Implementing Assistive Technology in Dementia Care Services

A Guide for Practitioners

Compiled and edited by Philomena Stapleton and Sarah Delaney,
with contributions from Richard Wynne and Kevin Cullen.

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Genio, Marlinstown Office Park, Mullingar,
Co. Westmeath, Ireland.
Tel: +353 (0)44 9385940
Email: info@genio.ie
Web: www.genio.ie

Foreword

Assistive technology (AT) is something many people have heard of, but something few of us know about in any detail. In spite of the proliferation of technology in our everyday lives, there is a lack of knowledge as to how assistive technologies may support better quality of life for people with dementia and enable them to remain living in their own homes. The National Dementia Strategy recognises the potential of AT to be part of a range of services which provide flexible support to people with dementia and their carers.

While AT has promising potential and many useful tools to offer, experience from sites in Ireland who are working with AT and findings from other studies indicate that the task of implementing AT is poorly understood and not very well developed in Ireland. While there is a general level of knowledge about AT, there were significant gaps in terms of understanding the main functions of the different types of technology and how technology is implemented on the ground. This guidance document has been produced in order to address these gaps. However, guidance has only one role to play in addressing a knowledge gap. The need for focused training on AT and its use was identified by practitioners during the development of this document. Such training is probably most appropriately provided as part of initial professional development training.

The guide is structured around descriptions of products and services that support memory, safety, communication and entertainment/reminiscence. A range of information has been compiled into a clear and easily navigated guide with lots of practical tools for implementation and resources to access for further information.

The implementation of AT raises issues to be considered such as the primacy of human contact in keeping the person with dementia socially connected and the importance of AT being a support for the person and their carers, not a replacement for human contact. Ethical issues are also raised through the use of some technologies. These issues and concerns are addressed in a section on ethics in this Guidance document.

While the guidance is primarily aimed at front-line professionals working with people with dementia and their carers, and service managers responsible for the resourcing and implementation of AT, the guidance contains a wealth of information in an easily accessible format so that it may also be of use to some people with dementia, family carers and others who are involved in supporting people with dementia.

I wish to acknowledge the excellent work of the Work Research Centre in compiling this guide and the contribution of those who took part in consultations to develop this resource. I hope that it will be useful to all those who work with and support people with dementia and their carers to have a full life and to live well with dementia.

Dr Fiona Keogh
Director of Research and Evidence, Genio

Contents

1. Introduction 6

1.1 Background 7
1.2 Who is this Guidance for? 7
1.3 How to use the Guidance 7
1.4 What is AT? 8
1.5 About Dementia 8
1.6 How can AT and telecare assist people with dementia? 9
1.7 Types of AT used in dementia 9
1.8 Limitations of AT 9
1.9 Information on AT products and services provided in this document 10
1.10 Apps for tablets and smart phones 10

2. Products and Services - Memory 12

2.1 Simple (no-tech) memory aids 13
2.2 Electronic memory aids 13

3. Products and Services - Safety 19

3.1 Stand-alone safety devices 21
3.2 Telecare devices and systems 23
3.3 Safer walking technologies 32
3.4 Help cards/information documents 33

4. Products and Services - Communication 34

4.1 Communication devices 35

5. Products and Services - Entertainment / Reminiscence 38

5.1 Entertainment 39
5.2 Reminiscence 40

6. Implementing AT Provision in Dementia Care Services 43

6.1 Getting started 45
6.2 Needs assessment – screening and assessing for AT 50
6.3 Monitoring and evaluation 57
6.4 Difficulties in implementing an AT service 58
6.5 Maximising successful implementation 59

7. Ethical Issues and the Use of AT in Dementia 60

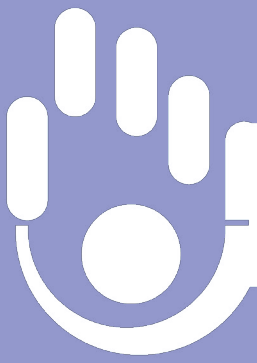
7.1 Why do we need to consider ethics? 61
7.2 Developing an ethical approach 61

Appendices 65

APPENDIX 1: Resources on AT 66
APPENDIX 2: Dementia care resources / organisations 68
APPENDIX 3: Documentary sources on using AT and telecare 69
APPENDIX 4: Example of an Assistive Technology Assessment 71
APPENDIX 5: Development of this guidance 74

List of Tables and figures

Table 2.1 Types of simple (no tech) memory aids 13
Table 2.2 Types of electronic memory aids 14
Table 3.1 Types of stand-alone safety devices 21
Table 3.2 Types of telecare devices and systems 23
Table 3.3 Potential benefits and limitations of safer walking technologies 32
Table 4.1 Types of communication devices 35
Table 5.1 Types of entertainment products 39
Table 5.2 Types of reminiscence aids 40
Tool 1: Key issues in developing an AT training programme 47
Tool 2: Considerations in developing a comprehensive service plan for AT 50
Tool 3: Checklist for needs assessment 52
Tool 4: Checklist for considering the use of AT 54
Tool 5: Matrix for rating suppliers of AT products and services 55
Tool 6: Key issues in reviewing AT plans for service users 56



1. Introduction

Contents

1.1	Background	7
1.2	Who is this Guidance for?	7
1.3	How to use the Guidance	7
1.4	What is AT?	8
1.5	About Dementia	8
1.6	How can AT and telecare assist people with dementia?	9
1.7	Types of AT used in dementia	9
1.8	Limitations of AT	9
1.9	Information on AT products and services provided in this document	10
1.10	Apps for tablets and smart phones	10

1.1 Background

This resource was developed within the framework of the Genio Dementia Programme 2011.[1] In 2011 Genio received funding from the Atlantic Philanthropies and the HSE to develop and test new service models which would improve the range and quality of community-based supports for people with dementia. Assistive technology (AT), including telecare, was one of the themes included within the scope of the supports to be implemented in four Genio-funded projects.

It has been argued that people with dementia stand to gain more than most from what AT and telecare have to offer.[2] Notwithstanding this there has been relatively little focus on implementing AT and telecare with this group in comparison to other groups (e.g. older people and people with physical disabilities). As a result, there is a paucity of practical guidance material on the use of AT with people with dementia. This guidance addresses this gap.

1.2 Who is this Guidance for?

Many types of stakeholder can benefit from guidance in this area, but this document has been specifically developed for:

- **Front-line professionals working with people with dementia and their carers** - It aims to provide front-line staff with the knowledge and good practice guidance required to effectively identify, refer, assess, source and implement AT or telecare in the support of people with dementia and their carers.
- **Service managers involved in service development, funding resources and implementation** – It aims to provide service managers with guidance on planning and supporting the implementation of an AT/telecare programme or service.

It should be acknowledged that families provide the bulk of care to people with dementia. Although this Guidance is not primarily aimed at families and carers, links to information and resources designed for families are provided in **Appendix 1**.

A range of people and resources were consulted in the preparation of this guidance document and this process is described in **Appendix 5.**

1.3 How to use the Guidance

The document is set out in sections which address a specific topic. It can be read as a whole or each topic can be accessed individually depending on the reader's existing level of knowledge or experience with AT or role within a service.

It is not intended to be an exhaustive treatment of the issues involved in implementing AT for people with dementia. Neither is it meant to provide a full account of the range of assistive devices and technologies available on the market or to recommend any particular product or service. The appendices provide references and links where further information on AT and on dementia care can be obtained.

Ethical issues are an important consideration when designing or implementing telecare for people with dementia and the Guidance should also be read with a view to ensuring these issues are addressed. The introduction of AT or telecare into a person's home environment, particularly someone with a cognitive impairment, should be regarded as a significant intervention requiring careful consideration. Ethical issues arise at all stages of the implementation process. A chapter summarising the ethical issues involved is included here but the reader should also refer to ethical guidance within their own service or organisation.

1.4 What is AT?

Assistive Technology has been defined as:

> *"any item, piece of equipment, product or system, whether acquired commercially, off the shelf, modified or customised, that is used to increase, maintain or improve functional capabilities of individuals with cognitive, physical or communication difficulties."*[3]

AT is therefore 'enabling' and includes a wide array of equipment ranging from low-tech stand-alone devices to more sophisticated devices or systems involving ICT technology. Smart home technologies (including remote or voice activated environmental controls in the home) also fall under the term AT.

Telecare is an application of AT that focuses on monitoring and detecting risk rather than directly enabling the user to carry out functional tasks. It has been defined as

> *"the continuous, automatic and remote monitoring of real time emergencies and lifestyle changes over time in order to manage the risks associated with independent living."*[4]

Telecare typically involves the installation of sensors in the home. Sensors are linked to a monitoring centre that alerts relevant parties (e.g. family carers or emergency services) when a risk is detected, who then make the appropriate response. However, telecare arrangements are also available that operate without a monitoring centre, for example, by sending alerts directly to family carers or formal care personnel.

1.5 About Dementia

Dementia is a term used to describe a number of conditions that cause damage to the brain which affects memory, thinking, language and the ability to perform everyday tasks.[5] Alzheimer's disease is the most common form of dementia. While drug and other non-pharmacological treatments can improve some of the symptoms and impacts of dementia, most types of dementias are progressive with no known treatment to halt progression.

It is estimated that there are 47,000 people with dementia living in Ireland (with around 30,000 of these living in the community) and this number is expected to rise to over 130,000 by 2041.[6]

1.6 How can AT and telecare assist people with dementia?

The symptoms of dementia can make managing daily tasks difficult. These difficulties can be addressed in a number of ways that will often not, nor should, involve a technological solution.[7] The appropriate solution may involve making changes to the home environment or increasing the amount of personal care provided.

In making decisions around using AT in dementia care the focus should be on assessing the presenting needs of the person at a specific time and deciding on how these can be best met.

Assistive technology can for example:[8]

- promote independence and autonomy for the person with dementia and those around them
- help manage potential risks in and around the home.
- facilitate memory and recall.
- reduce the stress on carers, improve their quality of life and that of the person with dementia.

Many telecare devices work passively making it unnecessary for the user to activate or remember to activate them. This feature means that telecare can be particularly suitable for use with people with cognitive impairment, facilitating safety and independence while also providing reassurance for carers. As well as monitoring and detecting risks telecare can be also be used to assess a person living at home with a view to informing care planning.

1.7 Types of AT used in dementia

There is a wide variety of assistive technologies available that can support the care of people with dementia at home. Although usually categorised into three stages; mild, moderate and severe, for all types of dementia, progression will vary from person to person as will the range of symptoms experienced.[9] It is therefore not possible or desirable to be prescriptive around matching particular types of AT to particular stages.

1.8 Limitations of AT

The limitations associated with the technologies presented in the following sections are discussed where this information is available. However, there are some general limitations that should be kept in mind when considering the use of AT for people with dementia. These include:

- AT can neither provide nor substitute for human care and contact.
- AT cannot eliminate risk or prevent adverse incidents from occurring.
- Someone with dementia will have varying ability to cope with (i.e. accept, learn how to use, remember to use) assistive technology, even what might be regarded as simple AT, or will have different needs at different stages of their dementia.
- In addition to cognitive impairment, people with dementia may have vision, hearing, mobility, dexterity or other difficulties that impact on their ability to use technology.

- AT requires set-up and maintenance and telecare systems require people to respond to alerts.
- There are numerous ethical issues that need to be considered e.g. peoples right to autonomy, information, choice, privacy etc.

1.9 Information on AT products and services provided in this document

The areas of need that can be supported by AT for people with dementia (and their carers) can be categorised into four broad areas;

- memory
- safety
- communication
- entertainment/reminiscence

The following 4 sections present examples of AT products and services relating to each of these areas and include a description of what they do and how they may assist people with dementia. Where information on limitations of the technologies is available this is included.

The technologies dealt with in these Sections are not exhaustive. There is a wide range of equipment already available and new devices are being developed and introduced to the market continuously. Further information (including illustrations and details on where to buy) on the types of technologies outlined can be obtained at:

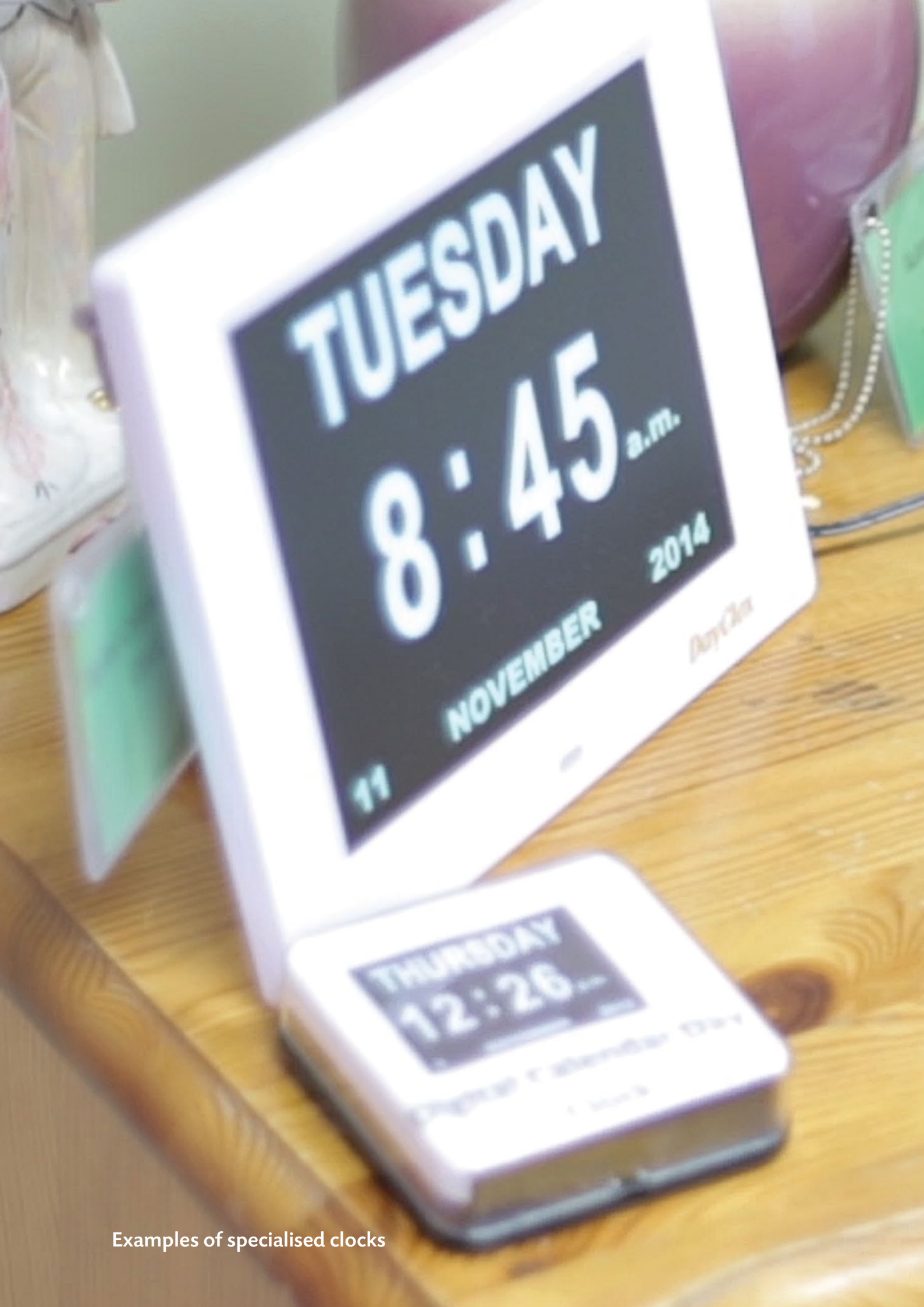
- www.informationhub.ie/section/dementia
- www.southtipperarydementia.ie/library-resources.
- livingwellwithdementia.ie/assistive-technology

See also **Appendix 1** for links to further resources.

1.10 Apps for tablets and smart phones

There are also a variety of Apps specifically developed for people with dementia and their carers for use on iPad and Android tablets and smart phones. See for example:

- tinyurl.com/assistireland-apps
- www.arts4dementia.org.uk/memory-aids
- The Apple App Store
- Google Play



Examples of specialised clocks

2. Products and Services - Memory

Contents

2.1 Simple (no-tech) memory aids 13

High Visibility Signage 13

2.2 Electronic memory aids 13

Item locators 14

Clocks and Calendar clocks 14

Medication reminders and dispensers 15

Medication reminder (text message) services 16

Memo/ Message reminders 17

Talking Tiles 17

Memory problems can affect people with dementia in different aspects of their lives. A range of technologies are available to address some of the problems that arise as a result of memory loss. These include devices that prompt or remind the person to do (or not to do) something, that help them keep track of or locate misplaced items, or that help them with time orientation and with reminiscence. These types of devices are of benefit to people in the mild or early moderate stages of dementia and experiencing short term memory problems.

2.1 Simple (no-tech) memory aids

Often the best solution can be one that does not involve technology. Simple item organisers can help to keep everyday items in one central place. Signs, notices and labels can act as effective visual aids.

Table 2.1 Types of simple (no tech) memory aids

Function	Device	Description
Memory – visual aids, orientation	**High Visibility Signage** ➲ Way finding signs ➲ Room function identification signs ➲ Item identification / function signs ➲ Orientation boards	These products include simple signs and other visual aids that help to prompt or increase visibility. They can help a person with dementia navigate, locate or identify areas or items within the home. Signs can combine illustration and wording, have high-contrast colouring, or be tactile. Orientation boards are simple reusable white boards for displaying information, reminders or messages and can be placed in prominent locations in the home.

2.2 Electronic memory aids

Electronic memory aids provide visual, audible or verbal prompts to remind the user to do or not to do something (e.g. reminder to take medication, reminder not to leave the home). The devices can be pre-programmed to emit an alarm or pre-recorded message at set times.

Examples include:

- item locators
- clocks and calendar clocks
- medication reminders and dispensers
- memo/message reminders

Table 2.2 Types of electronic memory aids

Function	Device	Description
Memory reminding, prompting, orientation	**Item locators**	Item locators are small, remote controlled, electronic devices that help to locate misplaced items within the home, such as keys, wallets etc. Items are tagged with receivers that emit an alarm when a fob device is activated. Some types can control more than one tagged item with a different alarm sound for each. Item locators can also be used by carers or other family members to locate items that a person with dementia has misplaced. **Limitations:** ➲ The person with dementia may not remember to use the device ➲ Batteries are required for operation
	Clocks and Calendar clocks ➲ Calendar clocks ➲ Day and night clocks	Specialised clocks and calendars can help people with dementia who have difficulties keeping track of times and dates, have irregular sleep patterns, or have difficulty keeping track of whether it is day or night. There are a variety of types available. Some are wall mountable, battery operated and have large letter and number displays. Some types can be personalised with photographs or pictures. Electronic calendars display the day, date and time. Some display the time as either morning, afternoon, evening or night. **Limitations:**[10] ➲ Can the person with dementia see and understand the clock face? ➲ Is analogue or digital more suitable? ➲ Who will programme/set the device, monitor battery life or ensure that it is plugged into the mains electricity supply? ➲ Will the clock accommodate leap years? ➲ Will the person with dementia like the clock in their home?

Function	Device	Description
Memory reminding, prompting, orientation	**Medication reminders and dispensers**	Medication reminders and dispensers help people who may forget to take their medication or get confused about what medication to take and when. Medication reminders include small electronic timers and watches that can be pre-set to emit an alarm or verbal message at certain times to remind the user to take their medication. There are a range of different types of dispensers from simple manual pill boxes with compartments labelled with the time of day and day of the week to electronic dispensers that automatically dispense the required pill dosage at the required time and keep emitting an alert until the pills are removed from the dispenser compartment. Many can be customised to suit individual needs and circumstances (e.g. can be pre-programmed with messages recorded by a familiar voice). Some devices are designed to be portable (e.g. small neck worn containers that can hold a limited amount of pills). Others are large enough to contain sufficient pills for a number of days or weeks and can be locked to ensure that only the correct dosage is taken. Medication dispensers can also be connected to a telecare system and an alert will automatically be raised with a family member or monitoring centre if the dispenser has not been tilted to remove the pills at the prescribed time. **Limitations:** There are a number of limitations associated with all or some medication reminder and pill dispenser devices[11] that are worth noting: ➲ Some types require the user to press a button to hear the reminder message. The user needs to understand and remember how and when to do this. ➲ There is no way of knowing if the user actually ingested the pills. ➲ Users need to be able to understand and respond to the alerts and be motivated to take their medication. ➲ Some users may not have the manual dexterity to tip the dispenser or access the medication. ➲ Setting up can be difficult or time consuming on some devices, requiring good manual dexterity and vision.

Function	Device	Description
		➲ Some devices cannot have multiple settings (e.g. only one reminder) thereby limiting their usefulness. ➲ People taking multiple medications may require more than one dispenser. ➲ An additional unit may be required so as to facilitate refilling by the pharmacy. **Other limitations:**[12] In some devices pills can get wedged in the compartments and become difficult to remove. ➲ All parties involved in care need to be coordinated in knowing who is responsible for filling and programming a pill dispenser. ➲ Whoever is programming a pill dispenser should have sufficient knowledge and ability to do so as the user may get confused if inaccurate information (e.g. time of day) is displayed on the device.
	Medication reminder (text message) services	Medication reminder services send personalised SMS text messages to registered users to remind them to take medication. **Limitations:** ➲ An individual's prescription may change requiring the users details be updated with the reminder service. ➲ There may be a limit on the number of medicines for which an alert can be received or on the number of alerts offered, and subscription or credit purchase charges may apply. ➲ Interruptions in mobile network services may affect the timeliness message delivery. ➲ The person receiving the reminder needs to have a mobile phone, and to understand and be motivated to use it. ➲ Hearing, visual or dexterity impairments should be considered.

Function	Device	Description
Memory reminding, prompting, orientation	**Memo/ Message reminders**	These devices can help a person with dementia who has difficulty remembering to do (or not to do) things or how to carry out certain tasks. They are customisable and can be programmed with pre-recorded voice messages that automatically activate at set times (e.g. reminding the person it is time to eat). Other devices can have movement sensors incorporated so that a voice message is activated when the person passes the device. Some devices can display a video message or provide visual step by step instructions on how to carry out a certain task. **Limitations:**[13] ➲ In some devices the user needs to remember to press a button on the product to hear the voice reminder. ➲ Placement of the reminder needs to be considered for it to be effective. ➲ If the device is meant to be worn or carried will the person with dementia do this? ➲ Voice quality may be an issue. ➲ May not be suitable if the user has a hearing impairment. ➲ Will the person with dementia recognise or respond to the voice, will they be startled or distressed by the voice? ➲ Battery life needs to be monitored. ➲ Use of text and images; these need to be appropriate to the person and take into account culture and literacy issues.
	Talking Tiles	These are small, reusable, electronic devices that record and play back speech or other sounds. The user presses the tile cover, which can be personalised with pictures or text, to hear the recorded message. **They can be used:**[14] ➲ As an audible reminder or message. ➲ To store emergency phone numbers. ➲ To record a message for a carer or visitor. ➲ To record place names and directions. **Limitations:** ➲ 40 second recording/playback time. ➲ Batteries required. Other limitations have been observed in relation to the size of switches, sound volume and quality of recording.[15]

Example of a talking tile

3. Products and Services - Safety

Contents

3.1	Stand-alone safety devices	21
	Electronic wander reminder	21
	Touch lamps and automatic night lights	22
	Timed power switches	22
	Electrical power socket covers	22
	Key safes	23
	Flood prevention plugs	23
3.2	Telecare devices and systems	23
	Telecare alarm unit	23
	Pendant alarm	24
	Bogus caller alarm	26
	Flood detector	26
	Monitored smoke detector	26

3. Products and Services - Safety

Gas shut off valve 27

Monitored gas detector 27

Monitored carbon monoxide detector 27

Extreme temperature sensor 27

Fall detector 27

Bed occupancy sensor 28

Chair occupancy sensor 28

Floor mat 29

Activity monitors 29

Property exit sensor 29

Enuresis sensor 30

3.3 Safer walking technologies 32

3.4 Help cards/information documents 33

These technologies are aimed at improving safety for people with dementia in their home by minimising the risk of dangerous events that are associated with short-term memory problems and co-morbidities. They range from fairly simple stand-alone devices to more sophisticated integrated telecare systems. Examples of the most common and widely available safety devices are provided here.

3.1 Stand-alone safety devices

This category refers to devices such as electronic wander reminders, touch lamps, automatic night lights and timed power switches. They also include devices such as socket covers, plugs for preventing flooding and key safes. They have the common feature of not being connected to call centres or nominated carers.

Table 3.1 Types of stand-alone safety devices

Function	Device	Description
Safety	**Electronic wander reminder**	These are reminder devices that incorporate a motion sensor. A message can be recorded on the device which can be placed at the approach to a doorway. When the motion detector senses movement when the door is approached the pre-recorded message reminding the person not to leave the home is triggered. **Limitations:**[16] ➲ The person with dementia may be startled by a disembodied voice sounding from the device or may be agitated by the message telling them what to do. ➲ The person with dementia may learn to duck under the device, remove or disable it. ➲ They are not fail safe in preventing someone leaving the home as the person may not always respond to a verbal message or a carer may be in another part of the home and not hear the local alert. The device may need to be linked to or combined with a remote alert (e.g. to a carer pager or monitoring centre).

Function	Device	Description
	Touch lamps and automatic night lights	Touch lamps can be switched on by touching the base of the lamp and are useful for people with limited hand function or who have difficulty locating a switch. Night lights can be set to come on and turn off at certain times or to switch on automatically when movement is detected in the room. They provide automatic background/low level lighting for a person with dementia who may get out of bed at night. They may help to prevent falls associated with disorientation. **Limitations:** Night lights:[17] ➲ Having a light on at night may bother someone with dementia. ➲ If they are plugged out from a socket they have to be plugged back in to work. ➲ The light level provided may not be sufficient and other lighting may be required. Motion sensor lamps:[18] ➲ Someone with dementia may be agitated by a light going on and off automatically. ➲ Care may be required with some types to ensure the sensor is placed in the right location so that the light will be activated exactly when required. Touch Lamps: ➲ Need to be placed within easy reach.
	Timed power switches	➲ These allow power to be cut off from electrical devices left plugged in after a certain period of time.
	Electrical power socket covers	➲ These cover electrical sockets and switches and prevent them from being switched on and off. They can help with fire safety and control of electrical appliances. **Limitations:** ➲ It may frustrate or confuse someone with dementia not to be able to access sockets.

Function	Device	Description
	Key safes	These are designed to be placed outside the property to store spare keys to the home and can be used by formal or informal carers to gain quick and easy access. **Limitations:** ➲ Consider who will have or control access to the key safe.
	Flood prevention plugs	These plugs can be used in the bath or sink and automatically open when a certain water level is reached to prevent overflowing. They act to prevent flooding in the home if the user gets distracted or forgets to turn off the taps. **Limitations:** ➲ They do not automatically turn off water that is accidentally left running. ➲ Someone with dementia may not understand the plug's function and remove it.

3.2 Telecare devices and systems

This category covers a range of devices that share the common feature of being connected (i.e. alerting) either to carers or to call monitoring centres. Their functionality aims to improve the safety of the user and they include a wide range of alarms, detectors and sensors that address different activities of living in a range of settings.

Table 3.2 Types of telecare devices and systems

Function	Device	Description
Safety	**Telecare alarm unit**	The alarm unit automatically dials a carer or 24 hour monitoring centre outside of the home to raise an alert when it is triggered. The unit can be triggered by the user pressing a panic button on the unit itself or on a personal (body worn) pendant, or by automatic sensors installed in the home. A call centre operator can then talk to the user over the unit to establish the nature of an incident and, if required, activate the pre-determined response protocol. The device raises an immediate alert and facilitates fast response/assistance in the event of an adverse incident in the home.

Function	Device	Description
		Limitations: ➲ Needs a mains electrical socket to operate – the socket therefore needs to be close to where the device is to be placed in the home. ➲ Some models may only work via a land telephone line (not mobile enabled). ➲ Someone with dementia may not understand what the unit is for and may not use the panic button in the event of an adverse incident. Conversely, they may also overuse the panic button when no adverse incident has occurred.** ➲ Someone with dementia may be startled by the voice of a call centre operator emitting from the alarm unit.** **The unit can be placed in a location where the person with dementia does not see it. In addition, call centres can establish a protocol whereby when an alert is triggered the operator will not speak to the person with dementia over the unit but call a nominated contact directly.
	Pendant alarm	This is a body worn (pendant or bracelet) personal alarm. The user presses the button to trigger the telecare alarm unit. It allows the user to raise an alert from anywhere within the home or within range of the alarm unit. Because of the limitations set out below, a pendant alarm is not suitable for people in the advanced stages of dementia. It may however benefit their carer by allowing them to summon assistance if required. **Limitations:** ➲ Someone with dementia may not understand what the pendant is for and either may not use it at all or overuse it. ➲ The device is intended to be worn at all times but the user may either forget to wear it or not want to wear it due to a perception of stigma, thereby limiting its usefulness. ➲ Users may be anxious about triggering the pendant alarm by accident.

Example of a bracelet alarm

Function	Device	Description
	Bogus caller alarm	This is a panic button that can be placed anywhere around the home but is usually placed by the front door. It is connected to a telecare system and when pressed it alerts straight though to call centre staff at a 24 hour monitoring centre. The bogus caller alarm can provide an added measure of security for users in the event of unwanted callers to the home. **Limitations:** ➲ The person with dementia may not understand what the alarm is for or how to use it.
	Flood detector	These are small portable devices for use in the kitchen or bathroom. They are placed on the floor and will set off an alarm locally and at a 24 hour monitoring centre when they detect water. They help to prevent flooding in the home if the user forgets to turn off taps or in the event of burst water pipes. **Limitations:** ➲ Sufficient space is required in the room of use so that the device can sit on the floor without being obtrusive or a trip hazard. ➲ Someone with dementia may not understand or forget what it is for and remove it from the floor. ➲ They may get confused or startled when the alarm goes off in the home. ➲ The device does not actually turn off the water.
	Monitored smoke detector	This is a battery powered smoke detector that emits an alarm in the home and at a 24 hour monitoring centre outside of the home (via a telecare system). It helps to detect and alert to potential fire in the home. The monitoring centre can check with the user whether or not the alert is connected to a fire event and if necessary can contact the emergency services. **Limitations:** ➲ The person with dementia may get confused or startled when the alarm goes off in the home. ➲ Clear, pre established protocols for response in the event of an alert from a monitored smoke detector is essential.

Function	Device	Description
	Gas shut off valve	This device automatically turns off the gas supply when a leak is detected. It helps protect against fire or gas hazards.
	Monitored gas detector	This device detects natural gas leaks in the home and triggers a local and remote alarm in a 24 hour monitoring centre. It can be of additional benefit if used in combination with a gas shut off valve. **Limitations:** ➲ The person with dementia may get confused or startled if alarm goes off in the home. ➲ Clear, pre established protocols for response in the event of an alert from a monitored gas detector is essential.
	Monitored carbon monoxide detector	Detects dangerous levels of carbon monoxide in the home. When activated it sounds an alarm in the home and raises an alert at a 24 hour monitoring centre. **Limitations:** ➲ The person with dementia may get confused or startled when an alarm goes off in the home. ➲ Clear, pre established protocols for response in the event of an alert from a monitored smoke detector is essential.
	Extreme temperature sensor	This device detects and alerts the user to extreme high, low, or rapid changes in temperature in the home. It helps protect against the risk of hypothermia. It may help protect against the risk of fire as it can detect rapid rise in temperatures associated with fire. It can also be connected to a telecare system.
	Fall detector	This is a small device that is worn by the user (e.g. on a wrist worn bracelet or on a belt) that detects the impact of a fall. The device sends out an alert to a carer or a 24 hour monitoring centre when a fall is detected. It is useful for people who are prone or at risk of falling. **Limitations:** ➲ It can be over sensitive and triggered accidentally giving rise to false alarms. ➲ The person with dementia may not understand what the fall detector is for or may not want to wear it.

Function	Device	Description
	Bed occupancy sensor	This is a pressure pad that is placed on a mattress under the bed linen. It detects when the person is in or has left the bed. Some types can be pre- timed to alert a carer if the user has not gone to bed, has not got up in the morning, or has left the bed during the night for an extended period. Some types can be connected to a bedside lamp, triggering it to come on automatically when the user gets out of bed. The use of a bed occupancy sensor can also help a carer to establish or monitor the user's night time routine or behaviour. Bed occupancy sensors can be configured to alert to a carer or to a 24 hour monitoring centre. **Limitations:** ➲ If the alarm sounds or a light flashes locally at the pad this may cause distress to the person with dementia. ➲ If the user does not have a set sleep routine the carer may be woken multiple times during the night.[19] ➲ Some types cannot be timed and will alert every time the person gets out of bed requiring the carer to go into the persons room to turn off and reset the sensor. ➲ It may alert when the person has not actually left the bed but simply moves around within it, disturbing the carer unnecessarily. ➲ If falls are a concern the alert may be too late and the person may have already fallen.[20]
	Chair occupancy sensor	This is a pressure pad that detects when a person gets up out of a chair. It can alert a carer to the user moving from the chair or spending excessive time sitting in same location. It can help establish or monitor a user's activity or routine and it can raise an alert to a carer or to a 24 hour monitoring centre. **Limitations:** ➲ If the alarm sounds or light flashes locally at the pad this can cause distress to the person with dementia. ➲ If falls are an issue it may give carers a false sense of security – the person with dementia may have already fallen by the time carer can respond to the alert.[21]

Function	Device	Description
	Floor mat	This is an electronic mat that is placed on the floor and detects foot or body pressure. Mats can be placed in key locations in the home (e.g. beside a bed, chair or door) to monitor or detect movement. It can raise an alert to a carer or to a 24 hour monitoring centre. **Limitations:** ➲ Long leads may cause a tripping hazard.[22] ➲ It may be a trip hazard when used between rooms with different floor heights (e.g. for people using walking frames).
	Activity monitors	Wireless sensors (Passive Infrared Sensors) that can be placed around the home and detect movement (activity) or lack of movement (inactivity). The sensors can be set to collect this information at certain times of the day or night. The information can be sent to a carer or to a 24 hour monitoring centre. Activity sensors can be used to provide a picture of the daily routine of a person with dementia and how they are coping at home. The information can help families and care services in care planning. This may be especially beneficial if the person is living on their own. **Limitations:** ➲ There are issues to do with consent, privacy and confidentiality around the use of activity monitoring.
	Property exit sensor	Types of property exit sensors include magnetic door contacts or wireless (Passive Infrared Red) movement sensors. They can be programmed to alert a carer locally and/or to a 24 hour monitoring centre when someone leaves the home unexpectedly or has not returned within a certain period of time. The sensors can be set to operate (activate and deactivate) at certain times of the day or night. Carers or family members can set or unset the system.

Function	Device	Description
		Limitations: ➲ It may unnecessarily restrict the person's freedom to leave their home. ➲ The sensor timings can be problematic for others living in the home i.e. to suit the comings and goings of others. **If the property exit sensor is alarmed consider:**[23] ➲ Will the person with dementia be startled at the sound of the alarm? ➲ Who will respond to alerts? ➲ The nature, tone and volume of alerts e.g. an alarming doorbell, beeper or a familiar voice. ➲ The hearing ability of the person with dementia and the carer to hear the alarm.
	Enuresis sensor	This is a mat or pad that can be placed under bed linen to detect moisture. It alerts the carer to the occurrence of incontinence incidents enabling them to respond quickly and reduce discomfort for the user. The carer does not have to physically check for incidents as often and the user can be made comfortable faster following an incident. **Limitations:**[24] ➲ Sweating may cause false alarms.

Example of a flood prevention plug

3.3 Safer walking technologies

Walking is generally recognised to be a positive activity for people with dementia. However, when walking has associated risks it can become a concern for the person with dementia and for their family.[25] The person may become disorientated when they are out or they may have frequent and compelling urges to leave the home. There are a number of devices available that aim to support safer walking and to minimise the risks for someone with dementia leaving the home unexpectedly.

There is considerable debate about the use of GPS tracking with people with dementia from an ethical point of view. It could be regarded as an intrusion on their privacy, a curtailment on their right to move around as they wish, and an affront to their sense of dignity. Deception can also be a cause of concern, especially if a person with dementia is not aware that a locator device is hidden upon their person, is not told what the real purpose of such a device is, or cannot remove it if he or she chooses to at a later time.[26]

It should be noted that currently there is an absence of a legislative framework in Ireland around the use of GPS tracking in situations where capacity to give consent is impaired.

The South East Scotland GPS Forum has described some of the potential benefits and limitations of safer walking technologies.[27]

Table 3.3 Potential benefits and limitations of safer walking technologies[28]

Description
Safer walking technologies include a range of personal safety locating devices which use GPS technology to help carers and/or staff at a 24 hr monitoring centre track the whereabouts of someone who has left the home or to locate them in an emergency situation. There are a variety of different devices including: ➲ Small transmitter devices that can be placed in or attached to clothing. ➲ Mobile phones with built-in GPS tracking and panic button. ➲ Wrist worn devices (watches). Devices can be programmed to notify a carer or a monitoring centre if the user moves beyond a pre-determined boundary (this is known as geofencing) or to allow for the constant tracking of movement.
Potential Benefits
The potential benefits of safer walking technologies include: ➲ May maintain independence by supporting the person with dementia to walk more freely. ➲ May reduce the need for more restrictive measures (such as locking doors). ➲ May provide increased peace of mind for the person with dementia and their carer.

Potential Limitations

The potential limitation of safer walking technologies include:

- The potential to decrease autonomy and restrict movement.
- Issues to do with confidentiality and privacy.
- It may give a false sense of security (for example, it does not affect road safety risks, if the person has lost their road safety skills).
- It may be misused (for example, it may be used to reduce informal care or formal care services).
- The device needs to be with the person to be of any benefit -most devices can easily be removed.
- The mobile phone reception of the area in which it is to be used needs to be checked, and the possibility of a roaming SIM may need to be considered.
- The devices only work outdoors as they rely on a line of sight to show the GPS location. If the user goes indoors it will only give its last known location, usually outside the building.
- In a busy area such as a town main street it will still be difficult to find someone.
- There can be a time delay in reporting the current location. Tall buildings can block the line of sight to the satellite.

3.4 Help cards/information documents

The Alzheimer's Society (UK) has developed information tools for people with dementia.

'Help cards' are credit card sized cards on which the person's name, contact details and details for an emergency contact can be recorded. The person can carry the card with them when they are out and it may make it easier for them to get appropriate assistance if they get into difficulty.

'This is Me' is a document for recording and communicating important information about the person to professionals providing care to them in their home, hospital or respite care setting (e.g. the person's personal details, care needs, medications, eating habits, likes, dislikes and preferences etc.).

- **Help Cards**
  tinyurl.com/help-cards
- **'This is Me' tool**
  tinyurl.com/this-is-me-tool

4. Products and Services - Communication

Contents

4.1 Communication devices 35

Easy to use telephones 35

Intercoms 37

Talking Mats 37

This category relates to technologies that help a person with dementia communicate with others. It includes devices such as easy to use telephones, intercoms and conversation aids.

4.1 Communication devices

Table 4.1 Types of communication devices

Function	Device	Description
Communication	**Easy to use telephones**	Telephones (landline and mobile) with large buttons, picture buttons, large display, and/or amplification features. Some models have emergency functions with an SOS button on the phone and an additional SOS pendant. The telephone can be programmed so that when either alert button is activated it will automatically dial out to pre-programmed phone numbers (e.g. of family, friends carers) in sequence until the call is answered. Picture buttons and pre-programmed numbers are helpful if the user has difficulty remembering phone numbers or has dexterity problems. **Limitations:**[29] ➲ Someone has to programme the phone e.g. enter the pre-set numbers, pictures or text. ➲ The person may not understand the information programmed into the phone or how to use it. ➲ The contacts selected need to be able answer their own phones in response. ➲ Need to consider whether SOS button calls should connect to family members or to emergency services. The time of day that a call might be made will need to be taken into account. ➲ Some mobile phones have limited functionality e.g. cannot input more than four direct dials, or cannot input credit on the phone or check the credit balance. Someone needs access to on-line banking for the latter function. ➲ The mobile network signal and compatibility to the phone may be an issue. ➲ For a mobile phone: someone needs to be available or remember to keep it charged.

Example of an easy to use telephone

Function	Device	Description
	Intercoms	Intercoms allow for conversation between two people in different rooms in the home or between someone inside the home and a caller to the front door. Wired intercom systems are in a permanent location in the home (e.g. at the front door) while wireless systems can be plugged in in different rooms. They allow the user to check the identity of a caller without having to open the door to them or to call out to someone who is in another location in the home. They can be helpful for carers by allowing them to verbally check in with the person when they are in another room. **Limitations:** ➲ May not be suitable for people in advanced stages of dementia who may not understand where the voice is coming from. ➲ Risk of being over relied on or used to replace the need to visually check on the person.
	Talking Mats	Talking Mats is a communication framework that uses symbols or pictures that help facilitate communication with people who have communication or verbal difficulties (a digital (APP) version of Talking Mats is also available). Talking mats allows a person with dementia to think about issues being discussed with them and to express their feelings and choices.[30] A study of talking mats as a low-tech communication tool for people with dementia found that:[31] ➲ Talking Mats can help both people with dementia and their family carers feel more involved in discussions about managing their daily lives. ➲ People with dementia reported that Talking Mats helped them to clarify their thoughts, express them to their family carers, and reach a decision in these discussions. ➲ Family carers reported that Talking Mats made them feel 'listened to' by the person with dementia. They also felt that their relative could actually 'see' their point of view when using Talking Mats. ➲ Talking Mats can contribute to the process of negotiation in day-to-day decision-making. They also offer a method for recording joint views to inform later decisions made with members of the wider support community.

5. Products and Services - Entertainment / Reminiscence

Contents

5.1	Entertainment	39
	Single button radio	39
	Easy to use remote controls	39
	Adapted computer keyboards	39
	Games, activities and sensory stimulation products	39
5.2	Reminiscence	40
	Talking photograph albums	40
	Reminiscence cards	41
	Reminiscence packs	41
	Scent boxes	41
	Life Story Books	41

An increasing number of entertainment and reminiscence products and activities are being developed specifically for people with dementia. These include games and activities for stimulation and adapted equipment like radios, music centres, computer accessories (e.g. keyboards) and remote controls. Devices and activities are also available that support reminiscence, both as a leisure and therapeutic activity. These include things like talking photograph albums, life story books and other reminiscence materials (e.g. reminiscence cards, packs, and scent boxes).

5.1 Entertainment

Table 5.1 Types of entertainment products

Function	Device	Description
Leisure / Entertainment	**Single button radio**	This device is an easy to use radio that has been adapted to operate by having to only press one button. The person's preferred radio channel and volume setting can be pre-set. A cover then goes over the radio which has a single button making it easier for people with memory problems, visual impairment or poor dexterity to use.
	Easy to use remote controls	These devices have large print or colour coded buttons that are designed to make them easier to use. Most are oversized making them easy to locate and handle. Many are universal and can be pre-programmed to operate with a range of audio and visual devices (TVs, music centres, DVD players etc.).
	Adapted computer keyboards	These are keyboards which have different features to make them easier to use e.g. large sized keys, coloured keys, and simplified layout. They may be helpful for people with dexterity or visual difficulties.
	Games, activities and sensory stimulation products	There are a range of different games and activities available that have been specifically developed for people with dementia. These include products such as interactive computer games, jigsaw puzzles, puzzle books, activity books, scrap books, painting kits, and musical instruments. Tactile items designed for sensory stimulation, relaxation or anxiety calming are also available such as specially designed hand muffs and sensory cushions, activity blankets and aprons with sensory stimulation attachments, fidget items and soft toys.

Function	Device	Description
		Limitations: ➲ If the activity does not fit the individuals' current ability and interests they may find it too stressful or too infantile to use.[32] ➲ Some products (e.g. soft toys, dolls) are childlike and have the potential to be stigmatising; they may be more suitable for people with severe dementia. ➲ Gender and cultural issues should be considered. A user trial[33] of sensory cushions and twiddle muffs found that some could be flimsy and potentially hazardous, highlighting the need for careful risk assessment of each situation.

5.2 Reminiscence

Table 5.2 Types of reminiscence aids

Function	Device	Description
Reminiscence	**Talking photograph albums**	These are electronic photograph albums that have the facility to add personalised voice messages to accompany photographs. They can help the user recall people and events in their lives. The messages recorded can relate to the names of people in a photograph or the story associated with it. Albums can also be used by carers to give verbal and illustrated prompts or instructions on how to carry out a task. **Limitations:** ➲ May be useful in earlier stages of dementia but as the condition progresses the person may not recognise the photo, voice or relationship. A user trial[34] of a proprietary photo album noted some user issues: ➲ The switches can be fiddly. ➲ Battery life can expire quickly if the device it is left switched on. ➲ Volume of voice recordings made can be poor.

Function	Device	Description
	Reminiscence cards	These cards have illustrations and prompts on themes from particular times in the past (e.g. a specific decade). They can help to bring to mind memories of past life experiences.
	Reminiscence packs	Reminiscence packs can contain a collection of everyday items from a specific period in time. As with reminiscence cards they may help someone with dementia to recall familiar things from the past and associated experiences.
	Scent boxes	Scent boxes contain a collection of different aromas designed to evoke memories of the items they are connected with. **Limitations:** ➲ They are more appropriate for use in late stage dementia.
	Life Story Books	Life story books are available to purchase or can be homemade. Compiling the book involves gathering and organising stories or photographs of people, places and events in their life. This can be an enjoyable activity for someone with dementia and one that can be shared with family or friends. Creating a life story book draws on long term memory and can enhance the wellbeing of the person by emphasising what they can remember rather than what they can't. It can also support interaction and communication between someone with dementia and their carers, family and friends.[35]

Example of a one button radio

6. Implementing AT Provision in Dementia Care Services

Contents

6.1 Getting started 45

6.1.1 Building a project team 46

6.1.2 Building support and commitment 46

6.1.3 Capacity building 46

6.2 Needs assessment – screening and assessing for AT 50

6.2.1 Assessment of capacity to give informed consent 51

6.2.2 Assessment of needs 51

6.2.3 Approach to assessment 53

6.2.4 Making a decision to use AT 53

6.2.5 Working with external providers 55

6.2.6 Measuring baseline information on key factors 56

6.2.7 Communicating with service provider staff 56

6.2.8 Reviewing AT plans for service users 56

6.3 Monitoring and evaluation 57

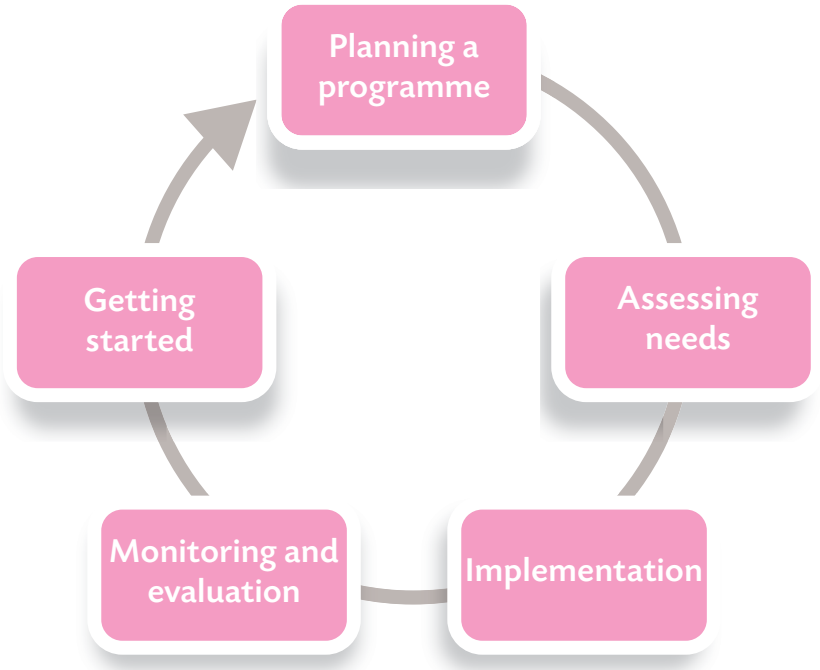
6.4 Difficulties in implementing an AT service 58

6.5 Maximising successful implementation 59

This chapter deals with the implementation of an AT (including telecare) project or service. It is divided into 5 key stages that follow a 'project management cycle'.

This is an idealised view of how projects should be managed – different projects will follow different paths. In addition, every service will have their own procedures and protocols to be operated and observed when establishing any new project. However, well managed projects will need to undertake the main activities that are outlined in this Chapter if they are to be effective, and the 5 stages of the project management cycle outlined below provide a useful checklist for people involved in designing and implementing telecare services for people with dementia.

The stages of the project management cycle



Phases, activities and tools

Each of these phases has a number of activities which need to be undertaken or issues that need to be addressed. These are described in detail below. In addition, a number of tools are proposed that will support the activities, and are also described below.

Who should use the guidance and how

The stages outlined in this chapter will have different relevance for readers depending on their role. The matrix below provides a guide on the relevant sections for service managers with particular responsibilities and for front line staff. It is suggested that service managers with

responsibilities for developing services or with funding these services might be most interested in Stages 1, 2 and 5 of the cycle, as these deal with the more strategic parts of developing a service. Services managers with responsibility for service implementation or front line staff who deliver the telecare service might be most interested in the more operational aspects of the project cycle, i.e. Stages 3, 4 and 5.

	Service Managers (Service Development)	**Service Managers** (Funding)	**Service Managers** (Implementation)	**Front Line Staff**
Stage 1 Getting started	X	X		
Stage 2 Planning at AT programme	X	X		
Stage 3 Needs assessment			X	X
Stage 4 Implementation			X	X
Stage 5 Monitoring & evaluation	X	X	X	X

6.1 Getting started

Any project that takes place in an organisation requires a sound basis and the way to promote that is to build solid organisational foundations. The effort put in to getting started will be repaid through having clarity for the project and its participants. It will provide mechanisms for ensuring buy-in to the project, clear lines of responsibility and reporting, and will also help ensure that all stakeholders have the ability to take part in the project.

6.1.1 Building a project team

The first step in developing an AT programme is the creation of a team to oversee, plan and implement AT. This team should have the responsibility to drive forward AT within the context of dementia care.

It is important that the AT team should appoint a project manager, who has responsibility for achieving the desired outcomes of the project.[36] The team itself can be comprised of a diverse group of people from different departments, or those who have an interest in AT. The key here is to ensure that all relevant stakeholders are included in the project team, including representatives of service users.

Actions should be taken at an early stage to ensure:

- Line managers agree to release the project manager and team members from normal duties for the agreed activity. Obtaining a formal agreement may be wise (e.g. email confirmation, etc.).
- The project manager and the membership of the team are identified, formally established, and publicised.
- Their roles and responsibilities are clear.
- Their time commitment is specified.

These actions will ensure transparency and clarity about the project.

6.1.2 Building support and commitment

The work of the team needs to be built on explicit support from senior management and a commitment within the organisation to implementing AT. This is particularly important, as the implementation of the AT programme is likely to involve changes in roles for many staff involved with the service.

Ideally, a member of the senior management team should be asked to monitor the development and implementation of AT activities. Meetings of the senior management team should receive regular reports on progress.

6.1.3 Capacity building

Training in AT and how it can contribute to the care and support of people with dementia and their carers has been identified by contributors to this resource as essential. Knowledgeable staff can better support an AT user, their carer and their wider support network. In-service training for all service staff working with people with dementia and their families will help to ensure that a common set of practices around implementation are developed and followed.

Key elements of what a training programme should provide:[37]

- How to identify clients who may benefit from AT or telecare
- How to conduct a holistic needs-based assessment as part of a wider process with the person and family

- A good understanding of the range of AT options that are available, where they can be sourced, some of the potential pitfalls associated with them, and the amount of support required for various options to be implemented successfully
- What to look out for when selecting AT products and services (e.g. provider's policy on exchange, breakdowns or faults, maintenance issues)

Outside expertise may be required to provide training and skill development. Training may also involve visits to other agencies operating an AT service and to service users. In the case of telecare, it may also involve a visit to a call monitoring centre. All service staff should receive training.

Most organisations would benefit from having a trained group of staff available to design and implement the AT programme. Assessing the needs for such training and providing it early in the programme will help prevent mistakes in the design and implementation of the programme.

Tool 1 below gives an overview of the actions to be taken and the potential content for a training programme in the area. This could provide the starting point for the design of an appropriate training programme.

Tool 1: Key issues in developing an AT training programme[38]

Action	Issues to be considered
Conduct a training needs analysis	- Who will require training? - When does this need to happen? - What are the outcomes expected from the training programme? - Is there an existing training programme that can be used or adapted for use?
Designing the training programme	- Who will design the training programme? - What form will the programme take? - What training materials will be required? - Who will develop these? - Does the training programme need to be accredited and how can this be done? - What budget and other resources will be required/ available?
Delivering the training programme	- Who will deliver the training? - When will it happen? - How long will it last?
Evaluating the effectiveness of the training programme	- Has the programme met expected outcomes? - Does it need to be adapted?

Planning an AT programme

This stage of the project management cycle is concerned with the development of a project plan for the AT programme.

The main activity that needs to be undertaken in planning a telecare programme is developing a comprehensive service plan. This involves, amongst other things:[39]

- Identifying all stakeholders involved and establishing who has overall authority for the provision of AT
- Establishing the brief for the project
- Developing a plan which details activities, schedules, resources needed and responsibilities
- Obtaining sign-off on the plan from relevant stakeholders

Tool 2 gives a more detailed list of issues that should be considered in developing the plan.

Tool 2: Considerations in developing a comprehensive service plan for AT[40]

- What the intended outcomes of the service are and how these will be achieved.
- How the AT service is to be financed and resourced.
- How potential users and their families will become introduced to and be provided with information on AT provision.
- The identification process, referral route(s) and eligibility criteria for AT for service users.
- Assessment and review procedures for assessing the needs of service users and the time frame for such assessments.
- How the views of users and carers can be incorporated into the service.
- How equipment and services will be sourced and procured (including how to balance value for money considerations against the need to be able to provide a flexible and tailored service to meet individual client needs).
- How the technology will be installed – who should be involved in this process.
- The quality standards that will be applied – standards should be developed for all aspects of service provision.
- Decommissioning plan and procedures.
- Service monitoring, review and evaluation procedures.
- Training requirements for service staff (awareness and technical training around AT and telecare, training around screening and assessing for AT and telecare needs).
- Risk management and legal issues – e.g. Data protection, service user right of access to data, mental capacity.
- Plans for sustainability and future service development.

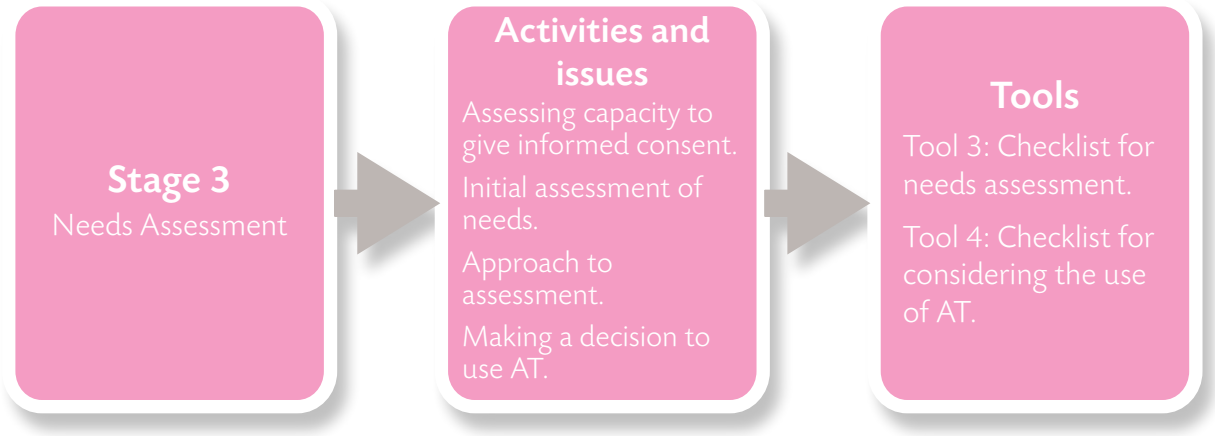
6.2 Needs assessment – screening and assessing for AT

A successful AT programme or service depends on many things being done well, chief among them being the development of a system for matching the needs of clients to the services (AT and human based) that can be provided. This stage of the project management cycle is concerned with this issue and the results from it will inform how the service will operate in practical terms as well as how well it meets client needs.

There are two main aspects of importance here:

- Services will need to decide how they will identify and assess services users who may benefit from the use of AT.
- Professionals involved in assessment and deciding on the AT plan to be implemented need to understand dementia, its symptoms and how these affect the individual. They may also need to develop their knowledge of AT to access effectively or to develop new ways of working.

This phase of activity involves 4 main activities and issues to be addressed, each of which is described in detail below.



6.2.1 Assessment of capacity to give informed consent

Obtaining informed consent from someone with dementia can be challenging. The Alzheimer's Society (UK)[41] points out that the mental capacity of a person with dementia will fluctuate and recommends that they should be assessed on whether they have the ability to make a particular decision at a particular time. An assessment of capacity to make decisions should be carried out for every decision and should be reviewed regularly.

Although the Assisted Decision-making (Capacity) Bill 2013[42] has not at the time of writing been passed into law in Ireland, it is recommended that services approach informed consent in conformance with the provisions of the Bill. According to the Bill, a person would be regarded as lacking capacity to make a decision if they are unable:

- to understand the information relevant to the decision;
- to retain that information;
- to use or weigh that information as part of the process of making the decision; or
- to communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party.

The HSE has developed a National Consent Policy[43] with accompanying guidance for health and social care professionals.

6.2.2 Assessment of needs

The next activity that should be undertaken is the assessment of needs of the potential client. This needs to be a thorough assessment of the needs of the person with dementia (and where appropriate their carer). It should be carried out in the persons living environment in order to obtain a good overview of the environment in which the AT may be situated. A holistic and

person-centred approach is recommended with an emphasis on empowering the person with dementia to participate in decisions wherever possible.

Assessment involves looking carefully at different aspects of the person's life and identifying areas where problems or risks arise. Tool 3 below provides an overview of the issues that should be taken into account in a needs assessment.

Tool 3: Checklist for needs assessment

Criteria to be assessed include:

- time orientation.
- taking medication.
- risk of falls.
- getting out of bed at night.
- night-time incontinence.
- leaving the home and returning safely.
- leaving the home at unexpected or inappropriate times.
- opening the door to strangers.
- leaving doors and windows open.
- using household appliances and systems (e.g. cookers, heating).
- using taps and plugs.
- remembering the location of household or personal items.
- performing personal care tasks.
- remembering how to perform routine tasks.
- remembering familiar people and events.
- boredom or lack of mental stimulation.
- visual, hearing or mobility impairment.
- other areas or activities where assistive technology may have an enabling impact.

Other things to establish include:[44]

- What other social supports are available (for example, from friends or neighbours)?
- What other services are being provided (from formal or informal carers)?
- How are they coping with carrying out activities of daily living – what are their capabilities and what areas are they struggling with?
- If there are problems what are they? What happens, under what circumstances does it happen, when does it happen (e.g. at certain times of the day or night), what are the reasons and are any other people involved?
- The person's living arrangements – do they live alone, with a carer or other family member?

6.2.3 Approach to assessment

The Joint Improvement Team in Scotland[45] set out some tips on assessing people with dementia:

- Taking time to assess someone with dementia is crucial, as individuals can often maintain a very good façade over short periods, may have good days and bad days, and often have a 'best time of day' – often late morning.
- Coaching some people with dementia may have potential, and introducing small changes supported by repeat coaching can sometimes be successful.
- Assessment is not a linear process, unlike medical models: one thing that is changed in a person's life may well impact on others.
- Communication can work well through someone the individual is familiar with and trusts.
- Non-verbal communication can also be very informative e.g. interpretation of 'stories', and behaviour.

An example of an AT Assessment tool is provided in **Appendix 4**.[46] The service that developed the tool uses it in conjunction with an assessment of dependency and cognitive ability (using the HSE Common Summary Assessment Record Form[47]) in order to make decisions regarding the AT equipment to be prescribed.

Looking at the needs of informal carers is also an important element of the assessment process. If there is one or more family carer involved in supporting the person with dementia (either living with them or living elsewhere), then impacts on the level of stress, anxiety and burden of the family carer should be considered.

Some points to consider in relation to carers include[48]:

- Carers may not be knowledgeable about the availability or potential of technology to support them in their role.
- A carer of a person with dementia may not be supportive of the use of technology or be willing to monitor its use.
- Carers may have concerns about adaptations to the home environment and equipment such as laptops, mobile phones and domestic equipment – this may be due to anxiety about change, the inconvenience of having the technology, concerns about its reliability, stigma or other concerns.

It is also important to consider the optimum environment for the person with dementia at that point, in terms of meeting their needs and the needs of the carer.

6.2.4 Making a decision to use AT

Each technology being considered should be assessed in relation to the needs and preferences of the person with dementia and their family or carer.[49] Before making a decision to use AT, practitioners need to satisfy themselves that they have all of the information they need. The following checklist outlines some of the questions that need to be considered.

Tool 4: Checklist for considering the use of AT[50]

- Has a full, person-centred assessment of the person's needs been completed (and their carer's needs, where appropriate)?
- Has the person got difficulties in any areas?
- Have any risks been identified? What are they and how likely are they to happen?
- Can AT address these risks and how would it do this?
- What are the limitations of AT in relation to the risks?
- Are there more appropriate solutions?
- Have all the ethical issues been considered?
- Has the person with dementia's wishes and preferences been ascertained and taken into account?
- Has the person with dementia's family and carer's views been ascertained?
- Does the person with dementia consent to the use of AT?
- Does the person with dementia understand what the technology is for and the limitations of what it can do?
- Will the person be able to use it?
- How will the technology fit in with the person's living environment or lifestyle?
- Is safety more important than privacy?
- In the case of telecare, are appropriate monitoring and response arrangements in place?
- Is the technology reliable?
- Could it agitate or confuse the person with dementia – alarm noises, recorded voices, flashing lights?
- Who will be responsible for installation, maintenance and repair, and decommissioning of the equipment?
- Who is responsible for training the person with dementia or family in the use of the technology?

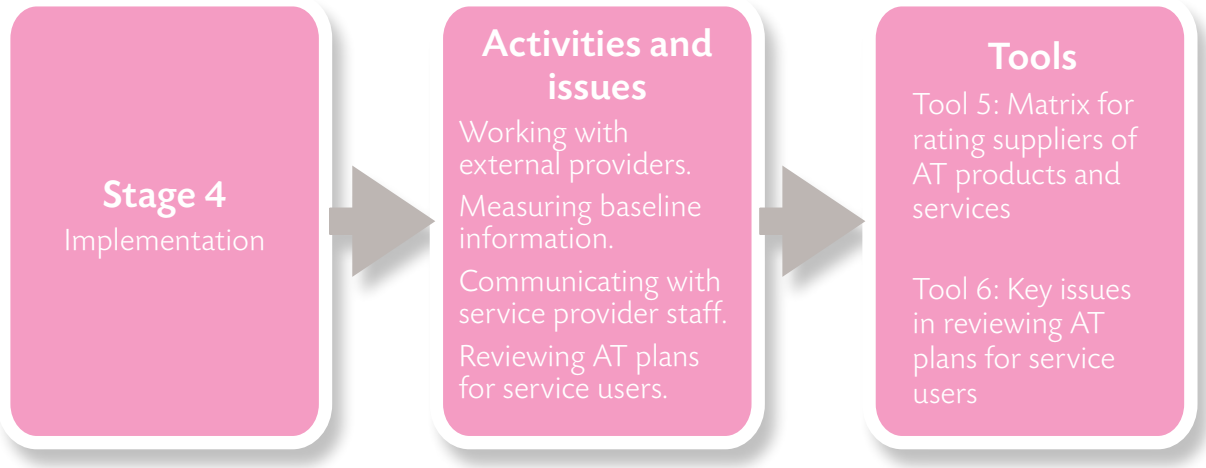
Implementation

Four activities and issues are important in the implementation of an AT programme or service.

These are:

- Working with external providers.
- Measuring baseline information from clients.
- Communicating with service provider staff.
- Reviewing the AT plans for service users.
- Reviewing the AT implementation plan.

These activities and issues emphasise the need not only to provide the service, but also the need to review implementation of the service in the light of changing client needs.



6.2.5 Working with external providers

Working with external third party service providers is a key area that needs to be clarified and regularised in the early stages of implementing AT. Issues to be covered include:[51]

- equipment purchase and (inter) connectivity requirements.
- selecting and managing installation contractors.
- battery management (replacement programmes), asset management, storage, decontamination and recycling.
- call handling requirements.
- communication with contractors.

The following matrix can be used as a simple tool to help evaluate or compare different suppliers of AT products and services.[52]

Tool 5: Matrix for rating suppliers of AT products and services

Supplier	Device	Service Charges?	Maintenance charges?	Warranty?	Meets service user requirements full or in part?
Supplier A					
Supplier B					
Supplier C					
Supplier D					

6.2.6 Measuring baseline information on key factors

It is important to assemble baseline data on the key factors that will be used to evaluate the AT service. Without doing this it will be impossible to demonstrate improvement or impact as a result of providing AT to service users.

6.2.7 Communicating with service provider staff

Establishing and using clear lines of communication, and communicating actively and regularly is essential during implementation. Staff need to know what is happening in their area, the timeframe for implementation, and any effects that the roll-out of AT will have on their work. Local management must also understand and approve the process or they will not promote or support the service.

6.2.8 Reviewing AT plans for service users

Given that dementia is a progressive disease and people can deteriorate rapidly, it is essential that an individual's assessment of need and assessment for AT are both regularly reviewed. It is recommended that reviews are carried out early, initially within four weeks of installation.[53]

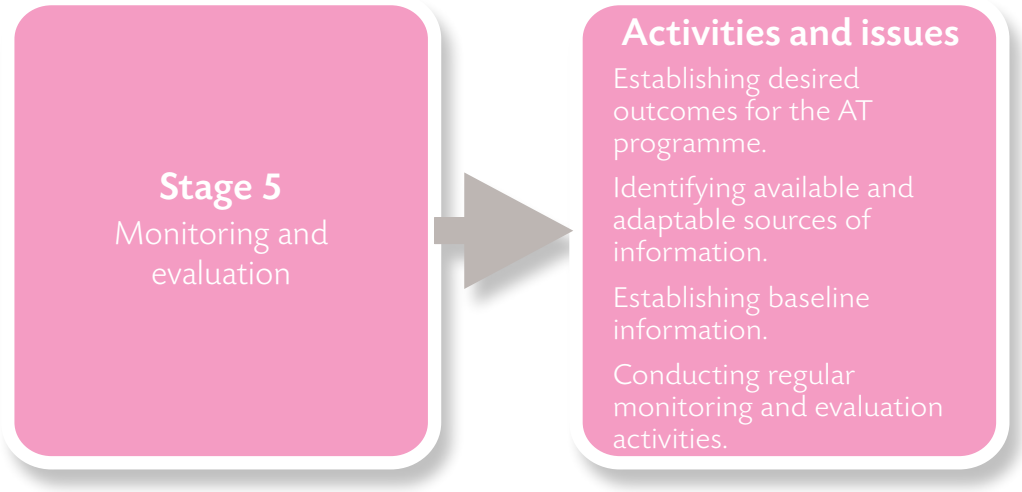
Tool 6: Key issues in reviewing AT plans for service users

- Have there been any changes in the person's dementia progression and any associated changes in behaviour in terms of safety or independence?
- Have there been any changes in their living circumstances (for example the amount of informal or formal care they receive)?
- Has the AT had any unintended or unforeseeable negative impacts on the person with dementia or their carer?
- Does the AT they currently have continue to meet their needs or do other technology options need to be considered?
- Does the AT need to be withdrawn?

The views and experiences of the person with dementia and their carer should be sought and taken into account in the review process. In the case of telecare provision it may be necessary to ascertain the amount and nature of telecare alerts, as well as responses to and outcomes of alert events.

6.3 Monitoring and evaluation

Monitoring and evaluation should be built into the AT service plan. An integral part of the AT service pathway is the review of how implementation has worked, and planning how things can be improved if necessary.[54] The project manager can help to improve performance by ensuring that the team regularly monitors and evaluates its own performance, and plans how to improve. The outcomes from such reviews of implementation can be fed back to key stakeholders to underpin continuing support for AT, or to identify lessons to guide future activities.



Undertaking a good and useful evaluation of a programme requires planning prior to the evaluation as well as the collection of information that can be used for evaluation on an ongoing basis. In this regard, the timing of monitoring and evaluation activities is important if findings are to inform the AT programme. Often a formal monitoring and evaluation report is produced at the end of a project. However, it is very useful to project managers if they can also plan for regular feedback and review throughout implementation, as any actions that need to be taken to resolve problems can be taken in a timely fashion.[55]

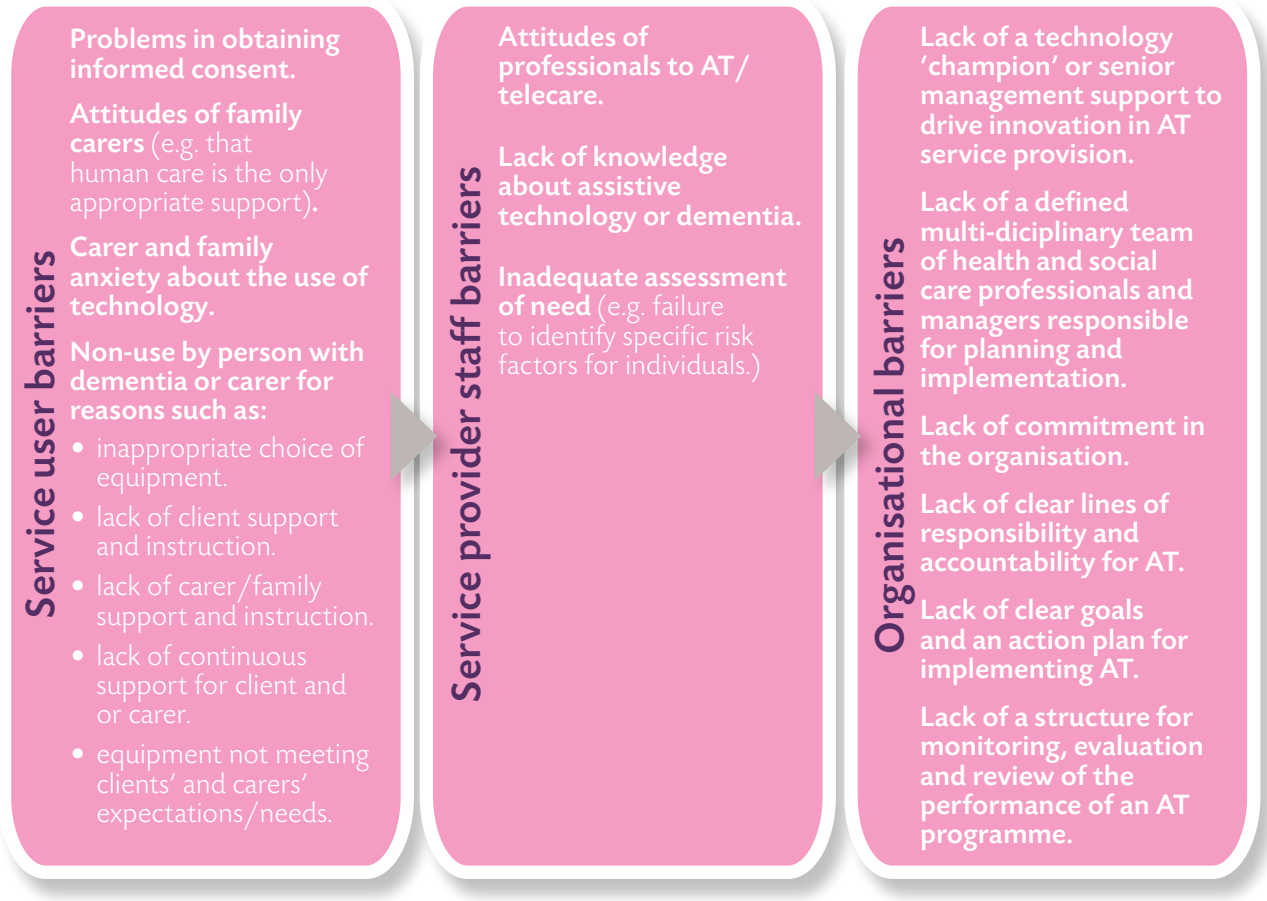
Key activities in developing an evaluation system are:

- Establishing desired outcomes for the AT programme - This involves setting objectives for the telecare support in terms that are measurable and which relate to information that is relatively easily obtained.
- Identifying available and adaptable sources of information - Use should be made of information that is routinely collected as part of the management of the telecare programme. In addition, it is likely that some specific information that is not routinely collected may be needed.
- Establishing baseline information – making sure that information is obtained from clients before they get to use the AT or telecare system. This will ensure that there is good basis for describing its effects after it has been implemented.
- Conducting regular monitoring and evaluation activities – ensure that regular data is collected. This will allow for a realistic evaluation of the AT as well as helping to track the extent to which it is meeting the needs of the client over time.

6.4 Difficulties in implementing an AT service

The process of implementing an innovative service is not always an easy one. Understanding the potential barriers to implementing an AT service to support people with dementia will help to maximise successful implementation. Some potential pitfalls have been noted in the literature.[56,57]

Barriers to the successful implementation of AT



These relate to issues that the service user may face, that are a function of the service provider staff or that relate to how the organisation (health or social care) functions. The figure above outlines some of these barriers and difficulties, but a number of key issues are important to note here:

- Many barriers relate to a failure to match the technology and service to the needs of the client.
- Integrating the social services to the potential of the AT is a key issue to be addressed when meeting the needs of the client.
- The support and involvement of all stakeholders is needed to overcome potential difficulties in implementation.

6.5 Maximising successful implementation

Though it is likely that some problems of implementation will occur, a number of tips can be drawn from previous experiences of implementation that will help overcome many of these difficulties. Following these tips will help ensure that problems may be avoided, or if they occur, that they be minimised.

Tips to maximise successful implementation of AT in dementia care

- Developing a clear framework and action plan within the service with defined roles and responsibilities.
- Providing adequate training for all staff.
- Raising awareness of the potential of AT to support people with dementia and their carers. This may include demonstrating AT to potential users in their own homes and setting up AT demonstration areas in settings such as day hospitals, primary care centres, etc. where people can view and get information on AT.
- Incorporating specific assessment for AT and telecare into service provision.
- Ensuring a person-centred, holistic and ethically based approach to assessment and decision making processes.
- Involving people with dementia and their carers in decision making.
- Understanding the limitations of AT and managing the expectations of users, carers and families, and service staff.
- Facilitating user choice and, wherever possible, offering trial periods with AT.
- Putting in place structures for regular monitoring and review of service provision.
- Ensuring that appropriate data protection structures are in place and adhered to.

7. Ethical Issues and the Use of AT in Dementia

Contents

7.1 Why do we need to consider ethics? 61

7.2 Developing an ethical approach 61

7.2.1 Risk to autonomy and independence 61

7.2.2 Risk to well-being 61

7.2.3 Limitations of AT 62

7.2.4 Assessment of needs 62

7.2.5 Data protection 62

7.2.6 Key practice points in the ethical use of AT 62

Ethical issues are central to the design and implementation of AT/telecare services for people with dementia.

7.1 Why do we need to consider ethics?

Although it has potential benefits, AT may also have unintended impacts for users or their families and careful consideration should be given to the ethical issues involved. Professionals working in dementia care services need to be aware of ethical dilemmas that arise and services need to develop a framework of principles to guide and underpin professional practice.[58]

Four *prima facie* moral principles have been set out[59] as a framework to guide ethical considerations in medical ethics which are still widely held to be a valuable starting point for professionals when analysing the often competing and conflicting moral issues involved in making decisions in health and social care:

- Autonomy - the right of someone to make decisions about things that affect them.
- Beneficence - the obligation to provide for and act in a way that is of benefit for the person.
- Non-maleficence – this refers to 'doing no harm'.
- Justice - treating every individual fairly and equitably.

7.2 Developing an ethical approach

The use of AT with people with dementia carries possible risks that threaten the principles outlined above. These risks not only relate to the person with dementia, but also to their carers and potentially to the service.

7.2.1 Risk to autonomy and independence

AT can have a considerable effect on the lives of people with dementia in terms of their autonomy and independence. Practitioners need to be clear that there is a legitimate need to employ AT and that it is the least restrictive intervention available.[60] AT may also risk increased dependency by doing things for a person with dementia that they are still able to do themselves.[61]

Obtaining informed consent is vital but in the case of someone with a cognitive impairment it is one of the most challenging ethical issues to be faced.[62] Care and consideration is needed in relation to how information is provided to them. Where someone does not have capacity to consent a balance may have to be struck between their right to autonomy and choice and the need to protect their safety and wellbeing. If the person does have capacity and does not consent to the use of assistive technology, their decision must be respected.

7.2.2 Risk to well-being

AT has the potential to add complexity to the lives and homes of people with dementia or to place demands on their abilities that they cannot meet. It may also be perceived as stigmatising to some people with dementia and may be detrimental to their self-esteem.[63] Consideration should be given to the possibilities of non- or low-tech solutions.

7.2.3 Limitations of AT

Although it can be enabling, there is a concern that AT can be isolating and can contribute to social exclusion if it is used as a replacement for human care services and interaction. AT should be therefore used to enhance rather than replace informal or formal care. Practitioners need to be aware of the limitations of AT and have realistic expectations of what it can and cannot do. They will also need to manage the expectations of service users and their families.

7.2.4 Assessment of needs

An individualised, person-centred assessment of the need of the person with dementia and their informal carers must be carried out. Sometimes the needs of a person with dementia and their carer may differ or even conflict. Carers or others may overestimate the difficulties or risk to the person they care for.[64] This can be a problem for practitioners trying to determine the extent of the person's difficulties or the level of risk to which they are exposed in the home and whether AT has a role in managing these.

7.2.5 Data protection

There are important data protection issues around the use of assistive technologies, especially the use of telecare systems, and care must be taken to ensure that information gathered about a user is stored securely. If this information is being shared with other care professionals to help support the care planning process, procedures should be in place to ensure that this is done on a need-to-know basis only and solely for the purpose intended.

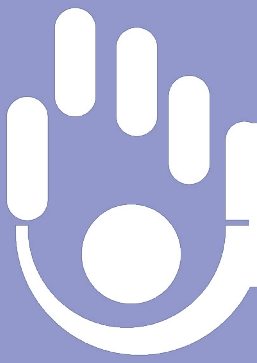
7.2.6 Key practice points in the ethical use of AT

The box on the following page summarises the key points that should be addressed in any AT/Telecare programme. Ethical considerations are not limited to these, but they should be taken into account in for each client who may become a user of AT/telecare.

Key practice points for the ethical use of AT in dementia care

- AT can benefit and be enabling for people with dementia but it can also have unintended effects on their autonomy, privacy and well-being.
- Practitioners need to consider and weigh the benefits and the risks of introducing AT. The safety and well-being of the individual should be the paramount consideration.
- People with dementia and their families should be fully informed about and consent to the use of AT.
- Care should be taken in the way in which information is provided to someone with a cognitive impairment.
- AT cannot replace human contact and should never be used as a substitute for formal or informal social care.
- The aim of using enabling technologies should be to enable the person to do things that they find difficult or can no longer do.
- The aim of using telecare should be to enhance the safety and security of the person with dementia.
- The information gathered by telecare systems must be stored safely and used only for the purposes for which it was intended.
- A person–centred assessment of needs should be carried out before assessment for AT.
- AT will not suit every person with dementia. Some people's needs may be such that they require additional support.

Memory Technology Library
5 Steps to Living Well with Dementia project, South Tipperary



Appendices

Contents

APPENDIX 1: Resources on AT 66

APPENDIX 2: Dementia care resources / organisations 68

APPENDIX 3: Documentary sources on using AT and telecare 69

APPENDIX 4: Example of an Assistive Technology Assessment 71

APPENDIX 5: Development of this guidance 74

APPENDIX 1: Resources on AT

Policy Documents

The Irish National Dementia Strategy
health.gov.ie/blog/publications/the-irish-national-dementia-strategy

Irish AT and Telecare Service Providers

A list of stand-alone AT, personal alarm and telecare service providers in Ireland can be found at: www.assistireland.ie. NB: This list is not exhaustive and there are other providers operating in Ireland. Assistireland.ie also provides a directory of AT products for dementia care.

Information on Assistive Technologies

The Information Hub www.informationhub.ie	The Information Hub is a dedicated resource website provided by Genio which brings together publications, multimedia and events for anyone with an interest in disability, mental health or dementia.
5 Steps to Living Well with Dementia in South Tipperary Memory Technology Library Resources www.southtipperarydementia.ie/library-resources.html	The 5 Steps to Living Well with Dementia in South Tipperary project is supported by the Genio Trust. The Demo section of the Memory Technology Library Resources website offers information on a range of AT products and services. Illustrations and supplier listings are included. The Memory Technology Library does not sell products.
Living Well with Dementia in Stillorgan/Blackrock livingwellwithdementia.ie	The Living Well with Dementia in Stillorgan/Blackrock project is supported by the Genio Trust. The project website contains information and advice on AT products. Product illustrations and supplier listings are also provided.
AT dementia www.atdementia.org.uk	AT Dementia is a UK based website that provides information on AT products, the benefits and limitations of AT, as well as a discussion forum where users of the site can exchange information. Although the AT suppliers listed are UK-based, products can be delivered to Ireland.
AlzProducts www.alzproducts.co.uk	An UK based on-line shop for AT products for people with Alzheimer's and dementia. Products can be delivered to Ireland.

This Caring Home www.thiscaringhome.org	This is a US-based website offering advice and guidance materials on safety and various AT products to support people with dementia living at home.
Foundation for AT (FAST) www.fastuk.org	The Foundation for Assistive Technology (FAST) was established as a charity in 1998 in the UK to co-ordinate activity in research and development on AT, to create a think tank to encourage new ideas and technology transfer, and to document, demonstrate and evaluate innovative and high tech AT. The organisation also developed a database of information on research and development projects in AT which is freely available to the public. However, future funding of FAST by the UK government is uncertain.
Living Made Easy www.livingmadeeasy.org.uk	Living Made Easy is an advice and information website about daily living equipment developed by the Disabled Living Foundation (DLF) in the UK. The Living Made Easy website aims to provide comprehensive and independent information about AT and daily living equipment. The product information is supported by advice from a team of occupational therapists.
"Getting equipped to tackle forgetfulness: Top tips for family and friends Equipment, gadgets and technology to help people with dementia." www.atdementia.org.uk/content_files/files/TopTipsForCarers.pdf.	A booklet on AT designed for people with dementia, and their carers, family and friends. Some of the information is UK specific.

APPENDIX 2: Dementia care resources / organisations

HSE (National Dementia Training Programme)

www.hse.ie/eng/services/Publications/corporate/NursingMidwifery%20Services/dementia.html.

Access to the National Training Dementia Programme training recourse materials

Dementia Services Information and Development Centre (DSIDC)

www.dementia.ie

Based in St James Hospital, Dublin, DSIDC is a national centre of excellence for dementia in Ireland offering education and training, information and consultancy, and research.

Living with Dementia (LiD) Research Programme

livingwithdementia.tcd.ie

Hosted by the School of Social Work and Social Policy in Trinity College, Dublin, the Living with Dementia Research programme supports and promotes research in dementia care.

Other dementia care resources/organisations

Alzheimer's Society of Ireland

www.alzheimer.ie

Information on dementia and the range of supports and services provided by the Alzheimer's Society of Ireland can be found on their website.

Additional Alzheimer's resources :

- Alzheimer's Society (UK)
- Alzheimer's Association (USA)
- Alzheimer's Association (Australia)
- Alzheimer's Society (Canada)

APPENDIX 3: Documentary sources on using AT and telecare

Astrid: A Social and Technological Response to Meeting the Needs of Individuals with Dementia and their Carers
Marshall, M. (2000)
London: Hawker Publications

Technology, Ethics and Dementia
Bjørneby, S., Topo, P. and Holthe, T. (1999)
Norwegian Centre for Dementia Research

Home Solutions. A study into the benefits of telecare for older people choosing to remain at home.
Alastair Graham, Bryan Lawson & David Bolton (2011)
Dublin: Health Service Executive

"It gives me a sense of independence" – Findings from Ireland on the use and usefulness of assistive technology for people with dementia
S. Cahill, E. Begley, J.P. Faulkner and I. Hagen
Technology and Disability 19 (2007) 133–142 133 IOS Press

Research on the provision of Assistive Technology in Ireland and other countries to support independent living across the lifecycle.
Kevin Cullen, Donal McAnaney, Ciaran Dolphin, Sarah Delaney and Philomena Stapleton (2012)
Ireland: National Disability Authority

The role of telecare in supporting carers of older people
Centre for Aging Research and Development in Ireland (CARDI)

Memory Technology Library Project Report.
Dr Nigel Harris and Nina Evans (2014)
Designability: Bath Institute of Medical Engineering.

Using ICT in activities for people with dementia: A short guide for social care providers
Social Care Institute for Excellence (2012)

At Home with AT (Assistive Technology).
Marilyn Cash (2004)
Dementia Voice

Medication Reminder Equipment and Services.
Linda Saunders and Ann Allison (2011)
Falkirk CHP Telecare Partnership

Nottinghamshire Evaluation of Just Checking Telecare System
Justine Schneider, Deborah Read and Barnaby Rhodes (2010)
University of Nottingham and The Institute of Mental Health Nottingham

Telecare for People with Dementia: Evaluation of Renfrewshire Project. Final Evaluation Report
York Health Economics Consortium (2012)
Joint Improvement Team and Scottish Centre for Telehealth and Telecare

The Aztec Project – Providing Assistive Technology for People with Dementia and their Carers in Croydon
Barbara Dunk and Kevin Doughty (2006)
Presented at Laing & Buisson 2006 Telecare & Assistive Technology Conference, Cavendish Conference Centre, London, 18 January

"A Weight off my Mind" Exploring the impact and potential benefits of telecare for unpaid carers in Scotland
Kara Jarrold and Sue Yeandle (2009)
University of Leeds and Carers Scotland

Literature review: the cost effectiveness of assistive technology in supporting people with dementia.
Alison Bowes, Alison Dawson, Corinne Greasley-Adams (2013)
University of Stirling

APPENDIX 4: Example of an Assistive Technology Assessment

Urgent Please tick

Assistive Technology Assessment

Name: D.O.B.
Address:
Tel
Next of Kin/Specified Person

GP:

Performance Context - Environmental factors

Home Ownership, Layout:

Performance Components

communication, memory, psychological /social, sensory, perception, cognition, motivation, insight, behaviour

Physical, upper & lower body, quality of movement, balance, co-ordination, activity tolerance:

Performance areas (Activities and Participation)

mobility - indoors/out, stairs, transfers, personal care, continence, home management, leisure/activities with personal significance: Ability to use domestic technology -TV Remote, phone, mobile

Aspirations and Fears

Client

Family / Carers

Presenting needs and possible solutions

Summarise the needs that are to be met and an appraisal of the options that have been considered and discussed with client and relevant others:

Recommendations

Name
Address
Tel
Next of Kin/ Specified Person

Equipment	Specification/Comment	Monitoring Requirement

O.T. Name _____Signature_____ Date_____

Key Worker _____ Signature _____ Date_____

Review date _____

Outcome

Confirmation of Decision: Approval Panel

Chairperson_____ Signature _____ Date_____

Panel Member _____Signature _____Date_____

APPENDIX 5: Development of this guidance

This resource was developed within the framework of the Genio Dementia Programme. In 2011, Genio received funding from the Atlantic Philanthropies and the HSE to develop and test new service models which would improve the range and quality of community-based supports for people with dementia, to influence public policy and investment in this area, and to build the leadership in the field that is necessary in order to capitalise on the potential of the proposed National Dementia Strategy. Assistive technology (including telecare) was one of the themes included within the scope of the supports to be implemented in the four Genio-funded projects.

As part of the assistive technology strand of the Genio Dementia programme it was identified that there was a need for a Guidance resource for professionals working in dementia care services in Ireland who wished to implement assistive technology.

A number of approaches were taken in the development of this document:

- A review of existing guidance literature and materials on implementing assistive technology and telecare. While the focus was on material relating to implementation with people with dementia, the review also included material relating to implementation with other groups. An initial working draft was developed drawing on themes and practical tools identified as being useful and relevant for the purpose of developing the resource.
- The development and dissemination of a Requirements Questionnaire for relevant practitioners within the Genio Dementia Programme. Practitioners were invited to identify and rate key issues in terms of their importance to the effective implementation of assistive technology or telecare and the level of knowledge and skills that existed in their organisation in relation to these issues. The feedback provided was used to prioritise themes and materials to be included in a second draft of the document
- A consultative workshop was held to discuss the second draft of the document. Professionals from the Genio Dementia projects, the HSE, research and academic arenas, and technology providers working with the Genio projects were invited to take part in the consultation process. The output from the consultation process was used to refine and shape the final resource.

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About Genio

Genio is an independent, non-profit organisation based in Ireland. We are driven by a vision of a society that benefits by valuing all of its citizens. Genio brings together Government and philanthropy to help develop and scale, cost-effective citizen-centred services so that everyone has the chance to live full lives in their communities.

Genio is supported by the Atlantic Philanthropies in collaboration with the Department of Health and the Health Service Executive.

We work in partnership with all stakeholders to re-configure resources to reform services in order that they reflect national policy and international best practice.

Established in March 2008, Genio Limited in an Irish registered company (Reg no. 454839).

The Genio Trust is a registered charity (CHY 19312).

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Genio, Marlinstown Office Park, Mullingar,
Co. Westmeath, Ireland.
Tel: +353 (0)44 9385940
Email: info@genio.ie | Web: www.genio.ie