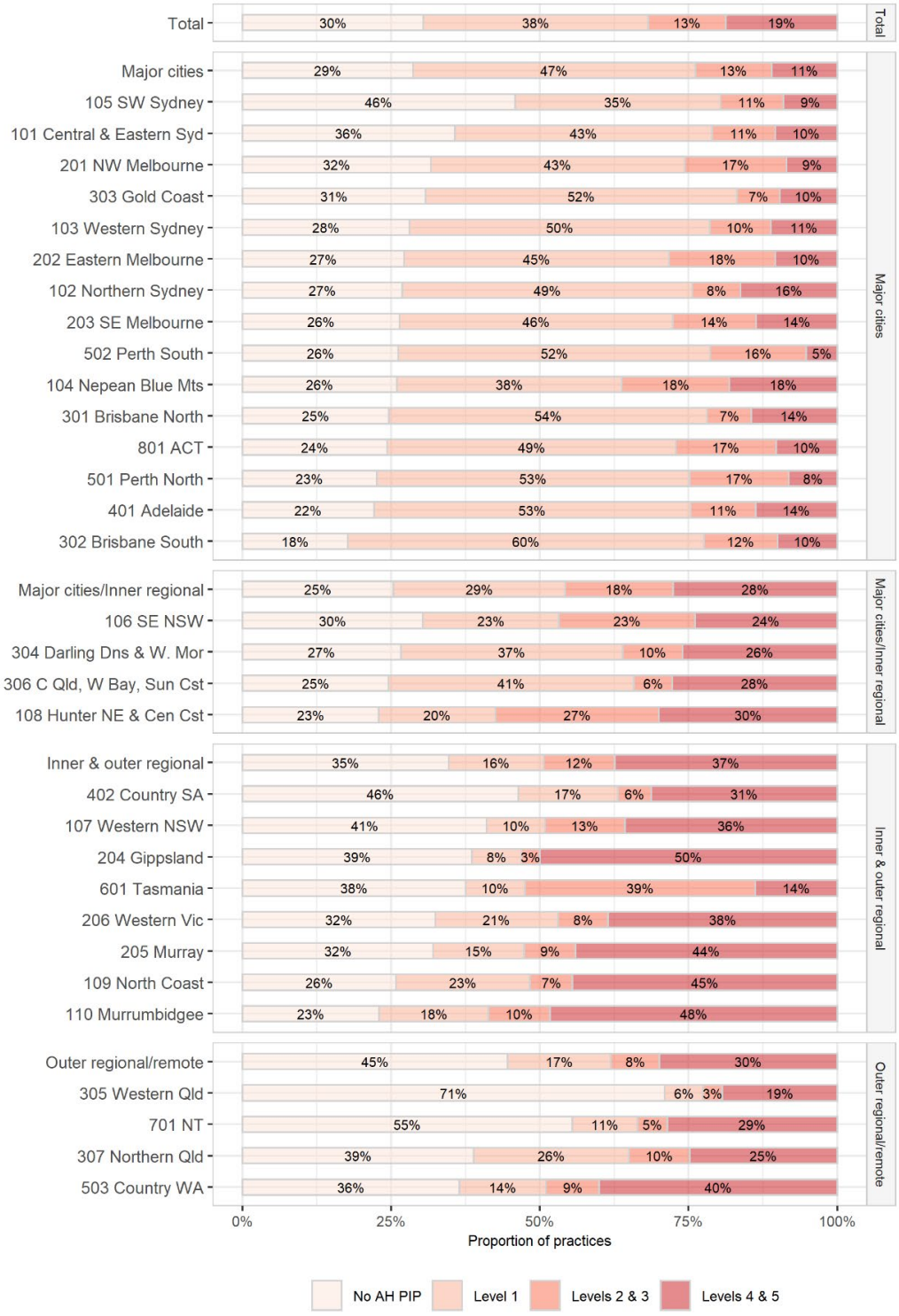

Figure 12 – Estimated proportion of general practices participating in PIP after hours, by PHN group and PHNs, August 2019

Sources: Department of Health data provided for the evaluation for August 2019. Estimated practices by PHN based on data downloaded from the National Health Service Directory, November 2020.

Healthdirect services

Figure 13 and Figure 14 show estimated utilisation of the HealthDirect Nurse Triage service and the After Hours GP Helpline, by PHN and state.

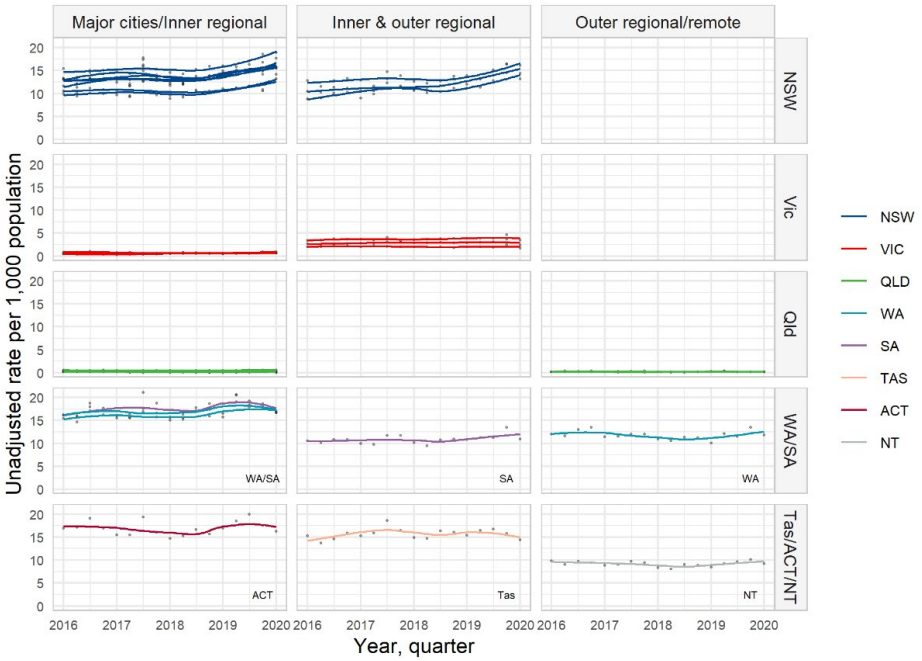

Figure 13 – Trends in quarterly number of calls to HealthDirect Nurse Triage service, March 2016 to March 2020

Source: HPA analysis of Healthmap data (*https://healthmap.com.au/*)

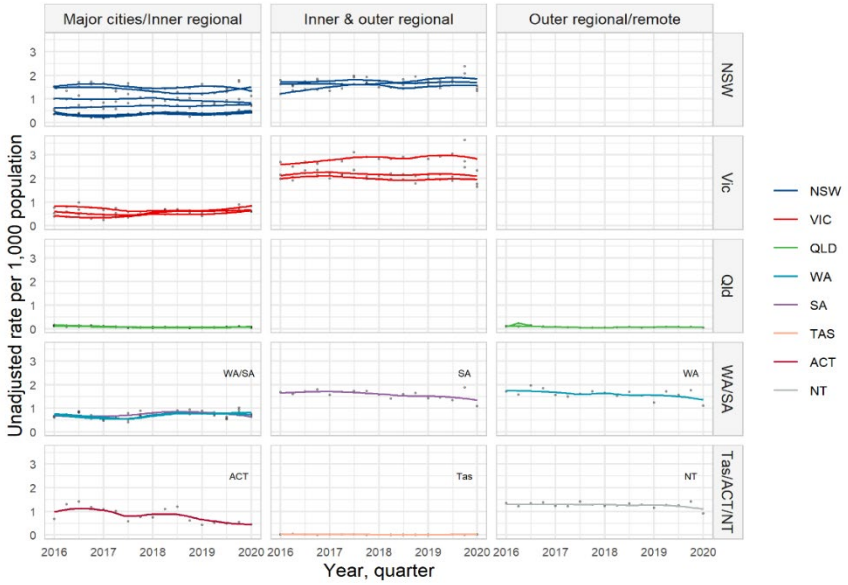

Figure 14 – Trends in quarterly number of calls to Healthdirect After Hours GP Helpline, March 2016 to March 2020

Source: HPA analysis of Healthmap data (https://healthmap.com.au/)

GP after-hours services and low-urgency emergency department attendances

Table 23 shows numbers and rates of GP after-hours items and low urgency

ED after-hours care by PHNs. Similar data were used at the SA3 level in the modelling described below (Models A1 and A2).

Table 11 – Comparison of GP after-hours items and low urgency ED after-hours care by PHNs, 2018–19

PHN	Services/attendances		Crude rate per 1,000	
	GP after hours	ED low-urgency after hours	GP after hours	ED low-urgency after hours
1 Major cities				
Adelaide	750,575	51,680	608	42
Perth South	466,390	57,393	468	58
Perth North	422,459	55,233	394	52
Gold Coast	382,275	19,270	615	31
Brisbane South	604,381	39,999	519	34
Brisbane North	463,806	40,644	453	40
Eastern Melbourne	1,039,361	58,263	669	38
South Eastern Melbourne	1,071,957	56,996	678	36
Northwest Melbourne	1,496,577	88,089	819	48
South Eastern Sydney	794,202	53,694	785	53
Nepean Blue Mountains	230,273	24,173	610	64
Western Sydney	898,212	45,704	896	46
Central and Eastern Sydney	768,410	75,011	471	46
Northern Sydney	418,371	42,612	445	45
Australian Capital Territory	146,116	24,145	347	57
Crude rate per 1,000			**605**	**45**
2 Major cities/inner regional				
Darling Downs & West Moreton	243,755	14,820	422	26
South Eastern New South Wales	177,103	52,996	283	85
Hunter NE & Central Coast	381,070	117,224	300	92
C Qld, Walsh Bay, Sunshine Coast	220,476	43,729	256	51
Crude rate per 1,000			**307**	**69**
3 Inner and outer regional				
Country South Australia	106,066	26,034	211	52
Western New South Wales	55,516	45,063	179	145
Murrumbidgee	47,426	28,689	194	117
Tasmania	98,702	27,939	187	53
Murray	159,881	49,609	259	80
Gippsland	51,876	24,161	183	85
Western Victoria	209,769	31,855	322	49
North Coast	95,075	57,964	181	110
Crude rate per 1,000			**225**	**79**

PHN	Services/attendances		Crude rate per 1,000	
	GP after hours	ED low-urgency after hours	GP after hours	ED low-urgency after hours
4 Outer regional/remote				
Western Queensland	15,054	5,665	241	Not published
Northern Territory	90,709	26,219	367	Not published
Country Western Australia	89,316	58,442	168	Not published
Northern Queensland	253,120	24,754	363	36
Crude rate per 1,000			**291**	**NA**
Australia	**12,248,288**	**1,393,756**	**490**	**56**

Sources: ED – Australian Institute of Health and Welfare (2020d); GP after hours – Australian Institute of Health and Welfare (2020b).

Appendix 8 – Statistical modelling

Impact of level of MBS after-hours services on low-urgency after-hours ED presentations

The analysis presented in this section aims to determine whether there is substitution between the MBS-supported services and low-urgency after-hours ED presentations. The rational for undertaking this analysis was:

- After-hours service delivery through MBS is a primary mechanism funded by government to support after-hours service provision. Therefore, understanding the impact of the relative provision of these services on the main outcome measures (low-urgency after-hours ED presentations and potentially preventable hospitalisations) is useful for understanding the context of the PHN After Hours Program.
- A plausible mechanism through which the PHN After Hours Program affects low-urgency after-hours ED presentations is by increasing the promotion or patronage of MBS-supported services as an alternative to presenting to ED.

Methods

The analysis was undertaken at two levels based on:

- Annual data published by the AIHW at the SA3 level (see Table 16).
- Daily time series based on analysis of data supplied by the Department of Health for MBS after-hours services and the Department of Health holdings of the NAPED data collection (see Table 16).

Measures of MBS-supported services and low-urgency after-hours ED presentations were converted to unadjusted rates per 1,000 population. Sensitivity analysis was also conducted on age-sex adjusted measures of the annual and monthly data. Analysis was conducted using data at the SA3 level.

Exploratory analysis examined the rate of ED presentations and MBS claims by day of the week, month of the year, and remoteness and socio-economic characteristics of SA3.

A set of models was then estimated, as described in Table 24. In each model, the outcome of interest was the rate of low-urgency after-hours ED presentations. The rate of MBS-supported services was an explanatory variable, with other explanatory variables added as described in the Table.

Table 12 – Models estimated to examine the relationship between MBS-supported services and-low urgency after-hours ED presentations

Model	Unit of analysis	Frequency	Outcome variable	Explanatory variables	Model specification
A1	SA3	Annual	Rate of low-urgency after-hours ED presentations	• Rate of MBS after-hours services • Combined remoteness and socio-economic	• Linear

Model	Unit of analysis	Frequency	Outcome variable	Explanatory variables	Model specification
A2	SA3	Annual	Rate of low-urgency after-hours ED presentations	• Rate of MBS after-hours services • Combined remoteness and socio-economic • Year	• Generalised linear mixed model
B1	SA3	Daily, July 2016 to June 2019	Rate of low-urgency after-hours ED presentations	• Rate of urgent MBS after-hours services • Combined remoteness and socio-economic • Day of week • Month of year • Year	• Generalised linear mixed model
B2	SA3	Daily July 2016 to June 2019	Rate of low-urgency after-hours ED presentations	• Rate of all MBS after-hours services • Combined remoteness and socio-economic • Day of week • Month of year • Year	• Generalised linear mixed model

Models A1 and A2 explored the broader relationships between MBS-supported after-hours services and low-urgency after-hours ED presentation over four financial years.

Models B1 and B2 used a ***generalised linear mixed model*** to explore the relationship between change in the rate of daily urgent after-hour MBS claims (Model B1) and total after-hours MBS claims and change in the rate of daily low-urgency after-hours ED presentations, between July 2016 and June 2019. The model also included variables for a characteristic of SA3 (combining remoteness and socio-economic characteristics – see Table 25), month of year (to adjust for any seasonal effects), and day of week (to adjust for differences in rates between days of the week), and a random intercept term to adjust for SA3. The coefficient of the date variable from these models was multiplied by 365 to obtain an estimate of the average annual change in the daily rate of events. This analysis tested whether, on any given day, the rate of MBS claims predicts the rate of ED presentations within an SA3.

Table 13 – Number of SA3s within each of the regional groups

Regional group	# of SA3s	
	Models A1 & A2	Models B1 & B2
Major cities – high SES	49	48
Major cities – medium SES	93	91
Major cities – lower SES	48	48
Inner regional	80	79
Outer regional	43	39
Remote/Very remote		16
Total	313	321

Results: Descriptive analysis

Figure 15 and Figure 16 show the distribution of the ED and MBS measures across SA3s grouped by the combined remoteness area/SES variable. The ED variable shows a prominent gradient across the SA3 categories. For the MBS measures, the differences between categories are more complex with the lowest rates seen in the remote/very remote SA3. The rates for the MBS measures are higher in major cities, but with a clear socio-economic gradient – with higher rates for SA3 allocated to the lower SES category.

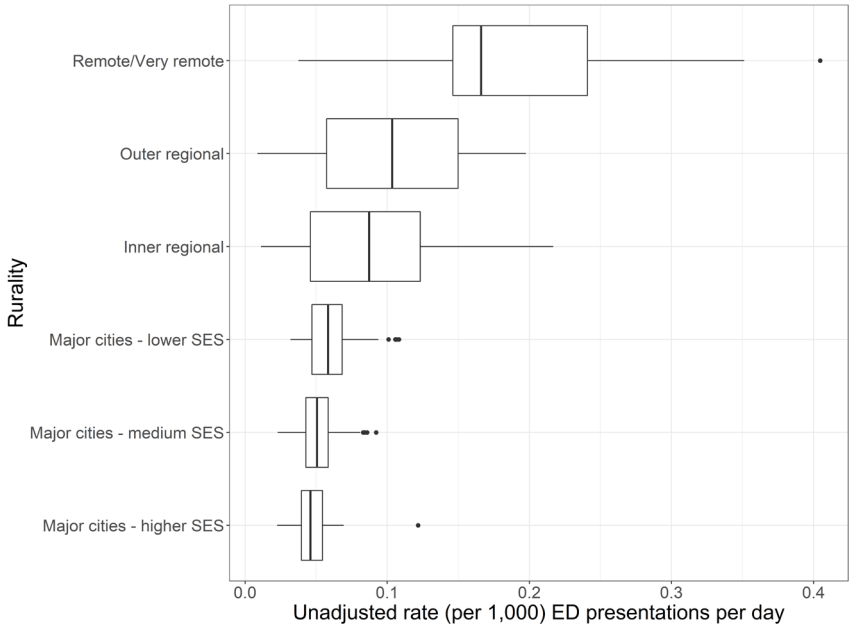

Figure 15 – Boxplot of the rate of low-urgency after-hours ED presentations by SA3 clustered by remoteness area/socio-economic category

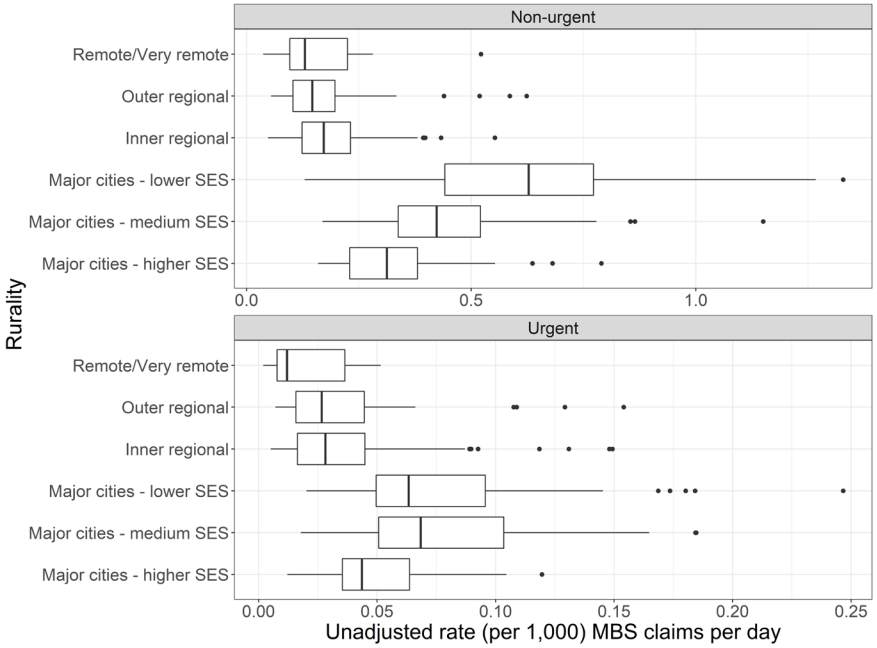

Figure 16 – Boxplot of the rate of after-hours MBS services by SA3 clustered by remoteness area/socio-economic category

Table 26 shows the number of events across the day of the week, the month of the year and the combined remoteness/SES variable. The table also includes the number of low-urgency after-hours ED presentations as a percentage of total after-hours MBS claims.

Table 14 – Number (column percent) of low urgency after-hours ED presentations and urgent and non-urgent services through MBS – Total for July 2016 to June 2019

Variable		Low-urgency after-hours ED presentations n (%)	MBS after-hours services		ED as percentage of total after-hours MBS
			Urgent n (%)	Non-urgent n (%)	
Day	Sunday	1,481,859 (30.0%)	1,060,340 (23.4%)	12,048,068 (37.9%)	11.3%
	Monday	516,833 (10.5%)	625,309 (13.8%)	3,157,305 (9.9%)	13.7%
	Tuesday	492,572 (10.0%)	548,587 (12.1%)	2,505,517 (7.9%)	16.1%
	Wednesday	481,746 (9.8%)	526,433 (11.6%)	2,308,139 (7.3%)	17.0%
	Thursday	472,666 (9.6%)	500,068 (11.0%)	2,255,107 (7.1%)	17.2%
	Friday	467,339 (9.5%)	480,892 (10.6%)	2,062,919 (6.5%)	18.4%
	Saturday	1,021,993 (20.7%)	786,386 (17.4%)	7,416,071 (23.4%)	12.5%
Month	January	435,397 (8.8%)	340,278 (7.5%)	2,567,004 (8.1%)	15.0%
	February	390,122 (7.9%)	301,780 (6.7%)	2,328,927 (7.3%)	14.8%
	March	428,048 (8.7%)	351,292 (7.8%)	2,746,425 (8.6%)	13.8%
	April	411,756 (8.3%)	367,122 (8.1%)	3,066,446 (9.7%)	12.0%
	May	388,604 (7.9%)	346,162 (7.6%)	2,655,846 (8.4%)	12.9%
	June	389,568 (7.9%)	359,478 (7.9%)	2,829,421 (8.9%)	12.2%
	July	406,040 (8.2%)	438,994 (9.7%)	2,662,613 (8.4%)	13.1%
	August	402,695 (8.2%)	462,053 (10.2%)	2,590,930 (8.2%)	13.2%
	September	405,263 (8.2%)	427,384 (9.4%)	2,651,346 (8.3%)	13.2%
	October	413,701 (8.4%)	397,186 (8.8%)	2,657,065 (8.4%)	13.5%
	November	405,649 (8.2%)	357,802 (7.9%)	2,439,815 (7.7%)	14.5%
	December	458,165 (9.3%)	378,484 (8.4%)	2,557,288 (8.1%)	15.6%
Remote area (RA) & socio-economic area (SES)	Major cities – higher SES	578,937 (11.7%)	602,643 (13.3%)	4,216,304 (13.3%)	12.0%
	Major cities – medium SES	1,311,457 (26.6%)	1,816,391 (40.1%)	12,080,711 (38.0%)	9.4%
	Major cities – lower SES	1,024,992 (20.8%)	1,250,220 (27.6%)	11,448,050 (36.1%)	8.1%
	Inner regional	1,240,466 (25.1%)	580,720 (12.8%)	2,573,404 (8.1%)	39.3%
	Outer regional	522,390 (10.6%)	246,889 (5.5%)	1,198,861 (3.8%)	36.1%
	Remote/Very remote	256,766 (5.2%)	31,152 (0.7%)	235,796 (0.7%)	96.2%

As described previously, activity across these measures is skewed towards Saturdays and Sundays (Figure 8 and Figure 9). The increase over the weekend is expected because most of Saturday and all of Sunday is considered after hours. Low-urgency after-hours ED presentations as a percentage of after-hours MBS services fluctuates from about 11.3% on Sundays to 18.4% on Fridays.

There is variation in the number of events across the year, but the effect is relatively small. The lower event rate in February can be explained by the fewer days in that month. Low-urgency after-hours ED presentations as a percentage of after-hours MBS services fluctuates across months from 10.7% in April to 13.0% in January (Figure 17). There was a small but significant decline of approximately 0.002 per year in this percentage across the three years observed ($p = 0.003$).

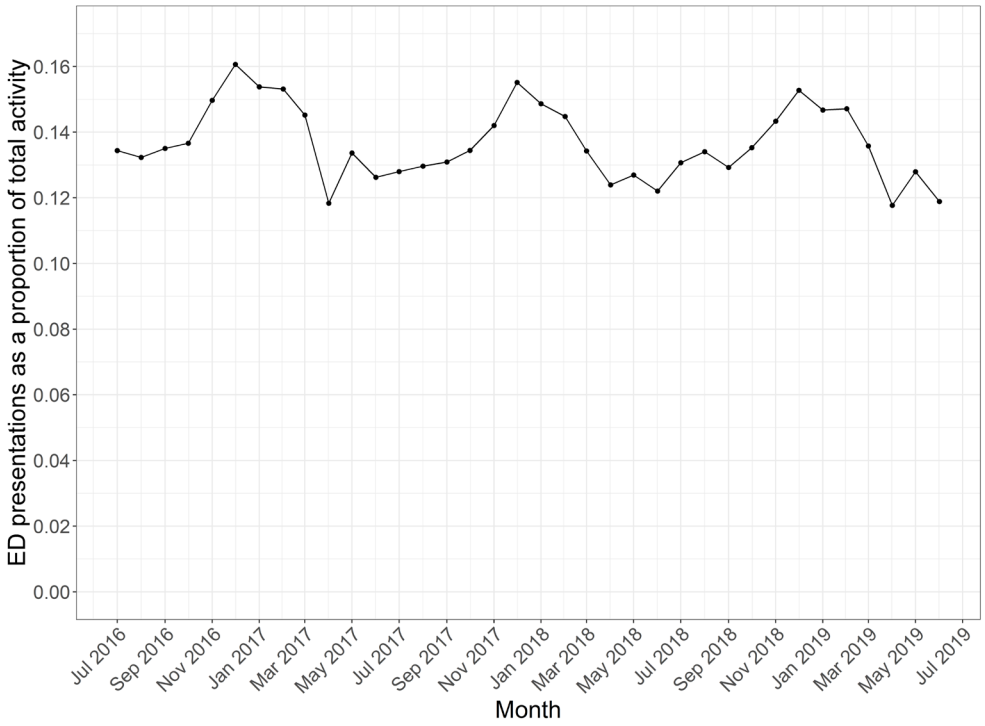

Figure 17 – Low-urgency after-hours ED as a percentage of after-hours MBS services by month, July 2016 to June 2019

Results: Models A1(linear regression) and A2 (random effects linear model)

Table 27 presents the results of models A1 and A2. The results for model A1 suggest that for each one unit increase in the rate of after-hours MBS claims there is a reduction of 0.30 in the rate of ED presentations ($p < 0.001$). The model also shows a very strong increase in the rate of ED presentations within major cities as the level of SES decreases.

Model A2 was a generalised linear mixed model with the same predictor variables as used for A1. The difference between the two models is the mixed model includes a random intercept term for SA3, which means the model is estimating the association between the rate of MBS claims and ED presentations within SA3s and pooling the estimated effect. The mixed model is testing a different hypothesis to the linear model in that it is testing whether there is an association between MBS rates and ED presentation rates within SA3s. The results from the model indicate there is an association but the magnitude is smaller than in the cross-sectional analysis.

Table 15 – Estimated coefficients for models A1 and A2: Models testing if the rate of total after-hours MBS services is a predictor of the rate of ED presentations (annual data)

Variable	Level	Model output		
		Coefficient	95% confidence interval (CI)	p value
Model A1: Linear regression				
MBS services (per 100 people)		-0.30	-0.40 to -0.20	<0.001
Geographic group	Major cities – higher SES	Referent		
	Major cities – medium SES	7.14	1.66 to 12.63	0.009
	Major cities – lower SES	23.66	16.69 to 30.62	<0.001
	Inner regional	22.98	17.26 to 28.71	<0.001
	Outer regional	13.72	7.22 to 20.22	<0.001
Financial year	2015–16	Referent		
	2016–17	-0.53	-5.32 to 4.26	0.824
	2017–18	-1.18	-5.97 to 3.61	0.622
	2018–19	-1.36	-6.15 to 3.43	0.571

Variable	Level	Model output		
		Coefficient	95% confidence interval (CI)	p value
Model A2: Random effects linear model				
MBS services (per 100 people)		-0.17	-0.28 to -0.07	0.002
Geographic group	Major cities – higher SES	Referent		
	Major cities – medium SES	4.61	-5.90 to 15.12	0.270
	Major cities – lower SES	18.82	6.35 to 31.28	0.005
	Inner regional	24.09	13.25 to 34.93	<0.001
	Outer regional	14.84	2.39 to 27.29	0.024
Financial year	2015–16	Referent		
	2016–17	-1.02	-1.85 to -0.19	0.021
	2017–18	-1.73	-2.56 to -0.89	<0.001
	2018–19	-1.80	-2.63 to -0.98	<0.001

Results: Models B1 (urgent after-hours) and B2 (total after-hours)

The results of models B1 and B2 are shown in Table 28. The main coefficient of interest in these models is the MBS rate. In summary:

- For model B1 it is estimated that each unit increase (one per 1,000) in the rate of *urgent after-hours MBS services* predicted a decrease in the rate of ED presentations of **-0.078 (CI -0.082 to -0.073) per 1,000**.
- For model B2 it is estimated that each unit increase (one per 1,000) in the rate of *total after-hours MBS services* results in a decrease the rate of low-urgency after-hours ED presentations of **-0.039 (CI -0.039 to -0.038) per 1,000**.

Table 16 – Estimated coefficients for models B1 and B2: Models testing if rates of after-hours MBS services (urgent and total) are predictors of rate of ED presentations (daily data)

Variable	Level	Model B1 Urgent after-hours MBS		Model B2 Total after-hours MBS	
		Estimate (95% confidence interval)	p value	Estimate (95% confidence interval)	p value
	Intercept	0.400 (0.369 to 0.431)	<0.001	0.487 (0.456 to 0.518)	<0.001
	MBS rate	**-0.078 (-0.082 to -0.073)**	**<0.001**	**-0.039 (-0.039 to -0.038)**	**<0.001**
Month	January	Referent		Referent	
	February	-0.005 (-0.007 to -0.003)	<0.001	-0.006 (-0.008 to -0.004)	<0.001
	March	-0.008 (-0.010 to -0.006)	<0.001	-0.007 (-0.009 to -0.005)	<0.001
	April	-0.012 (-0.014 to -0.010)	<0.001	-0.006 (-0.008 to -0.004)	<0.001
	May	-0.021 (-0.023 to -0.019)	<0.001	-0.020 (-0.021 to -0.018)	<0.001
	June	-0.023 (-0.025 to -0.021)	<0.001	-0.020 (-0.022 to -0.018)	<0.001
	July	-0.023 (-0.025 to -0.021)	<0.001	-0.025 (-0.027 to -0.023)	<0.001
	August	-0.009 (-0.011 to -0.007)	<0.001	-0.010 (-0.012 to -0.008)	<0.001
	September	-0.011 (-0.013 to -0.009)	<0.001	-0.012 (-0.014 to -0.010)	<0.001
	October	-0.014 (-0.016 to -0.012)	<0.001	-0.015 (-0.017 to -0.013)	<0.001
	November	-0.006 (-0.008 to -0.004)	<0.001	-0.007 (-0.009 to -0.005)	<0.001
	December	0.004 (0.002 to 0.006)	<0.001	0.002 (-0.000 to 0.003)	0.114
Day	Sunday	Referent		Referent	
	Monday	-0.308 (-0.310 to -0.306)	<0.001	-0.377 (-0.378 to -0.375)	<0.001
	Tuesday	-0.316 (-0.318 to -0.314)	<0.001	-0.390 (-0.391 to -0.388)	<0.001
	Wednesday	-0.319 (-0.321 to -0.318)	<0.001	-0.394 (-0.396 to -0.392)	<0.001
	Thursday	-0.323 (-0.325 to -0.321)	<0.001	-0.398 (-0.400 to -0.396)	<0.001
	Friday	-0.326 (-0.327 to -0.324)	<0.001	-0.402 (-0.404 to -0.400)	<0.001
	Saturday	-0.150 (-0.152 to -0.148)	<0.001	-0.186 (-0.188 to -0.185)	<0.001
Rurality	Major cities – high SES	Referent		Referent	
	Major cities – medium SES	0.017 (-0.021 to 0.055)	0.265	0.026 (-0.012 to 0.064)	0.157
	Major cities – lower SES	0.048 (0.004 to 0.091)	0.038	0.076 (0.033 to 0.120)	0.001
	Inner regional	0.115 (0.076 to 0.154)	<0.001	0.101 (0.062 to 0.140)	<0.001

Variable	Level	Model B1 Urgent after-hours MBS		Model B2 Total after-hours MBS	
		Estimate (95% confidence interval)	p value	Estimate (95% confidence interval)	p value
	Outer regional	0.159 (0.112 to 0.205)	<0.001	0.144 (0.098 to 0.190)	<0.001
	Remote/Very remote	0.405 (0.343 to 0.467)	<0.001	0.390 (0.329 to 0.452)	<0.001

Impact of PHN After Hours Program activities on emergency department presentations

This analysis aimed to test whether the introduction of activity as part of the PNH After Hours Program reduced the rate of ED presentations. The models estimated are shown in Table 29.

Table 17 – Models estimated to examine the relationship between PHN After Hours Program activities and low-urgency after-hours ED presentations

Model	Unit of analysis	Frequency	Outcome variable	Explanatory variables	Model specification
C1	SA3	Monthly July 2015 to June 2019	Rate of age-standardised low-urgency after-hours ED presentations	• SA3-based variable indicating that a commissioned activity commenced in the SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	• Generalised linear mixed model
C2	SA3	Monthly July 2015 to June 2019	Rate of age-standardised low-urgency after-hours ED presentations	• SA3-based variable indicating that a commissioned activity commenced in the SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	• Generalised linear mixed model estimated separately for each SA3 group compared with SA3 with no new initiative

The outcome variable for this analysis was age-standardised rates of low-urgency after-hours ED presentations by calendar month and SA3, from July 2016 to June 2019. Models included predictor variables for date (first day of month) and calendar month. Two additional variables were included:

- An indicator (***activity group***) that grouped SA3s by whether a PHN's commissioned activity commenced in a particular financial year. For example, if an activity commenced within an SA3 in the 2015–16 financial year, it was allocated to the group '15/16', if it began an activity in the 2016–17 financial year it was allocated to '16/17', and so on, otherwise it was allocated to the 'No activity' group (i.e. those SA3s that did not begin any activity during the four-year period). Allocation was done hierarchically starting with the first period. SA3s in which no new activity had commenced were assigned to a 'no-activity' group, which was used for comparison.
- A time-based indicator (***period***) reflecting the periods of time in which the activities had sufficient time to have an impact on the outcomes. The first period, period 0, was the baseline and was the period up to and including January 2016. Period 1 was from February 2016 to January 2017, period 2 was from February 2017 to January 2018, period 3 was from February 2018 to January 2019, and period 4 was from February 2019 to June 2019. Therefore, the modelling was testing whether the introduction of an activity lowered the level of the outcomes starting in the February of the financial year the activity began.

Figure 18 – Mean of the age-standardised rates of low-urgency after-hours ED presentations each month within SA3s from July 2016 to June 2019 – by activity group Figure 18 shows the mean rates for the outcome variable for each of the activity groups by the observed periods.

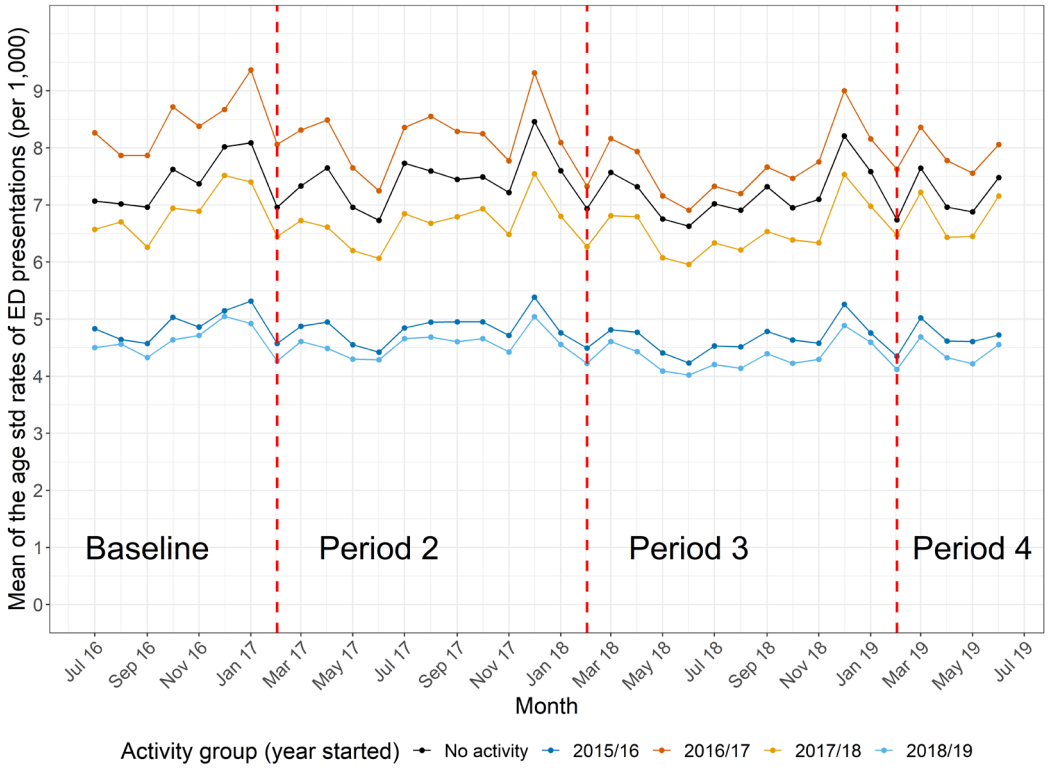

Figure 18 – Mean of the age-standardised rates of low-urgency after-hours ED presentations each month within SA3s from July 2016 to June 2019 – by activity group

Results: Models C1 and C2

Model C1: Generalised linear mixed model

A generalised linear mixed model was applied using all SA3s, with the aim of estimating the impact of the commencement of an activity on the outcome variable (age-standardised rate of low-urgency after-hours ED presentations). Specifically, the model tested whether there was a difference in the change in the outcomes between the activity groups, from the baseline period to the periods after the intervention would be expected to have had an impact. Technically, the coefficient of interest was the interaction term between activity group and period (limited to periods following the introduction of the activity).

The coefficient for the interaction term is an estimate of how much the rate has changed from baseline to each post-baseline period in the activity group more than it has changed in the no-activity group. The estimates for the interaction terms are shown in Table 30. The estimates for SA3 within the 2016–17 group are negative values for each period, suggesting that in the periods after the introduction of activities in these SA3, the outcome was lower than expected. The estimates for SA3s in the 2017–18 and 2018–19 groups (where activities were introduced in these year) are mixed and not statistically significant.

Table 18 – Estimated coefficients for model C1 for the interaction terms between time period and activity group indicating change in rate of low urgency after-hours ED presentations

Period	Groupings of SA3 according to the year they started activity		
	2016–17	2017–18	2018–19
Period2	-0.23 (-0.37 to -0.09)*	na	na
Period3	-0.52 (-0.66 to -0.38)**	-0.121 (-0.27 to 0.03)	na
Period4	-0.26 (-0.43 to -0.09)*	0.157 (-0.03 to 0.35)	0.02 (-0.19 to 0.22)

*Note: * indicates p value between 0.05 and 0.001; ** indicates p value < 0.001*

Model C2: Generalised linear mixed model estimated separately for each SA3 group

An alternative but similar way to explore the differences in change between the SA3s that introduced some activity and those that introduced none was to fit separate models to compare each of the activity groups with the no activity group. These before-and-after models have only two periods: the period before activity began in the activity group and the period after. Therefore, the periods were different for each analysis. The generalised linear mixed models used to test for differences in change here included the predictors of period (before and after), activity group (activity and no activity) and an interaction term for period by activity group. The models also included a variable for calendar year to adjust for any seasonal affect.

Results for model C2 are shown in Table 31. In the comparison of change between the SA3s in the 2016–17 activity group and the no activity group, February 2017 was the point in time that separated the before period from the after period. The estimates in Table 31 suggest the mean level of ED presentations in the 'before' period in the no activity group was 7.388 per 1,000 (i.e. coefficient of the intercept), the mean level in the '2016–17' activity group was 1.012 per 1,000 higher than in the no activity group, the change in the no activity group from before to after was -0.095, and the change in ED presentation per 1,000 population in the '2016/17' activity group was 0.385 lower than the change in the no activity group. The difference in change was statistically significant ($p < 0.001$). The greater reduction of ED presentations per 1,000 population represents a 4.58% change (0.385 / (7.388 + 1.012)). There was not a significant difference in change in the other activity groups.

Table 19 – Estimated coefficients for model C2 testing differences in change in the rate of emergency department presentations from period prior to the activity being introduced to period following introduction – presented separately by activity group.

Activity group	Parameter	Estimate	95% confidence interval	p value	% change
2016–17	Intercept	7.388	(6.103 to 8.673)	<0.001	
	Activity group	1.012	(-0.640 to 2.664)	0.188	
	Period	-0.095	(-0.210 to 0.020)	0.102	
	Period by group interaction	**-0.385**	**(-0.532 to -0.237)**	**<0.001**	**-4.58%**
2017–18	Intercept	7.412	(6.276 to 8.549)	<0.001	
	Activity group	-0.678	(-2.305 to 0.949)	0.281	
	Period	-0.221	(-0.301 to -0.141)	<0.001	
	Period by group interaction	**0.092**	**(-0.023 to 0.207)**	**0.111**	**1.36%**
2018–19	Intercept	7.323	(6.510 to 8.137)	<0.001	
	Activity group	-2.839	(-4.104 to -1.573)	<0.001	
	Period	-0.082	(-0.178 to 0.013)	0.091	
	Period by group interaction	**0.045**	**(-0.105 to 0.194)**	**0.332**	**0.99%**

Impact of PHN After Hours Program activities on potentially preventable hospitalisations

Similar analysis was conducted using alternative outcome variables: age-standardised rates of acute PPHs and, separately, for chronic PPHs. The models estimated with PPHs as the outcome variable are shown in Table 32.

Table 20 – Models estimated to examine the relationship between PHN After Hours Program activities and potentially preventable hospitalisations

Model	Unit of analysis	Frequency	Outcome variable	Explanatory variables	Model specification
D1	SA3	Monthly July 2014 to June 2016	Age-standardised rate of acute PPH	• SA3-based variable indicating that a commissioned activity commenced in the SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	• Generalised linear mixed model
D2	SA3	Monthly July 2014 to June 2016	Age-standardised rate of chronic PPH	• SA3-based variable indicating that a commissioned activity commenced in the	• Generalised linear mixed model

Model	Unit of analysis	Frequency	Outcome variable	Explanatory variables	Model specification
				SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	
E2	SA3	Monthly July 2014 to June 2018	Age-standardised rate of acute PPH	• SA3-based variable indicating that a commissioned activity commenced in the SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	• Generalised linear mixed model estimated separated for each SA3 group compared with SA3 with no new initiative
E2	SA3	Monthly July 2014 to June 2018	Age-standardised rate of chronic PPH	• SA3-based variable indicating that a commissioned activity commenced in the SA3 in a specified financial year • Time-based variables indicating periods in which effects of a new activity would be expected to be observed • Date (month/year)	• Generalised linear mixed model estimated separated for each SA3 group compared with SA3 with no new initiative

Data were available for the acute and chronic PPHs for the three financial years of 2015–16, 2016–17 and 2017–18 so the SA3s that did not start activity until the 2018–19 financial year were grouped with the no activity SA3s. The rate of acute and chronic PPHs is lower than that of ED presentations but, in relative terms, there is a similar level of variation in the age-standardised rates across the SA3s. Figure 19 shows the mean of the rates for the PPH for the activity groups.

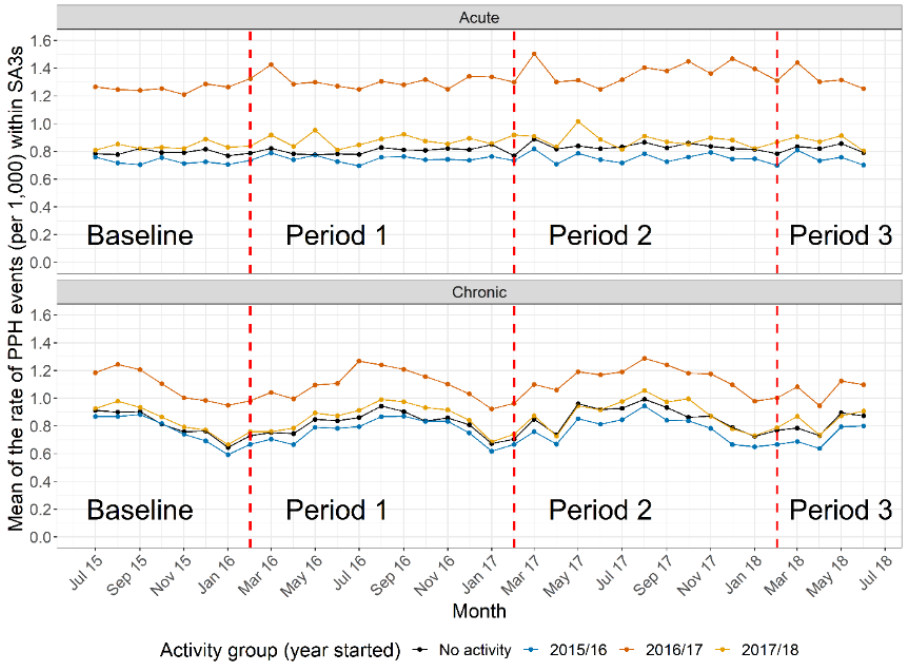

Figure 19 – Mean of the age-standardised rates of potentially preventable hospitalisations each month within SA3s from July 2016 to June 2019 – by activity group

Results: Models D1(acute PPHs) and D2 (chronic PPHs)

Models D1 and D2: The models estimated generalised linear mixed models using all SA3s, with the aim of estimating the effect of the commencement of an activity on the two outcome variable: acute PPHs (D1) and chronic PPHs (D2).

The results for the key coefficients – the interactions between activity group and period – are shown in Table 33. For acute PPHs, there were statistically significant differences in change between the 2016–17 activity group and the no activity group, with the 2016–17 activity group having a more positive change from baseline to period 2 [0.08 (0.04 to 0.11)] and baseline to period 3 [0.05 (0.00 to 0.09)]. This is consistent with the trend analysis, which showed the rate of acute PPHs increased in both the no-activity group and the 2015–16 activity group, with the largest increase in the 2016–17 activity group. There were no other significant interaction terms in the models of acute PPHs.

For chronic PPHs, there were significant negative interaction effects for the 2015–16 group in Periods 2 and 3, and for the 2016–17 group a significant effect in Period 3. Overall, the estimated effects appear inconsistent and marginally statistically significant.

Table 21 – Estimated coefficients for models D1 and D2 for the interaction terms between period and activity group indicating change in rate of PPHs, acute and chronic

Outcome	Period	Groups of SA3 according to the year they started activity (activity groups)		
		2015–16	2016–17	2017–18
D1: Acute PPH	Period1	0.01 (-0.03 to 0.05)		
	Period2	-0.01 (-0.05 to 0.03)	0.08 (0.04 to 0.11)**	
	Period3	-0.01 (-0.06 to 0.04)	0.05 (0.00 to 0.09)*	0.01(-0.04 to 0.06)
D2: Chronic PPH	Period1	-0.02 (-0.05 to 0.02)		
	Period2	-0.05 (-0.08 to -0.01)*	-0.00 (-0.03 to 0.03)	
	Period3	-0.06 (-0.10 to -0.02)*	-0.04 (-0.08 to -0.01)*	-0.01 (-0.05 to 0.03)

Note: * indicates p value between 0.05 and 0.001; ** indicates p value < 0.001.

Results: Models E1 (acute PPH) and E2 (chronic PPH)

The results of the before-and-after analysis comparing a specific activity group with the no activity group are presented in Table 34. The important parameter in the models is the period by group interaction, which indicates how much the mean change in the outcome among the SA3s that had implemented an activity was different to the mean change among the SA3s that had no activity. For the acute PPH outcomes, the only significant effect is for the 2016–17 activity group. For chronic PPH outcomes, significant effects are estimated for only the 2015–16 group. Overall, the evidence on the effect of activities on PPHs is inconsistent, suggesting the evidence is weak.

Table 22 – Estimated coefficients for model E1 and E2 testing differences in change in the rate of PPHs (acute and chronic) from period prior to the activity being introduced to period following introduction – presented separately by activity group.

Activity group	Parameter	Model E1: Acute PPH			Model E2: Chronic PPH		
		Estimate	95% confidence interval	p value	Estimate	95% Confidence interval	p value
2015–16	Intercept	0.792	(0.741 to 0.844)	<0.001	0.803	(0.749 to 0.858)	<0.001
	Activity group	-0.065	(-0.156 to 0.025)	0.141	-0.037	(-0.132 to 0.058)	0.294
	Period	0.027	(0.016 to 0.039)	<0.001	0.032	(0.019 to 0.045)	<0.001
	Period by group interaction	**-0.005**	**(-0.025 to 0.015)**	**0.352**	**-0.033**	**(-0.056 to -0.011)**	**0.006**
2016–17	Intercept	0.799	(0.657 to 0.941)	<0.001	0.810	(0.711 to 0.909)	<0.001
	Activity group	0.488	(0.282 to 0.694)	<0.001	0.280	(0.136 to 0.423)	<0.001
	Period	0.033	(0.015 to 0.051)	<0.001	0.041	(0.025 to 0.058)	<0.001
	Period by group interaction	**0.040**	**(0.013 to 0.067)**	**0.005**	**-0.011**	**(-0.035 to 0.014)**	**0.268**
2017–18	Intercept	0.812	(0.752 to 0.873)	<0.001	0.829	(0.767 to 0.891)	<0.001
	Activity group	0.057	(-0.044 to 0.159)	0.209	0.034	(-0.070 to 0.138)	0.320
	Period	0.014	(-0.006 to 0.034)	0.148	-0.008	(-0.028 to 0.012)	0.281
	Period by group interaction	**-0.011**	**(-0.044 to 0.023)**	**0.325**	**-0.009**	**(-0.042 to 0.024)**	**0.340**

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