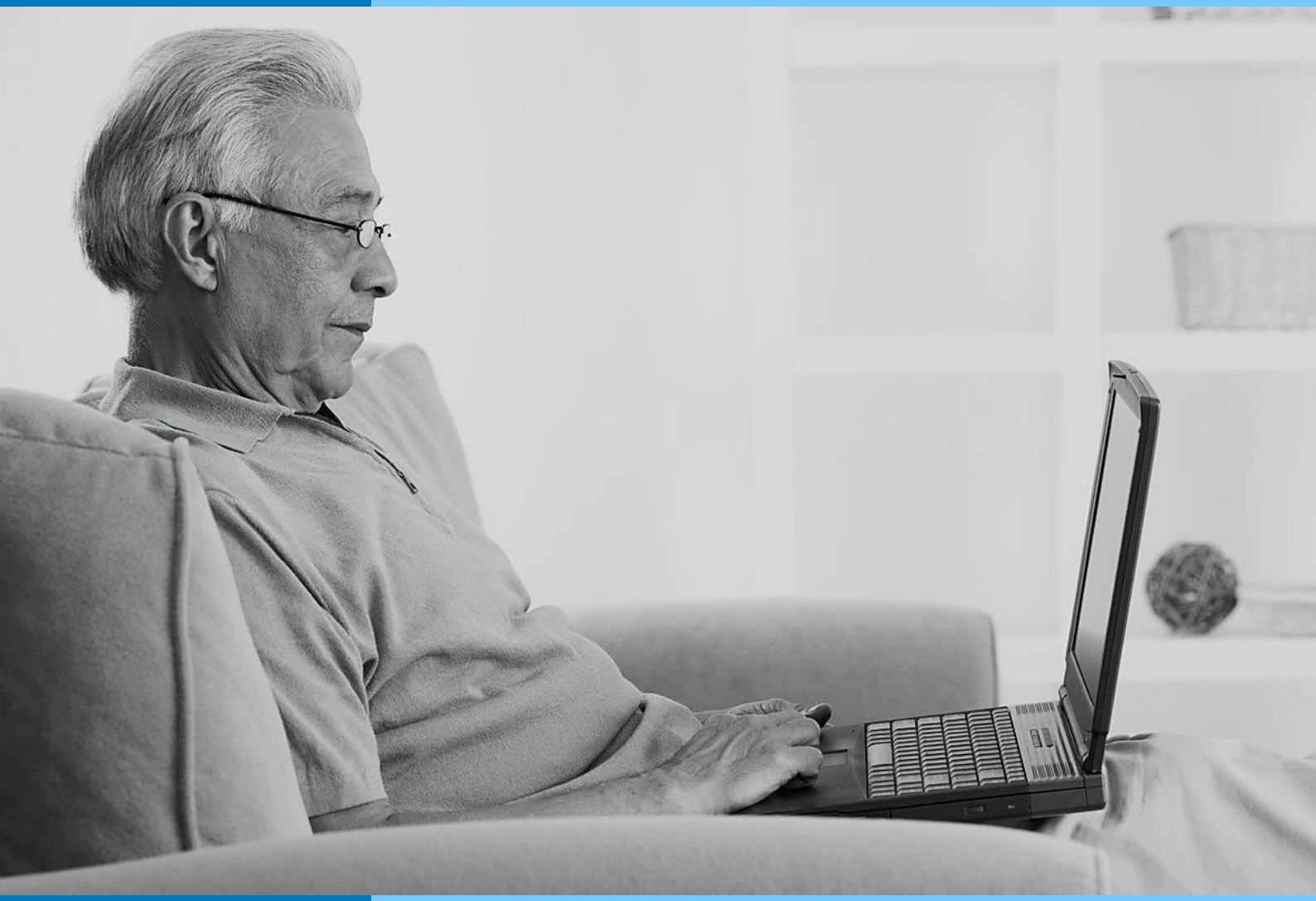

Review of Assistive Technology Programs in Australia

Supplementary Technical Report

for the Australian Government Department of Health

Australian Healthcare Associates

9 June 2020

AHA Australian Healthcare Associates
Australia's largest health & human services consulting firm

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Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
ABS SDAC	Australian Bureau of Statistics Survey of Disability, Ageing and Carers
ACAS	Aged Care Assessment Services
ACAT	Aged Care Assessment Team
ACFI	Aged Care Funding Instrument
AHA	Australian Healthcare Associates
AHPRA	Australian Health Practitioner Regulation Agency
AIHW	Australian Institute of Health and Welfare
AF	Atrial fibrillation
AT	Assistive technology
AT-HM	Assistive Technology and Home Modifications
CBA	Cost-benefit analysis
CDC	Consumer directed care
CHSP	Commonwealth Home Support Program
COPD	Chronic obstructive pulmonary disease
the Department	Australian Government Department of Health
DHS	Australian Government Department of Human Services
DIY	Do-it-yourself
DVA	Department of Veterans' Affairs
ECEI	Early Childhood Early Intervention
GORD	Gastro-oesophageal reflux disease
HACC	Home and Community Care
HCP	Home Care Packages
HQOL	Health-related quality of life
ICF	World Health Organization International Classification of Functioning, Disability and Health
ILC	Independent Living Centre
MBS	Medicare Benefits Schedule
MCA	Middle cerebral artery
MDS	Minimum data set
MDT	Multidisciplinary Team
MOW	Meals on Wheels
NACA	National Aged Care Alliance

Abbreviation	Definition
NDIS	National Disability Insurance Scheme
NED	National Equipment Database
NIIS	National Injury Insurance Scheme
NIISQ	National Injury Insurance Agency, Queensland
OH&S	Occupational Health & Safety
OT	Occupational therapist
P&O	Prosthetics and orthotics
PDW	Power drive wheelchairs
PIL	Promoting Independent Living
RAS	Regional Assessment Service
RER	Rapid evidence review
RFQ	Request for quote
STRC	Short-Term Restorative Care Program
TCP	Transition Care Program
TGA	Therapeutic Goods Administration
WHO	World Health Organization

Glossary

Abbreviation	Definition
AT Products and services	AT Products and AT Services make up an AT Products and services
AT Products	Items of assistive technology
AT Services	Services or 'soft technology' used
Core Activity Limitation	The Australian Bureau of Statistics Survey of Disability, Ageing and Carers (ABS SDAC) provides information on core activity limitations. Core activities are communication, mobility and self-care. Four levels of severity are provided: Mild limitation – People who need no help and have no difficulty, but use aids or equipment for core tasks or have one or more of the following limitations: • Cannot easily walk 200 metres • Cannot walk up and down stairs without a handrail • Cannot easily bend to pick up an object from the floor • Has difficulty or cannot use public transport Moderate limitation – people who need no help but have difficulty Severe limitation – people who sometimes need help and/or have difficulty Profound limitation – people with the greatest need for help or who are unable to do an activity
Disability	In the ABS SDAC, a person is considered to have disability if they have at least one of a list of limitations, restrictions or impairments, which has lasted, or is likely to last, for at least 6 months and restricts everyday activities. The severity of disability is further defined according to the degree of assistance or supervision required in core activities – self-care, mobility, and communication – and grouped for mild, moderate, severe, and profound limitation.
ISO 9999	The International Organization for Standardization (ISO) is an independent, non-governmental organisation with a membership of 164 national standards bodies, whose remit is to develop and publish international standards. ISO 9999 establishes a classification of assistive products that have been produced for persons with disability. All assistive products in ISO 9999 are primarily intended for use outside of health care settings. Assistive products are classified according to their function. The classification consists of three hierarchical levels, with classes, subclasses and divisions. For the purposes of this review, 12 ISO 9999 classes are used. The ISO 9999 is currently being revised.
Soft technology	AT services associated with providing AT products
States	Australian state and territory jurisdictions

1 Introduction

This Supplementary Technical Report is provided as a companion report to the Assistive Technology Review Final Report.

This report details:

- **Review methods** and results as follows:
  - Review methodology overview (Appendix A)
  - Rapid Evidence Review (Appendix B)
  - Delphi technique (Appendix C)
  - Archetypes (Appendix D)
- **Existing AT programs**
  - Existing AT programs (Appendix E)
  - AT information and advice resources (Appendix F)
- **References** (Appendix H)

Appendix A Review methodology overview

A.1 Introduction

The review was conducted between November 2019 and June 2020 and involved mapping the current AT programs, conducting a Rapid Evidence Review (RER), undertaking a cost-benefit analysis and proposing future options for a national AT program for older Australians. AHA's mixed-methods approach is outlined in *Planning* phase

The planning phase of the review was undertaken during November and December 2019. AHA met with the Department of Health in Canberra in November 2019 for a face-to-face project initiation meeting, to confirm the scope and objectives of the review. The project plan was delivered in December 2019, detailing AHA's approach to undertaking the review, key project personnel and a risk management plan.

Mapping existing AT programs

A.2 AHA undertook a mapping exercise of existing AT programs in Australia to:

Identify current AT arrangements across Australian jurisdictions including access points, eligibility criteria, scope of services, and intersections with health and disability sectors

- Summarise gaps, duplication, supply and access barriers and areas of strain in the provision of AT.
- The mapping phase was undertaken over December 2019 and January 2020.
- The mapping exercise involved conducting:
- A desktop review
- A Rapid Evidence Review (RER)
- Stakeholder consultations.

The results of the mapping phase were presented in an Initial Report to the Department in January 2020. *Appendix E* provides details of existing AT programs.

Desktop review

A desktop review of AT programs and information was conducted. This included:

- Reviewing program information and data provided by the Department of Health including CHSP and HCP program and data
- Searching relevant program information for all state and territory AT programs, their key eligibility and exclusion criteria, funding amounts, AT assessment and provision arrangements
- Reviewing AT databases including the NED database

Searching for retail AT product information and prices to be used in the cost-benefit analysis.

Figure A-1. The subsequent sections provide details around each phase of the review methodology.

A.3 Planning phase

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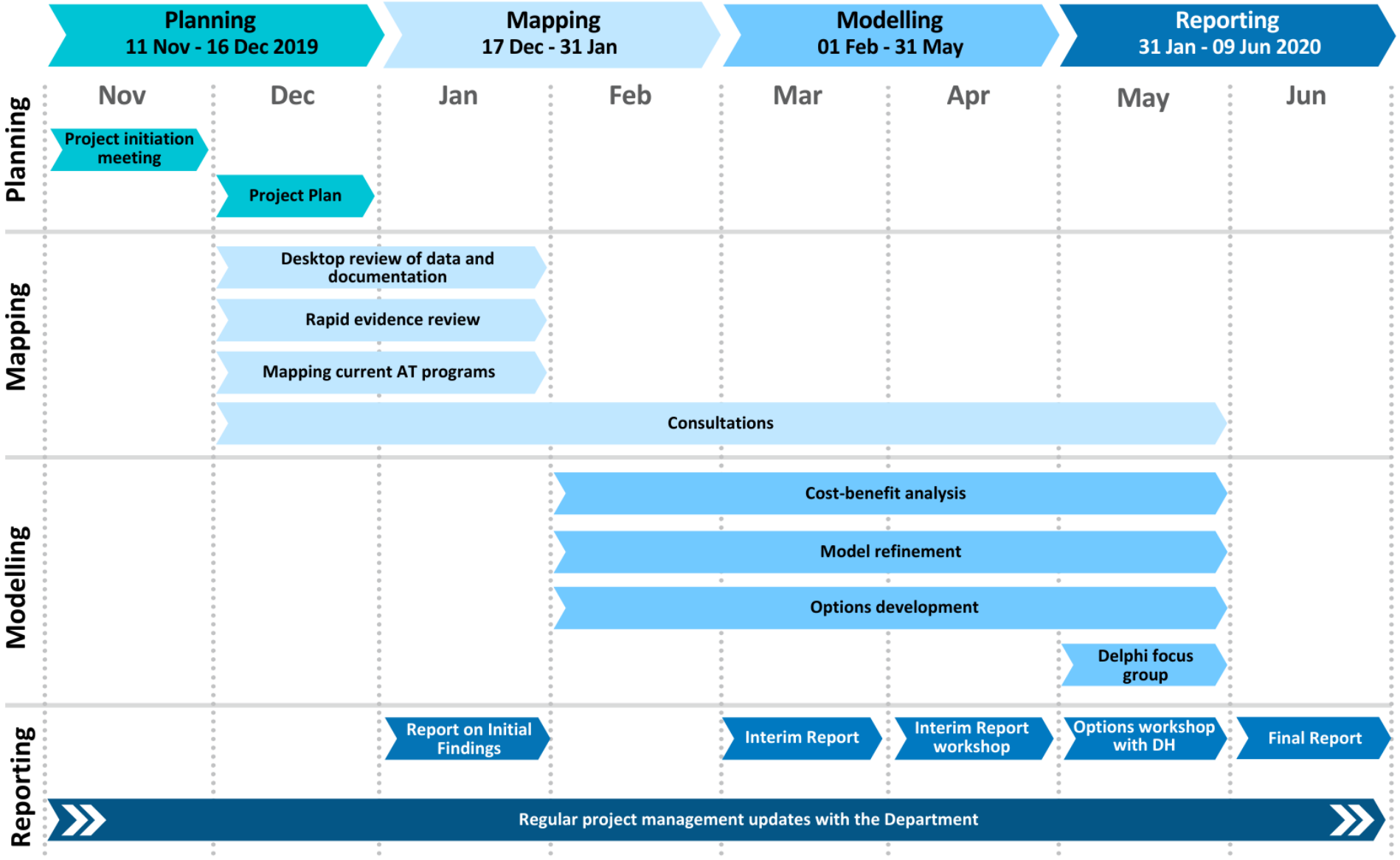
- Reviewing AT databases including the NED database
- Searching for retail AT product information and prices to be used in the cost-benefit analysis.

Figure A-1: AT Review methodology



A.4.2 Rapid Evidence Review

AHA undertook a Rapid Evidence Review (RER) to examine the available evidence on whether AT effectively improves independence, autonomy, safety and participation for the target population. More specifically, literature highlighting the economic outcomes of AT was identified.

Review search strategy

The RER was undertaken in three key parts:

1. **Initial document search based on the National Aged Care Alliance (NACA) Assistive Technology position paper.** Using the NACA paper as starting point – i.e. as a summary of evidence for economic and other benefits of AT to September 2018 – a similar search strategy was repeated for articles published between October 2018 and November 2019 to source articles published more recently. This first part allowed the inclusion of studies prior to 2010 which had already been identified in the NACA paper, as long as they met all other inclusion criteria.
2. **Three additional related searches** were also performed to find:
    a) Academic literature (using EBSCOhost database) describing evidence for economic outcomes related to AT published between January 2009 and November 2019
    b) Grey literature (using Google) describing evidence for economic outcomes related to AT
    c) Reference checking of the included studies for relevant papers. This allowed the inclusion of studies prior to 2010, as long as they met all other inclusion criteria.
3. **Cost-benefit review and matrix** – Relevant papers were also reviewed and a matrix prepared to identify and quantify the costs and benefits for use in the cost-benefit analysis.

The full methods and results of the RER are detailed in *Appendix B*.

A.4.3 Stakeholder consultations

AHA undertook two rounds of consultations:

- Initial stakeholder consultations were conducted in December 2019 and January 2020 as part of the mapping phase
- Targeted consultations with key stakeholders were conducted between March and June 2020.to follow up and confirm data and information.

Consultations were undertaken via a mix of teleconferences and face to face meetings, including site visits to each capital city. AHA engaged a broad range of stakeholders including Australian Government agencies, state and territory government representatives, peak organisations, AT providers and national international AT experts.

The purpose of the consultations was to gather qualitative and quantitative data to:

- Map existing AT programs
- Refine information on current gaps, duplication, supply and access barriers and areas of strain in relation to AT programs

- Identify emerging benefits (costs, social benefits etc) associated with entry level, in-home provision of AT
- Capture stakeholders' perspectives on ways forward to improve access to AT for the target population in Australia.

A full list of stakeholders who were consulted or invited to a consultation as part of the review is provided in *Table A-1*.

Table A-1: Stakeholders consulted for the Review

Organisation	Stakeholder type	Date of consultations	Mode of consultation
ACT Department of Health	State government	Wed 18 Dec 2019	Face to face
ADL SmartCare (UK)	AT service provider	Mon 20 April 2020	Teleconference
Australian Rehabilitation & Assistive Technology Association (ARATA)	Peak organisation	Fri 20 Dec 2019	Teleconference
Assistive Technology Australia	Peak organisation	Tue 17 Dec 2019	Face to face
(formerly ILCNSW)		Thu 16 April 2020	Teleconference
Assistive Technology Suppliers Australia	Peak organisation	Tue 17 Dec 2019	Face to face
Australian Orthotic Prosthetic Association (AOPA)	Peak organisation	Mon 13 Jan 2020	Face to face
Bolton Clarke	Peak organisation	Thu 21 Nov 2019	Face to face
Community Care Smart Assistive Technology Collaborative (CCSATC)	Peak organisation	Thu 9 Jan 2020	Face to face
Continence Foundation of Australia	Peak organisation	Mon 16 Dec 2019	Face to face
Council on the Ageing (COTA)	Peak organisation	Mon 16 Dec 2019	Face to face
Dementia Australia	Peak organisation	Thu 19 Dec 2019	Face to face
Dietitians Association of Australia	Peak organisation	Wed 18 Dec 2019	Face to face
DVA	Australian Government	Mon 17 Feb 2020	Teleconference
Hampshire County Council (UK)	AT service provider	Wed 22 April 2020	Teleconference
Home Modification Information Clearinghouse	Peak organisation	Wed 15 Jan 2020	Face to face
Indigo (formerly ILCWA)	Peak organisation	Thu 23 Jan 2020	Face to face
		Wed 15 April 2020	Teleconference
		Wed 22 April 2020	Teleconference
Leading Age Services Australia	Peak organisation	Wed 18 Dec 2019	Face to face
Meg Henderson	Expert	Wed 20 Nov 2019	Teleconference

Organisation	Stakeholder type	Date of consultations	Mode of consultation
National Assistive Technologies Alliance	Peak organisation	Fri 22 Nov 2019	Teleconference
National Disability Insurance Agency (NDIA)	Australian Government	Wed 8 Jan 2020	Face to face
NSW Ministry of Health	State government	Wed 15 Jan 2020	Face to face
NT Department of Health	State government	Fri 24 Jan 2020	Face to face
Older Person Advocacy Network (OPAN)	Peak organisation	Fri 10 Jan 2020	Face to face
Qld Department of Health	State government	Thu 16 Jan 2020	Face to face
SA Department of Health	State government	Thu 9 Jan 2020	Face to face
Tas Department of Health	State government	Thu 23 Jan 2020	Teleconference
Aus Department of Health	Australian Government	Tue 21 Jan 2020	Teleconference
Vic Department of Health and Human Services	State government	Fri 6 Dec 2019	Face to face
Vision Australia	Peak organisation	Wed 11 Dec 2019	Face to face
WA Department of Health	State government	Thu 23 Jan 2020	Face to face

A.5 Modelling phase

The modelling phase of the review was undertaken from February to May 2020, and comprised:

- Cost-benefit analysis
- Delphi focus group to supplement the RER
- Program options development and refinement.

A.5.1 Introduction

A cost-benefit analysis (CBA) is a type of economic evaluation which involves estimating the costs and benefits of an intervention over a period of time. This can also be expressed as a return on investment, In this analysis:

- Costs relate to AT Products
- Benefits relate to reduced formal and informal care, avoided falls, hospital and residential aged care admissions, and improved wellbeing.

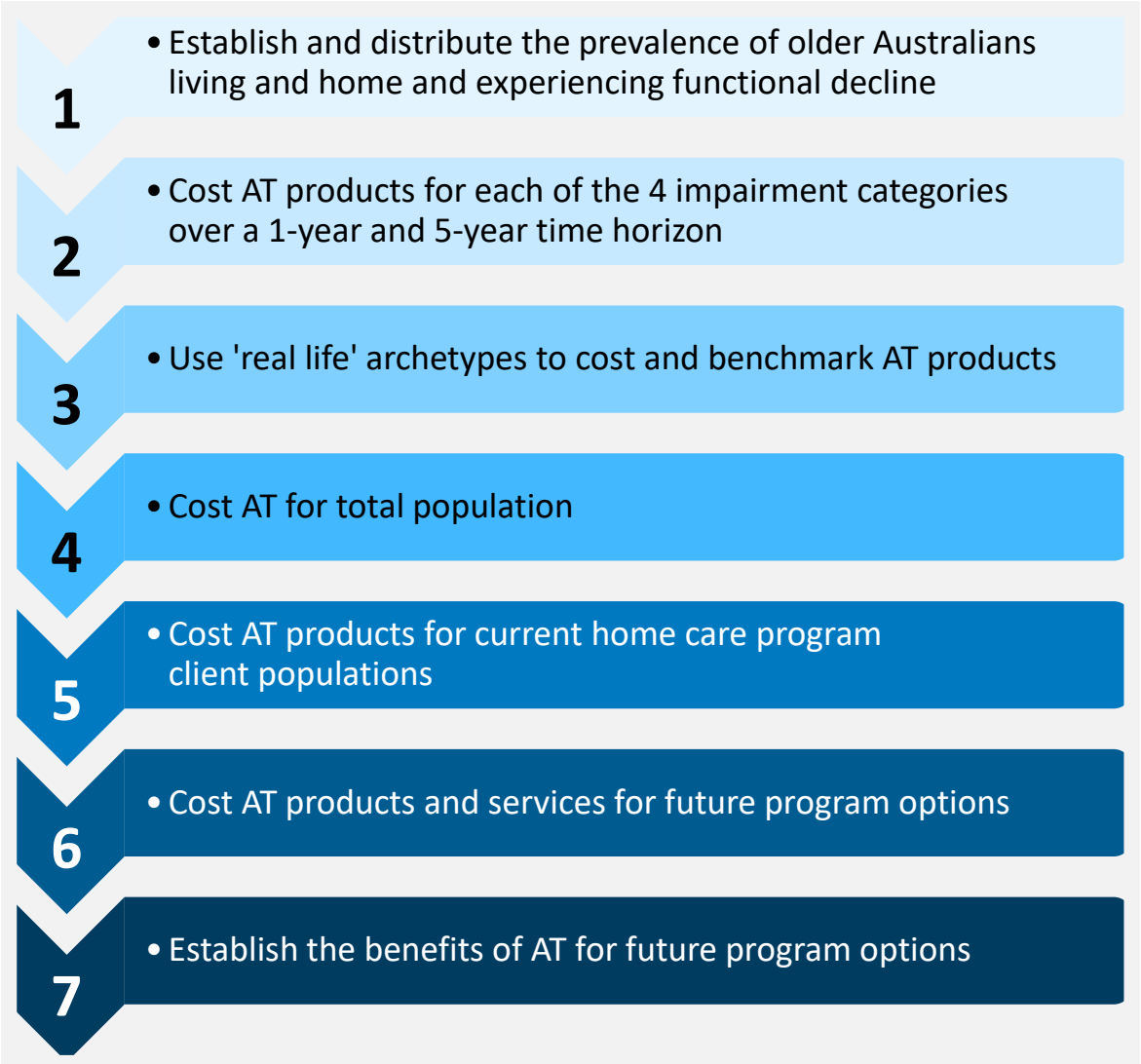
The CBA was prepared with reference to the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) checklist for the economic evaluation of health interventions (Husereau et al., 2013). It was

conducted from a limited societal perspective, over a one– and five-year time horizon, with costs presented in $AUD 2019-20.

A.5.2 Seven steps of the cost–benefit analysis

The seven key steps of this cost–benefit analysis are summarised in *Figure A-2*.

Figure A-2: Key steps of the cost–benefit analysis



The methods and results for each step are outlined in the following sections. The *Supplementary Modelling Report* provides the cost-benefit Excel model.

This review is underpinned by a number of assumptions, which are detailed in *Section 0*.

Step 1: Determine prevalence and distribution

A core component of this CBA is the concept of impairment and functional decline. Evidence suggests that as impairment progresses, there is increasing need for support, including AT, to supplement the capacity of an individual (Gore et al. 2018).

The *ABS Survey of Disability, Ageing and Carers* (ABS SDAC) classifies functional decline as mild, moderate, severe or profound based on whether a person needs help, has difficulty, or uses aids or equipment with any of the core mobility, self-care and communication activities of daily living. *Table A-2* defines these categories and maps these categories to aged care programs.

Table A-2: ABS SDAC limitation category definitions and relevance in aged care programs

Category	Definition	Program
Mild	People who need no help and have no difficulty, but use aids or equipment for core tasks or have one or more of the following limitations: • Cannot easily walk 200 metres • Cannot walk up and down stairs without a handrail • Cannot easily bend to pick up an object from the floor • Has difficulty or cannot use public transport	Not in aged care
Moderate	People who need no help but have difficulty	CHSP and HCP
Severe	People who sometimes need help and/or have difficulty	HCP TCP and STRC
Profound	People with the greatest need for help or who are unable to do an activity	HCP Residential aged care

Methods

Aged care program data on consumer impairment or functional decline were not available for this review. Instead, *ABS Survey of Disability, Ageing and Carers* (ABS SDAC) measures of impairment were used to reflect population impairment levels as indicators of AT need.

Prevalence was estimated based on two different data sources:

- **Non-Indigenous Australian population**: We used data from the *ABS Disability, Ageing and Carers Australia: Summary of Findings 2018 Survey* (Australian Bureau of Statistics 2019a) to determine the prevalence of the non-Indigenous Australian population aged 65 or older who are living at home and experiencing functional decline.

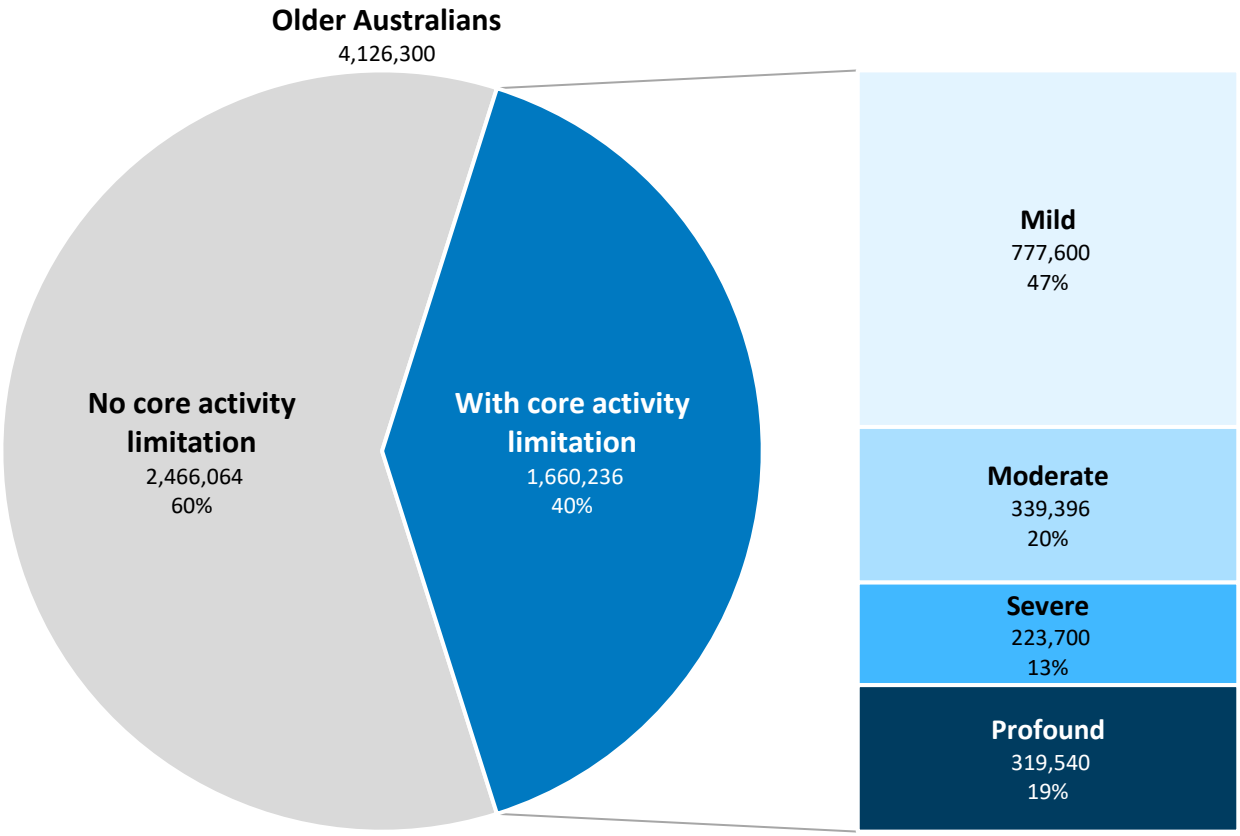
  ABS SDAC limitation categories were used to distribute this population.

- **Aboriginal and Torres Strait Islander population:** We used data from the *ABS National Aboriginal and Torres Strait Islander Health Survey 2018-19* (Australian Bureau of Statistics 2019b) and published demographic data on disability for Aboriginal and Torres Strait Islander people to determine the prevalence of the Aboriginal and Torres Strait Islander population aged 50 or older who are living at home and experiencing functional decline.

  ABS SDAC data distributes the Aboriginal and Torres Strait Islander population into two combined limitation categories: mild and moderate combined and severe and profound combined.

Figure A-3 summarises the ABS SDAC results modelled for older Australians (aged 65 years and older).

Figure A-3: Prevalence of core activity limitations among older Australians



Step 2: Cost AT products and services

Costing AT Products

Using AT Products identified in the *National Aged Care Alliance Position paper: Assistive technology for older Australians study* (National Aged Care Alliance 2018) as a starting point, AT Products were reviewed and updated to reflect AT requirements for the Australian population aged 65 or older (or 50 or older for Aboriginal and Torres Strait Islander peoples), who are living at home with functional decline.

Each AT Product was defined and costed using a current data source to establish the net present value for the current market rate. Product costs range in price. Products with mid-range prices were selected and all products were costed at a GST-exclusive rate.

For each of the AT Products, evidence from the RER and from additional published literature, combined with expert opinion, was used to:

- Determine the likelihood of using each particular AT Product across the four limitation categories. The likelihood ranged from 0% (nil or negligible requirement for this AT Product) to 100% (all people or almost all people would require this AT Product).
- Calculate a time horizon for each product had a time horizon. The time horizon represented how long the product would last before needing replacement. Where the information was available, warranty durations were used to calculate the time horizon.
- Calculate an average AT Product cost for every person in each of the four limitation categories. The cost was based on a time horizon of 1 year; for example, if an AT Product had a known time horizon of 2 years, the cost was halved to represent the cost per 1 year.
- Map each AT Product unit to the ISO 9999 (2016) 12 classes of AT. This mapping exercise allowed comparison with other data sources that also used the ISO 9999 (2018) 12 classes of AT.

In addition, expert advice was used to categorise each product as to whether the product required prescription by an allied health professional. Three categories were developed:

- Unprescribed products: low-risk products that are generally available and do not require a prescription
- Under advice products: low-risk products that are generally available but would benefit from written or professional advice to ensure that the product is used or installed correctly
- Prescribed products: products that require an assessment by an allied health professional to prescribe and adjust the product if necessary.

Costing AT kits

Seventeen AT kits were developed that group together common AT Products (*Table A-3*). The kits were developed in consultation with four expert allied health professionals who prescribe AT in their day-to-day practice and were therefore able to advise on common items prescribed for older Australians.

The kits contain one of each of the useful items for a given activity area, but not every product in that category. These kits were used to estimate costs for common groups of items used to address an activity of daily living. Each kit was costed based on the sum of individual product costs. Costing is based on product costs only; AT services are not included.

Items that are currently subsidised by other national programs, such as continence products, were not included in the kits.

Table A-3: AT kits description

AT kit	Purpose	AT Products
Bathing	Bathing	• Toe washer • Toe dryer • Long-handled sponge
Bathroom	Access to bathing and showering	• Handheld shower hose • Switchcock or adjustable hand shower on rail • Non-slip bathmat • Two handrails • Thermostatic mixer or tempering valve
Bed	Getting in and out of bed	• Bed ladder • Bed support
Car driving	Driving a car	• Hand controls • Wheelchair trailer
Car transfer	Getting into and out of a car	• Swivel mat • Transfer handle • Boot winch for manual wheelchair storage
Cleaning	Cleaning the house	• Long-handled dustpan • Long-handled duster • Lightweight power sweeper • Ergonomic mop
Communication and information	Communicating; accessing information	• Large-button and GPS-enabled mobile phone (monitoring and safety) • Magnification for newsprint • Smart AT from mainstream stores (e.g. Google Play)
Dressing	Dressing and undressing	• Sock donner • Button hook • Dressing stick • Long-handled shoehorn • Long-handled reacher
Eating and drinking	Eating and drinking	• Two-handled and/or insulated shatterproof cups • Built-up handle cutlery

AT kit	Purpose	AT Products
Home access	Entering and exiting the home; access throughout the home	• Handrails at entrances/exits • Partial room adaptations • Doorway adjustment • Ramp • Accessible doorbell • Adapted key • Step platform
Home safety	Maintaining a home free from risk and harm	• Audible smoke alarms • Rug fasteners • Lighting • Wall bumpers • Doorway lip ramps • Mix of other falls prevention measures (e.g. safety treads, colour contrast strips) • Double-hinged toilet door
Food preparation	Food preparation in the kitchen	• Powered can opener • Large-grip peeler • Buttering board • Jar opener • Kettle tipper • Tap turner • Kitchen trolley
Kitchen modification	Modifying the kitchen environment for kitchen access	• Microwave and oven stealth shelf • Under-sink clearance • Accessible cupboards
Laundry	Modifying the laundry environment for laundry access; completing laundry tasks	• Drying rack • Laundry trolley • Easy grip pegs • Side opening appliances or stealth shelf
Outdoor	Gardening and lawn care	• Lightweight mower • Long handled pruner • Wheelie bin trolley • Level access paving • Heavy duty reacher
Memory support	Products for alarming, indicating, reminding and signalling	• Automated reminder watch • GPS tracker • Large print calendar

AT kit	Purpose	AT Products
Sensory	Products that record, play and display audio and visual information	• TV/FM receivers • Lighting • Computer software • CCTV • Large print • ORCAM • Vibrating or light alarms for doorbell, phone, smoke detectors; hearing products

Costing ADL Kits

Six AT Kits were selected and modified to represent low-cost AT to support common activities of daily living (ADL) that could be provided to any consumer (*Table A-4*). These ADL Kits correspond to the most common services provided under the CHSP.

Table A-4: ADL kits description

AT kit	Purpose	AT items
Bathing	Bathing	• Toe washing • Toe drying • Long-handled sponge
Cleaning	Cleaning the house	• Long-handled dustpan • Long-handled duster • Lightweight power sweeper • Ergonomic mop
Dressing	Dressing and undressing	• Sock donner • Button hook • Dressing stick • Long-handled shoehorn • Long-handled reacher
Eating and drinking	Eating and drinking	• Two-handled and/or insulated shatterproof cups • Built-up handle cutlery
Food preparation	Food preparation in the kitchen	• Powered can opener • Large-grip peeler • Buttering board • Jar opener • Kettle tipper • Tap turner
Laundry	Modifying the laundry environment for laundry access; completing laundry tasks	• Drying rack • Laundry trolley • Easy grip pegs • Side opening appliances or stealth shelf

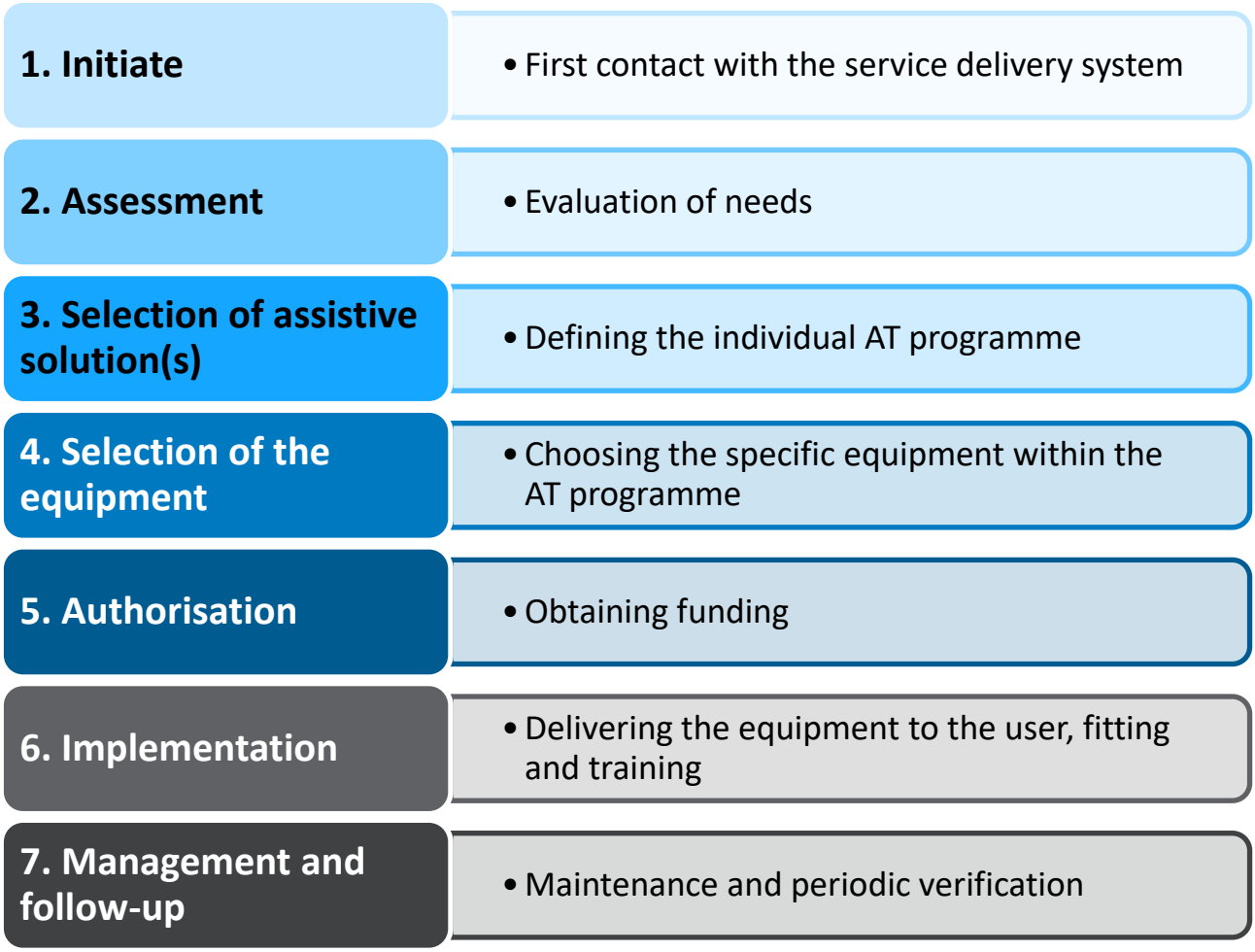
Costing AT Services

The seven steps to good clinical practice (*Figure A-4*) is used by the Australian Rehabilitation and Assistive Technology Association in its Statement of Good Practice and is also referred to by the NDIS as a cornerstone of AT services delivery for the provision of AT (ARATA, 2016).

In this review, consistent with the seven steps to good clinical practice (where relevant to their activities), new program options are proposed for consumers outside of the aged care system. Services that relate to these new program options include information, advice and a new Standard AT Screen. These services are designed to support the appropriate provision of AT and aid in minimising AT abandonment.

The program options proposed in *Final Report, Chapter 4* will boost the availability of AT. Additional CHSP allied health assessments needed to provide AT assessments have been costed in the model and use the average costs of a CHSP allied health assessment based on 2018-19 CHSP program data. A total cost of $133.38 per assessment has been used for a 90-minute assessment and 30 minutes of travel time.

Figure A-4: Seven steps to good clinical practice for the provision of AT



Step 3: Benchmarking against 'real life' archetypes

Through an interactive and iterative process, we initially developed a 15 Archetypes based on de-identified past CHSP consumers. This was undertaken to test how the AT Products costed in Step 4 (primary analysis) would compare to the likely cost AT required by 'real life' aged care consumers. As part of this process, we:

- **Reviewed recommendations from 88 audit file support plans** where consumers received either CHSP Goods and Equipment or Home Modification (HM) services
- **Mapped recommendations in support plans to existing Australian Government-funded aged care programs**. These included recommendations for:
  - Provision of AT only or HM only within CHSP
  - Provision of AT and other services (e.g. domestic assistance, personal care) within CHSP
  - Reablement within CHSP
  - HCP Levels 1–4
  - Residential Aged Care
  - Transition Care or Short-Term Restorative Care
- **Selected 15 archetypes** to represent all the Australian Government aged care programs, the four ABS SDAC limitation categories, and the major ISO 9999 AT categories.
- **Identified clinically-appropriate AT Products** using the AT products and service list for each Archetype.
- **Allocated costs for AT Products** for each Archetype. All costs are presented in $AUD 2019-20 to represent the net present value (NPV). Costs prior to 2019-20 were inflated by CPI to achieve a 2019-20 NPV (Australian Bureau of Statistics, 2020).

From these, four Archetypes were selected to represent each impairment category and these were used in the benefits analysis detailed in *Section A.5.3.*

Results

Four archetypes were used in the Delphi technique analysis. The full set of Archetypes are detailed in *Appendix D*. The results the Delphi technique are detailed in *Appendix C.3.3.*

Step 4: Cost AT Products for total population

Methods

Total costs across the four limitation categories were calculated per person, per year, and multiplied to find the cost per five years, which is the time horizon for the analysis. Where equipment alternatives were available, only one option was selected. Costs were identified for 1 year and over 5 years.

While the NDIS applied a 40% loading for remote and very remote areas, based on the *NDIS 2019-20 Price Guide* (National Disability Insurance Agency 2020), this was not applied to the current AT review.

Results

Table A-5 extrapolates the cost of AT costs for the total population of older Australians with an impairment based on the total of AT product costs. The total cost for providing AT to the identified population of 1.66 million older Australians was $971.13 million per year. This is broken down annually into:

- $66 million per year for the **mild** category
- $127 million per year for the **moderate** category
- $303 million per year for the **severe** category
- $475 million per year for the **profound** category.

Table A-5: National total cost of AT Products

ABS SDAC category	Non-Indigenous prevalence	Aboriginal and Torres Strait Islander prevalence	Total prevalence	AT Product cost per year	Total cost per year	Total cost per 5 years [1]
Mild	777,600	N/A	**777,600**	$85	$66,603,527	$357,546,433
Moderate	290,300	49,096	**339,396**	$374	$127,031,728	$687,516,141
Severe	223,700	N/A	**223,700**	$1,356	$303,294,626	$1,641,479,287
Profound	291,800	27,740	**319,540**	$1,486	$474,742,533	$2,569,382,925
Total			**1,660,236**		**$971,132,415**	**$5,255,942,786**

[1] Includes 2% CPI applied for inflation in years 2, 3, 4 and 5

Detailed working for the AT Products are presented in the Supplementary Excel file provided to the Department (worksheet labelled *Step 3 Costs*).

Step 5: Cost AT products and services for aged care program populations

Methods

Given the high total cost of funding AT (Step 4) and limited program funding resources, the review focused on modelling options that would open up access to people not in aged care and to particularly support the preventative and early intervention aspects of AT for consumers , especially to support those who may need assistance with activities of daily living.

AT costs were mapped for the following consumer groups.

- Consumers not in aged care
- CHSP consumers
- HCP consumers.
- TCP and STCR consumers

Results

Table A-6 details the number of people participating in aged care programs across the four impairment categories. The model was based on:

- 688,394 consumers outside the aged care system
- 971,842 consumers in the aged care system.

Table A-6: Consumers outside of aged care and in aged care programs

Program	Mild	Moderate	Severe	Profound	Total
Consumers outside of the aged care system	506,616	137,060	41,355	3,364	**688,394**
CHSP target cohort	270,984	200,000	90,444	250,000	**811,428**
HCP 1 & 2 target cohort	N/A	2,336	52,003	N/A	**54,339**
HCP 3 & 4 target cohort	N/A	N/A	26,411	52,689	**79100**
Transition Care Program and STRC	N/A	N/A	13,488	13,488	**26,975**
Total	**777,600**	**339,396**	**223,700**	**319,540**	**1,660,236**

A.5.3 Benefits of AT

The benefits of AT for people with disability and older people are widely acknowledged and are increasingly supported by the literature as well as consistently reported in consultations. AT has four distinct beneficiaries: consumers, carers, service providers (aged care, disability and health care) and governments. The benefits of AT for different beneficiaries can be summarised as follows:

Consumer benefits include:

- Increased independence and autonomy
- Maintenance of personal care
- Reduced personal pain or injury
- Slower functional decline
- Reduced risk and improved safety (e.g. falls prevention)
- Increased productivity
- Improvements in aspects of wellbeing including confidence, satisfaction, quality of life, social inclusion, community participation and a sense of security (Williamson et al. 2017, Layton & Irlam 2018, McDonald et al. 2013, Barnett et al. 2019).

Consumers may also benefit from AT in a residential aged care setting (Khosravi & Ghapanchi 2016), including managing:

- Chronic disease
- Dementia
- Mental health issues
- Medication.

Carer benefits include:

- Improved relationships
- Burden relief.

Service provider benefits include:

- Supporting care-planning, care management, and medication management
- Alleviating consumer frustration
- Providing more choice
- Conserving consumer energy
- Enabling more function and activity
- Increasing safety in the home for support workers.

Costing benefits

The benefits of access to, and use of, AT are well documented (Alshabeb & Abdulrahman 2019) (Clay & Alston 2016); however, they are rarely costed through a robust economic evaluation. Given that the available literature is limited in both quality and quantity, the analysis used a two-pronged approach:

- Rapid Evidence Review (see *Appendix B* for further details)
- Delphi Focus Group (see *Appendix C* for further details).

Rapid Evidence Review

A Rapid Evidence Review (RER) examined the available evidence on whether AT effectively improves independence, autonomy, safety and participation for older Australians and identified literature that highlights the economic outcomes of AT.

Methods

Due to the generally low quality of the included studies, we decided to report the 'direction' of the studies in addition to the quantified benefits of AT. Effectiveness was rated as Better/Same/Poorer than the control intervention. Cost was rated as Higher/Same (or insufficient reporting)/Lower than the control intervention. The findings were summarised to determine if the included studies supported rejecting or accepting the AT interventions.

Results

Figure A- summarises the results of the RER search. This indicates that:

- Of the initial 2,923 unique papers identified, 162 papers had a full text review.
- 39 of these papers were identified and reviewed, with 25 papers excluded. Papers were excluded for multiple reasons (see *Table B-6*): but most commonly because the paper was not specific to AT or the paper reported the prevalence of AT but not the cost.
- An additional six papers were identified through the *National Aged Care Alliance Position paper: Assistive technology for older Australians study* (National Aged Care Alliance 2018) RER and reference lists and were subsequently included
- This resulted in a final yield of 20 papers.

The RER resulted in a final yield of 20 papers. Overall, there was significant variation in quality among the included studies. Notably, the level of evidence and the quality of the included studies was generally low, and the risk of bias for the included studies was generally high. This compromises the robustness and generalisability of the findings from the rapid evidence review.

Each of the 20 papers was reviewed to quantify the benefits of AT, yielding the following annual cost savings of $36,950:

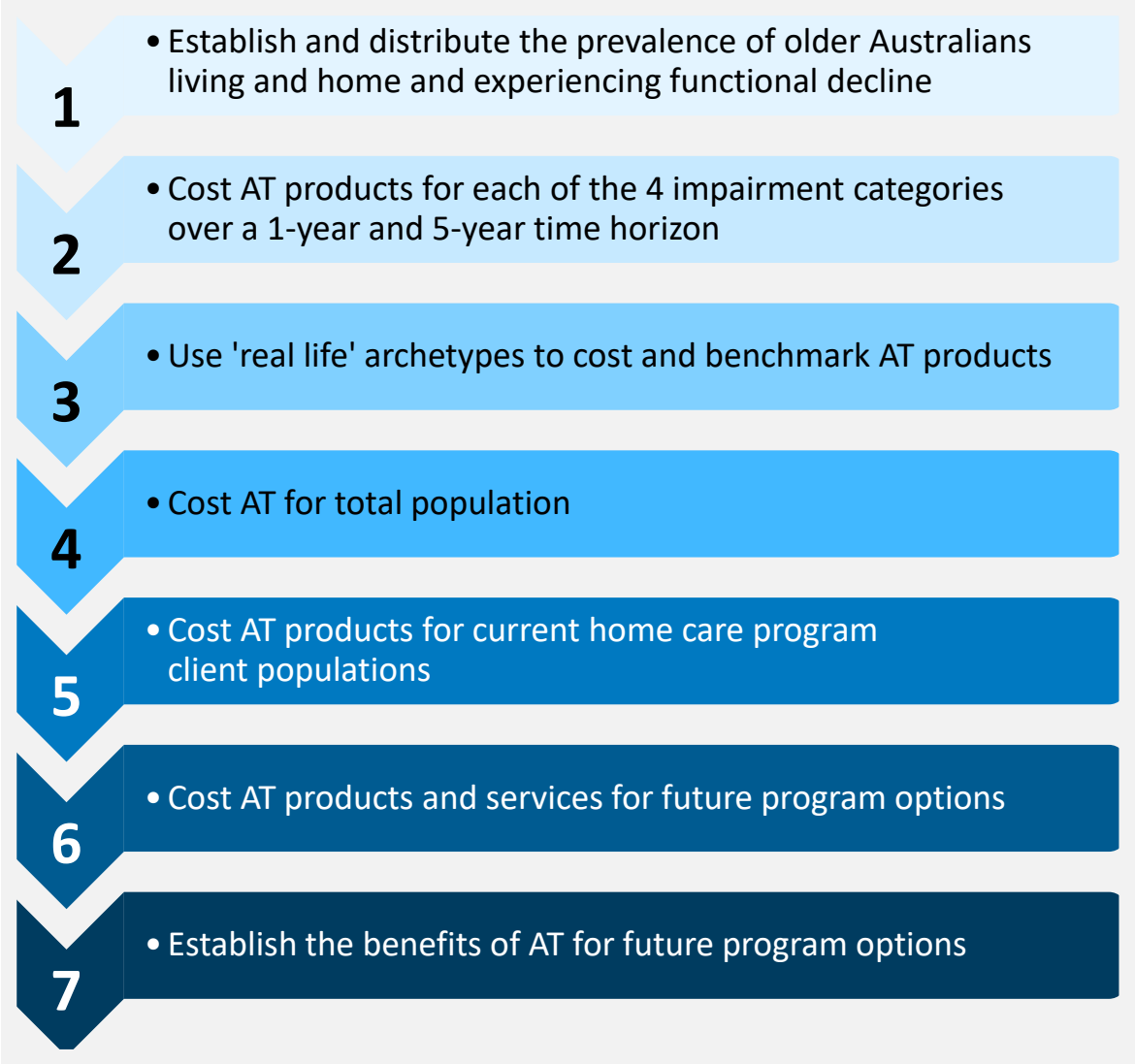
- **Cost savings for community services: $6,997.41.** This included formal paid care and informal unpaid care.

- **Cost savings for health and aged care: $29,952.59.** This included acute and subacute hospital admissions, as well as residential aged care admissions.
- **Social and wellbeing benefits: Undefined cost benefit.** This included improved wellbeing for the consumer and for their carer, greater participation in activities and reduced risks including falls.

The studies were then categorised for effectiveness and cost for each of the key outcomes reported, using the matrix described above. This showed that the studies consistently supported accepting AT.

Overall, 80% (n=16) of the selected studies demonstrated that AT was more effective than the comparison group who did not receive AT: 35% demonstrated a cost savings with 60% reporting either no cost difference or providing insufficient cost data. While it was determined that these were insufficient to represent robust cost savings to calculate benefits, these studies did indicate support for the positive direction for AT cost and effectiveness outcomes.

Figure A-5: RER search results



Delphi technique

Methods

The second approach to costing benefits used the Delphi technique to develop a consensus statement on the economic benefits of assistive technology. The Delphi technique is used to examine complex probleMs through an iterative process guided by expert opinions (Strasser 2017). This section presents a summary of the Delphi technique methods and results.

The Delphi technique used in this review included a three-stage iterative process which was conducted over three consecutive days (5 to 7 May 2020):

- Iteration 1 began with an anonymous **pre-survey** to gather individual opinions without any influences
- Iteration 2 involved a two-hour online **focus group**[1], which began with a presentation of the RER and pre-survey results, followed by a group discussion to elicit individual and group opinions and gain consensus.
- Iteration 3 consisted of a **post-survey**, which began with a presentation of the focus group results, to gather individual opinions which may now have been influenced by the previous two iterations.

The survey questions were designed to draw out the qualitative and quantitative benefits of AT for older Australians. This was in recognition that not all benefits could be quantified by a dollar value. In the surveys:

- Section 1 included demographic information about the participants. Participants were also asked "When you think of AT, what images come to mind? What benefits come to mind?".
- In Section 2, panellists were asked to rate the potential benefits of using AT in the home and in the community using a 7-point Likert scale.
- Section 3 presented four archetypes selected to represent a person with mild, moderate, severe and profound activity limitations, respectively (see *Appendix D*). Each archetype included a summary of the person's social, medical and functional history and the AT products and services recommended.

Results

Section 1: Initial perceptions

Panellists' perceptions of the benefits of AT focussed on independence, quality of life, autonomy, staying at home, confidence, and reducing hospital admissions and formal support.

Section 2: General benefits of AT

Of the 72 combinations for the pre-survey, a significant correlation ($p<0.05$) was reported for 10 combinations; of these, six combinations showed a moderate consensus and four showed a strong consensus. Of the 72 potential combinations for the post-survey, a significant correlation ($p<0.05$) was

[1] Due to the national COVID-19 restrictions in place at the time, the focus group was held via an on-line platform (https://zoom.us/).

reported for 28 combinations; of these, 20 combinations showed a moderate consensus and eight showed a strong consensus. *Table A 8* indicates the change in consensus from the pre-survey to the post survey. These results demonstrate an almost three-fold increase in the number of moderate consensus and a two-fold increase in the number of strong consensus reported. This finding provides strength in cost estimate of the AT benefits.

Table A-7: Delphi consensus

Survey	Moderate consensus	Strong consensus
Pre-survey	6	4
Post-survey	20	8
Difference	**+12**	**+4**

Section 3: Benefits of AT for the archetypes

Of the 72 potential combinations for the pre-survey, a significant correlation ($p<0.05$) was reported for 28 combinations; of these, 26 showed a moderate consensus and two showed a strong consensus. Of the 72 potential combinations for the post-survey, a significant correlation ($p<0.05$) was reported for 34 combinations, with all 34 showing a moderate consensus. These results demonstrate a small increase in the quantity of significant correlations.

Analysis of the quantified economic benefits for the archetypes was based on the post-survey results, which represent the point of greatest consensus between the panellists.

Table A-8 summarises the results from the Delphi process for each archetype representing an impairment category. This indicated that there was a combined benefit of:

- **$17 for mild impairment**

  Benefits for a mild impairment were attributed to reduced GP visits (100%). Future cost offsets were noted by panellists but these were not costed due to the significant degree of variation in panellists' views on the following:

  - Delays in the need to increase unpaid formal care, paid carer support and paid formal care, estimated between 2 and 12 years.
  - Delays in the need for residential aged care admission (not in the foreseeable future).

- **$2,835 for moderate impairment**

  Benefits for a moderate impairment were attributed to reduced hospitalisation (98.9%), reduced falls (20.3%), and reduced GP visits (0.7%), however there was an increase in paid formal care despite the provision of AT (20.0%). Future cost offsets were noted by panellists but these were not costed due to the significant degree of variation in panellists' views on the following:

  - Delays in the need to increase unpaid formal care, paid carer support and paid formal care – estimated between **1 and 10 years.**
  - Delays in the need for residential aged care admission – estimated between **6 months and 10 years**

- **$3,345 for severe impairment**

  Benefits for a severe impairment were attributed to reduced hospitalisations (100.6%), reduced unpaid informal care (6.7%), and reduced GP visits (1.1%), however there was an increase in paid

formal care despite the provision of AT (8.5%). Delays in the need to increase unpaid formal care, paid carer support and paid formal care – estimated between 1 and 10 years.

- **$13,555 for profound impairments**

  Benefits for a profound impairment were attributed to reduced hospitalisations (70.3%), reduced unpaid informal care (13.3%), reduced GP visits (1.6%), reduced paid carer support (10.8%), reduced paid formal care (2.1%) and reduced days in a Residential aged care (0.3%).

For every dollar spent on AT products and kits, as well as AT services, the quantified benefits were almost 6-fold (*Table A-8*), although these do vary according to the level of impairment, with the most benefits procured for the archetype with moderate impairment.

Quantifying the cost-benefit is difficult due to reliance on an RER with a low yield and generally low-quality included papers, as well as the subjective nature of the Delphi technique. However, due to the high level of consistency between the two diverse processes, we are confident that the provision of AT results in a strong cost-benefit to our society. A return on investment for every $1 spent on combined AT products, kits and services is detailed in *Table A-8*.

Table A-8: Cost-benefit based on the combined cost of AT products, kits and AT services

Archetype	Cost of AT Products and ADL Kits	Cost of AT Services	Combined AT costs	Benefit of AT	Return on investment
Mild impairment	$287	$144	**$431**	$17	**$0.04**
Moderate impairment	$40	$20	**$60**	$2,835	**$47.25**
Severe impairment	$773	$387	**$1,160**	$3,345	**$2.88**
Profound impairment	$1,174	$587	**$1,761**	$13,555	**$7.70**
TOTAL	**$2,274**	**$1,137**	**$3,411**	**$19,725**	**$5.79**

Conclusion

Both the RER and the Delphi technique were consistent with the depth and breadth of economic benefits identified, as well as the direction of the benefits. Specifically, both reported that in the context of the AT costs, the AT benefits indicated that we should accept AT as an intervention for older Australians.

The Delphi technique produced more conservative cost estimates of the benefits than the RER, and has therefore been used as the benchmark for this explorative cost–benefit analysis. We have assumed that the four Archetypes are moderately representative of the mild, moderate, severe and profound limitation categories. We recognise that a delay in the need to increase unpaid formal care, paid carer support and paid formal care and a delay in the need for residential aged care admission represent real cost savings; however these were out-of-scope for this analysis due to the high variability in the panellists data. This indicates that the following analysis is most likely to be an underrepresentation of the true cost–benefit of AT.

Quantifying the cost-benefit is difficult due to reliance on an RER with a low yield and generally low-quality included papers, as well as the subjective nature of the Delphi technique. However, due to the high level of consistency between the two diverse processes, we are confident that the provision of AT results in a strong cost-benefit to our society.

A.5.4 Future program options

The Delphi technique was used in determining the costs and benefits of future program options. *Table A-10* details the Product options used in the AT Review Final Report (Section 4).

Table A-9: Product options – consumer numbers and annual cost

Option	Option description	No. of consumers	Annual cost
1	Consumers outside of aged care 3% of all consumers outside aged care will use the Hotline. Of these 3% of consumers using the Hotline, it is expected that 80% will be eligible for an ADL AT kit following a screening assessment. This includes 1 of 6 kits which could be provided at an average cost of $121.47 per kit	16,521	**$2,006,779**
2	One ADL kit per person for all new CHSP reablement consumers (20% of new CHSP consumers)	32,457	**$3,942,418**
3	One ADL kit per person for all new CHSP reablement consumers (20% of CHSP consumers) plus 5% of existing consumers who undergo a reassessment who could be reabled	64,914	**$7,884,819**
4	One ADL kit per person for all new CHSP consumers plus all reassessed consumers	194,780	**$23,658,964**
5	One ADL kit for all new HCP Level 1 and 2 consumers	43,852	**$5,326,431**
6	CHSP equity for AT spend in state and territory funding based on current average national spend of $341 per person per year with a nominal $500 cap indicating 68% of cap is spent on average (See Step 7 AT costing details)	60,301	**$20,562,641**
7	CHSP equity for HM spend in state and territory funding based on current average national spend of $726 per person per year (See Step 7 AT costing details)	64,354	**$46,721,004**
8	CHSP equity for AT spend in state and territory funding based on projected national spend of $1,020 per person per year to indicate 68% average spend of a $1,500 cap (See Step 7 AT costing details). This expands the current AT product list to include all AT noted in this report	60,301	**$61,507,020**
9	Broader CHSP AT list made available to all new consumers based on projected AT product prevalence	162,286	**$54,533,714**

A.5.5 Assumptions and limitations

As there are several assumptions and limitations that underpin this economic evaluation, care needs to be taken with the interpretation and generalisability of the results.

Table A-10 details the key estimates – assumptions and limitations. *Table A-10* details the general assumptions.

Table A-10: Key estimates assumptions

Assumption	Step(s) impacted
The *ABS Disability, Ageing and Carers (ABS SDAC), Australia: Summary of Findings 2018 Survey* has been used as the benchmark for the classification of functional impairment (Mild, Moderate, Severe or Profound).	Step 1: Prevalence and Distribution
Where Aboriginal and Torres Strait Islander population data that met our inclusion criteria was not readily available or had missing values, we used modelling based on established techniques for calculating prevalence for Aboriginal and Torres Strait Islander peoples .	Step 1: Prevalence and Distribution
ABS data for Aboriginal and Torres Strait Islander people combined Mild/Moderate and Severe/Profound, and used the term "core activity limitation" which could be interpreted as "severity". Data for the Mild/Moderate groups were placed into the Moderate group, and data for the Severe/Profound groups were placed into the Profound group. This represents the highest possible AT Products and services requirements for the Aboriginal and Torres Strait Islander population aged 50+ years	Step 1: Prevalence and Distribution
ISO 9999 categories of AT guided development of the list of AT Products.	Step 2: AT Products
AT Kits are a group of products commonly used in combination to address functional limitations in an activity of daily living.	Step 2: AT Products
AT Services are an essential component due to the attrition rate for products implemented without wrap-around services. For services inside the aged care system it is assumed that consumers will continue to receive current services and that there would be no change in duration or cost of assessment services.	Step 4: AT Services
All costs are presented in $AUD 2019-20 to represent the net present value (NPV). Costs prior to 2019-20 were inflated by CPI to achieve a 2019-20 NPV (Australian Bureau of Statistics, 2020).	All steps

Table A-11: Key estimates limitations

Limitations	Step(s) impacted
When defining rurality, ABS data for the general population of people over 65 is exclusive of very remote or migratory people. While rurality was documented, it was not given a loading in this review.	Step 1: Prevalence and Distribution
Data for Aboriginal and Torres Strait Islander people aged 50+ required multiple data sources to create a single figure for each of the Mild, Moderate, Severe and Profound categories	Step 1: Prevalence and Distribution

Table A-12: General assumptions

Assumption type	Assumption
Base year of appraisal	2019-20
Evaluation period	Annualised costs within a projected five-year time horizon
Currency	All costs to be valued at $AUD 2019-20
Discount/inflation rate	Inflation rate (CPI) as per the ABS website (accessed 28 February 2020: https://www.abs.gov.au/ausstats/abs@.nsf/mf/6401.0, based on the June to June CPI rate from the base year). In addition, for non-Australian currencies, XE website was used to define the conversion (accessed 28 February 2020: (XE 2020)

Table A-13: Cost assumptions

Assumption type	Assumption
AT Product costs	Per unit per year: Cost per year presented is based on the time horizon for each AT Product. Retail costs (NDIA/suppliers) with data sources for the AT costs are presented
Archetype costs	Per unit (modelled from published peer-reviewed literature and retail costs)
Assessment costs	Cost per year. This has been detailed as cost per hour, the annual number of hours and an annualised cost
AT Service costs	Cost per year. This will be detailed as cost per hour, the annual number of hours and an annualised cost
AT abandonment	While there is a known degree of AT abandonment reported in the literature it Is assumed that with the wrap-around AT Services this will be minimised
Program design and implementation costs?	Project and implementation costs are out of scope for this project. It is assumed that the costs within this project reflect business as usual
Program operation costs?	Program operation costs are out of scope for this project
Program compliance?	Akin to AT abandonment: that is, while there is a known degree of AT abandonment reported in the literature it Is assumed that with the wrap-around AT Services this will be minimised
Cost savings for community services (Formal care, informal care)	Cost savings per year for community services
Cost savings for health and aged care (GP visits, acute and sub-acute hospital admissions, residential aged care facility admissions)	Cost savings per year for health and aged care
Social and wellbeing (Wellbeing; participation; carer health; and OH&S, including falls)	Cost savings per year

Table A-14: Benefit assumptions

Assumption type	Assumption
Remain independent at home	Improved quality of life Improved wellbeing Improved independence, mobility and physical function Increased opportunities to continue to live at home Improve safety or sense of safety Reduced falls
Delay or avoid high-level care	Avoided CHSP costs Avoided Home Care Package costs Avoided residential aged care costs Avoided hospital admissions
Reduced carer burden	Avoided carer burden
Reduction in costs	Reduction in aggregated homecare costs (CHSP, HCP, Residential Aged Care) Reduction in health care costs Savings through prevention of waste
Stay socially active and connected with community	Increased active and healthy lifestyle Social outcomes Overall health and community life outcomes

A.6 Reporting phase

AHA met weekly or fortnightly (as required) with the Department via teleconference over the duration of the review, to provide updates on emerging findings, to seek clarification, to test options, and to refine the review methodology. The reporting phase comprised a number of milestones and deliverables, including the Initial Report, Interim Report and subsequent workshop with the Department, an AT program model options workshop and this Final Report.

A.6.1 Initial Report

AHA presented the Initial Report to the Department in January 2020. The Initial Report detailed:

- AT Program mapping including national and state programs
- Access to assistive technology – including:
  - Information and advice
  - Referral and assessment
  - AT provision
  - Supply and demand
- Preliminary work around future models.

A.6.2 Interim Report

The Interim Report was presented to the Department in March 2020, and provided:

- Cost-benefit analysis methods and results
- Future program options and next steps
- Rapid Evidence Review results
- Review assumptions and limitations
- Real life Archetype descriptions
- Key evaluation questions and outputs.

Accompanying the Interim Report was the Supplementary Cost-Benefit Model Report, provided to the Department as an Excel document.

Interim Report Workshop

AHA presented the Interim Report cost benefit analysis findings and initial program options to the Department at a workshop, which provided an opportunity to discuss the key findings and next steps.

A.6.3 AT program model options workshop

The program model options workshop was an opportunity for AHA and the Department to discuss and refine program options following further modelling.

A.6.4 Final Report

This document (Final Report and Supplementary Technical Report) is the third and Final Report prepared by AHA for the Review of AT Programs in Australia.

Appendix B Rapid Evidence Review

B.1 Introduction

AHA undertook a Rapid Evidence Review (RER) to examine the available evidence on whether AT effectively improves independence, autonomy, safety and participation for the target population through the identification of literature highlighting the economic outcomes of AT.

The RER is summarised as follows:

- Methods (*Section B.2*) comprising:
    1. PICO search strategy
    2. Document search
    3. Quality and risk assessment
    4. RER matrix
- Results (*Section 0*) comprising:
    1. Identifying relevant papers
    2. Quality and risk assessment results
    3. Permutated and hierarchical matrix of the included RER studies
    4. Quantified benefits for the rapid evidence review
    5. RER summaries.

B.2 Methods

B.2.1 PICO search strategy

A Population Intervention Comparison Outcome (PICO) approach was used to determine the inclusion and exclusion criteria (*Table B-1*). All cost outcomes were annualised and reported in $AUD 2019-20.

Table B-1: PICO search strategy 2010-2020

Criteria	Inclusion criteria	Terms	Exclusion criteria
Population	People aged 65 and older (50 and older for Aboriginal and Torres Strait Islander peoples) and who are living at home with disability	N/A	A study population that cannot be applied to older people (e.g. pregnant women, children).
Intervention	Any type of AT +/- soft technology to support it.	• Equipment • Device • Technology • Assistive technology • Assistive device	AT that cannot be applied to older people (e.g. AT during pregnancy or specific to children)
Comparator	Unlimited (or there may be no comparator).		
Outcome measures	All outcomes with an attributed economic value, with the exception of outcomes relating to 'wellbeing' were included. This was based on the assumption that there would be a limited number of studies in this area that reported direct costs. Outcomes with a broader perspective were also included, for example: • Direct cost offsets (formal and informal care) • Downstream costs (GP visits, acute and sub-acute hospital admissions, residential aged care facility admissions) • Social costs (wellbeing, participation, carer health and OH&S including falls).	• Cost • Economic • Economy • Financial • Cost-analysis • Cost-saving • Cost-minimization/ cost-minimisation • Cost-effectiveness • Cost-utility • Modelling/modelling • Cost–benefit • Policy • Resource • Utilisation/utilization • Allocation • Dollar cost	Not relating to cost, resource utilisation/ allocation or value
Publication	Journal publications as well as grey literature, such as unpublished dissertations, theses, books, or conference proceedings	N/A	Non-English publications. Clinical trial protocols.

The RER included interventions based primarily on:

- Modelled economic data
- Hypothetical Archetypes (also known as notational patients/consumers).

However, the cost outcomes did not contribute to the Schedule of Benefits due to the risk of inappropriate interpretation and extrapolation when attributing specific data which were not designed for this particular cohort.

B.2.2 Document search

RER was undertaken in two key parts:

1. Using the National Aged Care Alliance (NACA) Assistive Technology position paper as starting point – i.e., as a summary of evidence for economic and other benefits of AT to September 2018 – a similar search strategy was repeated for articles published between October 2018 and November 2019 to source articles published more recently. This first part allowed the inclusion of studies prior to 2010 which had already been identified in the NACA paper, as long as they met all other inclusion criteria.
2. Three additional related searches were also performed to find:
    a) Academic literature (using EBSCOhost database) describing evidence for economic outcomes related to AT published between January 2009 and November 2019.
    b) Grey literature (using Google) describing evidence for economic outcomes related to AT.
    c) Reference checking of the included studies for relevant papers. This allowed the inclusion of studies prior to 2010, as long as they met all other inclusion criteria.

The details of Search 1 are provided in *Table B-2*. The results of the search were summarised and are available on request.

Table B-2: Details of NACA search re-run

Detail	Search
Search terms	(equipment OR technology) AND (age OR disability) AND (economic OR cost)
EBSCOhost databases	CINAHL, Abstracts in Social Gerontology, Healthsource, Psychology and Behavioural Sciences Collection, SocIndex, EconLit
Limit results	Publication dates October 2018 to November 2019

The search terms and other settings used to identify relevant academic literature through the EBSCOhost database (Search 2a) are shown in *Table B-3*.

Table B-3: EBSCO search specifics

Criteria	Search
Search terms	AT search terms[2] AND Age/disability search terms[3] AND Economic outcomes search terms[4]
Databases	CINAHL Plus, Abstracts in Social Gerontology, Healthsource, Psychology and Behavioural Sciences Collection, SocIndex, ECONLit
In	Abstracts
Search options	Boolean/Phrase Apply equivalent subjects expander
Limit results	Publication dates January 2009 to November 2019
Special limiters for CINAHL Plus	Abstract available English Language Human All adult age group
Special limiters for SocINDEX	English
Exclusion criteria (manual)	Non-English language, AT not relevant to older people (i.e. pregnancy, paediatrics), health management devices (e.g. diabetes products), trial protocols, implants, opinion piece, narrative review (although could be screened for primary data sources)

Titles and abstracts were reviewed to ascertain eligibility and potential relevance. Full text articles of included citations were sourced, reviewed and summarised by AHA.

The **Google Search** for grey literature (Search 2b) used terms similar to those used in the EBSCOhost searches:

> equipment OR device OR technology OR "assistive technology" OR "assistive device" OR "assistive product" OR "aids and equipment" OR "independent living products" AND aged OR older OR disability AND benefits OR outcomes OR cost OR economic OR policy OR financial OR modelling OR resource OR utilisation OR utilization.

Results from the first 25 pages of Google search results were reviewed for potential relevance. Additional references provided or recommended by stakeholders were also analysed with articles sourced through Search 2.

[2] Equipment OR device OR technology OR assistive technology OR assistive device OR assistive product OR (aids and equipment) OR independent living products OR medical devices OR medical appliances NOT surgery and medical devices.

[3] Age OR impairment OR older persons OR elders OR disability.

[4] Cost OR cost-effectiveness OR cost-analysis OR cost-saving OR cost-minimisation OR cost-minimization OR cost-utility OR cost-benefit OR economic OR economy OR financial OR modelling OR modelling OR policy OR resource OR utilisation OR utilization OR allocation OR dollar cost.

B.2.3 Quality and risk assessment

Each of the included papers was assessed for risk of bias and quality of reporting using the CHEERS Checklist. This provided information on the strength of the evidence and informed how this evidence was weighted in the economic modelling. Risk of bias and quality of reporting were assessed separately.

Risk of bias (ROB)

We used the Cochrane Collaboration's tool to assess the risk of bias. Individual studies were assessed against the six items of the checklist and given a score of low risk (1/1), high risk (0/1), or not relevant to this type of study (not scored). The risk of bias for each study was calculated by dividing the total score by the total number of items that were scored, with higher scores indicating lower risk. Results did not influence inclusion in the final group of studies but did influence the use of evidence associated with each study.

Quality of reporting

We used the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) checklist to determine the quality of reporting from an economic perspective . Individual studies were assessed against the 24 items of the checklist with a judgement of present (1/1), not present (0/1), or not relevant to this type of study (not scored). The risk of bias for each study was calculated by dividing the total score by the total number of items that were scored, with higher scores indicating lower risk.

General assumptions

The National Aged Care Alliance RER findings including the following assumptions, which have also been assumed for this rapid evidence review:

- AT can help achieve significant outcomes in participation and improved life satisfaction; however, these are difficult to measure and value
- Timely use of soft technology is critical to achieving outcomes
- Funding must cover the cost of the AT Services as well as the AT Products.

B.2.4 RER matrix

Due to prior knowledge of the quality and quantity of included papers in the NACA paper, it was decided that in addition to reporting the quantified benefits of the rapid evidence review, we should also report the 'direction' of the studies included in the RER through a permutated and hierarchical matrix. The process for developing a matrix of the included studies is to examine each study for effectiveness and cost.

Effectiveness for AT intervention is rated as Better/Same/Poorer than the control intervention. Cost for the AT intervention is rated as Higher/Same (or insufficient reporting)/Lower than the control intervention. These ratings were entered into a permutation matrix .

Almost all of the selected studies (80%) show that AT was more effective than the comparison group who did not receive AT, while also being cost-effective or cost neutral *Table B-4.*

Table B-4: Selected RER papers – Decisions

AT cost compared to comparison group	Number of trials/ points of evidence	Effectiveness compared to the comparison group	Decision
Higher	0	Poorer	Rejected the Assistive Technology intervention
Same (or insufficient detail provided)	0	Poorer	Rejected the Assistive Technology intervention
Higher	0	Same	Rejected the Assistive Technology intervention
Lower	0	Poorer	Incremental analysis required
Same (or insufficient detail provided)	1	Same	Neutral Study neither accepted nor rejected the AT intervention
Higher	1	Better	Incremental analysis required [1]
Lower	3	Same	Supported accept Assistive Technology intervention
Same (or insufficient detail provided)	11	Better	Supported accept Assistive Technology intervention
Lower	4	Better	Supported accept Assistive Technology intervention

B.3 Results

B.3.1 Identifying relevant papers

The initial EBSCOhost search identified 3,233 papers. Once duplicates were removed, details of 2,923 papers were exported into an Excel database. These papers were screened via title and abstract for the inclusion and exclusion criteria, which narrowed the yield to 162 papers for a full text review. Thirty-nine of these papers were identified as possibly relevant and included in the initial full text yield (*Table B-5*).

Table B-5: Search strategy screening to inform economic modelling

Search strategy	Citations screened	Possibly relevant
NACA re-run	14	0
EBSCO yield papers	118 (of 680 originally identified)	27
Google search	7	0
Other academic articles received by stakeholders	23	12
Total	**162**	**39**

The initial full text yield was reviewed. Of the 39 full-text papers, 25 were excluded. Papers were excluded for multiple reasons (*Table B-6*); most commonly because the paper that was not specific to AT (n=7) or the paper reported the prevalence of AT but not the cost (n=5). An additional six papers were identified through the NACA RER and reference lists and were subsequently included. This resulted in a final yield of 20 papers.

Table B-6: Reasons for excluding full text papers

Reason for exclusion	Number
Not specific to AT	8
Prevalence	6
Descriptive	4
Cost of AT Products only	3
No outcomes of interest	3
Policy paper	1
Protocol	1
Total	**25**

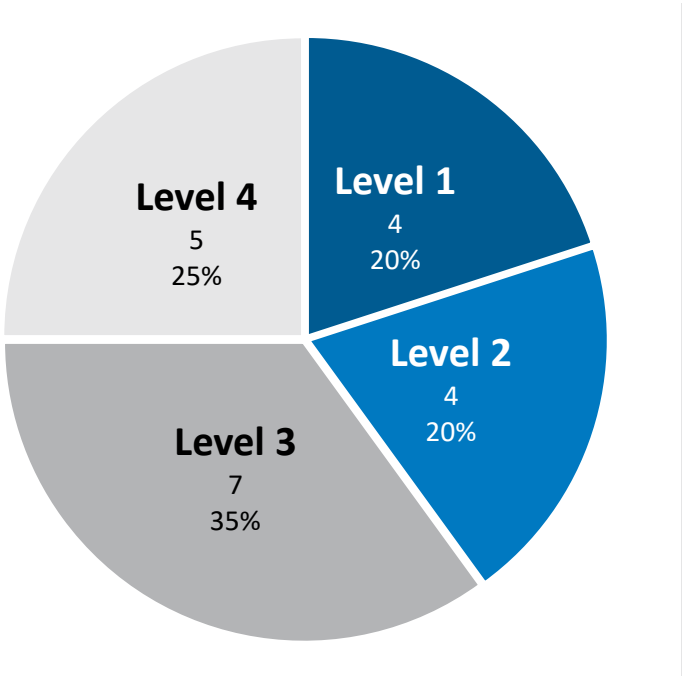
B.3.2 Quality and risk assessment results

The 20 included papers were examined to determine a ROB and CHEERS score for each. Further details of these assessments for each of the included studies can be provided upon request.

Levels of evidence for the included studies

The 20 included papers represented a number of different study types and therefore different levels of evidence, from systematic reviews (level 1) though to case studies (level 4). Lower-quality evidence (levels 3 and 4) dominated the yield (*Figure B-1*).

Figure B-1: Studies included in RER by level of evidence



Risk of bias for the included studies

Risk of bias assessments yielded results ranging from only one of five relevant criteria being judged as low risk of bias through to six of six.

CHEERS checklist for quality for the included studies

Assessment against the CHEERS checklist yielded results from 9 out of 23 to 23 out of 24 items present.

Limitations

Caution must be taken when interpreting the Schedule of Benefits of AT (*Table B-8*). We took a conservative approach to determining what was included in the schedule, only including studies where we were reasonably confident that the results are generalisable to Australian people aged 65 and older (50 and older for Aboriginal and Torres Strait Islander peoples) who are living at home with limitations or disability (ranging from Mild to Profound). However, studies were inconsistent in reporting (or did not report) the level of limitation or disability faced by the included population, and may therefore not be generalisable to this cohort.

Overall, these findings highlight the significant variation in data and reporting quality among the identified studies. Summary scores for each assessment are included in *Table A-8.* It is noted that the levels of evidence and the quality of the included studies was generally low, and the risk of bias for the included studies was generally high. This compromises the robustness and generalisability of the findings from the rapid evidence review.

B.3.3 Permutated and hierarchical matrix of the included RER studies

The included studies were examined for effectiveness and cost, for each of the key outcomes reported. As some studies reported more than one key outcome, there are more than 20 results presented in the hierarchical matrix. In summary, there was a consistent finding to accept AT due to the benefits, and that that is either cost effective or cost neutral (*Table B-7*). Following the completion of the permutated and hierarchical matrix, a word cloud was produced for the various benefits of AT that were captured in the RER to provide an image of the depth and breadth of benefits identified (*Figure B-2*).

Figure B-2: Word cloud to illustrate the various benefits of AT that were captured in the RER

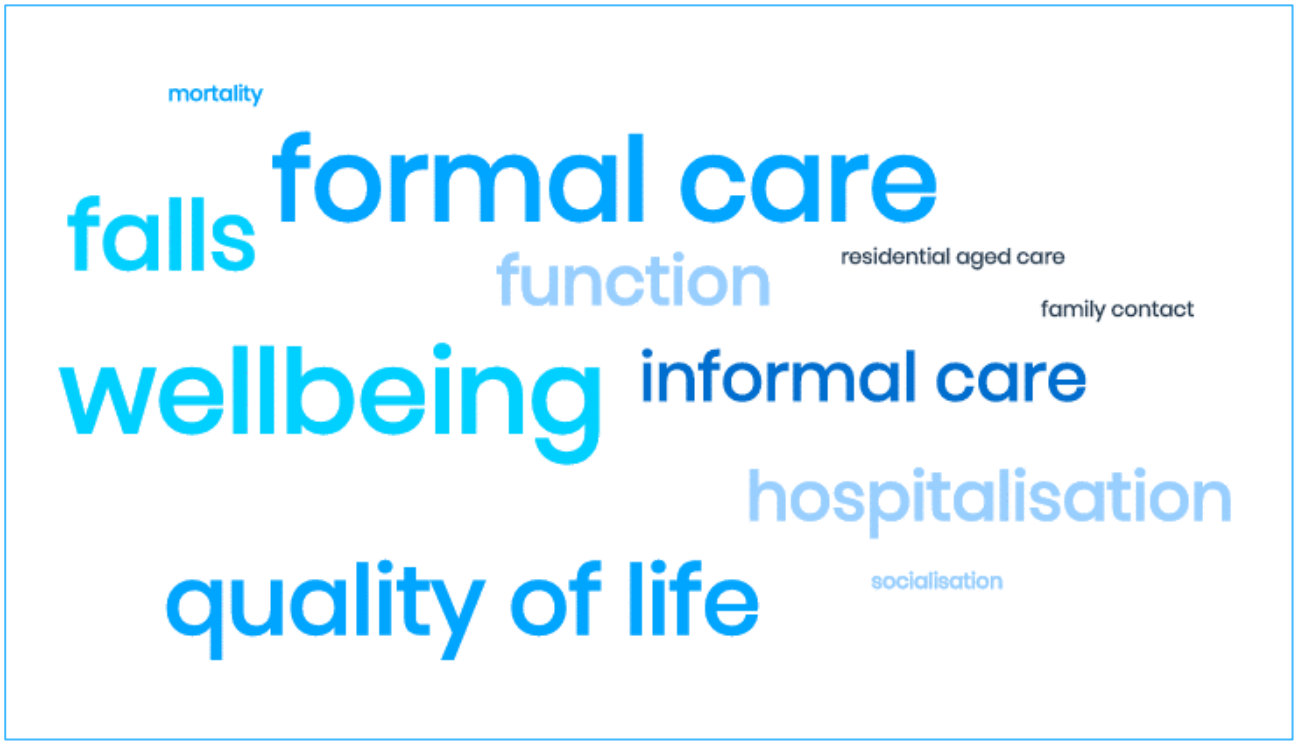


Table B-7: Details of the hierarchical matrix for the RER inclusive of 20 studies

Increment	More effective	Neutral effectiveness	Less effective
More expensive	1. (Jutkowitz et al. 2012) found home modifications reduced mortality	None	None
Cost-neutral	2. (Carnemolla & Bridge 2019) found home modification reduced formal and informal care 3. (Carnemolla & Bridge 2018) found home modification increased function, wellbeing, ageing, and socialisation and decreased falls/harm of falls 4. (Carnemolla & Bridge 2016) found home modification increased quality of life 5. (Fang et al. 2018) found information/communication technology increased family contact 6. (Gillespie et al. 2012) found OT (versus non-OT) for AT reduced rate of falls 7. (Hagberg et al. 2017) found power wheelchair increased quality of life 8. (Healy et al. 2020) P&O post-amputation increased function 9. (Hoenig et al. 2003) found use of AT decreased formal care 10. (Khosravi & Ghapanchi 2016) found AT increased quality of life and wellbeing 11. (Koopman-Boyden & Reid 2009) found internet use increased wellbeing 12. (Sheffield et al. 2013) found AT & ageing in place decreased formal care	13. (Finch, Griffin, & James T Pacala 2017) found remote monitoring reduced hospital and residential aged care admissions, but the results were not significant	None
Less expensive	14. (Coughlin et al. 2017) found COPD N-I ventilation decreased hospital admissions and increased wellbeing 15. (Keall et al. 2017) found AT & home modifications reduced falls 16. (Lansley et al. 2004) found AT & home modifications reduced formal and informal care 17. (Mann et al. 1999) found AT reduced hospital and residential aged care admission	18. (J Kate Goodacre et al. 2008) found savings result from the substitution of some AT for some formal care, but vary with the level of disability, type of housing and length of time AT is used 19. (Hutchinson et al. 2020) found vehicle modification had a positive return on investment 20. (Schneider et al. 2019) found remote monitoring compared to standard care pathway	None

B.3.4 Quantified benefits for the rapid evidence review

Each of the 20 papers was reviewed to quantify the benefits of AT. This data is summarised in *Table* A-*8* and more detail can be provided upon request.

In the RER summaries (*Table B-10*), the benefits have been reported in their original format, that is in the original financial year (known as base year) and currency. These costs have then been converted into $AUD 2019-20 using the conversion rates and exchange rates presented in *Table B-12* and *Table B-13*. This has then allowed all costs in *Table B-8*, the 'Schedule of Benefits of AT' to be presented as $AUD 2019–20.

In summary, the Schedule of Benefits of AT reports the following annual cost savings (*Table B-8*):

- Cost savings for community services (e.g. formal and informal care): $6,997.41
- Cost savings for health and aged care: $29,952.59
- Social and wellbeing benefits: Undefined

Total annual AT benefits reported in *Table B-8*, excluding the *undefined* social and wellbeing benefits and excluding the *passive remote patient monitoring* as utilisation as this AT would not extend across the whole population, was $36,950.

Table B-8: Schedule of Benefits of assistive technology (annual)

Benefit group	Benefit type	Unit definition	Unit cost	Units saved (annual)	Total savings (annual)	Data source
Cost savings for community services	Formal care/paid support work	AT to offset 1 hour of care	$48.96	18.72 hours [1]	$916.53	(Carnemolla & Bridge 2019)
	Informal care/unpaid support work	AT to offset 1 hour of care	$19.49	312 hours	$6,080.88	(Carnemolla & Bridge 2019)
	Direct cost offset for home modifications through AT [2]	Undefined	Undefined	Undefined	Undefined	None
Cost savings for health and aged care	GP visits [2]	No cost data identified through the RER	No data	No data	No data	None
	Acute hospital admissions	AT Products and services at home – for each day of hospitalisation avoided	$2,456.74	11.9 day	$29,235.14	(Mann et al. 1999)
		Passive remote patient monitoring to offset cost per year of hospital admissions	$433.61/ month	12 months	$5,203.32 [4]	(Finch, Griffin, & James T Pacala 2017)
	Subacute hospital admissions [2]	No cost data identified through the RER	No data	No data	No data	None
	Residential aged care facility admissions	AT Products and services at home for each day of aged care avoided	$239.15	3.0 days	$717.45	(Mann et al. 1999)
		Passive remote patient monitoring to offset cost per year of aged care	$975.46/ month	12 months	$11,705.54 [4]	(Finch, Griffin, & James T Pacala 2017)
Total costed benefits					**$36,950.00**	

Note: Costed benefits are ***in addition to social and wellbeing benefits*** (below). Possible ***greater reduction in hospital admissions and residential aged care admissions*** if the passive remote patient monitoring AT was included.

[1] A second paper (Hoenig, et all 2003) was included in this RER and this paper reported a reduction of formal care by 3.8 hours per week or 197.6 hours per year. Hoenig, et all (2003) used a single point in time survey design from the USA describing the correlation of those people who do and do not use AT and those who do and do not receive care (no intervention). This was substantially more than the 18.72 hours per year reported by Carnemolla, P. and C. Bridge (2019). While both papers had a high risk of bias and medium quality, Carnemolla, P. and C. Bridge (2019) is a recent publication which used an intervention design with a before and after comparison from the Australian population aged 65 and older and is therefore considered the more robust and more conservative estimate to be included in the Schedule of Benefits from AT.

[2] Additional benefits that were examined but were not costed.

[4] Not included in total due to low relevance across all AT user groups.

Table B-9: Schedule of Benefits of assistive technology (annual) – social and wellbeing benefits

Benefit type	Unit definition	Unit cost	Number of units saved (annual)	Data source
Productivity [2]	No cost data	No data	No data	None
Wellbeing	Variable	Undefined	Improved wellbeing, ageing and social participation	(Carnemolla & Bridge 2018)
			40% increase in HQOL	(Carnemolla & Bridge 2016)
			Information and communication technology increased family contact and wellbeing	(Fang et al. 2018)
Participation	Variable	Undefined	Improved function and physical health	(Carnemolla & Bridge 2018)
			Improved survival rate with AT (from 87% to 94%)	(Jutkowitz et al. 2012)
			Reduced social isolation and improved quality of life, improved wellbeing and life satisfaction, improved moods, reduced depression across multiple studies	(Khosravi & Ghapanchi 2016)
			Internet usage increased from 42.3% in the group who reported being very dissatisfied with wellbeing to 55.2% for those who reported being very satisfied with their overall wellbeing	(Koopman-Boyden & Reid 2009)
Carer health [2]	No cost data	No data	No data	None
OH&S risk including falls	No cost data	Undefined	Reduction in falls and injuries from falls	(Carnemolla & Bridge 2018)
			33% reduction in costs associated with falls	(Keall et al. 2017)
			18% reduction in falls	(Khosravi & Ghapanchi 2016)

[2] Additional benefits that were examined but were not costed.

B.3.5 RER summaries

Table B-10: Rapid evidence review summaries

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Carnemolla & Bridge 2019)	Paid support work	ROB: 1/5 CHEERS: 15/22	Level 3 Mixed methods explorative cohort study	Effect only	Across a variety of home modifications (from minor to major) there was an average reduction of 0.36 hours per week of formal carer hours (n=157, 95% CI 0.02 to 0.7 hours, p=0.04), n=157Carnemolla, P. and C. Bridge (2019). "Housing design and community care: How home modifications reduce care needs of older people and people with disability." International journal of environmental research and public health 16(11): 1951.	Reduction in formal care hours by 0.36 per week or 18.72 per year	18.72 hours per year costed at $48.96 per hour = annual cost saving of $916.53
(Carnemolla & Bridge 2019)	Unpaid support work	ROB: 1/5 CHEERS: 15/22	Level 3 Mixed methods explorative cohort study	Effect only	Across a variety of home modifications (from minor to major) there was an average reduction of 6 hours per week of informal carer hours (n=157, 95% CI 4.12 to 7.8 hours, p<0.00), n=157 Carnemolla, P. and C. Bridge (2019). "Housing design and community care: How home modifications reduce care needs of older people and people with disability." International journal of environmental research and public health 16(11): 1951.	Reduction in informal care hours by 6 per week or 312 per year	312 hours per year costed at $19.49 per hour = annual cost saving of $6,080.88
(Carnemolla & Bridge 2018)	Combined benefit from systematic review	No ROB or CHEERS – this paper used the PRIMSA for quality of reporting	Level 1 Systematic review	General effect only	A systematic review in the RER included seven studies on cost-effectiveness of home modifications. 3 older studies (all published in 2000) reported not being cost-effective. 4 newer studies published 1999, 2011, 2004 and 2007) reported being cost-effective. Have included one of these studies into this RER as it meets the criteria (Jutkowitz, 2012). Carnemolla, P. and C. Bridge (2018). "A scoping review of home modification interventions–Mapping the evidence base." Indoor and Built Environment: 1420326X18761112.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Carnemolla & Bridge 2018)	Wellbeing	No ROB or CHEERS – this paper used the PRIMSA for quality of reporting	Level 1 Systematic review	Effect only	Systematic review paper: Based on two systematic reviews and 5 RCTs and 15 quasi-experimental studies there was consistent evidence that home modifications had a relationship with improved function. Carnemolla, P. and C. Bridge (2018). "A scoping review of home modification interventions–Mapping the evidence base." Indoor and Built Environment: 1420326X18761112.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Carnemolla & Bridge 2018)	Wellbeing	No ROB or CHEERS – this paper used the PRIMSA for quality of reporting	Level 1 Systematic review	Effect only	Systematic review paper: Based on variable low to medium levels of evidence in the systematic review, it was reported that home modifications had a positive effect for physical health and wellbeing (2 RCTs), ageing (low-level evidence) and social participation (low-level evidence) Carnemolla, P. and C. Bridge (2018). "A scoping review of home modification interventions–Mapping the evidence base." Indoor and Built Environment: 1420326X18761112.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Carnemolla & Bridge 2018)	Carer Health/ Avoid OH&S Risk	No ROB or CHEERS – this paper used the PRIMSA for quality of reporting	Level 1 Systematic review	Effect only	Systematic review paper: Based on six systematic reviews and 19 RCTs, there was strong and consistent evidence with home modifications reduced falls and injuries from falls. Carnemolla, P. and C. Bridge (2018). "A scoping review of home modification interventions–Mapping the evidence base." Indoor and Built Environment: 1420326X18761112.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Carnemolla & Bridge 2016)	Wellbeing	ROB: 1/5 CHEERS: 13/22	Level 3 Explorative cohort study	Effect only	40% increase in HRQoL pre – to post-home modifications. N=157 Australian HACC consumers. Carnemolla, P. and C. Bridge (2016). "Accessible housing and health related quality of life: Measurements of wellbeing outcomes following home modifications." ArchNet-IJAR 10(2).	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Coughlin et al. 2017)	Acute hospital admissions	ROB: 3/6 CHEERS: 22/23	Level 3 Modelled economic data	Cost and effect	This economic model concluded that adoption of home advanced non-invasive ventilation with averaged volume assured pressure support with auto expiratory positive airway pressure as a part of a multifaceted intervention program, presents an opportunity for hospitals to reduce COPD readmission costs for payers to reduce costs associated with managing patients with severe COPD on the basis with reduced admissions. Model includes all ages (including aged 65 and above) but does not provide a breakdown of age groups Coughlin, S., et al. (2017). "Cost savings from reduced hospitalizations with use of home non-invasive ventilation for COPD." Value in Health 20(3): 379–387.	Modelled cost data over n=250 (all ages) is a savings I hospital admissions of $402,981 from day 0-30 post AT (USD 2015)	Insufficient detail to determine a defined benefit with an associated cost saving within the context of the current RER
(Fang et al. 2018)	Wellbeing	ROB: 3/3 CHEERS: 16/22	Level 3 Explorative cohort study	Effect only	Information and communication technology among people aged 75 and above is associated with increased contact with the family, n=1,201 Fang, Y., et al. (2018). "Information and communicative technology use enhance psychological wellbeing of older adults: the roles of age, social connectedness, and frailty status." Aging & mental health 22(11): 1516–1524.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Fang et al. 2018)	Wellbeing	ROB: 3/3 CHEERS: 16/22	Level 3 Explorative cohort study	Effect only	ICT use on a scale of 1 (never) to 4 (often) ICT use was 2.74. Psychological wellbeing on a scale of 0-10 where high score represents a better outcome the score was 6.9 with a significant correlation between ICT use and psychological wellbeing p=0.048, n=1,201 Fang, Y., et al. (2018). "Information and communicative technology use enhance psychological wellbeing of older adults: the roles of age, social connectedness, and frailty status." Aging & mental health 22(11): 1516–1524.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Finch, Griffin, & James T. Pacala 2017)	Acute admissions	ROB: 3/6 CHEERS: 20/24	Level 3 Comparative study	Cost and effect	The passive remote patient monitoring trends towards being a cost-effective intervention. Trended towards significance for cost categories of in-patient hospital stay (P=0.22), long term care (P=0.12) and skilled nursing facility (p=0.16). Overall apparent cost savings ranged from 547.32 to 687.13 (USD 2014) per month. Apparent cost savings for in-patient hospital admissions ranged from 123.38 (intervention n=74 to not enrolled n=129) to 254.74 (intervention n=74 to historical n=65) (USD 2014). Finch, M., et al. (2017). "Reduced health care use and apparent savings with passive home monitoring technology: A pilot study." Journal of the American Geriatrics Society 65(6): 1301–1305.	Passive remote patient monitoring saved in-patient hospital admissions (intervention to historical) $254.74 x 12 months = $3,056.88 (USA 2014)	Passive remote patient monitoring saved in-patient hospital admissions (intervention to historical) $433.61 x 12 months = $5,203.32
(Finch, Griffin, & James T. Pacala 2017)	Residential aged care facility	ROB: 3/6 CHEERS: 20/24	Level 3 Comparative study	Cost and effect	The passive remote patient monitoring trends towards being a cost-effective intervention. Trended towards significance for cost categories of in-patient hospital stay (P=0.22), long term care (P=0.12) and skilled nursing facility (p=0.16). Overall apparent cost savings ranged from 547.32 to 687.13 (USD 2014) per month. Specific to residential aged care facilities the apparent cost savings ranged from 347.85 (intervention n=74 to not enrolled n=129) to 573.07 (intervention n=74 to historical n=65) per month Finch, M., et al. (2017). "Reduced health care use and apparent savings with passive home monitoring technology: A pilot study." Journal of the American Geriatrics Society 65(6): 1301–1305.	Passive remote patient monitoring saved residential aged care admissions (intervention to historical) $573.07 x 12 months = $6,876.84 (USA 2014)	Passive remote patient monitoring saved residential aged care admissions (intervention to historical) $975.46 x 12 months = $11,705.54

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Gillespie et al. 2012)	AT Services	Cochrane's systematic review, no risk of bias CHEERS: CHEERS completed	Level 1 Systematic review	Effect only	The review carried out a post-hoc subgroup analysis based on whether the home safety assessment/intervention was carried out by an OT or by other personnel. One paper (Pighills 2011) randomised participants to two interventions groups to explore the effect of using differently trained personnel to deliver the intervention. There was some evidence that OT led interventions were more effective than non-OT led interventions for rate of falls and risk of falling. Home safety interventions implemented by an OT resulted in a statistically significant difference in rate of falls. Gillespie, L. D., et al. (2012). "Interventions for preventing falls in older people living in the community." Cochrane database of systematic reviews (9).	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Kate Goodacre et al. 2008)	Formal and informal care	ROB: 2/5 CHEERS: 18/23	Level 3 Comparative study	Cost and effect	This research provides important evidence about the cost of AT and the situations in which its increased use can be cost neutral or even provide cost benefits because it is used to supplement, or in some circumstances substitute for, care Goodacre, K., et al. (2008). "Enabling older people to stay at home: the costs of substituting and supplementing care with assistive technology." British Journal of Occupational Therapy 71(4): 130–140.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Hagberg et al. 2017)	Wellbeing	ROB: 2/5 CHEERS: 22/23	Level 3 Comparative study with pre/post	Cost and effect	Prescription of powered mobility devices for elderly people might be cost-effective. However, there are shortcomings in measuring QALY gains for the use of a powered mobility device. QALY across 5 years of use gains in QALY was 0.194 and the cost was $3,597 USD 2014. Hagberg, L., et al. (2017). "Cost-effectiveness of powered mobility devices for elderly people with disability." Disability and Rehabilitation: Assistive Technology 12(2): 115–120	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Healy et al. 2020)	Wellbeing	ROB: 2/2 CHEERS: 9/23	Level 1 Systematic review	Cost and effect	The included studies highlight the importance of P&O supports post amputation of the lower limb, however, the ability for the literature to inform policy is limited. Healy, A., et al. (2020). "A scoping literature review of studies assessing effectiveness and cost-effectiveness of prosthetic and orthotic interventions." Disability and Rehabilitation: Assistive Technology 15(1): 60–66.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Hoenig et al. 2003)	Formal care	ROB: 3/6 CHEERS: 17/23	Level 4 Survey	Effect only	Among people with disability use of assistive technology was associated with use of fewer hours of personal assistance. Reduction of 3.8 hours per week of formal care for those that us some or all equipment compared to those that did not use equipment Hoenig, H., et al. (2003). "Does assistive technology substitute for personal assistance among the disabled elderly?" American Journal of Public Health 93(2): 330–337.	Summary of benefit and reason for excluding from the Schedule of Benefits from AT: Hoenig, et all 2003 reported a reduction of formal care by 3.8 hours per week or 197.6 hours per year. Hoenig, et all (2003) used a single point in time survey design from the USA describing the correlation of those people who do and do not use AT and those who do and do not receive care (no intervention). This was substantially more than the 18.72 hours per year reported by Carnemolla, P. and C. Bridge (2019). While both papers had a high risk of bias and medium quality, Carnemolla, P. and C. Bridge (2019) is a recent publication which used an intervention design with a before and after comparison from the Australian population aged 65 and older and therefore considered the more robust and more conservative estimate to be included in the Schedule of Benefits from AT.	

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Hutchinson et al. 2020)	Participation	ROB: 2/5 CHEERS: 23/23	Level 4 Case studies	Cost and effect	Vehicle modifications represent sound investment for both funders and users given the short payback periods, funders should reconsider age restrictions on vehicles considered suitable for modifications, especially for low to medium cost modifications. While the social return on investment considered a multitude of outcomes which were costed, of these employment and education opportunities were included. The social return on investment for car modifications across all age groups ranges from (co-investment) 17.32 to 2.78 per one dollar invested. Consumer payback periods were between 5.4 and 7.1 months and funder payback periods were between 3.5 weeks and 2 years 8 months. Care must be taken as this is based on all people aged 18+ as the specificity for the 65+ age group is unknown. Hutchinson, C., et al. (2020). "Using social return on investment analysis to calculate the social impact of modified vehicles for people with disability." Australian Occupational Therapy Journal.	Insufficient detail to determine a defined benefit with an associated cost saving for the 65+ age group	Insufficient detail to determine a defined benefit with an associated cost saving for the 65+ age group
(Jutkowitz et al. 2012)	Wellbeing	ROB: 4/4 CHEERS: 23/24	Level 2 Randomised controlled trials	Cost and effect	The home-based intervention may be worthwhile depending on society's willingness to pay. Additional costs for one additional year of life was 13,179 USD (for base case model). Total average cost per person for home modifications was $942 (USA 2010). The intervention group had a survival rate of 94% (n=9) deaths, or mortality rate of 6%) control group had a survival rate of 87% (n=21) deaths, or mortality rate of 13% p=0.02. Jutkowitz, E., et al. (2012). "Cost-effectiveness of a home-based intervention that helps functionally vulnerable older adults age in place at home." Journal of Aging Research 2012(1): 1–6.	The “cost” for the improved survival rate has not been reported, rather the ICER per QALY	The “cost” for the improved survival rate has not been reported, rather the ICER per QALY

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Keall et al. 2017)	Carer/Health/Avoid OH&S risk	ROB: 6/6 CHEERS: 22/23	Level 2 Randomised controlled trials	Cost and effect	The social benefits of injuries prevented were estimated to be at least six times the costs of the intervention. The results show a convincing economic justification for undertaking relatively low-cost home repairs and installing safety measures to prevent falls. 33% reduction in costs associated with falls, however, costs are extrapolated over 20 years from a societal perspective (unable to extract the annual or 5-year time horizon required for this RER). Keall, M. D., et al. (2017). "Cost–benefit analysis of fall injuries prevented by a programme of home modifications: a cluster randomised controlled trial." Injury Prevention 23(1): 22–26.	33% reduction in costs associated with falls, however, unable to extract the annual or 5-year time horizon required for this RER	33% reduction in costs associated with falls, however, unable to extract the annual or 5-year time horizon required for this RER
(Khosravi & Ghapanchi 2016)	Carer Health/Avoid OH&S risk	Systematic review, no ROB or CHEERS scores	Level 1 Systematic review	Effect	Assistive technologies are a reality and can be applied to improve quality of life especially among older age groups. Studies reported 18% reduction in falls (2 studies). Reduced social isolation and improved quality of life, improved wellbeing and life satisfaction, improved moods, reduced depression across multiple studies. However, inconsistent results for dementia. Sensor technology provided favourable results for those with access to this AT. No effect was seen with regard to medication adherence. Khosravi, P. and A. H. Ghapanchi (2016). "Investigating the effectiveness of technologies applied to assist seniors: A systematic literature review." International Journal of Medical Informatics 85(1): 17–26.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Koopman-Boyden & Reid 2009)	Wellbeing	ROB: 4/5 (survey only) CHEERS: No score	Level 4 Cohort study	Effect only	A trend of increasing internet usage with overall wellbeing on the World Value Survey question. Internet usage increased from 42.3% in the group who reported being very dissatisfied with wellbeing to 55.2% for those who reported being very satisfied with their overall wellbeing. Similar positive relationship for leisure, recreation, leadership and self-reported health with positive results correlating with higher levels of internet and email usage. Koopman-Boyden, P. G. and S. L. Reid (2009). "Internet/Email usage and wellbeing among 65–84 year olds in New Zealand: Policy implications." Educational Gerontology 35(11): 990–1007.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving
(Lansley et al. 2004)	Paid support work	ROB: 2/5 CHEERS: 18/21	Level 4 Case studies	Cost and effect	Adaptations and AT can substitute and supplement care. For many older people, adaptations and AT can be cost-effective. Pay-back periods from investment in adaptations and AT can be quite short. The design of the home has a major impact on cost-effectiveness. Appropriately selected adaptations and AT can make a significant contribution to the provision of living environments which facilitate independence. They can both substitute for traditional formal care services and supplement these services in a cost-effective way. Data was modelled based on notational users and cannot be applied to population data. Lansley, P., et al. (2004). "Can adapting the homes of older people and providing assistive technology pay its way?" Age and Ageing 33(6): 571–576.	Insufficient detail to determine a defined benefit with an associated cost saving	Insufficient detail to determine a defined benefit with an associated cost saving

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Mann 1999)	Acute admissions	ROB: 6/6 CHEERS: 18/23	Level 2 Randomised controlled trials	Cost and effect	The intervention group required significantly less cost for institutional care. Frail/elderly people experience functional decline over time. In this study the results indicate that the rate of decline can be slowed and institutional and certain in-home personnel costs can be reduced through a systematic approach to providing AT. Specific to days of hospitalisation, the intervention group had 5.9 days over 18 months compared to the control group who had 23.7 days over 18 months, with the costs respectively 4977 and 20826 (USD 1999). Difference in days was 17.8 days over 18 months, or 11.9 days over 12 months. Mann, W. C., et al. (1999). "Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly: A randomized controlled trial." Archives of Family Medicine 8(3): 210.	Reduction in hospital admissions by 11.9 days. Mean cost per day 878.73 (USD 1999) or 10,456.94 per year	Reduction in hospital admissions by 11.9 days. per year $29,235.14

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Mann 1999)	Residential aged care facility	ROB: 6/6 CHEERS: 18/23	Level 2 Randomised controlled trials	Cost and effect	The intervention group required significantly less cost for institutional care. Frail/elderly people experience functional decline over time. In this study the results indicate that the rate of decline can be slowed and institutional and certain in-home personnel costs can be reduced through a systematic approach to providing AT. Specific to days of residential aged care facilities, the intervention group had 7.4 days over 18 months compared to the control group who had 11.9 days over 18 months, with the costs respectively 633 and 1020 (USD 1999). Difference in days was 4.5 days over 18 months, or 3.0 days over 12 months. Mann, W. C., et al. (1999). "Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly: A randomized controlled trial." Archives of Family Medicine 8(3): 210.	Reduction in aged care admissions by 3.0 days. Mean cost per day 85.54 (USD 1999) or 256.62 per year	Reduction in aged care admissions by 3.0 days. per year $717.45
(Schneider et al. 2019)	Residential aged care facility	ROB: 2/5 CHEERS: 18/24	Level 4 Case studies	Cost and effect	The cost–benefit model showed savings between approximately 425 (USD 2019) per member, per month (PMPM) for those using PMT compared to those on the standard of care pathway. Schneider, J. E., et al. (2019). "Economic evaluation of passive monitoring technology for seniors." Aging clinical and experimental research: 1-8.	Modelled cost data does not allow population-based extrapolation	Modelled cost data does not allow population-based extrapolation

Short reference	Benefit type	Scores [1]	Level of evidence	Cost/effect	Evidence statement & full reference	Benefit per year as presented	Benefit per year $AUD 2019-20
(Sheffield et al. 2013)	Formal care	ROB: 5/6 CHEERS: 11/23	Level 2 Randomised controlled trials	Cost and effect	A reduction of 2.36 hours per week per consumer (0.44 SD) in informal care, or a 39% reduction relative to existing care plan created by the social worker/case manager, for agency-Based Occupational Therapy Intervention to Facilitate Ageing in place including AT. However, this was not based on actual observed reduction, this was based on OT professional judgement in the amount of formal care required each week. This outcome has not been included in the Schedule of Benefits Table as the economic evaluation had poor quality (11/23) and was opinion based Sheffield, C., et al. (2013). "Evaluation of an agency-based occupational therapy intervention to facilitate aging in place." The Gerontologist 53(6): 907-918.	A reduction of 2.36 hours per week per consumer in informal care following OT and AT intervention	This has not been included in the Schedule of Benefits Table as the economic evaluation had poor quality (11/23) and was opinion based

[1] As mentioned in *Section B.3.2* more detail on risk of bias (ROB) and Consolidated Health Economic Evaluation Reporting Standards may be provided upon request.

Table B-11: Modelled cost data

Unit type	Cost per unit	Cost definition	Data source
Unpaid informal care	$19.49 base rate (excludes entitlements and loadings)	Base hourly rate for current minimum wage in Australia	Minimum Wage and Award Wages in Australia (employsure n.d.)
Paid carer support	$19.49 base rate (excludes entitlements and loadings)	Base hourly rate for current minimum wage in Australia	Minimum Wage and Award Wages in Australia (employsure n.d.)
Paid formal care	$32.65 base rate $48.96 inflated rate	Base hourly rate for a Level 3.3 employee	Community Vision Australia Disability and Aged Care Agreement 2019 (Fair Work Commission 2016)f

Assumptions and limitations:

- Formal care is based on an hourly rate which is inflated by 50%. This is to cover on-costs or casual rates (25% loading) and travel, car expenses and other costs (25% loading).
- The hourly rate for the Community Vision Australia Disability and Aged Care Agreement 2019 was consistent with the range found in other similar agreements.
- Informal care is based on the current minimum wage in Australia to reflect a monetary value should this informal care need to be replaced with paid care.
- Costs are reported in $AUD 2019–20.
- Rates are valid as at February 2020.

Table B-12: Exchange rates

Original country & currency	Australia ($AUD) Current conversion rate*
United States ($USD)	1.52524
Europe (€Euro)	1.67579
United Kingdom (£GBP)	1.96570
New Zealand ($NZD)	0.95632
Canada ($CAD)	1.13646
Sweden (SEK)	0.15746

*Per the XE website (https://www.xe.com/, accessed 28 February 2020)

Table B-13: Conversion rates

Base year	Inflated year	CPI*	Multiplication factor from base year to inflated year	Multiplication factor from base year to 2019–20
1999-2000	2000-01	1.9%	1.019	1.833
2000-01	2001-02	6.6%	1.066	1.799
2001-02	2002-03	3.4%	1.034	1.688
2002-03	2003-04	4.4%	1.044	1.632
2003-04	2004-05	2.3%	1.023	1.563
2004-05	2005-06	1.9%	1.019	1.528
2005-06	2006-07	8.3%	1.083	1.500
2006-07	2007-08	2.2%	1.022	1.385
2007-08	2008-09	3.9%	1.039	1.355
2008-09	2009-10	4.8%	1.048	1.304
2009-10	2010-11	1.4%	1.014	1.244
2010-11	2011-12	6.1%	1.061	1.227
2011-12	2012-13	1.2%	1.012	1.157
2012-13	2013-14	2.4%	1.024	1.143
2013-14	2014-15	3.0%	1.030	1.116
2014-15	2015-16	1.5%	1.015	1.084
2015-16	2016-17	1.0%	1.010	1.068
2016-17	2017-18	1.9%	1.019	1.057
2017-18	2018-19	2.1%	1.021	1.037
2018-19	2019-20	1.6%	1.016	1.016

* Inflation rate based on the June to June CPI rate from the base year, per the ABS website (https:/www.abs.gov.au/ausstats/abs@.nsf/mf/6401.0, accessed 28 February 2020.)

Appendix C Delphi technique for a Consensus Statement on the Benefits of AT

C.1 Introduction

AHA utilised the Delphi technique to develop a consensus statement on the economic benefits of assistive technology. A Delphi technique is used to examine complex problems through an iterative process guided by expert opinions (Strasser 2017), known as a group knowledge acquisition model (Habibi et al. 2014). On this occasion, this was a three-stage iterative process with experts in the areas of AT use, AT service provision, Government and health economics, to obtain consensus around the qualitative and quantitative benefits of AT for older Australians.

The Delphi technique is summarised as follows:

- Methods (*Section C.2*) comprising:
    1. The Delphi technique
    2. Delphi expert panel selection
    3. Focus of the Delphi questions
    4. Analysis of the Delphi questions.
- Results (*Section C.3*) comprising:
    1. Delphi panel experts
    2. Feedback provided at the start of Iteration 2 and Iteration 3
    3. Results of the Delphi technique
    4. Integration of the Rapid Evidence Review and the Delphi technique results.

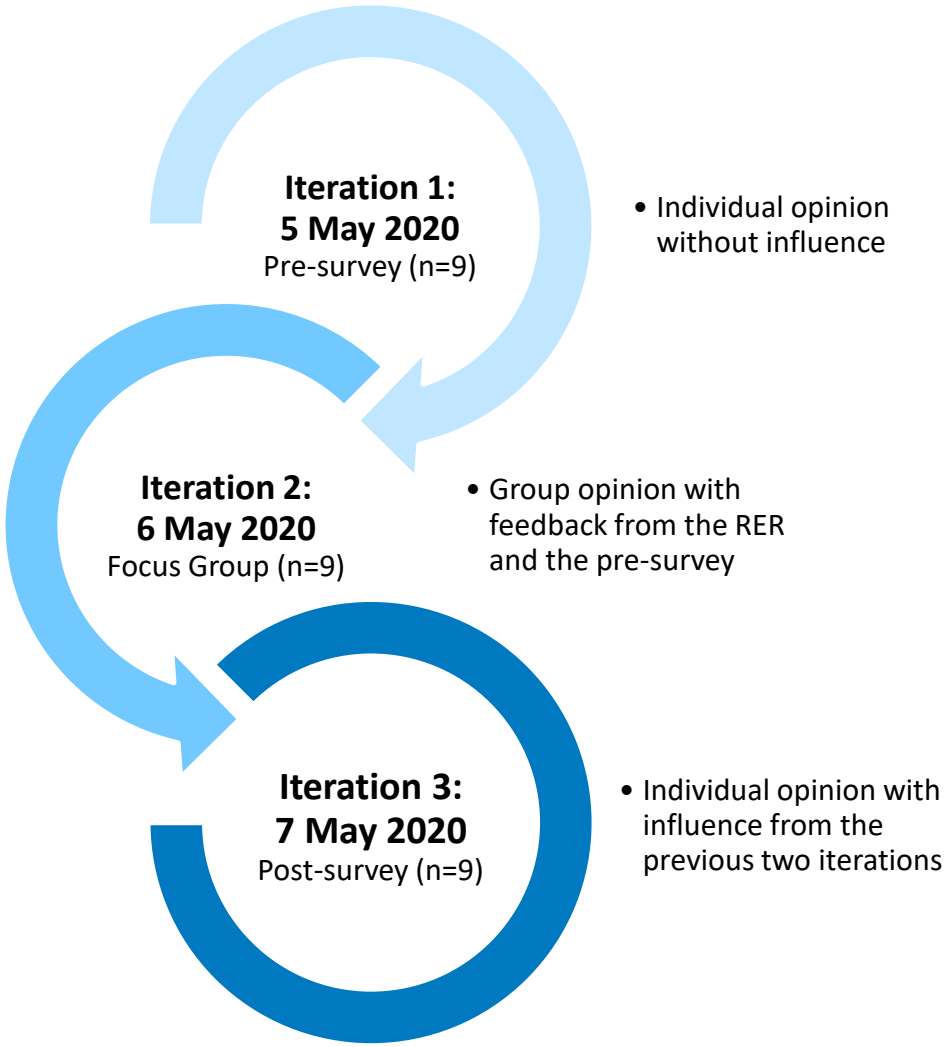
C.2 Methods

C.2.1 The Delphi technique

The Delphi technique has been around for over 50 years and over this time it has taken over a dozen different forMs including the Classical Delphi, Policy Delphi, Decision Delphi and the Mini Delphi (Strasser 2017). While variations exist within the different Delphi techniques, most have retained several key elements including an iterative process for the panellists, the provision of feedback between one iteration and the next, as well as aggregation of the group responses (Strasser 2017) (Habibi et al. 2014). A Delphi technique usually has between two and ten rounds and it is reported that three rounds are considered adequate for many studies (Habibi et al. 2014) and a Delphi technique can be a part of a larger evaluation (Rowe & Wright 2011).

The Delphi technique in this study was aligned to the Classical Delphi where the focus is on facts and the objective is the elicit opinion and gain consensus (Strasser 2017). Our technique included a three-stage iterative process which was conducted over three consecutive days: 5–7 May 2020 (*Figure C-1*). We commenced with a pre-survey to gain individual opinion without any influences (Iteration 1); followed by a 2-hour focus group, which began with a presentation of the RER results and the pre-survey results, followed by a group discussion to elicit individual and group opinions and gain consensus (Iteration 2); and a post-survey, which began with a presentation of the focus group results, to gain individual opinion which may now have been influenced by the previous two iterations (Iteration 3). Key to this Delphi technique was the provision of the RER evidence during the focus group to ensure the consensus process of the expert panel was based on fact.

Figure C-1: Delphi technique for the AT study demonstrating the three-stage iterative process



The two surveys were administered on a Qualtrics server and were sent to the panel members via email which included a link to the survey. The focus group was not in person, instead it was held via an on-line platform (https://zoom.us/) due to the national COVID-19 social restrictions in place at the time the Delphi technique was administered. Anonymity of the participants was maintained for the first iteration; however, this was not maintained for the next two iterations when the panellists were introduced to each other at the start of the focus group. The focus group was facilitated by one of the AHA team members to ensure that all panel members had an opportunity to contribute and be heard. During the focus group additional members of the AHA team were present to introduce the project, provide contextual background information, note comments written in the "comments" function on the online platform, and transcribe the focus group verbatim. To assist with the transcription, the focus group was recorded.

C.2.2 Delphi expert panel selection

This Delphi technique aimed to have 8 to 10 panel members with a broad range of expertise and lived experience. Potential panel members were targeted to cover the following range of expertise and lived experience:

1. Lived experience using, or caring for someone with, AT
2. Health economics
3. Government perspective
4. AT and reablement service provision & service leadership.

Potential panel members were contacted via email. The email outlined the project, the planned Delphi technique and the commitment which was required by the panel members. It was noted that participation was voluntary and that the decision to participate (or not) would not influence current or future relationships with the AHA team.

C.2.3 Focus of the Delphi questions

The questions in the Delphi technique were designed to draw out the qualitative and quantitative benefits of AT for older Australians. This was in recognition that not all benefits could be quantified by a dollar value. A copy of the full question set is available on request. The same format of questions was used for the pre-survey, the focus group and the post-survey. Section 1 started broadly, gathering demographic information and asking the panel "when you think of AT, what images come to mind? What benefits come to mind?". This approach allowed us to understand the different perspectives that each of the panellist brought to the Delphi technique. Section 2 and 3 asked a number of questions which were scored on a 7-point Likert scale. The 7-point Likert scale was chosen due to the appropriateness of a Likert scale in capturing expert opinion within the Delphi technique and due to the correlation between a 7-point scale and t-test results (Habibi et al. 2014). Sections 2 and 3 also asked about unpaid informal care, paid carer support and paid formal care. These were defined as:

- Unpaid informal care – this is when family, friends and volunteers who help the person without payment
- Paid carer support – this is when you family receives payment to care for the person (e.g. the daughter is on a carers allowance to support her father at home)
- Paid formal care – this includes supports such as domestic assistance, personal care through the local council or an agency, meal support and gardening support.

Section 2 used the 7-point Likert scale to ask panellists about the potential benefits of using AT in the home and in the community and these focussed on user wellbeing, user independence and participation in the home and in the community, as well as reduced user risks such as falls and burns in the kitchen. As noted in the RER, these areas had been identified as potential benefits of AT, however they had not been quantified by a dollar value. Section 2 then asked panellists about the potential benefits of using AT for families and carers. These questions are focussed on reducing safety risks for unpaid informal care support, improving carer satisfaction and reduce the hours for unpaid informal care support. Section 2 then asked panellists about the potential benefits of using AT for the health and aged care system through reduced hours for paid carer support, reduced GP visits, reduced hospitalisations through the emergency department,

reduced days in respite care and reducing or delaying the need for residential care. As noted in the RER, these areas had been identified as potential benefits of AT and they have been quantified by a dollar value.

These four Archetypes were selected as follows that were:

- Person 1: Mrs A - Mild impairment
- Person 2: Mr B - Moderate impairment
- Person 3: Ms C - Severe impairment
- Person 4: Mr D - Profound impairment

Table C-1 describes each Archetype.. Each Archetype had a summary of:

- The person's social, medical and functional history
- The AT products and services recommended
- The previous 12 months (pre access to AT) utilisation and access to support for unpaid informal care, paid carer support, paid formal care, GP visits, hospital admissions through the emergency department, days a day program and days in respite care, as well as the number of falls.

The questions asked sought:

- A rating on the 7-point Likert scale
- Quantified changes to the previous 12 months (pre access to AT) utilisation and access to support projected for the following 12 months (post access to AT).

For the focus group and the post-survey, the panel were instructed "When answering the questions about the four AT users, please base your responses on the assumption that there is no change in function status or disease progression, therefore the only difference is the access to AT".

The cost of the AT was not presented in the surveys nor was it discussed in the focus group. This was because the focus was on the benefits, not the cost of the AT. To allow a cost benefit analysis, the cost of the AT products and kits have been calculated using are noted below:

- Person 1: Mrs A; these AT products and kits would cost an average of $287 per year
- Person 2: Mr B; these AT products and kits would cost an average of $40 per year
- Person 3: Ms C; these AT products and kits would cost an average of $773 per year, and
- Person 4: Mr D; these AT products and kits would cost an average of $1,174 per year.

Table C-1: The four Archetypes

Archetype	Description	AT Products	AT Services
Person 1 – Mrs A	Mrs A, aged 69, is beginning to notice that it is harder to do some everyday tasks such as cleaning, cutting her toenails and gardening. She is worried about losing her independence and becoming more dependent on her children. She was talking with a friend who told her about some products they had found online. Her friend referred her to a website that provides ideas, help and advice about simple equipment that might help with daily tasks and help keep her safe. The website listed a range of products such as bathroom, cleaning and gardening aids. After some more research on the costs of these items, Mrs A bought a range of products online and from the local hardware store. Mrs A does not need to access any formal support services.	**Bathroom products including:** • Long-handled washer/toe dryer • Long-handled sponge • Long-handled nail clippers **Cleaning products including:** • Lightweight vacuum • Lightweight mop • Long-handled reacher • Long-handled dustpan and brush • Long-handled duster • Long-handled scrubber • Long-handled garden equipment	• Online information about costs
Person 2 – Mr B	Mr B, aged 71, takes regular medications. He exercises daily and maintains a healthy diet. He lives alone and has a good circle of friends. He is independent and manages his daily living tasks himself and rests when needed. He gets some assistance with his shopping through a local service and has a private cleaner who comes in every fortnight. Mr B is experiencing increasing mobility issues that leave him prone to slips and falls. However, Mr B does not consider himself frail and does not accept that he needs any support from aged care services. He heard from friends that he could get an independent consultation to look at AT options, particularly mobility aids. He visited an Independent Living Centre and had an AT consultation.	• Four-wheeled walker	• AT consultation at the Independent Living Centre

Archetype	Description	AT Products	AT Services
Person 3 – Ms C	Ms C, aged 72, contacted My Aged Care and has been referred for assessment due to medical conditions and concern about increasing frailty. Ms C has also been referred by her local GP for a mobility assessment. She is concerned about accessing medical appointments outside of her local area and would like some support. She would also like some information about local social group activities. She lives with her friend in a rental home. She enjoys watching TV, reading and the company of her pets. She accesses counselling services through a GP health care plan as part of treatment to maintain her emotional wellbeing. She would like to join some social group outings that meet her interests and help support her emotional wellbeing. She accesses a private lawn-mowing service. Ms C takes prescribed medication to manage hypertension, high cholesterol, reflux, mood, respiratory health, chronic pain and osteoarthritis. She moves independently in the home and uses a walking stick when out of the house. Ms C advises that she feels stable on her feet and has not had a fall this year, but she is cautious when she walks and can only walk short distances. She advises that she cannot kneel. She drives locally and is independent with grocery shopping, meal preparation, medication management, bills, and mobility transfers. She also advises that she manages domestic tasks with modification of tasks and time management, but cannot lift her arMs above her shoulders.	**Falls prevention products:** • Long-handled reacher • Lighting • Safety flooring • Rail in the shower • Handheld shower head • Adjustable washing line, laundry trolley • Handrails for bathroom, toilet, entrances • Shower stool • Alter cupboard reach range (minor modifications) **Meal preparation aids:** • Powered can opener • Large-grip peeler • Buttering board • Jar opener • Kettle tipper • Tap turner • Kitchen trolley • Four-wheeled walker for prolonged walking • AT Services	• A mobility assessment by an allied health worker to support ongoing safe mobility • Consideration of an exercise program to support balance and conditioning, and reduce the risk of falls • Accessing social group outings and activities that meet her interests to support ongoing connection to her community and her emotional wellbeing • Transport assistance to attend medical appointments out of her local area

Archetype	Description	AT Products	AT Services
Person 4 – Mr D	Mr D is aged 86 and lives with his daughter, who is his registered carer. Mr D was referred for an Aged Care Assessment Team (ACAT) assessment to provide access to a coordinated Home Care Package and to assess his eligibility for residential care (both permanent and respite). Mr D also has two sons, both of whom reside in the same town. Mr D attends the Men's Shed twice weekly and his daughter is investigating other day centre options. Mr D maintains regular contact with his GP. He is able to verbalise his immediate needs. He has: • Chronic and complex health conditions impacting physical functional capacity and mobility • Diagnosis of dementia in Alzheimer's disease: he requires prompting to initiate, and supervision of safety, for all daily living activities. He has reported visual misperceptions and potential for wandering, including overnight High potential for carer stress and/or burnout, as reflected in Carer Strain Index. Nil current residential respite eligibilities and/or sustainable emergency care plan. High falls risk potential – supervision of all mobility and transfers is suggested.	• Visual prompts and props (signage, lighting, large-print orientation labels on doors) • Large-face watch with reminder system • Large-button TV/radio controller or iPad for self-settling with meditation apps/ favourite music/shows • Workbench or desk for hobby/ self-soothing activities (books, pictures, small tools and projects) Reverse hinge toilet door for safety, safety latches on garden gates • GPS tracking system • Transfer mat alarm at bedside/doorstep • Riser recliner armchair, raised bed • Stool for dressing • Tempering valve in shower with shower seat, hand shower and rails for shower/ toilet	• Home Care Package Level 4 • High-level residential respite care • Social support • Centre-based respite • Flexible respite • Home modifications

C.2.4 Analysis of the Delphi questions

The analysis was divided into quantitative and qualitative sections. Open ended questions were reported as a word cloud using the https://monkeylearn.com/word-cloud/result website. Words that were reported more frequently were shown in a larger font compared to words that were reported less frequently. Likert scale questions were analysed to report the correlation between the panellist's responses based on Kendall's tau coefficient of concordance for an ordinal scale (Habibi et al. 2014). A Kendall's W > 0.7 is considered a strong consensus; W = 0.5 is considered a moderate consensus and W < 0.3 is considered a weak consensus (Habibi et al. 2014). It is noted that Kendall's tau is more suited for small sample sizes and is a more conservative measure compared to Spearman rho.

C.3 Results

C.3.1 Delphi expert panel

The panel consisted of nine people with a broad range of expertise and lived experience (*Table C-2*). The expert panel ranged in age from 41 to 70+ years, with the majority of the panel aged 51-60 years (n=6). Three of the panel members were current users of AT and one panel member currently provided support and care for someone who uses AT.

Table C-2: Delphi expert panel

Expertise and lived experience
AT mentor and lived experience
ILC Representative
Wellness and Reablement Consultant
Aged Care Program Executive
Health Economist
Victorian Government representative
ILC Representative
Consumer Representative
AT Service Provider/Local Government

C.3.2 Feedback provided at the start of Iteration 2 and Iteration 3

At the commencement of the focus group (Iteration 2) there was a presentation of the RER results and the pre-survey results (*Figure C-2).* At the commencement of the post-survey (Iteration 3) there was a presentation of the focus group results (*Figure C-3*).

Figure C-2: Presentation to the focus group of the RER results and the pre-survey results

COST EFFECTIVENESS OF AT FOR OLDER PEOPLE RAPID EVIDENCE REVIEW

Key	Effectiveness	Cost
+	Better	Higher
0	Same	Same (or insufficient cost detail provided)
-	Poorer	Lower

Cost	Number of trials in each category (total n=20)	Effectiveness	Decision
+		-	Reject Assistive Technology
0		-	
+		0	
0	☑	0	Neutral
+	☑	+	Incremental analysis required
-	☑☑☑	0	Accept Assistive Technology
0	☑☑☑☑☑☑☑☑☑☑☑☑	+	
-	☑☑☑☑	+	

FEEDBACK FROM THE SURVEY (PART 1)

Perceived benefits by the panel	AGREE Strongly agree Mostly agree	MIDDLE GROUND Somewhat agree Neither agree nor disagree Somewhat disagree	DISAGREE Strongly disagree Mostly disagree
Black = Non-direct financial benefits	Reduced carer risk Improved user wellbeing Improved user Independence in both the home and community Reduced user risks Improved carer satisfaction Reduced unpaid informal care		
Red = Direct financial benefits	Reduced paid carer support Reduced paid formal care Reduced hospital admissions Reducing or delaying the need for residential aged care Reduced respite care	Reduced GP visits	

FEEDBACK FROM THE SURVEY (PART 2)

Perceived benefits by panel	Areas of direct financial benefit	Areas of consumer benefit	Time until carer/ service needs increase after access to AT
Person 1 **Mrs A**	• Small to no **reduction** in GP visits	Compare to the previous 12 months (0 falls), **small to no increase** in falls	1 year to 6 years *Delayed admission to residential care 6 months to 10 years*
Person 2 **Mr B**	• Small to no **reduction** in GP visits • Small to no **decrease** in hospitalisation • Small to no **increase** in informal/formal/carer • Small to no **increase** in respite care	Compare to the previous 12 months (2 falls), **small reduction to no increase** in falls	6 months to 5 years *Delayed admission to residential care 6 months to 10 years*
Person 3 **Ms C**	• **Reduction** in GP visits • Small to no **decrease** in hospitalisation • Small **decrease** in informal/formal/carer	Compare to the previous 12 months (0 falls), **small to no increase** in falls	1 year to 5 years *Delayed admission to residential care 6 months to 10 years*
Person 4 **Mr D**	• **Mixed response**: for informal/formal/carer • **Reduction** in GP visits • **Mixed response**: for hospitalisation and respite care	Compare to the previous 12 months (2 falls), there was a **mixed response**	0 months to 12 months *Delayed admission to residential care 6 months to 18 months*

Figure C-3: Presentation of the focus group results at the start of the post-survey

High-level focus group findings

Summary of discussion around user profiles:

Mrs A: The panel provided feedback around Mrs A's current need for AT and the possible benefits which could sustain her independence over the medium to long term, including support services. The group agreed that with the appropriate AT there was no perceived need for residential aged care in the foreseeable future. AT could enable Mrs A to do her own housework in an easier way, with the added benefits of moving her body, increasing flexibility, strength and balance. This could be encouraging her to build capacity and reserve rather than compensate with unnecessary AT. Several panel members felt it was hard to assess the impact of AT on the frequency of GP visits. There was agreement that AT would lead to a reduction in formal support going forward (delaying the need).

Mr B: The panel identified that Mr B had visited an Independent Living Centre, and therefore it was assumed that the prescription of his four wheeled walked was done by an Allied Health professional, taking into account his environment, with no additional needs identified. The panel agreed that appropriate prescription of AT reduces the risk of abandonment. Mr B could have substantial behaviour change with access to a four wheeled walker, including confidence gained and increased community access. If referred to a physio following a fall, he may not need the walker long term (reablement).

Ms C: The panel determined that Ms C is on the cusp of needing a lot of formal support, however appropriate AT could delay the need for services. Short term intensive services could alleviate the need for long term ongoing services. A planned approach that could be scaled back as needed may be appropriate for this user. The panel identified that she has complex health needs, as identified through her medications, she is on the cusp of requiring escalated care if no immediate intervention is put in place. A holistic approach to her support is needed. Loss of ability to drive could lead to emotional distress and a feeling of loss of independence. Putting in the appropriate supports could delay admission to residential aged care for 5-10 years. The panel advised that appropriate AT can last 10, 20, 30 years.

Mr D: "I can't imagine what this gentleman's life or his daughter's life would be like, or even possible, without the AT and modifications." The panel considered that without the significant carer support and AT, Mr D would already be in residential aged care. The panel highlighted the need to balance cost of services with cost of AT. There is high risk of carer burnout without AT. The panel assumed that the AT described in the user profiles had been purchased by the individuals or their families. It was noted that consumers often don't want to pay for an AT assessment with their home care package, and may just go ahead and purchase unprescribed AT which could lead to AT abandonment.

C.3.3 Results of the Delphi technique

Images and benefits of AT (free text)

Both the images and benefits of AT, as perceived by the panellists, had some variation and some similarity from the pre-survey to the post-survey (*Figure C-4* and *Figure C-5*). Images focussed on a variety of different aids and equipment. Benefits focussed on independence, quality of life, autonomy, staying at home, confidence and reducing hospital admissions and formal support.

Figure C-4: Panellist reported images of AT

Part a) Pre-survey

Part b) Post-survey

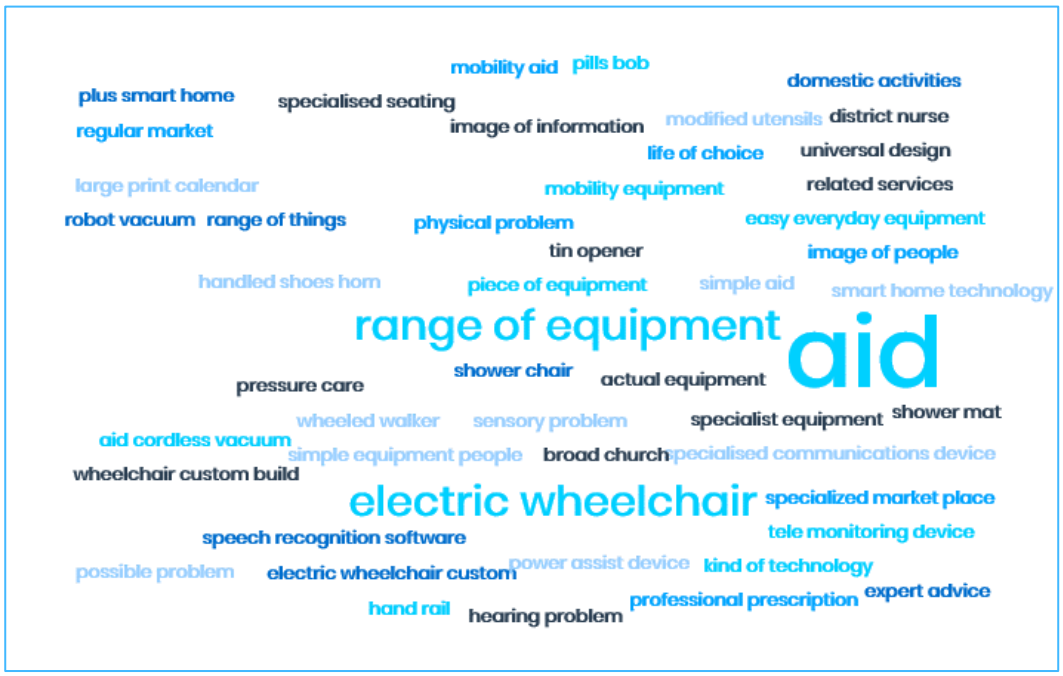


Figure C-5: Panellist reported benefits of AT

Part a) Pre-survey

Part b) Post-survey

Figure C-6: Panellist quotes to reflect the main themes from the focus group

AT Services are essential for AT Products to be selected and implemented correctly and to reduce AT product abandonment and safe usage

Training of the AT products is important – high level AT can be dangerous, like a mobility scooter, when a consumer is not properly trained
— AT User

We see multiple AT items of the same type being abandoned because there was no assessment or information provided to get the right product for the right person. — ILC Representative

Consumers (AT Mentor and AT User) emphasise that without access to AT, day to day activities would be fully dependent on others

I would need full time round the clock formal care or I would be in assisted housing or formal residential aged care without AT. — AT User

Often when people lose their ability to drive, it's a loss of independence, that will also affect people mentally, loss of driving can have a big impact on function and emotional wellbeing. — AT User

Capital costs, including major home modification and electric scooters, need to be decided on a case-by-case basis, where the time horizon for benefits is part of the decision-making process

In terms of capital, AT and home modifications capital cost is high. It is a matter of an investment in an AT product that wasn't capital intensive vs a big capital expense. If there is going to be an intensive capital investment you want to see a long-term benefit. — Health economist

AT should not replace opportunities for reablement. AT and reablement should complement one another, not be instead of one another.

For low level non-complex AT in the context of reablement do you need that piece of AT – AT can be a crutch when a consumer should be strengthening in the long term.
— ILC representative

Reablement can encourage people to build capacity rather than compensate with the AT, it's the balance of building capacity and AT use.
— ILC representative

Access to information is critical to ensuring consumers have fit for purpose AT

Consumer tends to get what's available not what's required – this is one of the reasons for abandonment. Consumers need information to help identify what is needed.
— ILC representative

People need to be informed about their choices, to minimise abandonment of AT.
— ILC representative

AT assessment and a holistic view of consumer needs are essential components to an effective AT service system

There is potential to lose a consumer if they're unable to get a quick, good assessment. Need to take into consideration a person's current big picture. — Aged care program leader

As far as the AT goes, the right piece of AT or right level of AT can last a long time. It's taking the time to make sure the right product is prescribed. — AT User

Consumer attitudes are important factors in AT use/abandonment

A person's motivation to use equipment is important too, not everyone sees the benefit.
— Government representative

I think the right AT provides people with the option or encouragement to maintain a healthy social life. — AT User

Benefits of AT (Likert scale)

To recap, for Section 2, the pre-survey and the post-survey were examined separately to determine the correlation between the panellist's responses based on Kendall's tau coefficient. A coefficient of > 0.7 was considered a strong consensus; 0.5 was considered a moderate consensus and <0.3 was considered a weak consensus. Section 2 had 13 Likert scale questions rated by 9 panellists. This meant that a correlation between the 13 questions was reported for 72 potential combinations (each of the 9 panellists was compared to the other 8 panellists).

Of the 72 potential combinations for the pre-survey, a significant correlation ($p<0.05$) was reported for 10 combinations with 6 of the significant correlations reporting a moderate consensus and 4 reporting a strong consensus. Of the 72 potential combinations for the post-survey, a significant correlation ($p<0.05$) was reported for 28 combinations with 20 of the significant correlations reporting a moderate consensus and 8 reporting a strong consensus. These results demonstrate that there was almost a three-fold increase in the quantity of significant consensus' as well as a two-fold increase in the number of strong consensus' reported. Graphs of the survey results are presented in *Figure C-7* to *Figure C-9*.

Figure C-7: Benefits of using AT in the home and community

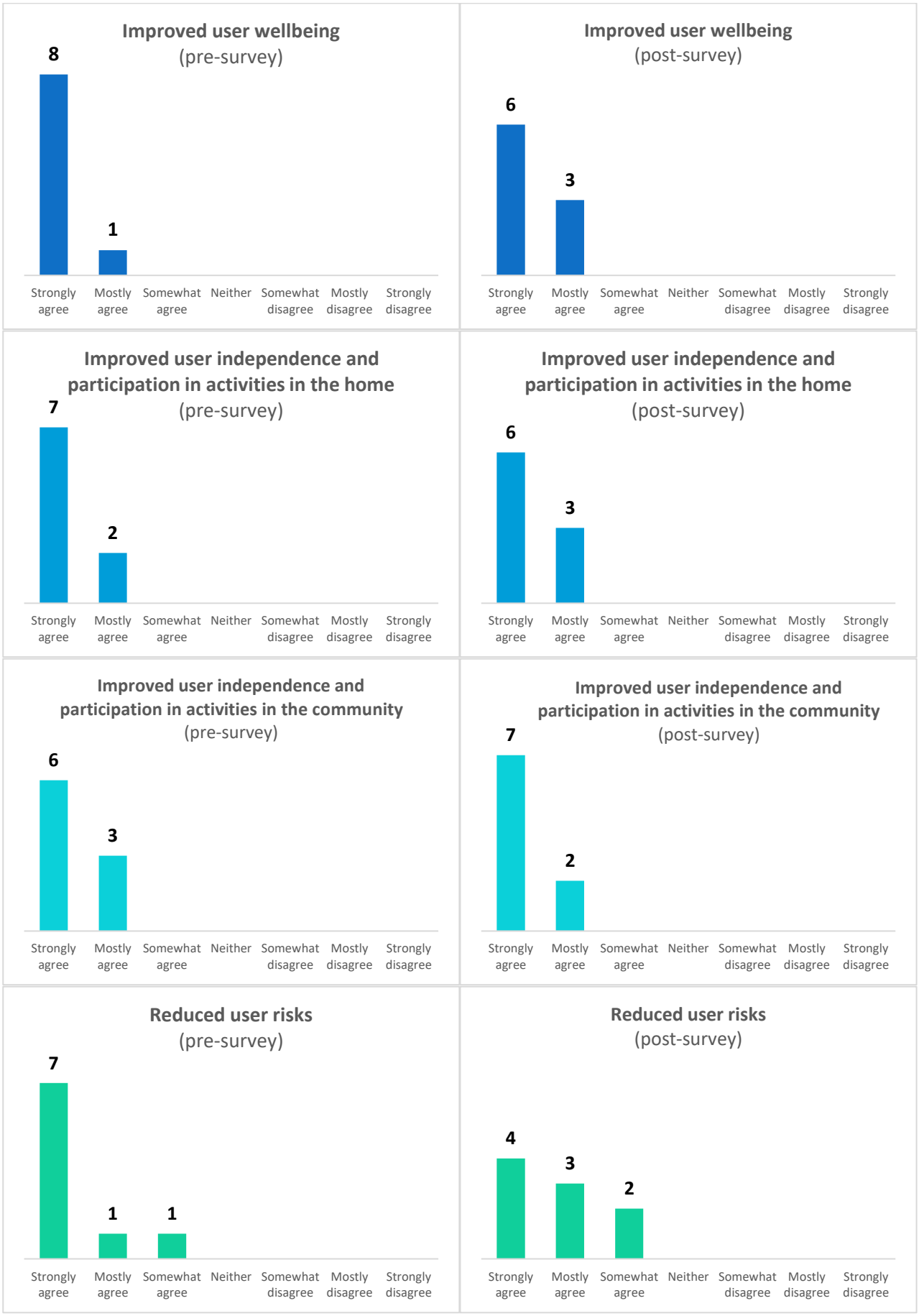


Figure C-8: Benefits of using AT for families and carers

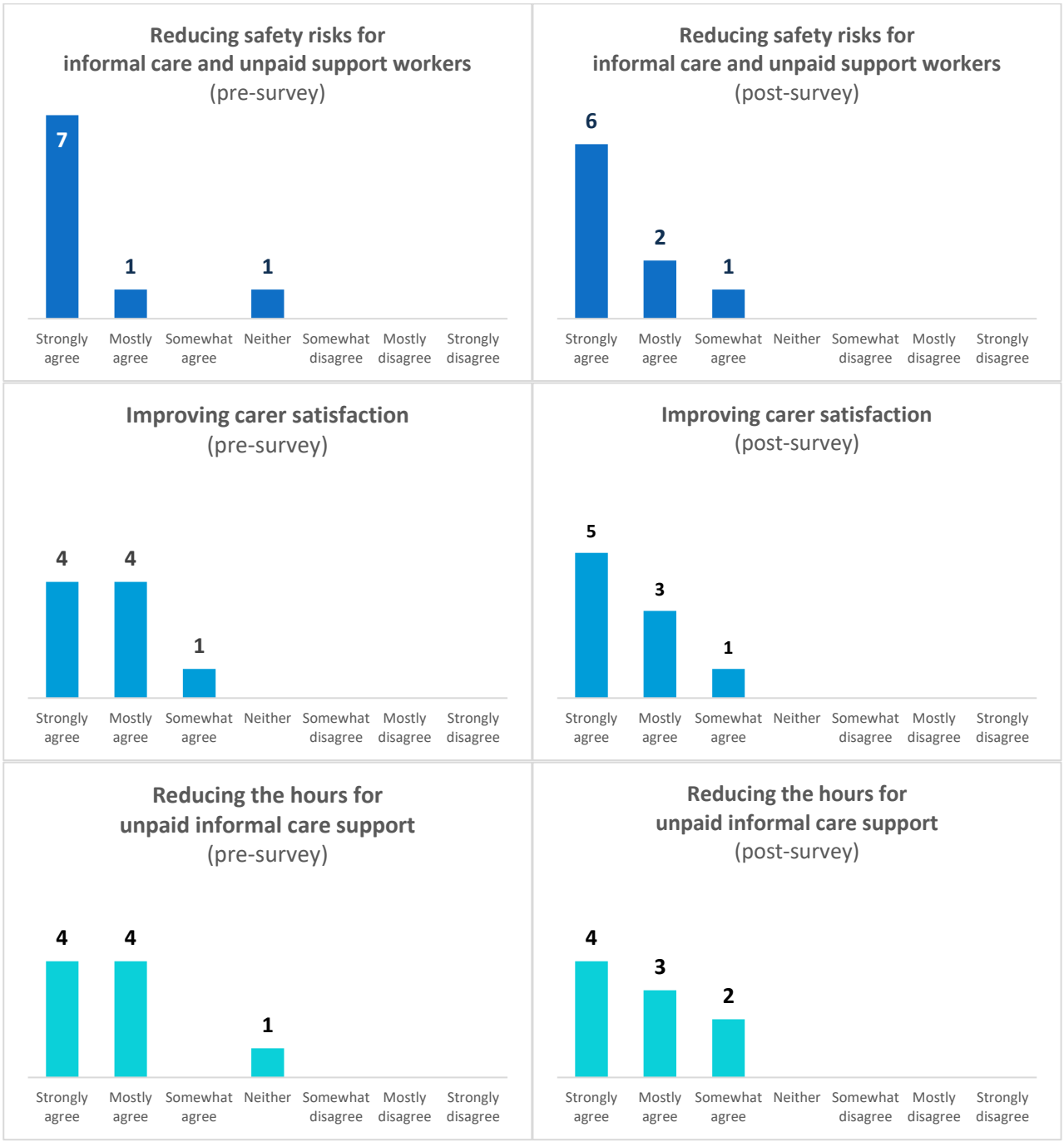
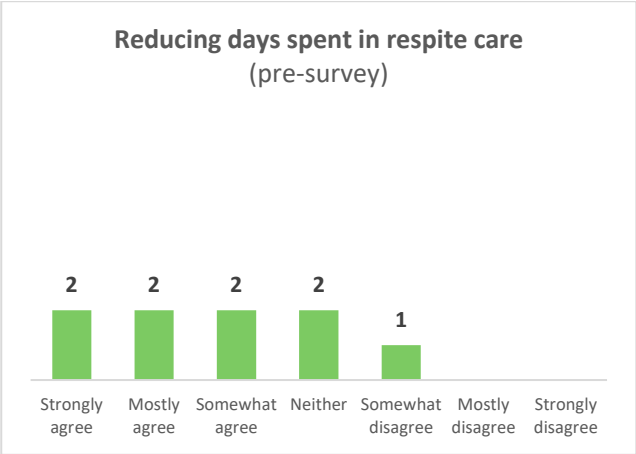


Figure C-9: Benefits of using AT for the health and aged care systems


Reducing days spent in respite care
(pre-survey)
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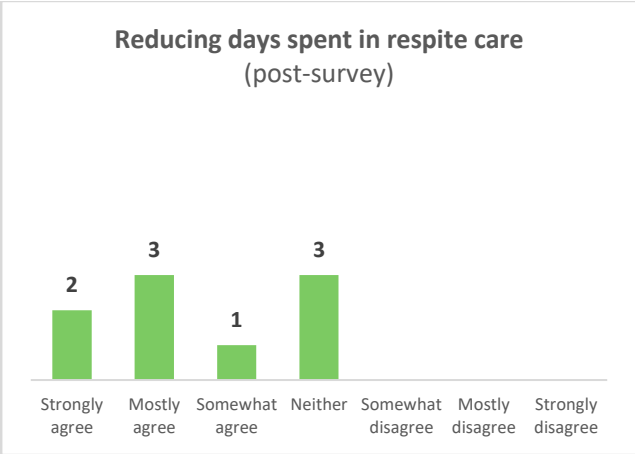
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing days spent in respite care
(post-survey)
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3
1
3
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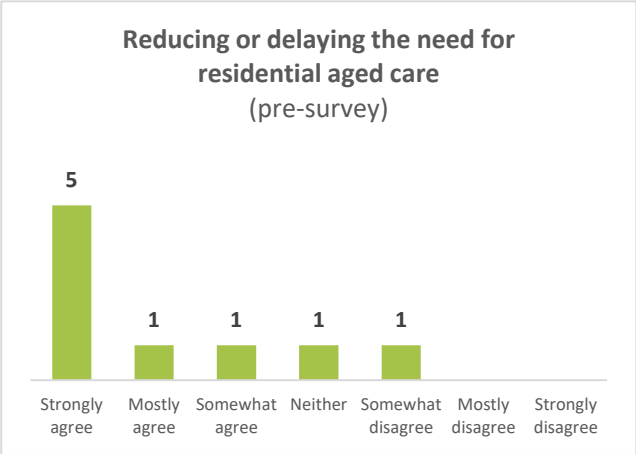
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing or delaying the need for residential aged care
(pre-survey)
5
1
1
1
1
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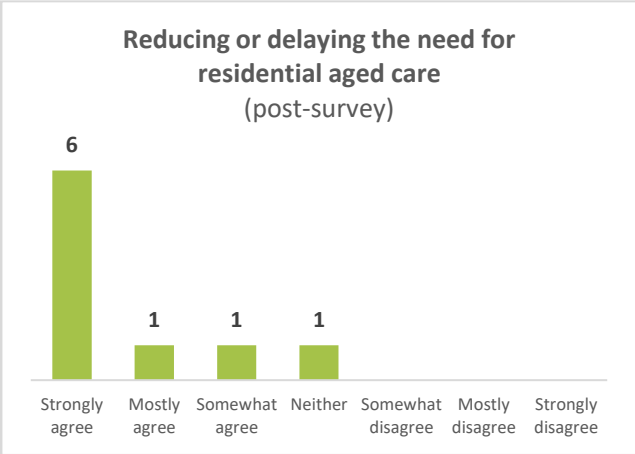
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing or delaying the need for residential aged care
(post-survey)
6
1
1
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree

Benefits for the AT users Archetypes

To recap, for Section 3, the pre-survey and the post-survey were examined separately to determine the correlation between the panellist's responses based on Kendall's tau coefficient. A coefficient of > 0.7 was considered a strong consensus; 0.5 was considered a moderate consensus and < 0.3 was considered a weak consensus. Section 3 had 28 Likert scale questions rated by 9 panellists. This meant that a correlation between the 28 questions was reported for 72 potential combinations (each of the 9 panellists was compared to the other 8 panellists).

Of the 72 potential combinations for the pre-survey, a significant correlation ($p<0.05$) was reported for 28 combinations with 26 of the significant correlations reporting a moderate consensus and 2 reporting a strong consensus. Of the 72 potential combinations for the post-survey, a significant correlation ($p<0.05$) was reported for 34 combinations with all 34 of the significant correlations reporting a moderate consensus. These results demonstrate a small increase in the quantity of significant consensus'. Graphs of the survey results are presented in *Figure C-13* to *Figure C-16*.

Summaries of the benefits for the pre-survey, the focus group and the post-survey are provided in

Figure C-10*, Figure C-11* and *Figure C-12.*

Analysis of the quantified economic benefits for the archetypes was based on the post-survey to represent the point of greatest consensus between the panellists. Panellists were presented with the quantity of services and supports required in the 12 months prior to accessing AT and were asked to report their perception on the quantity of services and supports required in the 12 months post access to AT. This was assuming that the functional status and disease progression did not worsen.

As this was a consensus process, 2 or more panellists were required to report a difference in the quantity services and supports required to impact the analysis of quantified and costed benefits of AT. It is noted that for some services and supports the panellists reported that they perceive the quantity has increased.

Table C-3 presents a summary of the results,

Table C-4 summarised the quantity and costs of the benefits and *Table C-5* reports the methodology for costing the modelled cost data. In brief for the post-survey and final analyses of the costed benefits:

- Person 1: Mrs A (mild impairment) reported benefit of **$17** per year following access to AT compared to the **annual cost of AT valued at $287** which was assumed to be funded by the consumer.
- Person 2: Mr B (moderate impairment) reported benefit of **$2,8345** per year following access to AT compared to the **annual cost of AT valued at $40** which was assumed to be funded by the consumer.
- Person 3: Ms C (severe impairment) reported benefit of **$3,345** per year following access to AT compared to the **annual cost of AT valued at $773** which was assumed to be co-funded by the Aged Care system.
- Person 4: Mr D (profound impairment) reported benefit of **$13,555** per year following access to AT compared to the **annual cost of AT valued at $1,174** which was assumed to be co-funded by the Aged Care system.

Cost benefit based on the combined AT product and service costs, presented as a return on investment for every $1 spent on combined AT products, kits and services

Table C-3: Total costs, benefits and return on investment

Archetype	Cost of AT Products and ADL Kits	Cost of AT Services	Combined AT costs	Benefit of AT	Return on investment
Mild impairment	$287	$144	**$431**	$17	**$0.04**
Moderate impairment	$40	$20	**$60**	$2,835	**$47.25**
Severe impairment	$773	$387	**$1,160**	$3,345	**$2.88**
Profound impairment	$1,174	$587	**$1,761**	$13,555	**$7.70**
Total	**$2,274**	**$1,137**	**$3,411**	**$19,725**	**$5.79**

Figure C-10: Quantitative summary of the benefits of access to AT – pre-survey

Person 1: Mrs A (mild impairment)

Over the next 12 months, while there were no immediate cost savings from access to AT (e.g. reduction in care and support), there was a perception that access to AT would maintain her current level of independence for 1 to 6 years and ensure that residential aged care is not required within the foreseeable future. Additional cost benefits of AT include delay of in-home services (average 4 years) and supports and requirement for residential aged care (foreseeable future).

Person 2: Mr B (moderate impairment)

Over the next 12 months, it was perceived that access to AT may have a small reduction in GP visits, falls and hospital admissions through the emergency department. Despite the AT, it was perceived that there could be a small increase in unpaid formal care, paid carer support and paid formal care. There was a perception that access to AT would maintain his current level of independence for 6 months to 5 years and ensure that residential aged care is not required within the 6 months to 10 years. Additional cost benefits of AT include reduced health service utilisation (1 GP visit and ½ a hospital admission) and delay of in-home services (average 3 years) and supports and requirement for residential aged care (foreseeable future).

Person 3: Ms C (severe impairment)

Over the next 12 months, it was perceived that access to AT may have a small reduction in the need for unpaid informal care and paid formal care, GP visits and hospital admissions through the emergency department. Despite the AT, it was perceived that there could be a small increase in falls. There was a perception that access to AT would maintain her current level of independence for 1 to 5 years and ensure that residential aged care is not required within the 6 months to 10 years. Additional cost benefits of AT include reduced health service utilisation (2.5 GP visits and ½ a hospital admission) and delay of in-home services (average 3 years) and supports and requirement for residential aged care (average 5 years).

Person 4: Mr D (profound impairment)

Over the next 12 months, it was perceived that access to AT may have a small reduction in the need for unpaid informal care, paid carer support, GP visits, falls, hospital admissions through the emergency department, days in respite day programs and days in respite overnight services. Despite the AT, it was perceived that there could be a small increase paid formal care. There was a perception that access to AT would maintain her current level of independence for 6 to 12 months and ensure that residential aged care is not required within the 6 to 18 months. Additional cost benefits of AT include reduced health service utilisation (4 GP visits and 2 hospital admissions), paid carer support (4 hours per week) and delay of in-home services (average 3 years) and supports and requirement for residential aged care (average 5 years), however a potential increase in paid formal care was identified (1.5 hours per week).

Figure C-11: Qualitative summary of the benefits of access to AT – focus group

Person 1: Mrs A (mild impairment)

The panel provided feedback around Mrs A's current need for AT and the possible benefits which could sustain her independence over the medium to long term, including support services. The group agreed that with the appropriate AT there was no perceived need for residential aged care in the foreseeable future. AT could enable Mrs A to do her own housework in an easier way, with the added benefits of moving her body, increasing flexibility, strength and balance. This could be encouraging her to build capacity and reserve rather than compensate with unnecessary AT. Several panel members felt it was hard to assess the impact of AT on the frequency of GP visits. There was agreement that AT would lead to a reduction in formal support going forward (delaying the need).

Person 2: Mr B (moderate impairment)

The panel identified that Mr B had visited an Independent Living Centre, and therefore it was assumed that the prescription of his four wheeled walked was done by an Allied Health professional, taking into account his environment, with no additional needs identified. The panel agreed that appropriate prescription of AT reduces the risk of abandonment. Mr B could have substantial behaviour change with access to a four wheeled walker, including confidence gained and increased community access. If referred to a physio following a fall, he may not need the walker long term (reablement).

Person 3: Ms C (severe impairment)

The panel determined that Ms C is on the cusp of needing a lot of formal support, however appropriate AT could delay the need for services. Short term intensive services could alleviate the need for long term ongoing services. A planned approach that could be scaled back as needed may be appropriate for this user. The panel identified that she has complex health needs, as identified through her medications, she is on the cusp of requiring escalated care if no immediate intervention is put in place. A holistic approach to her support is needed. Loss of ability to drive could lead to emotional distress and a feeling of loss of independence. Putting in the appropriate supports could delay admission to residential aged care for 5-10 years. The panel advised that appropriate AT can last 10, 20, 30 years.

Person 4: Mr D (profound impairment)

"I can't imagine what this gentleman's life or his daughter's life would be like, or even possible, without the AT and modifications." The panel considered that without the significant carer support and AT, Mr D would already be in residential aged care. The panel highlighted the need to balance cost of services with cost of AT. There is high risk of carer burnout without AT. The panel assumed that the AT described in the user profiles had been purchased by the individuals or their families. It was noted that consumers often don't want to pay for an AT assessment with their home care package, and may just go ahead and purchase unprescribed AT which could lead to AT abandonment.

Figure C-12: Quantitative summary of the benefits of access to AT – post-survey

Person 1: Mrs A (mild impairment)

Mrs A who represented an older Australian with a **mild activity limitation** had a reported benefit of **$17** per year following access to AT. This was based on an annual small reduction in GP visits each year (0.4 reduction in visits per year). The most significant cost benefits for access to AT for Mrs A was the delay to increase unpaid formal care, paid carer support and paid formal care (estimated between 2 and 12 years) and the delay for residential aged care admission (not in the foreseeable future), noting that cost calculation for these benefits are out of scope for this analysis. This is compared to the **annual cost of AT valued at $287** which was assumed to be funded by the consumer.

Person 2: Mr B (moderate impairment)

Mr B who represented an older Australian with a **moderate activity limitation** had a reported benefit of **$2,835** per year following access to AT. This was based on an annual small reduction in GP visits (0.4 reduction), falls (0.9 reduction) and hospital admissions (0.6 reduction). Additional significant cost benefits for access to AT for Mr B was the delay to increase unpaid formal care, paid carer support and paid formal care (estimated between 2 and 12 years) and the delay for residential aged care admission (not in the foreseeable future), noting that cost calculation for these benefits are out of scope for this analysis. This is compared to the **annual cost of AT valued at $40** which was assumed to be funded by the consumer.

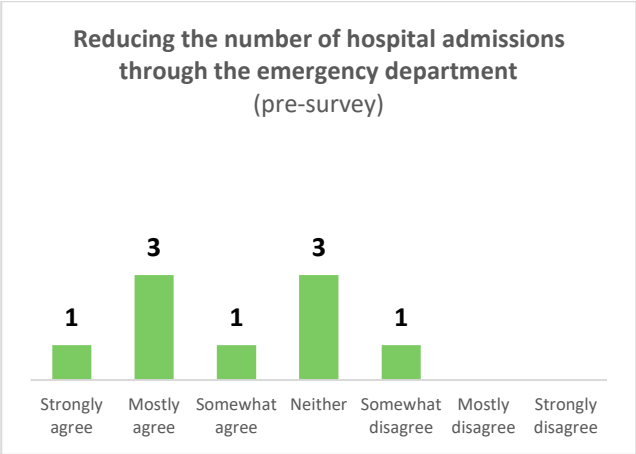
Person 3: Ms C (severe impairment)

Ms C who represented an older Australian with a **severe activity limitation** had a reported benefit of **$3,345** per year following access to AT. This was based on an annual reduction in unpaid informal care (12-hour reduction), GP visits (1.0 reduction) and hospital admissions (0.7 reduction). Additional significant cost benefits for access to AT for Ms C was the delay to increase unpaid formal care, paid carer support and paid formal care (estimated between 1 and 10 years) and the delay for residential aged care admission (6 months to 10 years), noting that cost calculation for these benefits are out of scope for this analysis. This is compared to the **annual cost of AT valued at $773** which was assumed to be funded by the Aged Care system.

Person 4: Mr D (profound impairment)

Mr D who represented an older Australian with a **profound activity limitation** had a reported benefit of **$13,272** per year following access to AT. This was based on an annual reduction in unpaid informal care, paid carer support and aid formal care (92 hours, 75 hours and 6 hours respectively), as well as GP visits (5.7 reduction), falls (0.3 reduction), hospital admissions (1.9 reduction) and days in residential respire care (0.9 reduction). Additional significant cost benefits for access to AT for Mr D was the delay to increase unpaid formal care, paid carer support and paid formal care (estimated between 6 months to 2 years) and the delay for residential aged care admission (4 months to 3 years), noting that cost calculation for these benefits are out of scope for this analysis. This is compared to the **annual cost of AT valued at $1,174** which was assumed to be funded by the Aged Care system.

Figure C-13: Benefits of using AT for the health and aged care systems – Person 1: Mrs A


Reducing the number of hospital admissions through the emergency department
(pre-survey)
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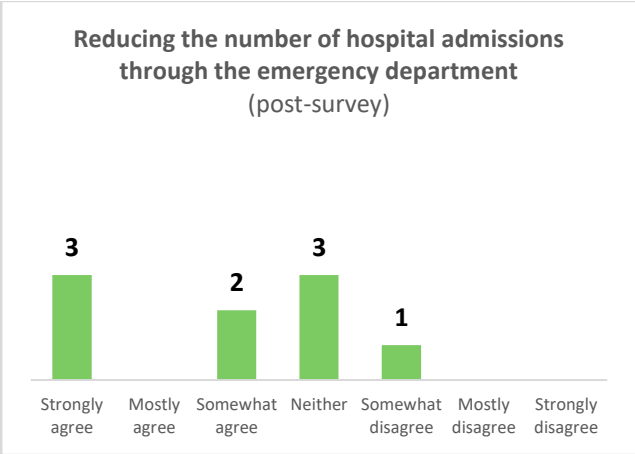
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing the number of hospital admissions through the emergency department
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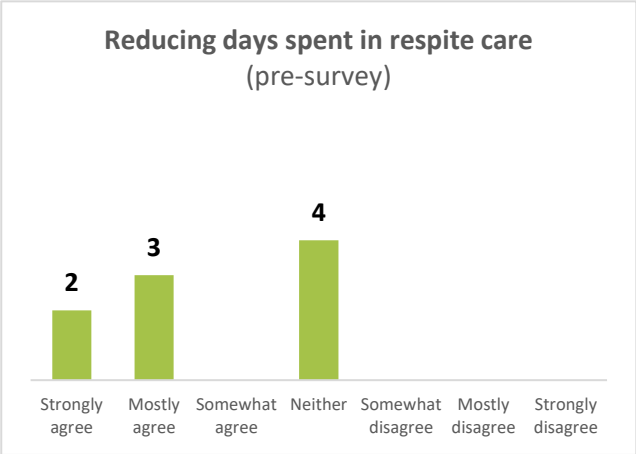
Strongly disagree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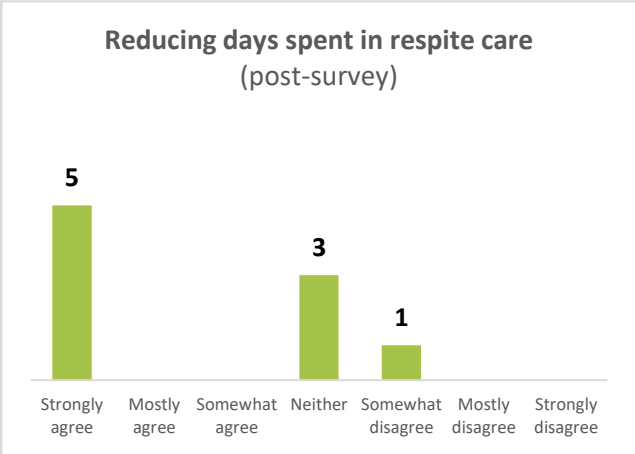
Strongly disagree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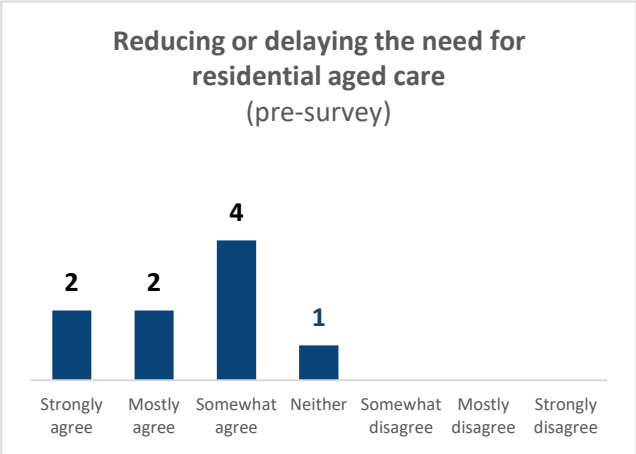
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Strongly disagree

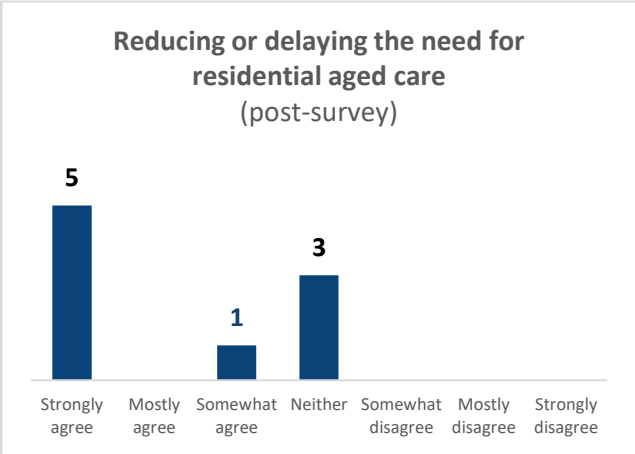
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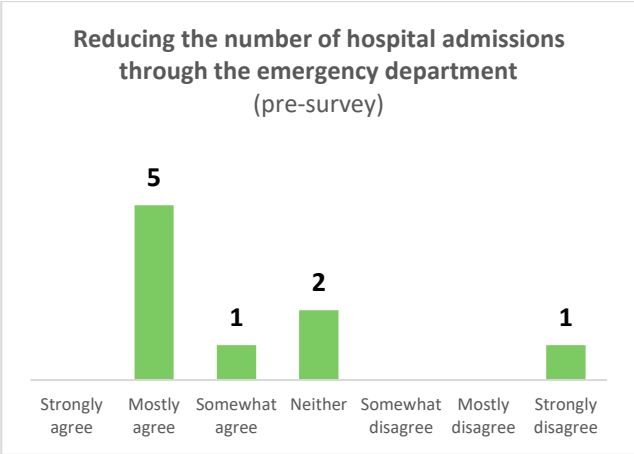
Figure C-14: Benefits of using AT for the health and aged care systems – Person 2: Mr B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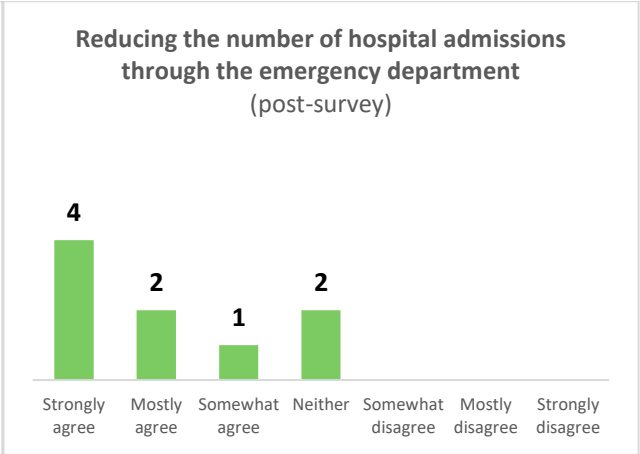
Strongly disagree


Reducing the number of hospital admissions through the emergency department
(post-survey)
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Somewhat agree
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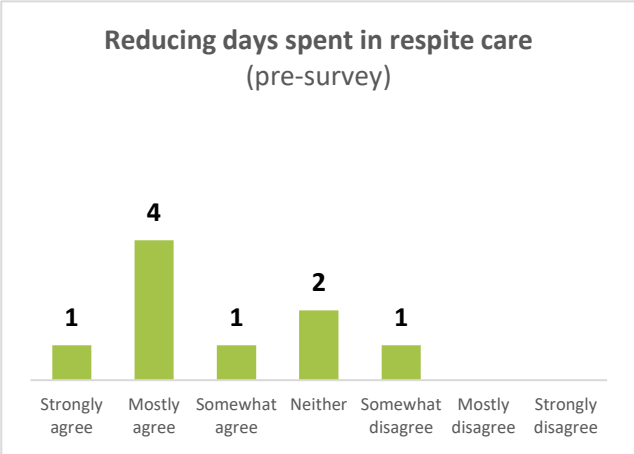
Mostly disagree
Strongly disagree


Reducing days spent in respite care
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2
1
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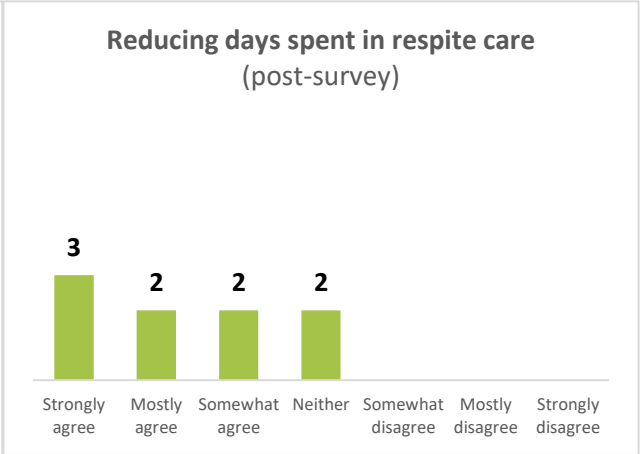
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree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(post-survey)
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Somewhat agree
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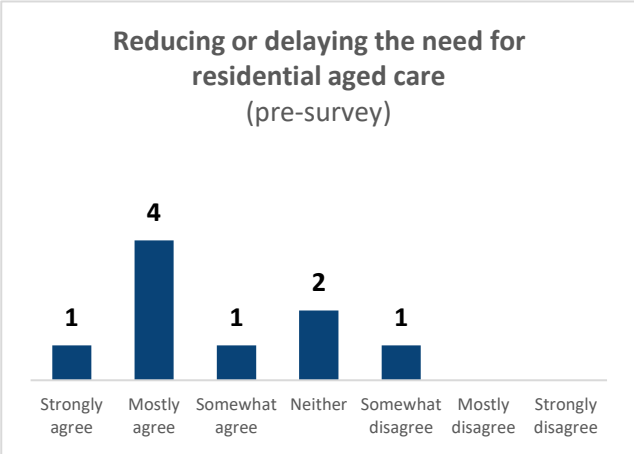
Strongly disagree


Reducing or delaying the need for residential aged care
(pre-survey)
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4
1
2
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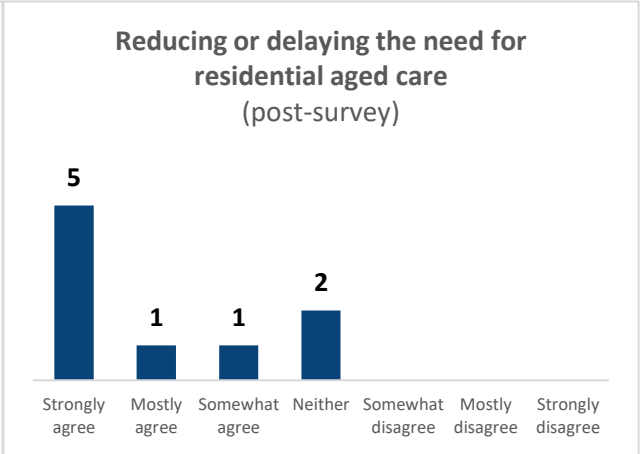
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing or delaying the need for residential aged care
(post-survey)
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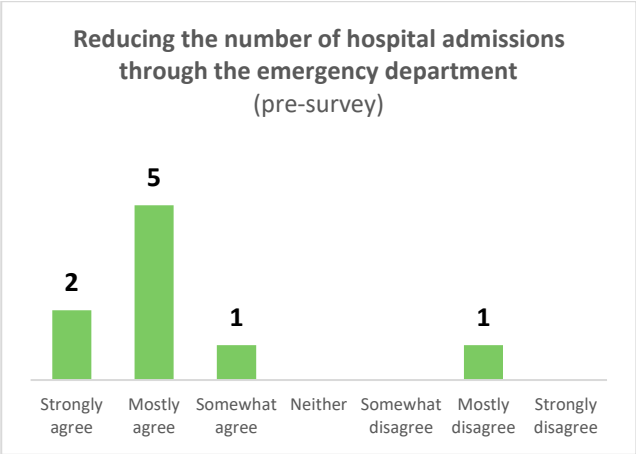
Somewhat disagree
Mostly disagree
Strongly disagree

Figure C-15: Benefits of using AT for the health and aged care systems – Person 3: Ms C


Reducing the number of hospital admissions through the emergency department
(pre-survey)
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5
1
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Mostly agree
Somewhat agree
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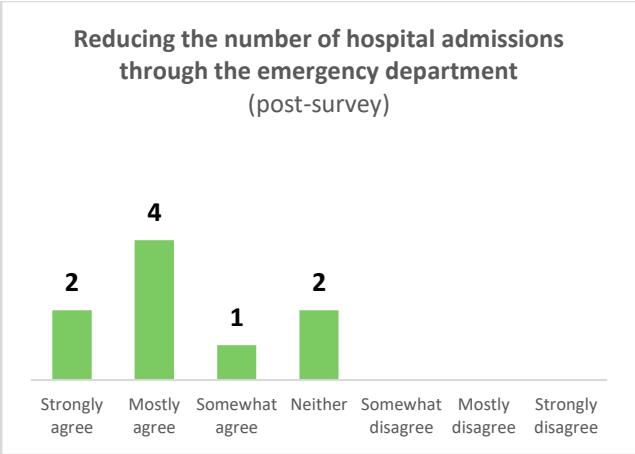
Somewhat disagree
Mostly disagree
Strongly disagree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(post-survey)
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4
1
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Somewhat agree
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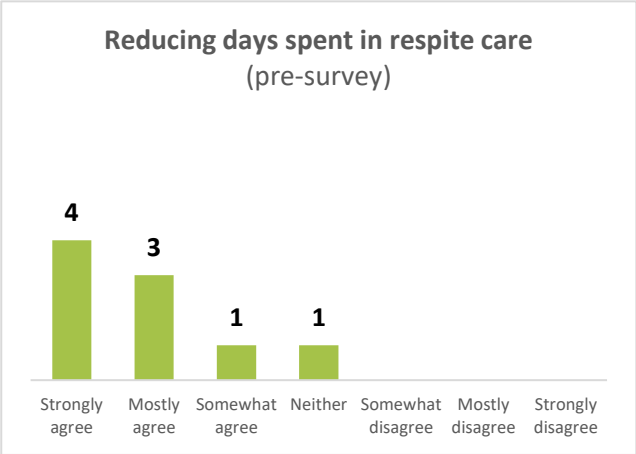
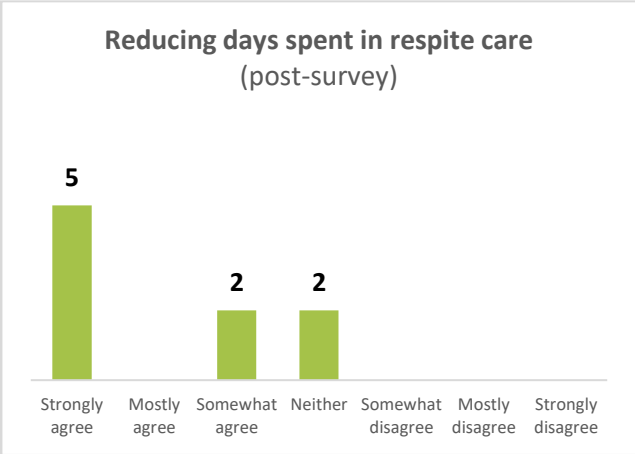
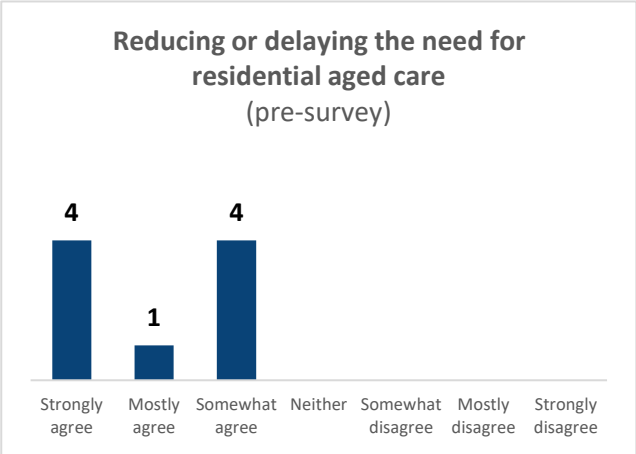
Mostly disagree
Strongly disagree


Reducing days spent in respite care
(pre-survey)
4
3
1
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing days spent in respite care
(post-survey)
5
2
2
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing or delaying the need for residential aged care
(pre-survey)
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4
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree

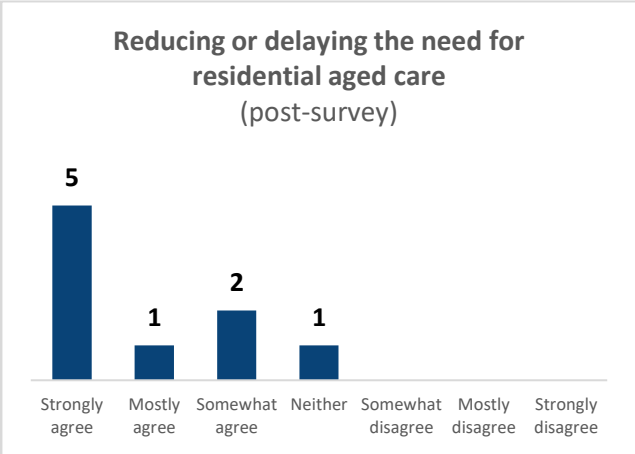
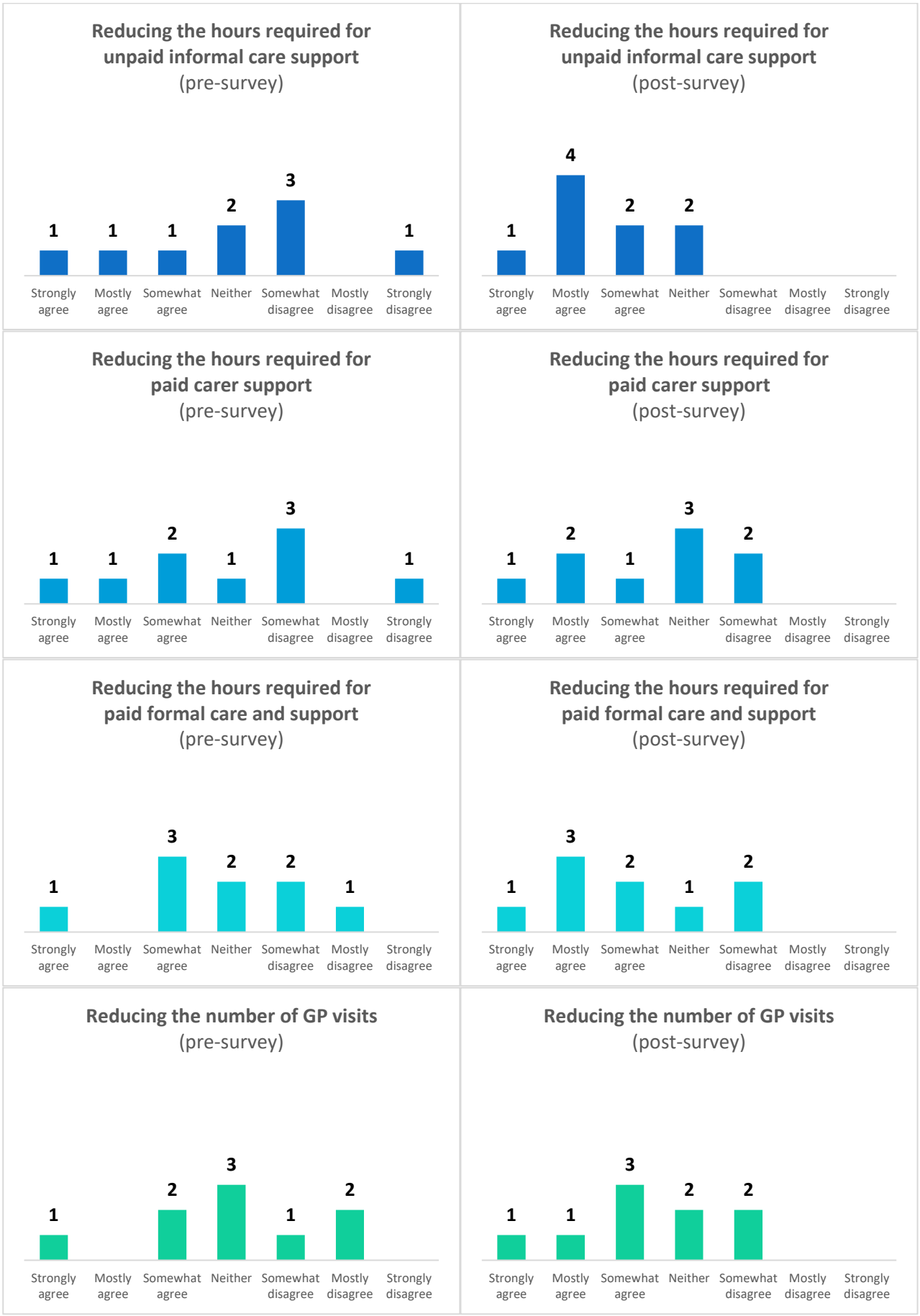
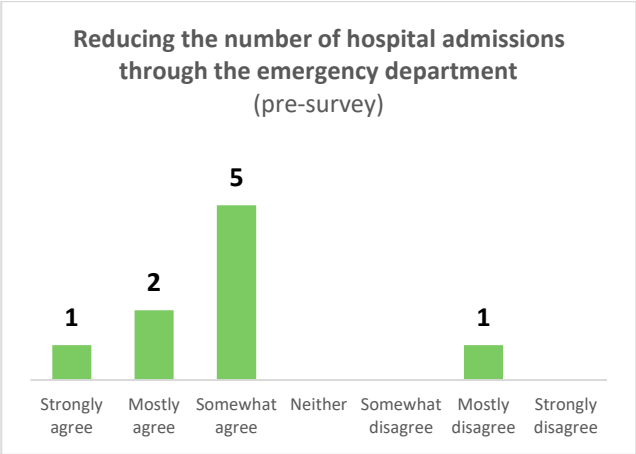
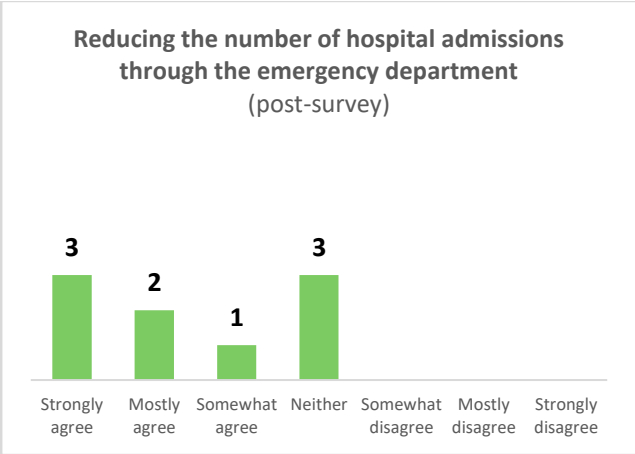
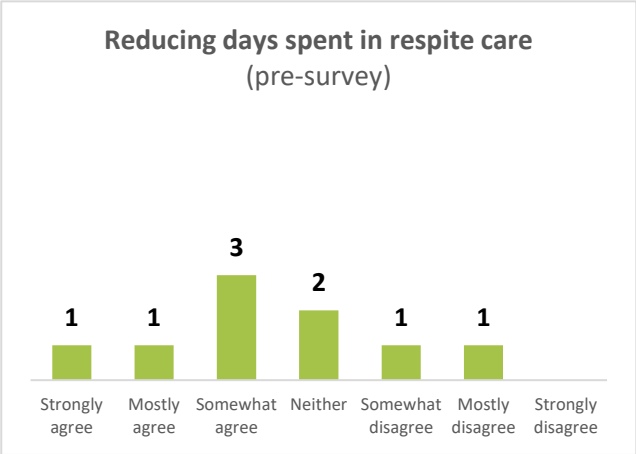

Reducing or delaying the need for residential aged care
(post-survey)
5
1
2
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree

Figure C-16: Benefits of using AT for the health and aged care systems – Person 4: Mr D




Reducing the number of hospital admissions through the emergency department
(pre-survey)
1
2
5
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing the number of hospital admissions through the emergency department
(post-survey)
3
2
1
3
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing days spent in respite care
(pre-survey)
1
1
3
2
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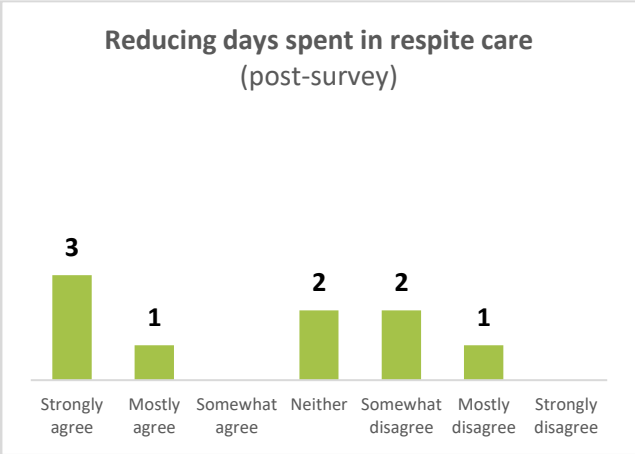
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing days spent in respite care
(post-survey)
3
1
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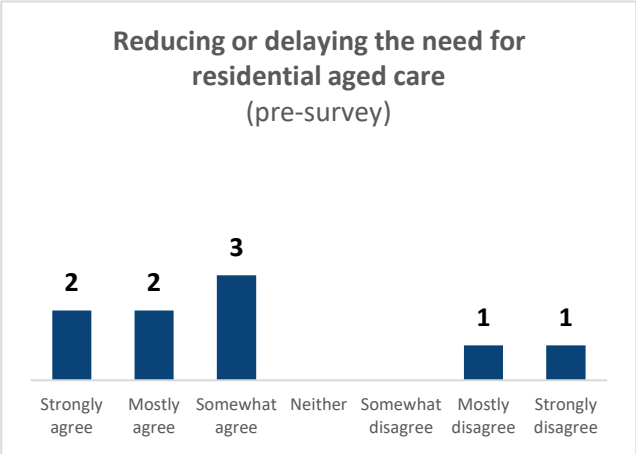
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree


Reducing or delaying the need for residential aged care
(pre-survey)
2
2
3
1
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree

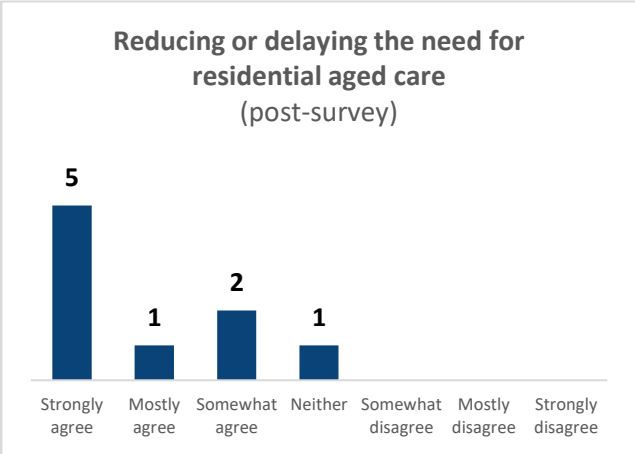

Reducing or delaying the need for residential aged care
(post-survey)
5
1
2
1
Strongly agree
Mostly agree
Somewhat agree
Neither
Somewhat disagree
Mostly disagree
Strongly disagree

Table C-4: Quantified and costed benefits for the archetypes based on the post-survey

Measure	Person 1: Mrs A Qty/year	Person 1: Mrs A Cost/year	Person 2: Mr B Qty/year	Person 2: Mr B Cost/year	Person 3: Ms C Qty/year	Person 3: Ms C Cost/year	Person 4: Mr D Qty/year	Person 4: Mr D Cost/year
Unpaid informal care (hours)	N/A	N/A	N/A	N/A	-11.6 (-0.2 per week)	-$225.22	-92.4 (-1.8 per week)	-$1,801.74
Paid carer support (hours)	N/A	N/A	N/A	N/A	N/A	N/A	-75.1 (-1.4 per week)	-$1,463.92
Paid formal care (hours)	N/A	N/A	11.6 (0.2 per week)	$565.76	5.8 (0.11 per week)	$282.88	-5.8 (-0.1 per week)	-$282.88
GP visits (number)	-0.4	-$17.11	-0.6	-$21.22	-1.0	-$38.20	-5.7	-$216.47
Falls (number)	N/A	N/A	-0.9	-$575.88	N/A	N/A	-0.3	-$213.30
Hospital admissions through the emergency department (number)	N/A	N/A	-0.6	-$2,803.36	-0.7	-$3,364.03	-1.9	-$9,531.41
Days spent in daytime community respite care	N/A	N/A	N/A	N/A	N/A	N/A	-7.6	$0.00
Days spent in residential respite care (days)	N/A	N/A	N/A	N/A	N/A	N/A	-0.9	-$45.42
TOTAL BENEFIT	**N/A**	**-$17.11**		**-$2,834.70**	**N/A**	**-$3,344.57**		**-$13,555.14**

Time horizon

With access to AT	Person 1: Mrs A	Person 2: Mr B	Person 3: Ms C	Person 4: Mr D
Time delay to increase unpaid formal care, paid carer support and paid formal care	2 to 12 years	2 to 12 years	1 to 10 years	6 months to 2 years
Time delay for residential aged care admission	10+ years (not in the foreseeable future)	10+ years (not in the foreseeable future)	6 months to 10 years	4 months to 3 years

Note: a negative quantity or cost represents a saving and a positive quantity or cost represents an increase.

Table C-5: Modelled cost data

Unit type	Cost per unit	Cost definition	Data source
Unpaid informal care	$19.49 base rate (excludes entitlements and loadings)	Base hourly rate for current minimum wage in Australia	Minimum Wage and Award Wages in Australia (employsure n.d.)
Paid carer support	$19.49 base rate (excludes entitlements and loadings)	Base hourly rate for current minimum wage in Australia	Minimum Wage and Award Wages in Australia (employsure n.d.)
Paid formal care	$32.65 base rate $48.96 inflated rate with entitlements and loadings	Base hourly rate for a Level 3.3 employee	Community Vision Australia Disability and Aged Care Agreement 2019 (Fair Work Commission 2016)f
GP Visit	$38.20	Medicare Benefits Schedule – Item 23 Level B professions attendance by a general practitioner. Fee $38.20	Medicare Benefits Schedule: (MBS online n.d.)
Falls	$639.90	Cost of non-hospital treatment associated with a fall in the community for Australian aged 65+. Hospital costs related to falls are captured in hospital admissions. Costs of $462 were reported in 2006/07 and inflated by CPI to 2019-20 to equal $639.90	The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07. A Report to NSW Health (Watson et al. 2010) Page 13, community residents aged 65+ with a non-hospital treatment for a fall.
Hospital admissions through the emergency department	$5,046.04	Average cost per acute hospital admission was $4,886 in 2017-18, inflated by CPI to 2019-20 to equal $5,046	National Hospital Cost Data Collection Report Public Sector, Round 22 (Financial Year 2017-18) February 2020 (Independent Hospital Pricing Authority 2020) Page 14, average cost per episode for Round 22, in 2017/18
Daytime community respite care	$0	Generally, no cost or minimal cost to attend a daytime community-based respite care	
Days spent in respite care	$51.21	The maximum daily fee for a respite resident is set by the Government at 85 percent of the single basic Age Pension. This is currently $843.60 per fortnight and 85 percent of this is $717.06 per fortnight or $51.21 per day.	Aged Care Guide; Australia (Aged Care Guide n.d.)

Assumptions and limitations:

- Formal care is based on an hourly rate which is inflated by 50%. This is to cover on-costs or casual rates (25% loading) and travel, car expenses and other costs (25% loading).
- The hourly rate for the Community Vision Australia Disability and Aged Care Agreement 2019 was consistent with the range found in other similar agreements.
- Informal care is based on the current minimum wage in Australia to reflect a monetary value should this informal care need to be replaced with paid care.
- Costs are reported in $AUD 2019-20. Rates are valid as at February 2020.

AT Best Buys

For the pre-survey, the top 5 AT categories a CONSUMER should fund included the Laundry AT, Bathing AT, Dressing AT, Communication and information, and Cleaning AT. Four panellists quantified a consumer co-payment for AT, and this ranged from $100 to $500. Top 5 AT categories a GOVERNMENT should fund included Home access, Home safety, Bathroom access, Bed Transfer and Kitchen modifications. Three panellists quantified a government cap for AT and this ranged from $1,000 to $2,000.

For the post-survey, the top 5 AT categories a CONSUMER should fund included the Cleaning AT, Bathing AT, Laundry AT, Food preparation and Dressing AT. Five panellists quantified a consumer co-payment for AT and this ranged from $30 to $200 with one suggesting 10% of the total costs. Top 5 AT categories a GOVERNMENT should fund included Home access, Bathroom access, Bed transfers, Home safety and Kitchen modifications. Two panellists quantified a government cap for AT and this ranged from $1,500 to $10,000.

The best buys for AT were identified for the pre-survey and the post-survey (*Figure C-17*). The pre-survey focused on the provision of information, education, assessment, as well as products and equipment which are directed towards individual circumstances and use. The post-survey had a slightly different approach where the focus was on support, services and equipment in the home, as well as education, media and advice, in addition to consideration of individual circumstances.

Figure C-17: AT 'best buys'

Part a) Pre-survey

Part b) Post-survey

Appendix D Archetypes

D.1 Archetype overview

This appendix:

- Describes the 15 Archetypes based on real life consumers, developed to represent the older population for the cost–benefit analysis
- Details the associated AT products and services recommended in the model.

The Archetypes are distributed across four categories according to the severity of impairment: Mild, Moderate, Severe and Profound. Archetypes in the Mild category represent consumers who are not in aged care. All other Archetypes are based on cases from de-identified CHSP support plans.

D.2 Archetypes for Mild limitation

Archetype 1: Preventative AT

Mr Z, aged 69, is beginning to notice that it is harder to do some everyday tasks such as cutting his toenails, gardening, using steps and going shopping. He is worried about losing his independence and becoming more dependent on his children.

He was talking about this with a friend who told him about a website that provides ideas, help and advice about simple equipment that might help with his daily tasks. After going online, Mr Z read about different types of equipment that can help him remain active and safe. The website listed a range of products such as bathroom and toenail clipping aids, as well as gardening and shopping aids. After some more research on the costs of items, Mr Z ordered online a long-handled nail clipper, some long-handled bathroom and gardening aids, and decided to look for a lightweight shopping trolley when he was next in the hardware store.

AT Products

- Peta long-handled nail clippers
- Propping kitchen stool
- Lightweight vacuum
- Lightweight mop
- Long-handled reacher
- Long-handled dustpan and brush
- Long-handled duster
- Long-handled scrubber
- Kitchen trolley
- Shopping trolley
- Long-handled washer/toe dryer
- Long-handled sponge
- Long-handled garden equipment

AT Services

- Online information

Archetype 2: Preventative Home Modifications

Mrs Y is 73 years old and lives in her own home that she and her husband built 40 years ago. Her husband has since passed away and she lives alone. Despite being in good health generally, Mrs Y recently slipped in the bathroom and had a fall, and with a history of hip problems, her daughter was worried about Mrs Y's general safety. Her daughter also noticed that Mrs Y is also beginning to have trouble climbing the large single step at her front doorway. Mrs Y is very independent and does not receive any services, assistance or pensions from the government.

After a family discussion about their concerns, Mrs Y's daughter found information on specific DIY fall-prevention bathroom modifications and ramps. Mrs Y's daughter has some basic carpentry skills and after discussing with Mrs Y she installed a single-step small ramp and handrails to her front doorway, added slip-resistant coating to her bathroom floor tiles, and a grab rail by her toilet.

Mrs Y was happy to have the renovations done on her home as they made it easier for her to move around and gave her some peace of mind.

AT Products

- Grab rails
- Handrails at steps to home
- Rubber ramp

AT Services

- Online information

Archetype 3: AT assessment only

Mr X, aged 71, takes medications and rests when needed. He exercises daily and maintains a healthy diet. He lives alone and has a good circle of friends. He is independent and manages his daily living tasks himself.

He gets some assistance with his shopping through a local service and has a private cleaner who comes in every fortnight.

Condition:

Mr X is experiencing increasing mobility issues that leave him prone to slips and falls. However, Mr X does not consider himself frail and does not accept that he needs any support from aged care programs. He heard from friends that he could get an independent consultation to look at AT options, particularly mobility aids. He visited an Independent Living Centre and an allied health professional conducted a gait assessment.

Recommendation:

A four-wheeled walker.

AT Product

- Four-wheeled walker

AT Services

- AT consultation – for example, by an Independent Living Centre, or by an allied health professional qualified to conduct a gait assessment or triaged by customer service staff trained to identify gait indicators that require allied health input (could be fully subsidised or paid for by the consumer, but provided outside of aged care).

Archetype 4: CHSP AT only

Mrs W, aged 68, contacted My Aged Care because she was concerned about her independence. She currently uses a walker but says she has increasing probleMs getting around her home. She does not want to relocate and would like someone to come and see how they can help her.

Condition:

Mrs W has chronic pain in her back, which limits her abilities to complete any strenuous activities, and she cannot walk far before she has to stop and rest. She has to bend over to use a walker and this causes pain.

Back problems: Dorsopathies (includes scoliosis, sciatica); stroke (CVA)-cerebrovascular accident; abnormalities of gait and mobility (includes ataxic and spastic gait, difficulty in walking); other heart diseases (AF); chronic lower respiratory diseases (includes emphysema).

Recommendation:

Referred for allied health assessment for support and mobility aids.

AT Products

- Kitchen trolley
- Propping stool
- Bathroom modifications
- Shower stool
- Dressing stool
- Review bed and chair transfers
- Long-handled reachers
- Footcare

AT Services

- Allied health assessment

D.3 Archetypes for Moderate limitation

Archetype 5: CHSP Reablement

Ms E, aged 72, contacted My Aged Care and has been referred for assessment due to medical conditions and concern about increasing frailty. Ms E has been referred by her local GP for a mobility assessment. She is concerned about accessing medical appointments out of her local area and would like some support. She would also like some information about social group activities. She lives with her friend and flatmate in a social housing rental home. She enjoys watching TV, reading and the company of her pets. She accesses counselling services through a GP health care plan as part of treatment to maintain her emotional wellbeing. She would like to join some social group outings that meet her interests and help support her emotional wellbeing. She accesses a private lawn-mowing service. No other support services are currently accessed.

Condition:

Ms E takes prescribed medication to manage hypertension, high cholesterol, reflux, mood, respiratory health, chronic pain and osteoarthritis.

In the shower, she utilises rails and a handheld shower head to maintain her independence and safety. She moves independently in the home and uses a walking stick when out of the house. Ms E advises that she feels stable on her feet and has not had a fall this year but is cautious when she walks and can only walk short distances. She uses a four-wheeled walker for prolonged walking and standing due to chronic pain and shortness of breath. She advises that she cannot kneel. She drives locally and is independent with grocery shopping, meal preparation, medication management, bills, and mobility transfers. She also advises that she manages domestic tasks with modification of tasks and time management, but cannot lift her arMs above her shoulders.

Recommendations:

- A mobility assessment to support ongoing safe mobility
- Goods and equipment
- Consideration of an exercise program to support balance and conditioning, and reduce the risk of fall
- Accessing social group outings and activities that meet her interests to support her ongoing connection to her community and her emotional wellbeing
- Transport assistance to attend medical appointments out of her local area.

AT Products

- Falls prevention products (long-handled reacher, lighting, safety flooring, etc.)
- Adjustable washing line, laundry trolley
- Handrails for bathroom/toilet/entrances
- Shower stool
- Alter cupboard reach range (minor modifications)
- Four-wheeled walker
- Meal preparation aids – powered can opener, large-grip peeler, buttering board, jar opener, kettle tipper, tap turner, kitchen trolley

AT Services

- Allied health assessment

Archetype 6: CHSP HM

Mrs F, aged 81, contacted My Aged Care. She has been referred for assessment as she has health conditions that affect her energy levels and result in some unsteadiness on her feet and, additionally, she is concerned about falling in the shower because there are no grab rails for support. She lives with a partner in a low-level dwelling. She has two sons living in the area who are supportive and whom she sees regularly. She has another son interstate and she has a circle of supportive friends. One son helps her with any heavy lifting and is available if she needs him.

Condition:

Mrs E has polymyalgia arthritica and is currently taking Cortisone for this. She experiences very reduced energy levels and can be unsteady on her feet. She had a heart attack in 2000 and had a pacemaker put into her heart. She takes blood thinners and manages cholesterol and her blood pressure with medication.

Recommendations:

- OT assessment for grab rails
- Bathroom assessment

AT Products

- Handheld shower
- Handheld shower maximum cost

AT Services

- Allied health assessment

Archetype 7: CHSP AT

Mr G, aged 71, was referred by a discharge planner from the local hospital for assessment as Mr G is home alone for most of the day while his wife is at work and he worries about not having a personal alarm system to assist him if he needed it. He lives with this wife in a one-bedroom granny flat, with his daughter and grandchildren living on the same property in a separate house. They provide great support to him and he also socialises with friends on a regular basis. His wife, who is also his carer, provides meals, transport, shopping needs and domestic assistance on a daily basis. He can only drive short distances. He does assist with meal preparation, and he manages his own medications and personal care. He receives domestic assistance for 1.5 hours per week but does not receive any other support services.

Condition:

Mr G experiences breathing difficulties/shortness of breath (COPD), other diseases of the digestive system, including pancreatitis, pain, and issues with transfers which cause him to become light-headed at times.

Mr G takes medications and rests when needed and uses home oxygen. He is under the care of a respiratory clinic and will be attending a six-week breathing clinic program.

He is being investigated for coughing up blood.

Recommendations:

Referral for:

- Occupational therapy
- Goods and equipment

AT Products

- Personal alarm
- Falls detection mat at bed/chair
- Powered riser recliner lounge chair
- Adjustable bed for respiratory angle and ease of transfers
- Upright chair for drying/dressing
- Shower stool, grab bars and hand shower
- Handrails in toilet
- Commode next to bed
- Home oxygen portable unit

AT Services

- Allied health assessment

D.4 Archetypes for Severe limitation

Archetype 8: CHSP and services

Mrs G, aged 83, contacted My Aged Care. She lives with her husband of 63 years in their own home. They built their house and have lived in this same house since they married. They have three children, 7 grandchildren and 10 great-grandchildren. Mrs G used to be an active person who loved gardening. Due to her worsening health, she now lives a sedentary life. She and her husband go every Friday to the RSL to meet their friends. Mrs G's health has deteriorated, and she is unable to assist her husband with looking after their home.

Condition:

Mrs G's pain is due to her arthritis, which mostly affects her middle back. She cannot raise her arMs above chest level due to pain. She says that she forgets names but is otherwise fine. She is a semi-independent person whose main support is her husband. She is able to look after her personal care, and assist with shopping, cooking, and lighter house cleaning. She drives locally, if need be. She has difficulties with mobility.

Indicators:

Personal care safety and independence

Recommendations:

- OT assessment
- Domestic assistance support
- Transport support
- Support with transfers (bed, toilet, shower)
- Goods and equipment referral

AT Products

Indicative products and services:

- Kitchen/laundry trolley
- Dressing supports for lymphoedema
- Seating for personal Activities of Daily Living
- Bathroom and toilet handrails; shower hose, shower seating
- Continence pads
- Bed mobility
- Medication management system
- Mobility scooter

AT Services

- Allied health assessment

Archetype 9: Home Care Package – Level 1

Mrs H was assessed by an ACAT clinician in her privately-owned home where she lives alone. Mrs H has increasing health issues and her daughter stated that there is increasing indication of memory loss. At this time there is no Power of Attorney or Enduring Guardian in place.

Mrs H has a history of falls. Currently she is mobilising with the assistance of a four-wheeled walker. Mrs H finds it difficult to be comfortable due to ongoing issues with pain.

Mrs H wears glasses for reading, has had no recent changes in vision. She does not need hearing aids and there is no difficulty with speech or swallowing.

Mrs H wears a Vital Call button at all times.

Condition:

Mrs H has monthly check-ups with her GP, and her medical history includes chronic back pain, osteoarthritis, peripheral neuropathy in her feet, GORD, COPD, hypertension, bilateral knee replacements, a right mastectomy and reconstruction in 2006.

She has noticeable lymphoedema in her right arm and hand. Mrs H has had two recent episodes of bowel incontinence, lacks sensation from her bladder and uses continence aids.

Mrs H's mobility is limited and has declined recently.

Indicators:

Personal care safety and independence

Recommendations:

- Minimum agreed interim package level: Home Care Package Level 1
- AT recommendations:
  - Support and mobility aids
  - Self-care aids
  - Medical care aids
  - Other goods and equipment, including rails in bathroom areas (currently has suction rails)
  - Allied health and therapy services
  - Social support.

AT Products

Indicative products and services:

- Kitchen/laundry trolley
- Dressing supports for lymphoedema
- Seating for personal ADLs
- Bathroom and toilet handrails, shower hose, shower seating
- Continence pads
- Bed mobility
- Medication management system
- Mobility scooter

AT Services

- Allied health assessment

Archetype 10: Home Care Package – Level 2

Mr I, aged 92, was referred by a hospital discharge planner to determine his eligibility to access aged care services. Mr I is a widower and lives alone in his own home, with two sons living locally. He has a weekly private cleaner, and his sons help with lawn mowing, and splitting and bringing in wood in the winter. His friends are providing some cooked meals on an irregular basis. Mr I was managing his own shopping until recently and his sons will help in the short term. He loves to spend time researching on the internet or emailing.

Condition:

Mr I was recently in hospital with a suspected bowel obstruction. He is very concerned about his short-term memory loss and states that this has been troublesome for the last couple of months, but his son thinks that there may have been a gradual decline over a longer period of time. Mr I's MMSE score is 27/30 and he was challenged only in the recall area.

Mr I has hearing loss and does use bilateral hearing aids. He has reduced vision in his left eye (from birth) and wears glasses. He has trouble sleeping at times. Mr I transfers with difficulty and uses aids such as pull belts, poles, furniture and fittings. He is mobilising across short distances using either a walking stick or a wheelie walker. He gets very breathless on exertion (even when conversing) and has to rest often. He had one recent fall when overbalanced and was unable to get himself back upright without someone to help him. His gait is slow and shuffling, and he tends to balance himself by leaning backwards. He is currently using a shower stool to undress and shower. He has trouble drying his feet. He also has trouble donning shoes and socks (so tends not to use them). He would benefit from minor assistance. He attends to his own toileting with no incontinence issues identified.

Mr I currently estimates his weight to be 80kg and he has no reported recent weight loss. He has a protruding abdomen. He believes that cabbage, cauliflower, brussels sprouts and onions have contributed to his recent bowel issue and is avoiding them. He would like to access MOW as he no longer cooks meals for himself but does get his own breakfast and snacks. His private cleaner attends to the heavy cleaning and laundry tasks. Mr I now needs help with transport, shopping and main meals.

Mr I lives in an older-style brick home on one level, with one large step out to the side of the home that he struggles with. He has a secure handrail in the shower recess but there remains a 10 cm step into the shower. There is no rail near the toilet. He would benefit from OT home assessment and possible bed pole for easier bed transfers.

Recommendations:

Home Care Package Level 2 to support him at home and potentially provide care coordination, personal care assistance, medication supervision, domestic and shopping assistance

- Goods and equipment: self-care aids and home modifications assessment
- Approvals in place for respite and permanent residential care
- May benefit from a rail near the entrance to his home.

AT Products

- Large-dial watch with medication reminder
- Falls prevention strategies:
  - Rug fasteners
  - Improved lighting
  - Declutter
  - Organisation of environment for prompting and safety (e.g. set up desk or table with drinks, computer, papers, phone, magnifier, lamp and upright kitchen chair; lounge seating area with blocks under favourite chair, overbed table with tissues, phone, daily task schedule)
  - Clothing/footwear
- Clothing/footwear as falls mitigation strategy:
  - Extra depth footwear (day shoes and slippers) with velcro
  - Sock donner
  - Easy wear clothing for lower limbs (e.g., https://ilcaustralia.org.au/products/21700)
- Kitchen trolley to carry light meals and drinks, and manage general tasks and demands around the home
- Bathroom products and services (shower chair with back, hand shower, handrails, non-slip treatment, toilet rails)
- Review transfer capacity: assess transfer technique and re-position all transfer surfaces, handrail at home entrance
- Chair mobility
- Bed mobility
- Gait: review wheelie walker to ensure can rise/lower into seat to manage shortness of breath during use

AT Services

- Allied health assessment

Archetype 11: Transition care – (stroke)

Mrs J, aged 78, has been referred for assessment by the hospital for consideration for a transition care package. She lives with her husband in their own home. He has his own health issues and thus their daughter is Mrs J's official carer. Mrs J receives weekly cleaning assistance.

Condition:

Mrs J had a right middle cerebral artery stroke and was admitted to hospital. She had multiple complications and was stabilised. Other medical issues include a previous CVA in 2018, diabetes mellitus-Type 2, chronic low back pain, atrial fibrillation, congestive heart failure, lower limb oedema and coeliac disease.

Mrs J's speech, mobility and cognition have improved since her CVA, but she has residual difficulties and requires ongoing rehabilitation. She has some cognitive impairment persisting around language (expressive and receptive dysphasia) and delayed processing.

Mrs J has resolving dysphagia and is now on a standard ward diet – gluten free due to coeliac disease – and thin fluids. This requires observation and prompts to ensure upright posture when eating.

Additionally, Mrs J has a persistent left homonymous hemianopia and left visual field inattention that requires ongoing intervention. Mrs J still has some left-sided weakness and un-coordination, but she is now mobilising and transferring independently on ward with a four-wheeled walker and is toileting independently. She receives assistance with showering and dressing on ward.

Mrs J experiences residual chronic back and left knee pain and mobility issues as a result of a car accident when she was in her 20s. She has also been having recurrent urinary tract infections that cause delirium.

Recommendations:

- Transition care
- High-level respite approvals
- Goods, equipment and AT
- Home modifications
- Domestic assistance
- Meals

AT Products

- Adapted eating: dysphagia cup, upright seating
- Visual aids: lighting, magnifier, wayfinding props at home and high-marks on appliances, communication board/book
- Bed support (clamp) and bed raisers/chair raisers for transfers
- Bathroom and toilet supports: rails, handrails, thermostatic mixing valve, shower hose, and shower chair with arms
- Monitoring supports: GPS tracker (family), audible watch, visual medication management system
- Walking aid

AT Services

None.

D.5 Archetypes for Profound limitation

Archetype 12: Home Care Packages – Level 3 (Parkinson's disease)

Mr K was referred for ACAT by his neurologist due to functional decline related to Parkinson's disease. Mr K lives with his wife who is his sole carer, with private support for domestic assistance. Mr K goes to several programs and health practitioners to maintain his capacity to undertake daily living tasks and independent mobility. Within their home, Mr K completes tasks with varying levels and forMs of assistance from his wife as required, mainly dependent upon his levels of fatigue, dexterity and mobility.

Condition

Mr K reports several eye conditions that impact on his ability to conduct daily living tasks. He is adjusting to changes in daily living as a result of his degenerative conditions. Poor vision, fatigue and low mood impact on his ability to maintain his professional interests as a retired scientist. He. has a network of former university colleagues who provide social support.

Recommendations

- Level 3 or 4 HCP, residential respite high and residential care as required
- Community transport and gardening maintenance
- Personal alarm/communication device
- Independent Living Centre to assess aids related to bed mobility and dressing
- Support for his wife as carer.

AT Products

- Bed mobility: adjustable bed, leg lifting device, bed pole
- Chair for dressing, dressing aids
- Large-print calendar, talking clock, audible watch with medication alarm
- Propping stool in kitchen/workspace to manage fatigue
- Bathroom modifications including installation of stepless shower base, fold-down shower seat, handrails, handheld hose and switchcock
- Wheeled mobility aid with seat and basket for outdoors/garden
- Garden trolley
- Personal alarm
- Easy access clothing, dressing stick, sock donner, elastic shoelaces

AT Services

- Allied health assessment

Archetype 13: Home Care Packages – Level 4

Mrs L is a 60-year-old Aboriginal woman who lives in a unit on her own. She sees her sister and brother-in-law regularly. She does not think of her sister as her carer and prefers not to call on her for help if possible. Mrs L is currently accessing a Level 2 Home Care Package, but due to the complex nature of her health conditions and need for specialised equipment she is already over budget with her package. Her Home Care Package Case Manager requested that Mrs L be reviewed by ACAT for a High Priority Level 4 Home Care Package. An assessment then occurred in Mrs L's home. Mrs L was also admitted to hospital a couple of weeks ago with such severe pain that she was not able to control it with medication and required a period of immobility/case assistance and high-level pain medication.

Condition

Mrs L has a long history of:

- Rheumatoid arthritis
- Lupus
- Osteoporosis
- Polymyalgia rheumatica
- Chronic pancreatitis
- Reflux
- Irritable bowel syndrome.

The majority of these conditions are a source of pain for her and she also reports experiencing a burning sensation that happens multiple times a day. The burning pain progresses through her body and can only be alleviated by lying very still and allowing it to pass. Mrs L is a very slim woman who requires a soft diet due to swallowing difficulties from her Lupus.

Mrs L currently accesses physiotherapy, counselling, and regular GP reviews, and has accessed the Pain Clinic in the past.

Indicators

- Soft diet (lupus)
- Mobility
- Safety/confidence

Recommendations

- Home Care Package Level 4
- Social support individual
- Goods, equipment and AT
- Domestic assistance
- Home maintenance

AT Products

Indicative products and services:

- Safety tread
- Dressing equipment
- Shower stool
- Bed supports (adjustable bed or tilt backrest)
- Chair raisers
- Home adaptations
- Nutrition support
- Lightweight cleaning and cooking equipment
- Laundry trolley
- Reaching aids

AT Services

- Allied health assessment

Archetype 14: Home Care Packages – Level 4 (Dementia)

Mr M is aged 86 and lives with his daughter, who is his registered carer. Following a recent Home Support Assessment, Mr M was referred for an ACAT assessment to provide access to a coordinated Home Care Package and to assess his eligibilities for residential care (both permanent and respite). Mr M also has two sons, both of whom reside in the same town. Mr M attends the Men's Shed twice weekly and his daughter is investigating other day centre options. No formal home care services are currently in place.

Mr M maintains regular contact with his GP. He is able to verbalise his immediate needs.

Condition

Mr M has a reported medical history of:

- Moderately severe dementia of mixed pathology
- Visual misperceptions
- Vascular parkinsonism
- Pre-syncope/syncope
- Duplex kidney
- Depression
- Hypercholesterolemia
- Coronary artery bypass grafting
- Basal-cell carcinoma and excisions of same
- Gastro-oesophageal reflux disease
- Atrial fibrillation.

He has:

- Chronic and complex health conditions impacting physical functional capacity and mobility
- Diagnosis of dementia in Alzheimer's disease: he requires prompting to initiate, and supervision of safety, for all daily living activities. He has reported visual misperceptions and potential for wandering, including overnight
- High potential for carer stress and/or burnout, as reflected in Carer Strain Index. Nil current residential respite eligibilities and/or sustainable emergency care plan
- High falls risk potential – supervision of all mobility and transfers is suggested.

Recommendations

- Home Care Package Level 4
- Residential care
- High-level residential respite care
- Social support
- Centre-based respite; flexible respite
- Goods, equipment and AT

AT Products

- Visual prompts and props (signage, lighting, large-print orientation labels on doors)
- Large-face watch with reminder system
- Large-button TV/radio controller or iPad for self-settling with meditation apps/favourite music/shows
- Workbench or desk for hobby/self-soothing activities (books, pictures, small tools and projects)
- Reverse hinge toilet door for safety, safety latches on garden gates
- GPS sock tracking system
- Transfer mat alarm at bedside/doorstep, if needed
- Riser recliner armchair, raised bed
- Stool for dressing
- Tempering valve in shower with shower seat, hand shower and rails for shower/toilet
- Stove shut-off device

AT Services

- Allied health assessment

Archetype 15: Home Care Packages – Level 4

Mrs N is a 68-year-old widow. She was referred by the local welfare association to review her priority to access a Home Care Package due to her increasing difficulty managing at home. She receives some CHSP services through the welfare association (assistance with personal care, cleaning, laundry, shopping, meals, bill-paying and transport). She also receives nursing care/wound care three days a week. Mrs N pays privately for four additional visits to assist with personal care (she therefore receives assistance with personal care seven days a week – she has a toe wound that she needs to keep dry). Mrs N wants to remain in her usual accommodation setting.

Condition

Mrs N reports:

- Significant joint pain and stiffness throughout her body due to severe rheumatoid arthritis
- Bilateral hip pain (she is awaiting orthopaedic review for possible hip replacements)
- Left foot pain (left second toe ulceration with severe deformity as well as clawing of other toes in both feet – she may require toe amputation then further corrective foot surgery).

Mrs N also has:

- Very limited function in her hands and significant hand deformity due to rheumatoid arthritis
- Very slow and limited mobility (she frequently reports being unable to move first thing in the morning)
- Very limited standing tolerance
- Difficulty with transfers due to pain and stiffness.

Mrs N mobilises using a four-wheeled walker and mobilises very short distances only (room to room). She reports that she tries to limit her mobility as much as possible due to left foot pain. She reported 2–3 falls in the last 12 months. She would benefit from assistance with all movement-related activities. Mrs N struggles to undertake all daily living tasks due to her physical limitations (pain, stiffness and joint deformity), and she needs assistance with everyday activities due to a chronic physical health condition. She has experienced further deterioration in her functioning, in particular increasing hip and foot pain. She is unable to perform the heavier cleaning tasks on a regular basis due to her rheumatoid arthritis and lack of mobility.

Recommendations

- Mrs N's priority to access a Home Care Package be changed from medium to high. Consumer at high risk of hospitalisation and entry into permanent residential care without additional home care services.
- Recommended assistance includes:
  - Goods, equipment and AT
  - Home modifications
  - Personal care
  - Domestic assistance
  - Social support group
  - Food services
  - Nursing services.

AT Products

- Full bathroom modifications (level access shower, wheeled shower commode)
- Easy access clothing, some dressing aids (check hand function)
- Jar openers/buttering boards, lightweight kettle and other dexterity-related kitchen supports
- Adjustable bed, power riser recliner lounge chair
- Power wheelchair option/mobility scooter or manual wheelchair for family to take Mrs N on outings
- Prosthetic support/orthotic footwear

AT Services

- Allied health assessment.

Appendix E Existing AT programs

E.1 National AT programs

Existing AT programs or subsidy schemes at a national level are profiled below. The profiles summarise each program, including funding source, categories of AT provided and eligibility criteria. Detailed profiles of each scheme are provided in the Initial Report.

National Disability Insurance Scheme (NDIS)

Funder: Australian Government Department of Social Services | **Administrator:** NDIA

The NDIS is Australia's first national scheme for people with disability. It provides funding directly to individuals. Consumer funding is based on what is 'reasonable' and 'necessary' to achieve the consumer's goals.

AT provided

The NDIS use four levels to describe the complexity of AT needs:

- Simple, low-risk AT
- Standard AT
- Specialised AT solutions
- Complex AT solutions.

NDIS participants can choose how they want to manage the funded supports in their plan, and can choose the providers they want to deliver AT supports. Funds can generally be used to:

- Buy the AT outright; or
- Access the AT through rental, loan or other arrangements

Information, assessment and provision

If AT is included in a consumer's plan, at least $500 is included to seek advice from an independent adviser about the consumer's AT requirements.

Key eligibility and exclusion criteria

- Have a permanent disability that significantly affects their ability to take part in everyday activities or a developmental delay
- Be aged between 7 and <65 years old when they first access the NDIS
- Be an Australian citizen, hold a permanent visa or a Protected Special Category visa

Rehabilitation Appliances Program (RAP)

Funder/Administrator: Australian Government Department of Veterans' Affairs

DVA's RAP provides eligible DVA consumers with aids and appliances that:

- Meet the consumer's clinical health care needs, enabling them to be as independent and self-reliant as possible at home and in the community
- Are aimed at minimising the impact of the consumer's disabilities, illnesses or injuries and helping them to maximise their quality of life, independence and participation in the community.

The Hearing Services Program is a sub-program of RAP.

AT provided

Generally, DVA funds only medical and specialist services listed on the MBS. Requests for items not on the DVA Schedule must be made through prior approval process with DVA for consideration. The aids and appliances available under RAP include continence, diabetes, oxygen and positive airways pressure, mobility and functional support, cognitive, dementia and memory assistive technology, personal response systems, falls prevention, low vision, prosthesis and footwear, hearing appliances and speech pathology.

Information, assessment and provision

Most health care providers in Australia accept DVA Health Cards/Veteran Cards as full payment for treatment.

Key eligibility and exclusion criteria

- A member of the veteran community
- A Gold Card holder, or
- A White Card holder (only for conditions accepted by DVA as related to service)
- Assessed by a GP or medical specialist as requiring an aid or appliance to meet a clinical health care need.

National Aboriginal and Torres Strait Islander Flexible Aged Care Program (NATSIFAC)

Funder/Administrator: Australian Government Department of Health

NATSIFAC provides culturally appropriate aged care to older Aboriginal and Torres Strait Islander people close to home and community. Service providers deliver a mix of residential and home care services in accordance with the needs of the community which are located mainly in rural and remote areas.

AT provided

Care can be:

- Residential care. This includes assistance with personal care and care that meets the person's nursing needs, meals and cleaning services, and furnishings, furniture and equipment for the provision of that care
- Home care that supports people to remain living at home.

Information, assessment and provision

Potential consumers are not required to be assessed by an ACAT to receive care services under the NATSIFAC Program. However, it is recommended that an assessment be undertaken by a health professional or ACAT prior to receiving aged care services.

Key eligibility and exclusion criteria

- Aged 50 years and older
- Aboriginal and/or Torres Strait Islander descent
- Identify as Aboriginal and/or Torres Strait Islander
- Are accepted by the community they live in or come from.

Commonwealth Home Support Package (CHSP)

Funder/Administrator: Australian Government Department of Health

CHSP represents the entry tier of the Australian aged care system. It is designed to provide a relatively small amount of care and support to a large number of frail older people to help them to remain living at home and in their communities. CHSP services can be delivered on a short-term, episodic or ongoing basis, and have a strong focus on activities that support independence and social connectedness and provide more choice to consumers. Services funded under CHSP include domestic assistance, transport, meals, personal care, home maintenance and modifications, social support, nursing and allied health.

AT provided

As no list currently exists of all items included under the CHSP goods, equipment and AT category, the following broad categories are used:

- Self-care Aids
- Support and Mobility Aids
- Medical Care Aids
- Communication Aids
- Other Goods and Equipment
- Reading Aids
- Car Modifications.
- Home modifications

Information, assessment and provision

Assessment for CHSP is through My Aged Care, the entry point to the aged care system for older people, their families and carers. Home Support Assessments for CHSP are conducted by the My Aged Care RAS. Only providers that have a contract with the Australian Government can provide these services using CHSP funds. Consumers can access up to $500 per year to access AT, or up to $1000 at provider discretion.

Key eligibility and exclusion criteria

- Frail people aged 65+ (50+ years for Aboriginal and Torres Strait Islander people), who have functional limitations (including cognitive) to remain living independently at home and in their community
- Frail older consumers who need planned respite services to provide their carers with a break from their usual caring duties.
- Frail people or prematurely aged people 50 years and over (or 45 years and over for Aboriginal and Torres Strait Islander people) on a low income, who are homeless or at risk of homelessness as a result of experiencing housing stress or not having secure accommodation.

Home Care Packages (HCP)

Funder/Administrator: Australian Government Department of Health

HCP helps older Australians with complex care needs to live independently in their own homes. It provides the second tier of support in the aged care system and is designed to support older people living in the community whose care needs exceed the level of support that can be provided through CHSP. There is no minimum age requirement for home care packages. Funding depends on which of the following four package levels a consumer is assigned to, based on their needs:

- Level 1: Basic care needs approx. $8,800 a year
- Level 2: Low care needs approx. $15,500 a year
- Level 3: Intermediate care needs approx. $33,700 a year
- Level 4: High care needs approx. $51,100 a year.

AT provided

Four types of services are provided under HCPs:

- Personal care: such as help with showering, dressing, mobility, meal preparation and eating, and fitting sensory communication aids
- Support services: such as help with laundry, house cleaning, gardening, basic home maintenance, home modifications (related to care needs), and transport to help the consumer do shopping, visit their doctor or attend social activities
- Clinical care: nursing, allied health and other therapies
- Other services: such as remote monitoring technology (where appropriate) and assistive technology, including devices that assist mobility, communication and personal safety where these services are identified in the consumer's care plan.

Information, assessment and provision

ACATs conduct comprehensive assessments for HCPs, and recipients are not limited to a basic list of services. Approved providers work with each of their consumers to select services that best meet each individual's care needs and goals. HCP consumers require an income assessment by the Department of Human Services and/or DVA. Wait times of three months to over 12 months apply, depending on the package level.

Only providers that have a contract with the Australian Government can provide these services using HCP funds.

No list currently exists of all items included under HCP.

Key eligibility and exclusion criteria

- Older Australians whose care needs exceed the level of support that can be provided through the CHSP are eligible for HCP.
- Individuals whose who are unable to continue living independently in their own homes and who require higher levels of ongoing support than that available through HCP are excluded.

Residential Aged Care (RAC)

Funder/Administrator: Australian Government Department of Health

Residential aged care is delivered to older people in Australia by service providers who are approved under the Aged Care Act 1997. Residential aged care provides a range of care options and accommodation for older people who are unable to continue living independently in their own home. The type of care provided ranges from personal care to assistance with activities of daily living through to 24-hour nursing care.

AT provided

RAC facilities are responsible for providing necessary AT for residents. Residents may also bring personal AT (such as mobility aids) when they move to the facility.

Information, assessment and provision

To enter Australian Government-subsidised residential care, a person must first be approved as a care recipient. In order to determine a person's eligibility and care needs, an Aged Care Assessment Team (ACAT) assessment must be undertaken.

Key eligibility and exclusion criteria

Older people who are unable to continue living independently in their own homes and who require higher levels of ongoing support than those available through home care packages.

Transition Care Program (TCP)

Funder/Administrator: Australian Government Department of Health & state/territory governments

Transition care provides short-term care that seeks to optimise the functioning and independence of older people after a hospital stay. Transition care is goal-oriented, time-limited and therapy-focused. The Department of Health provides funding through flexible care subsidies that are paid to state governments as the approved providers, and state governments provide a co-contribution.

AT provided

TCP provides older people with a package of services that includes low-intensity therapy such as physiotherapy and occupational therapy, as well as social work, nursing support or personal care to maintain and improve physical and/or cognitive functioning. The program seeks to enable older people to return home after a hospital stay rather than prematurely enter residential aged care. Providers are required to supply aids and equipment to consumers while in their care. Aids, appliances, equipment and services required for a care recipient's therapy are provided in a timely manner. Providers may purchase equipment and this equipment may be loaned temporarily to individual care recipients.

Information, assessment and provision

An assessment with an ACAT is required for entry into the program. If eligible, consumers must enter transition care as soon as they leave hospital. If a care recipient requires aids and equipment on an ongoing basis, the service provider should seek equipment from such sources as state government equipment schemes or equipment loan services. If care recipients are not eligible for services under these equipment schemes or equipment loan services and the required services are not available, the care recipient or their representative is responsible for the cost of the equipment.

Key eligibility and exclusion criteria

Consumers must be an older person and

- A patient in a public or private hospital
- Have been told that they are ready to leave hospital
- Would benefit from receiving services for a short period of time.

Short-Term Restorative Care Program (STRC)

Funder/Administrator: Australian Government Department of Health

The STRC Program is an early intervention to reverse or slow 'functional decline' in older people. 'Functional decline' is when a person is having difficulty performing their day-to-day activities, including bathing, dressing, feeding, shopping or driving. STRC provides services to older people for up to eight weeks (a maximum of 56 days) to help them delay or avoid long-term care.

AT provided

The support can take place in the person's home, an aged care (nursing) home or a combination of both. STRC services are tailored for each person and can involve a number of different health professionals. STRC services may include but are not limited to:

- Occupational therapy
- Physiotherapy
- Nursing support
- Personal care
- Provision of technologies to help with day-to-day activities
- Minor home modifications.

Information, assessment and provision

If a person wants to apply for STRC, an ACAT must assess them. Each episode of care requires an ACAT assessment.

A person can access both STRC and CHSP services, but the services must be different, yet complementary.

Key eligibility and exclusion criteria

To be eligible for STRC a person must be:

- An older people who are having difficulty performing their day-to-day activities.
- At risk of losing their independence
- Able to improve their independence with STRC.

Continence Aids Payment Scheme (CAPS)

Funder/Administrator: Australian Government Department of Health

A yearly non-taxable payment to cover some of the cost of products that help people manage incontinence

AT provided

The 2019-20 payment rate for CAPS is up to $609.70 per person. Consumers can buy any continence products they need with CAPS, including from supermarkets.

Information, assessment and provision

Consumers must fill out an application form, which must be signed off by a registered health professional

Key eligibility and exclusion criteria

To get paid under CAPS consumers must meet all of the following:

- be 5 years or older
- have permanent and severe bladder or bowel incontinence confirmed by a registered health professional
- be an Australian permanent resident or citizen for as long as you get the payment
- have any eligible neurological conditions or eligible other conditions on the Bladder and Bowel website.

Australian Government Hearing Services Program

Funder/Administrator: Australian Government Department of Health

The Australian Government Hearing Services Program provides eligible people with access to subsidised hearing services and products by an accredited hearing services provider

Funded by the Department of Health, administered through accredited hearing providers

AT provided

- Access to fully subsidised hearing aid devices
- Advice on how to achieve maximum benefits from hearing aids

Types of hearing devices:

- Behind-the-ear (BTE)
- High powered BTE
- Open fit BTE
- In-the-canal (ITC) and in-the-ear (ITE)
- Completely in the canal (CIC)
- Body aids
- Bone conduction hearing aids
- Spectacle aids
- Contralateral routing of signal (CROS) aids
- Bilateral contralateral routing of signal (BiCROS) aids

Information, assessment and provision

Consumers lodge an application form online, and if approved make an appointment with a registered hearing provider

Key eligibility and exclusion criteria

The Australian Government Hearing Services Program is open to Australian citizens or permanent residents 21 years or older who are:

- Pensioner Concession Card holders
- Department of Veterans' Affairs Gold Card or White Card holders
- Members of the Australian Defence Force
- Referred by the Disability Employment Services
- NDIS participants
- Receiving Sickness Allowance from Centrelink

Stoma Appliance Scheme (SAS)

Funder/Administrator: Australian Government Department of Health

The SAS is subsidised by the Australian Government Department of Health to provide stoma-related products free of charge to people with stomas.

AT provided

Consumers can access Stoma-related products through the scheme. Full list of available products can be found here.

Information, assessment and provision

Consumers pay a fee (the national access fee) to their chosen Stoma Association. The 2019-20 fee is:

- $50 for members who present a valid Commonwealth Concession Card; and
- $60 for members who are not entitled to a Commonwealth Concession

Key eligibility and exclusion criteria

To access stoma-related products under the Scheme, a person:

- Must have a temporary or permanent stoma
- Be an Australian resident or an eligible overseas resident

Essential Medical Equipment Payment

Funder/Administrator: Australian Government Department of Health

A yearly payment to help with energy costs to run medical equipment or medically required heating or cooling.

AT provided

Eligible equipment:

- dialysis machine
- ventilator
- respirator
- parenteral or enteral feeding device
- oxygen concentrator
- heart pump
- suction pump
- nebuliser – used daily
- positive airways pressure device
- phototherapy equipment
- air bed vibrator
- electric wheelchair
- insulin pump.

Information, assessment and provision

Eligible consumers receive $160 per year for medically required heating or cooling, and each piece of qualifying essential medical equipment.

Key eligibility and exclusion criteria

People can get this payment if they or the person they care for:

- need heating, cooling or certain equipment for your medical needs
- have a Commonwealth Concession Card
- pay for the energy running costs
- use an eligible piece of equipment.

E.2 State and territory funded AT programs

Existing state and territory funded AT programs are profiled below. The profiles summarise each program, including funding source, categories of AT provided and eligibility criteria. Detailed profiles of each program are provided in the Initial Report.

ACT Equipment Scheme (ACTES)

Funder: ACT Government | **Administrator:** Canberra Hospital and Health Services

ACTES assists eligible residents of the ACT who have a lifelong or long-term disability to live and participate in their community with the provision of appropriately prescribed equipment, aids and appliances.

AT provided

All approved applications are fully funded by the ACTES, but ACTES does not fund low-cost items (less than $100) such as walking sticks, crutches and bed pans.

The ACTES has a defined annual budget. The budget is allocated on an as-needs basis. This may mean that the full annual budget may be expended prior to the end of the financial year.

Information, assessment and provision

Assessment is carried out by authorised prescribers, who submit an application on behalf of the applicant. Authorised prescribers can be medical specialists (e.g. orthopaedic, neurological), GPs, allied health practitioners or nurses. Prescribers are required to organise a post-delivery check to ensure the correct aids and equipment have been supplied and meet the consumer's functional requirements and make minor adjustments. All equipment provided under the ACTES remains the property of the ACT Government. The repair and maintenance of ACTES-owned equipment is the responsibility of ACTES and is fully funded through the scheme

Key eligibility and exclusion criteria

- Be a permanent resident of Australia and the ACT, with a minimum of 6 months' residency
- Require assistance for a permanent disability or for a disability that has lasted for at least two years, or be a frail aged person
- Hold a Centrelink Pensioner or Health Care Card.

Victorian Aids and Equipment Program (VA&EP)

Funder: Victorian Government | **Administrator:** six community-based organisations

The VA&EP includes the following programs and schemes.

The State-wide Equipment Program (SWEP) administer by Ballarat Health Services delivers the following sub-programs:

- Aids and Equipment Program
- Supported Accommodation Equipment Assistance Scheme
- Domiciliary Oxygen Program
- Continence Aids Program
- Vehicle and home modification subsidy scheme
- Lymphoedema compression garments program
- Laryngectomy Consumables Program

Motor Neurone Disease Association administers the Equipment Library, which loans equipment such as wheelchairs, to meet the needs of people with motor neurone disease.

Solve Disability Solutions provides individual AT equipment or modification solutions not available commercially

Expression Australia provides subsidised Smoke Alarms for older people who are deaf or have significant hearing loss.

Vision Australia provides low cost items for older Victorians who are visually impaired.

Yooralla administers the Electronic Communication Devices Scheme, which provides subsidised electronic communications, switching and mounting devices, and software communication apps.

AT provided

The SWEP provides subsidised aids and equipment such as:

- walking frames and other mobility aids such as scooters and wheelchairs
- Equipment such as shower chairs and hoists
- continence aids for bowel or bladder control probleMs (such as reusable pants and pads)
- a contribution to the cost of home or vehicle modifications.

Information, assessment and provision

Eligible applicants must be assessed by an appropriate health professional/ AT Practitioner. The AT practitioner is also responsible for recommending the most suitable AT item(s) or modification(s) needed and determining whether the applicant or their or their carer can safely use the AT item.

Applicants are responsible for organising and paying for the assessment. SWEP retains ownership of the AT item when it has contributed more than 50% towards the cost of the AT item. Item are re-issued at no cost to the consumer. SWEP also provide an emergency 24/7 after-hours service repair service and an annual check of powered AT item used by paid support staff to meet OH&S requirements (e.g., hoist used to deliver personal care). There are maximum subsidy levels for each AT item category. If the subsidy does not cover the full cost of the AT item, the applicant or a third party will need to pay the remainder. Subsidies range from $80 for a shower seat to $10,000 for vehicle modifications.

Key eligibility and exclusion criteria

VA&EP provides subsidised aids and equipment for people:

- Of all ages where their needs relate to a health condition or where they do not meet NDIS access requirements
- Over 65 years with age- or disability-related aids or equipment needs.
- VA&EP has set subsidy levels for different aids and equipment items

Department of Human Services Equipment Program

Funder/Administrator: SA Government

Domiciliary Equipment Service (DES) is a business unit of the South Australian Department of Human Services (DHS) and administers the DHS Equipment Program. The DHS Equipment Program covers a number of different cohorts of consumers. Namely those who have significant functional needs requiring assistive technology solutions, but who are not eligible for NDIS or Aged Care Services.

Equipment and home modifications are provided to support people to live as independently as possible in the community and to reduce the risk of injury. To prevent hospitalisation or early entry to RACF

AT provided

The DHS Equipment Program includes the following streams:

- Disability Aged (grandfathered cohort – either Commonwealth CoS or Equipment Only)
- Advanced Palliative Equipment Response (APER)
- Adults with Chronic Conditions (ACC)
- Customised Mobility
- Footwear and orthoses
- Wigs

Programs serviced by DES include:

- DHS Equipment Program
- NDIS (DES signed a working arrangement with the NDIA to continue providing AT including equipment and home modifications, to NDIS participants
- Private hire.

Information, assessment and provision

Information regarding AT needs is provided from a variety of sources, typically via a clinician who is assessing an individual's needs. The Independent Living Centre is currently funded by DHS and provides advice and resources to members of the public with AT needs.

Assessment is undertaken by a Health Professional appropriate to the AT need – e.g. Podiatrists referring to the footwear program. The majority of assessment is undertaken by health professionals working in the Department of Health and Wellbeing, with the remainder undertaken by staff from the non-government sector.

Provision is via DES – a business unit of the Department of Human Services.

Key eligibility and exclusion criteria

- Permanent resident of SA
- Living in the community

DES provides services to a variety of programs, each of which has their own eligibility and assessment requirements to fund consumers accessing equipment and home modification services

Disability Equipment Program (DEP)

Funder/Administrator: NT Government

DEP aiMs to provide prescribed equipment, aids and appliances to assist eligible residents of the NT with a permanent or long-term disability, to enhance their safety and independence, and to assist them to live and participate in their community.

AT provided

The DEP:

- Provides access to appropriate equipment and appliances to meet the assessed needs of consumers
- Provides access to equipment that assists in maintaining and improving consumer capacity to remain in the community and to participate in social and community activities
- Has a consistent and equitable prioritisation process, targeted to people most in need.

Maximum subsidies range from $60 for a grab rail to $7,200 for a powered wheelchair.

Information, assessment and provision

The DEP use a clinical framework for prescription of equipment that includes:

- Clinical guidelines documenting criteria for the prescription of each equipment type
- Approved Prescriber Registration which requires prescribing therapists to be appropriately qualified and experienced to prescribe equipment items. Approved prescribers include allied health professionals and specialist nurses.

DEP offer repairs and maintenance for AT and if equipment must be taken away for repair, DEP will provide alternative equipment.

Key eligibility and exclusion criteria

- Have a disability of a permanent or long-term duration
- Permanent residents of the NT
- Living in or returning to the community, and are not a High Care resident of a Residential Aged Care facility
- Not eligible to receive the equipment under any other government-funded program
- Beneficiaries of a full Centrelink Disability Support or Age Pension.

TasEquip

Funder/Administrator: Tasmanian Government

TasEquip is a state-wide equipment scheme that has warehouses in all regions. TasEquip provides equipment options for eligible consumers who require equipment to support basic, everyday tasks which cannot be met by a non-assistive equipment solution. TasEquip operate under a refurbishment model and not all items are new when issued.

AT provided

TasEquip provides a defined range of assistive technology to eligible Tasmanians to improve their capacity to safely engage in basic, everyday tasks. There is no publicly available list of AT products funded by TasEquip.

Information, assessment and provision

Access to TasEquip resources is only through prescription by an authorised prescriber. Authorised prescribers are health professionals who have undertaken the required TasEquip training, who prescribe within their professional scope.

Consumers are required to pay the following fees:

- Loan fee – $50 for one or more items for any period up to a year
- Repair fee – a one-off $50 per year towards any new replacement part
- Replacement cost of wheelchair batteries, tyres and tubes.

Key eligibility and exclusion criteria

To be eligible, consumers need to meet the following criteria:

- Permanent Tasmanian resident
- Centrelink benefit recipient – Health Care, Pensioner Concession
- Living in the community
- Ineligible for home care package level 3 or 4, Workers Compensation, Motor Accident Insurance Board, DVA or NDIS.

Medical Aids Subsidy Scheme (MASS)

Funder/Administrator: Qld Government

MASS provides subsidy funding for medical aids and equipment to eligible Queensland residents who have a permanent and stabilised condition or a disability. The scheme helps people to live at home and avoid early or inappropriate residential care or hospitalisation.

AT provided

Assistive technology areas covered by MASS are:

- Daily Living & Mobility Aids
- Medical Grade Footwear
- Orthoses
- Continence Aids
- Communication Aids
- Home Oxygen

Aids and equipment are subsidy funded on a permanent loan basis, through private ownership or the purchase of consumables. If consumers pay for more than 50% of the cost for an item, they may choose to take ownership, rather than having a permanent loan. However, this means that consumers assume responsibly for all repairs to that item.

Information, assessment and provision

Consumers must be assessed by a health professional approved by MASS, who will help complete an application form, in conjunction with the consumer, and forward it to MASS for approval. MASS will pay for repairs and maintenance arising from reasonable 'wear and tear' to aids on permanent loan. The subsidy amount varies according to the item needed. If the item costs more than the subsidy amount, consumers must pay the extra cost directly to the supplier. Subsidies are designed to be applied per modification when a standard “off the shelf” item is always suitable. This methodology enables the consumer to receive greater benefit from the subsidy amount.

Key eligibility and exclusion criteria

You may be eligible for assistance under MASS if you:

- Are a permanent resident of Queensland
- Have a permanent or stable condition or disability
- Hold a Pensioner Concession Card, Health Care Card or Queensland Government Seniors Card
- Meet the clinical criteria for each aid.

EnableNSW

Funder: NSW Government | **Administrator:** NSW Health

The Aids and Equipment Program is a NSW Government initiative to assist eligible residents of NSW to live and participate within their community by providing appropriate equipment, aids and appliances. EnableNSW provides equipment and services to people in NSW with chronic health conditions or disability to assist them with mobility, communication and self-care. They also provide financial assistance for people who have to travel significant distances to access specialist medical treatment which is not available locally.

As part of HealthShare NSW, EnableNSW is responsible for the administration of NSW Health disability support and other assistance programs including:

- Aids and Equipment Program
- Continence Assistance
- Home Respiratory Program
- Prosthetic Limb Service
- Specialised Equipment Essential for Discharge

NSW Health is currently finalising the review of the AT Policy Directive to ensure currency with reforMs in the disability and aged care spaces. NSW Health also provides short term AT loans to ensure safe and timely discharge from hospital. This is done through 150 Equipment Loan Pools located within Local Health Districts and Specialty Health Networks.

AT provided

As a service directed to people who are financially disadvantaged, access to EnableNSW is means tested for adults for most categories of assistive technology.

Band 1: Adults on a full pension and children <16 years are eligible as Band 1 consumers. Consumers in Band 1 are eligible to receive assistance for all devices costing over $100 and are required to pay a $100 co-payment per annum

Band 2: Adults aged 16+ and above whose taxable income in the preceding financial year was less than or equal to $42,000 (single) or $70,000 (couple or family) are eligible as Band 2 consumers. Consumers in Band 2 are eligible to receive assistance for all devices costing over $100 and are required to pay a $100 co-payment per

Band 3: Adults aged 16 years+ whose taxable income in the preceding financial year was above $42,000 (single) or $70,000 (couple or family) are eligible as Band 3 consumers. Consumers in Band 3 are eligible to receive assistance for high cost devices over $800 and are required to pay 20% of the cost of the device.

Prosthetic Limbs – Band 1: Consumers holding a valid Pensioner Concession Card, a valid Health Care Card or a valid Seniors Health Card. No co-payment is required for consumers in this band receiving prosthetic limbs.

Prosthetic Limbs – Band 2: All consumers who do not have a valid concession card are assessed as Band 2. Consumers in Band 2 receiving prosthetic limbs are required to pay 15% of the scheduled cost of the provision, maintenance and repair of their prostheses up to a maximum of $200 per financial year.

Information, assessment and provision

An Equipment Request Form, which describes the individual's functional or clinical needs for the equipment, is required to be completed by an eligible prescriber. Completed applications and requests are assessed for eligibility and applicants are notified in writing of the outcome and expected timeframe for funding.

EnableNSW is responsible for maintenance and reasonable repairs to equipment it has funded and can be contacted via email or telephone to arrange this. Most devices issued through EnableNSW remain the property of NSW Health. Consumers are expected to return devices issued through EnableNSW when the devices are no longer required or being used. NSW Health may charge fees for equipment usage, loan, delivery and/or repairs and servicing. Fees are not charged to cover the full cost of equipment, but to ensure:

- Contributions to the cost of the equipment (such as purchasing, administration, staffing and storage costs).
- Equipment is returned as soon as it is no longer needed
- Equipment is looked after while it is in use.

Key eligibility and exclusion criteria

- The person is a permanent resident of NSW, or a refugee residing in NSW
- The person has a permanent or long-term disability
- The person has long-term assistive technology needs that have stabilised and allow them to remain in a community setting
- The person has not received compensation or damages in respect of the disability for which the assistive technology device or support is required
- The person is not eligible to receive the assistive technology under any other government-funded program.

E.3 Other AT programs

The list provided below is not an exhaustive list of AT programs (beyond national and state/territory funded programs) within Australia, but instead profiles programs that AHA has been made aware of during the rapid evidence and desktop reviews, and through consultations with state government representatives, peak bodies and consumer advocacy groups. These programs are different from the government programs detailed in ***Error! Reference source not found.*** and ***Error! Reference source not found.*** in that they can be funded and/or ad ministered by many different organisations. Together they demonstrate the breadth and complexity of the AT programs that currently exist in Australia. In total, 57 AT programs are identified - detailed summaries of these programs are provided in the Initial Report.

ACT

ACT Equipment Loan Service

ACT Artificial Limb Scheme (ACTALS)

Clinical Technology Service (CTS)

Domiciliary Oxygen and Respiratory Support Scheme (DORSS)

Specialised Wheelchair and Posture Seating Service (SWAPS)

Prosthetics and Orthotics (P&O) Service

Lifetime Care and Support Scheme

TADACT

New South Wales

Equipment Loan Pools operated by Local Health Districts (LHDs)

Aids & Equipment in Supported Accommodation (AESA)

Lifetime Care and Support Scheme

Assistive Technology and Equipment Program (ATEP)

NSW Spectacle Program

TAD

Hearing Connections

FlexEquip

Northern Territory

Motor Accidents Compensation (MAC) Scheme

Queensland

Home Assist Secure

TADQ

Queensland Artificial Limb Service

Motor Accident Insurance Commission (MAIc)

Sleep Disorders Program

Rehabilitation Engineering Centre

Cystic Fibrosis Australia

LifeTec

National Injury Insurance Agency, Queensland (NIISQ Agency)

South Australia

Continence Resource Centre

Orthotics and Prosthetics SA

Lifetime Support Scheme

Technology for Ageing and Disability (SA) Inc. (TASDA)

Royal Society for the Blind Adaptive Technology

Tasmania

Community Continence Service

TADTas

Orthotics and Prosthetics Service Tasmania

Tasmanian Artificial Limb Scheme (TALS)

Fusion (Australia) Home Modifications and Maintenance

Community Based Support South Inc.

Appendix F AT information and advice resources

F.1 AT information and advice resources

F.1.1 Model examples

The review identified several exemplar models of AT information provision and, whilst not exhaustive, the following provides a snapshot of existing information and advice resources.

Independent Living Centres

Independent Living Centres (ILCs) provide independent, commercially unbiased, information and advice to consumers and raise awareness of the role that AT plays in enabling whole life participation in the broader community. ILCs currently operate under different models in NSW, Tasmania, WA, Queensland and the ACT. The South Australian and Victorian ILCs have closed. The ILCs are funded by the Australian Government, state government, donations and grants. Each ILC operates as an independent not-for-profit organisation.

Around Australia, ILCs provide a broad range of services including:

- AT showrooms
- AT Equipment Database such as NED
- AT equipment hire
- Home modifications
- Vehicle modifications
- Allied health professional advice
- AT training
- National AT information phone line
- Training for care workers
- AT roadshows
- Virtual AT showroom.

ILC partnership with ADL SmartCare UK

ADL SmartCare provides a one-stop online guide to self-management and AT. ADL SmartCare is a private UK-based company who specialise in the provision of evidence-based data, research, knowledge and intelligence on age-related decline. ADL SmartCare provides advice and research around independence-promoting interventions for older adults, aiming to reduce the cost of care for individuals, service providers and governments.

ADL SmartCare in partnership with Newcastle University's Institute for Ageing have developed the LifeCurve app which maps individuals' age-related functional decline and suggests interventions (such as simple exercises) and AT to help people maintain or regain independence and confidence.

ADL SmartCare has built a Health Ageing Virtual Assistant (HAVA) available on online that provides access to self-management information and advice. Through questions it guides people to find services and AT that can meet their needs. The advice provided is independent and evidence-based, and not tied to any equipment providers.

ADL SmartCare also provides a Health Ageing Digital Service for organisations that includes:

- 24/7 access to self-help for individuals
- Professional quality, self-help advice without service involvement, supporting a culture of self-management
- Mapping to help triage individuals into relevant services and to identify when an individual might need specialist services
- Access to research around age-related decline and benchmarks and measures of the impact of early intervention and prevention.

For further information, see https://www.adlsmartcare.com/

Independent Living Assessment Inc (a part of the WA ILC) has developed a partnership with ADL SmartCare to explore their Healthy Ageing Digital Platform as it supports older people to manage their wellbeing and independence and empowers people through knowledge to live better for longer.

This platform has a broader prevention, self-management, health literacy and capacity building purposes with a focus on ageing well across the life course. The ILC sees the potential for this product to be used as part of a broader preventative and reablement approach.

Home Modification Information Clearinghouse fact sheets and application

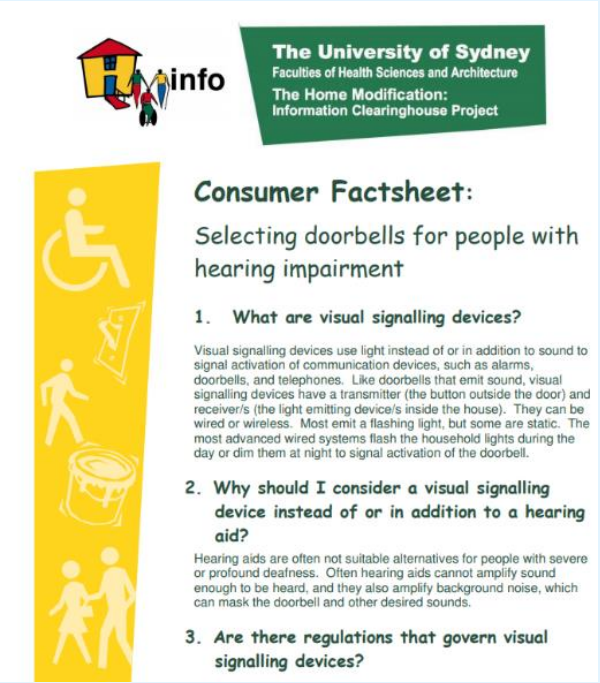
The Home Modification Information Clearinghouse (HMinfo) is located within the faculty of the Built Environment at the University of New South Wales, Sydney. HMinfo is an information service that collates, reviews and builds the evidence base for best practice in modification of the home environment to support people with self-care, participation and autonomy. HMinfo produces factsheets which translate research evidence for home modification design and building practices into information to assist home modification prescribers, practitioners and consumers. These include factsheets and guidance for DIY consumers.

Consumer factsheets cover range of topics, such as:

- Selecting coating for tiled floors
- How to arrange home modifications
- Fire safety – smoke alarms
- Recommended grabrail diameters
- Selecting doorbells for people with hearing impairment.

Industry factsheets provide similar information to consumer factsheets, often at a higher or more technical level, including:

- Cost–benefit factors when choosing between ramps and lifts
- Industry Checklist for Reeded (Ribbed) Timber for Decks, Ramps and Pathways
- Slip resistance of ramps.



Home Modification Information Clearinghouse applications

HMinfo have also developed DIYmodify and Liveability apps that are available as free downloads for consumers. These apps are free tools that facilitate 'on the go' assistance with assessing, planning, and undertaking modifications to the home and neighbourhood. The apps can be used on mobile devices, such as iPads, iPhones and Android phones.

The DIYmodify app is designed for people who wish to undertake their own home modification but are unsure how to start, as well as for those who are confident in DIY but unsure what kind of home modifications may be appropriate.

The Liveability app actively engages community members in rating the liveability features and services of their neighbourhood. The information collected by the app can be used by local councils, planners and other relevant authority groups to make improvements.

Bolton Clarke Easy Living Kit

Bolton Clarke offers services to support people across home care, retirement living and residential aged care around Australia. When undertaking home visits or assessments, Bolton Clarke personal care workers carry a standard AT kit to show activity of daily living equipment to consumers that consumers can purchase (care workers receive one hour of training on the equipment).

The workers also carry a flip chart booklet which provides information on simple aids (which don't require measurement or review) that a consumer may find useful. Some of the equipment listed in Easy Living kit includes:

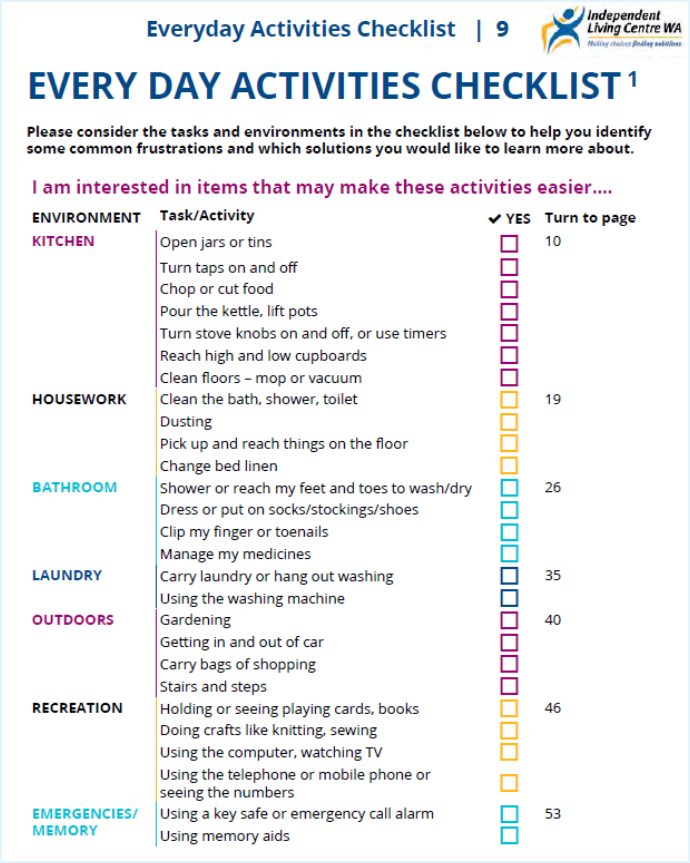
- Bottle cap opener
- Can opener/ring pull aid
- Handy bar for getting in/out of car
- Jar opener
- Key turner
- Lotion applicator
- Long-handled reacher
- Sock and stocking aid
- Tap turner.

Making Choices Finding Solutions Guide

Making Choices, Finding Solutions is a guide to assistive equipment and home modification options for consumers, focusing on safety, independence and wellbeing. The guide has been developed by Indigo (formerly ILC WA) and HACC. See https://ilc.com.au/making-choices-finding-solutions-guide/

Making Choices, Finding Solutions is designed to put professionally-held knowledge about simple, low-risk solutions and assistive technology into the hands of the consumer. Older people often experience common everyday frustrations like opening a jar, so the OT team decided to share their knowledge and experience of these common frustrations and the tips, tricks and solutions that help maintain independence.

The guide enables people to independently search through common frustrations and daily tasks to find simple everyday tips, tricks and solutions that can help someone change how they do that task, adapt their surroundings to make it easier, or from which familiar local stores (mainstream environment) they can buy a simple piece of assistive technology.



Everyday Activities Checklist | 9

Independent Living Centre WA

EVERY DAY ACTIVITIES CHECKLIST [1]

Please consider the tasks and environments in the checklist below to help you identify some common frustrations and which solutions you would like to learn more about.

I am interested in items that may make these activities easier....

ENVIRONMENT	Task/Activity	✔ YES	Turn to page
KITCHEN	Open jars or tins	☐	10
	Turn taps on and off	☐	
	Chop or cut food	☐	
	Pour the kettle, lift pots	☐	
	Turn stove knobs on and off, or use timers	☐	
	Reach high and low cupboards	☐	
	Clean floors – mop or vacuum	☐	
HOUSEWORK	Clean the bath, shower, toilet	☐	19
	Dusting	☐	
	Pick up and reach things on the floor	☐	
	Change bed linen	☐	
BATHROOM	Shower or reach my feet and toes to wash/dry	☐	26
	Dress or put on socks/stockings/shoes	☐	
	Clip my finger or toenails	☐	
	Manage my medicines	☐	
LAUNDRY	Carry laundry or hang out washing	☐	35
	Using the washing machine	☐	
OUTDOORS	Gardening	☐	40
	Getting in and out of car	☐	
	Carry bags of shopping	☐	
	Stairs and steps	☐	
RECREATION	Holding or seeing playing cards, books	☐	46
	Doing crafts like knitting, sewing	☐	
	Using the computer, watching TV	☐	
	Using the telephone or mobile phone or seeing the numbers	☐	
EMERGENCIES/ MEMORY	Using a key safe or emergency call alarm	☐	53
	Using memory aids	☐	

Appendix G Alt text long descriptions

Figure A-1: AT Review methodology

Gannt chart overview of the project activities in 4 phases: planning, mapping, modelling and reporting.

The chart is divided horizontally into 8 sections corresponding to the months of the project (from November 2019 to June 2020). The phases are shown in sequence, each covering approximately 2 months, as follows:

1. Planning (11 November 2019 to 16 December 2019)
2. Mapping (17 December 2019 to 31 January 2020)
3. Modelling (1 February 2020 to 31 May 2020)
4. Reporting (31 Jan 2020 to 9 June 2020).

The phases are also shown down the left side and divide the chart vertically into 4 sections. The tasks involved in each phase are shown under the corresponding phase and month.

The tasks involved in the planning phase are:

- Project initiation meeting (November 2019)
- Project plan (December 2019)

The tasks involved in the mapping phase are:

- Desktop review of data and documentation (December 2019 to January 2020)
- Rapid evidence review (December 2019 to January 2020)
- Mapping current AT programs (December 2019 to January 2020)
- Consultations (December 2019 to May 2020)

The tasks involved in the modelling phase are:

- Cost-benefit analysis (February 2020 to May 2020)
- Model refinement (February 2020 to May 2020)
- Options development (February 2020 to May 2020)
- Delphi focus group (May 2020)

The tasks involved in the mapping phase are:

- Report on Initial Findings (January 2020)
- Interim Report (March 2020)
- Interim Report Workshop (April 2020)
- Options workshop with the Department of Health (May 2020)
- Final Report (June 2020)
- Regular project management updates with the Department (November 2019 to June 2020)

Appendix H References

Cited references

Aged Care Guide n.d., Respite Care, , <https://www.agedcareguide.com.au/information/respite-care>.

Alshabeb, A & Abdulrahman, O 2019, Critical analysis of the benefits and drawbacks of assistive technology with special needs, , vol. 6, no. 8, pp. 210–215.

Australian Association of Rehablitation and Assistive Technology, 2016. AATC 2016 Statement of Good Practice in Assistive Technology Provision in Australia.

Australian Bureau of Statistics 2019a, Disability, ageing and carers, Australia: Summary of findings 2018, viewed 14 January 2020, <https://www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0>.

Australian Bureau of Statistics 2019b, National Aboriginal and Torres Strait Islander Health Survey 2018-19.

Barnett, K, Livingstone, A, Margelis, G, Tomlins, G, & Young, R 2019, Aged and community sector technology and innovative practice: Discussion paper 2019, Aged Care Industry Information Technology Council.

Carnemolla, P & Bridge, C 2016, Accessible housing and health-related quality of life: Measurements of wellbeing outcomes following home modifications, *Archnet-IJAR*, vol. 10, no. 2, pp. 38–51.

Carnemolla, P & Bridge, C 2018, A scoping review of home modification interventions – Mapping the evidence base, *Indoor and Built Environment*, vol. 0, no. 0, p. 1420326X1876111.

Carnemolla, P & Bridge, C 2019, Housing design and community care: How home modifications reduce care needs of older people and people with disability, *International Journal of Environmental Research and Public Health*, vol. 16, no. 11.

Clay, S. & Alston, R. 2016, The benefits of assistive technology use by persons with physical conditions: An examination of difficulty levels in areas of functioning, *Technology and Disability*, vol. 28, pp. 111–121.

Coughlin, S, Peyerl, FW, Munson, SH, Ravindranath, AJ, & Lee-Chiong, TL 2017, Cost savings from reduced hospitalizations with use of home noninvasive ventilation for COPD, *Value in Health*, vol. 20, pp. 379–387.

employsure n.d., Minimum Wage and Award Wages In Australia, , <https://employsure.com.au/guides/wage-and-pay/minimum-wage-australia/>.

Fair Work Commission 2016, Awards & agreements, , <https://www.fwc.gov.au/awards-and-agreements>.

Fang, Y, Chau, AKC, Wong, A, Fung, HH, & Woo, J 2018, Information and communicative technology use enhances psychological well-being of older adults: the roles of age, social connectedness, and frailty status, *Aging & Mental Health*, vol. 22, no. 11, pp. 1516–1524.

Finch, M, Griffin, K, & Pacala, James T 2017, Reduced Healthcare Use and Apparent Savings with Passive Home Monitoring Technology: A Pilot Study, *Journal of the American Geriatrics Society*, vol. 65, no. 6, pp. 1301–1305.

Finch, M, Griffin, K, & Pacala, James T. 2017, Reduced Healthcare Use and Apparent Savings with Passive Home Monitoring Technology: A Pilot Study, *Journal of the American Geriatrics Society*, vol. 65, no. 6, pp. 1301–1305.

Gillespie, LD, Robertson, MC, Gillespie, WJ, Sherrington, C, Gates, S, Clemson, LM, & Lamb, SE 2012, Environmental interventions for preventing falls in older people living in the community, *Cochrane Database of Systematic Reviews*, , no. 9.

Goodacre, JKate, McCreadie, C, Flanagan, S, & Lansley, P 2008, Enabling older people to stay at home: the costs of substituting and supplementing care with assistive technology, *British Journal of Occupational Therapy*, vol. 71, no. 4, pp. 130–140.

Goodacre, Kate, McCreadie, C, Flanagan, S, & Lansley, P 2008, Enabling older people to stay at home: the costs of substituting and supplementing care with assistive technology, *British Journal of Occupational Therapy*, vol. 71, no. 4, pp. 130–140.

Gore, PG, Kingston, A, Johnson, GR, Kirkwood, TBL, & Jagger, C 2018, New horizons in the compression of functional decline, *Age and Ageing*, vol. 47, pp. 764–768.

Habibi, A, Sarafrazi, A, & Izadyar, S 2014, Delphi Technique Theoretical Framework in Qualitative, *International Journal of Engineering Science*, vol. 3, pp. 8–13.

Hagberg, L, Hermansson, L, Fredriksson, C, & Pettersson, I 2017, Cost-effectiveness of powered mobility devices for elderly people with disability, *Disability and Rehabilitation: Assistive Technology*, vol. 12, no. 2, pp. 115–120.

Healy, A, Farmer, S, Eddison, N, Allcock, J, Perry, T, Pandyan, A, & Chockalingam, N 2020, A scoping literature review of studies assessing effectiveness and cost-effectiveness of prosthetic and orthotic interventions, *Disability and Rehabilitation: Assistive Technology*, vol. 15, no. 1, pp. 60–66.

Hoenig, H, Taylor Jr, DH, & Sloan, FA 2003, Does assistive technology substitute for personal assistance among the disabled elderly?, *American journal of public health*, vol. 93, no. 2, pp. 330–337.

Hutchinson, C, Berndt, A, Cleland, J, Gilbert-Hunt, S, George, S, & Ratcliffe, J 2020, Using social return on investment analysis to calculate the social impact of modified vehicles for people with disability, *Australian Occupational Therapy Journal*, , no. January, pp. 1–10.

Independent Hospital Pricing Authority 2020, National Hospital Cost Data Collection Report, , vol. 22, no. February.

Jutkowitz, E, Gitlin, LN, Pizzi, LT, Lee, E, & Dennis, MP 2012, Cost effectiveness of a home-based intervention that helps functionally vulnerable older adults age in place at home., *Journal of aging research*, vol. 2012.

Keall, MD, Pierse, N, Howden-Chapman, P, Guria, J, Cunningham, CW, & Baker, MG 2017, Cost–benefit analysis of fall injuries prevented by a programme of home modifications: A cluster randomised controlled trial, *Injury Prevention*, vol. 23, no. 1, pp. 22–26.

Khosravi, P & Ghapanchi, AH 2016, Investigating the effectiveness of technologies applied to assist seniors: A systematic literature review, *Int J Med Inform*, vol. 85, no. 1, pp. 17–26.

Koopman-Boyden, PG & Reid, SL 2009, Internet/e-mail usage and well-being among 65-84 year olds in new zealand: Policy implications, *Educational Gerontology*, vol. 35, no. 11, pp. 990–1007.

Lansley, PR, McCreadie, C, & Tinker, A 2004, Can adapting the homes of older people and providing assistive technology pay its way?, *Age and Ageing*, vol. 33, no. 6, pp. 571–576.

Layton, N & Irlam, C 2018, Assistive technology for older Australians: Rapid evidence review and economic pathway analysis, National Aged Care Alliance, Canberra.

Mann, W, Ottenbacher, K, Frass, L, Tomita, M, & Granger, C 1999, Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly: A randomized controlled trial, *Archives of Family Medicine*, vol. 8, no. 3, pp. 210–217.

Mann, WC 1999, Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly a randomized controlled trial, *Archives of Family Medicine*, vol. 8, no. 3, pp. 210–217.

MBS online n.d., Medicare Benefits Schedule - Item 23, *Australian Government Department of Health*, , <http://www9.health.gov.au/mbs/fullDisplay.cfm?type=item&qt=ItemID&q=23>.

McDonald, R, Thomacos, N, & Inglis, K 2013, Review of current and emerging assistive technologies for the reduction of care attendant hours: cost effectiveness , decision making tools and emerging practices, Research report # 0413-022-026-RR1, Institute for Safety, Compensation and Recovery Research.

National Aged Care Alliance 2018, Position paper: Assistive technology for older Australians.

National Disability Insurance Agency 2020, NDIS Price Guide 2019-20, , vol. 2.1, no. February, pp. 1–50.

Rowe, G & Wright, G 2011, The Delphi technique: Past, present, and future prospects – Introduction to the special issue, *Technological Forecasting and Social Change*, vol. 78, no. 9, pp. 1487–1490.

Schneider, JE, Cooper, J, Scheibling, C, & Parikh, A 2019, Economic evaluation of passive monitoring technology for seniors, *Aging Clinical and Experimental Research*, , no. 0123456789.

Sheffield, C, Smith, CA, & Becker, M 2013, Evaluation of an agency-based occupational therapy intervention to facilitate aging in place, *Gerontologist*, vol. 53, no. 6, pp. 907–918.

Strasser, A 2017, Delphi method variants in information systeMs research: Taxonomy development and application, *Electronic Journal of Business Research Methods*, vol. 15, no. 2, pp. 120–133.

Watson, W, Clapperton, A, & Mitchell, R 2010, The incidence and cost of falls injury among older people in New South Wales 2006/07.

Williamson, B, Aplin, T, de Jonge, D, & Goyne, M 2017, Tracking down a solution: Exploring the acceptability and value of wearable GPS devices for older persons, individuals with a disability and their support persons, *Disability and Rehabilitation: Assistive Technology*, vol. 12, no. 8, pp. 822–831.

XE 2020, XE - The World's Trusted Currency Authority, viewed 9 June 2020, <https://www.xe.com/>.