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## Introduction

Assistive Technology (AT) is a general description for a range of applications of (predominantly) electronic equipment used to monitor or enable people. It can:

- Help manage or eliminate a wide range of risks to both the individual e.g. of falling, or to the property e.g. fire, smoke, flood alert
- Promote independence by assisting people to overcome a sensory or physical or sometimes mental impairment
- Do some more tasks better or more reliably than the human equivalent
- Help deliver greater privacy or dignity in certain circumstances

Assistive Technology covers:

- Telecare – the remote managing of needs for social care and possibly intervention when required
- Telemedicine/ health – the remote managing of mental or physical status and possibly remote action
- Environmental control – equipment to physically enable an individual

There is potential for all types of assistive technology to support vulnerable people but of most immediate interest is telecare. From origins in simple pull cords, hard wired into sheltered schemes, in the last ten years there have been several linked developments which together have dramatically increased the potential for assistive technology to play a part in supporting disabled people:

- **Dispersed alarm** – it is no longer necessary to hard wire. Anyone with a telephone can have a base unit. They are cheap; less than £200 for the top of the range product, with considerable capability. It is possible to connect many devices to a **base unit**, which will also have two-way speech and the ability to record prompts, be remotely programmed and possibly even do things like dispense medicine
- **Central monitoring services** – have become commonplace and quite efficient. They can take action in an emergency so it is no longer necessary to have staff working or on call 24 hours a day simply to answer an emergency call.
- **Mobile response** – either based on a central monitoring service or stand alone. It is possible to respond to emergency calls 24 hours a day without having permanent, on-site staff, anywhere
- **Wireless monitoring devices** – a large number of sensors and other devices are readily available, 'off the shelf'. Most standard products can be installed with minimal training or knowledge and require no wiring. Devices can also be inter-connected and 'talk' to each other e.g. A pressure mat stepped on lights a path to the bathroom. The bedroom light goes off two minutes after the person has returned to bed. If they do not return to bed after a defined period then an alarm call is automatically triggered .... and so on. One qualitative difference



*Diagram used with acknowledgement to Tunstall*

The key building blocks of Telecare are then:

1. A **'base unit'**. This is at the centre of the network of devices. It connects to a monitoring service of some kind via the telephone line and can summon help automatically by dialling when 'instructed' by one of the sensors it connects to. This is usually a wireless device and does not require any action by the individual; it is automatic. An alarm button can also be pressed to get help or speak to whoever is monitoring.

The units have sensitive microphones and speakers built in. The base units can be connected to literally dozens of devices.

2. A **central control** or monitoring service. When the base unit is triggered it dials a **'control centre'** which is staffed 24 hours a day. The people in the centre know who is calling, where from, what the problem is according to the sensor and can immediately bring up details of the person. They can:

- Talk to the individual and ask what help is needed – they will know if the person in need of help is non-verbal.
- Call help according to an agreed protocol – this might be alerting nearby staff from a care provider or relatives or some other appropriate action as predetermined
- If necessary and according to the nature of the problem, call emergency services immediately.

In some forms of provision for example, core and cluster schemes or modern extra care housing, where staff are on the site 24 hours a day the alert may so in the first instance directly to staff via a pager. Alternatively, the signal goes initially to central control who then contact staff if required. The cost of linking to a central, 24 hour monitoring service varies according to who is providing the service and possibly the number of devices but is usually only a few pounds a week.

3. **Sensors**. There are now a large array of sensors and other devices that can be connected to the base unit. The starting point in most telecare installations is a collection of environmental sensors that monitor things like heat, smoke, gas, and flood. Natural gas detectors can automatically operate a gas shut off valve. They are used to offer a degree of safety in the home. Home safety packages usually include an intruder alarm. Many of these **environmental sensors** are 'passive infra red' or PIRs because of how they work.

Next, there is an array of **personal sensors** which can be selected according to the individual's requirements. These include things like pressure mats which can detect when someone gets out of bed, enters or leaves a room. They can be used in connection with other equipment to do a range of things like turn lights on or off. Enuresis alarms can be put in beds where incontinence is an issue. Epilepsy is common amongst people with learning disabilities and there are a variety of epilepsy alarms.

4. **Response**. If practical help is needed the response – according to the living situation may come from:

- Family carers
- Staff employed by a care or support provider nearby or on site
- Central controls own staff – not all central control providers offer a mobile service
- A mobile response service operated by the care provider or another agency
- Emergency services
- In some supported living arrangements initially from other residents

The base unit can be programmed to dial through a sequence of phone numbers according to who is expected to respond. Alternatively they may dial central control first who in turn may have a protocol for the individual setting out the sequence of people to call.

A typical installation might consist of a base unit, door entry, smoke detector, movement sensors and temperature sensor.

### **Stand Alone Devices**

There are many devices which either add to safety or promote independence that are broadly assistive technology but which can but do not always have to be part of the integrated monitoring system described so far as 'telecare'. There is a considerable range but to give some of the examples most helpful to disabled people:

- Environmental controls – can be used by someone physically disabled to remotely do things like open the front door, open and close windows and curtains. These can also be used to turn domestic appliances like televisions on and off
- Voice prompts – these can be recorded on a base unit or operate as a stand alone installation. So for example attached to the front door when it is opened the voice prompt reminds the person to check for traffic on the road before stepping out. They could also be programmed to a different prompt after a certain time. So after 11pm they might say 'it is night time David, are you sure you want to go out?'
- Personal locator and wandering alarms – can be used to find a person via GPS or for example send an alert if someone goes further than a pre-determined distance from their home. A mobile phone can be used in a similar way and there are a few models with larger keys and easier to use to dial pre-programmed numbers. These kinds of device can have a role in enabling someone to be more independent outside their home securely.

### **Conclusion**

This factsheet provides a very basic introduction to assistive technology. The key message is that AT can now have a role in supporting disabled people to live more safely and securely, independently. It can help overcome some disabilities; it may help support or relieve carers.

Some applications can simply do a monitoring job better and more reliably than the equivalent person. In certain settings they can reduce risks for example of abuse or attack also give additional gains. As an example someone who may be incontinent at night, living in a care home setting, may find a member of staff physically checks their bed periodically through the night. An enuresis alarm will do the job more reliably, only triggering an alarm when there is a problem, with less disruption of sleep and reducing the potential for abuse.

There are examples of using wrist care devices to treat Prader-Willi syndrome, people who had been unable to communicate using computer based devices, touch screen and special software programmes to build up a network of friends or learning to write and communicate, examples of families finding one simple bit of AT like an automatic water shut off valve enabling the whole family to cope and manage better particularly obsessive and damaging behaviour... The list of possibilities is considerable as is the scope for utilising AT.

## Further Help

Where to look for further information:

1. A simple introduction to AT, what it can do, costs with some examples of how people with a learning disability have used AT is *Gadgets, Gizmos and Gaining Independence* - [www.housingoptions.org.uk/general\\_information/gi\\_publications\\_docs/AT\\_Report.pdf](http://www.housingoptions.org.uk/general_information/gi_publications_docs/AT_Report.pdf)
2. Tunstall Ltd are the market leaders in telecare. They have produced a guide to the application of their products by people with a learning disability - [www.tunstall.co.uk/guides](http://www.tunstall.co.uk/guides) .
3. The Disabled Living Foundation have a very helpful website with advice, case studies and a comprehensive list of products - [www.telecaremadeeasy.com](http://www.telecaremadeeasy.com).

Although we try to ensure that statements as to the law and other facts are accurate this factsheet gives general guidance and does not aim to cater for individual cases. Housing Options and our sponsors cannot accept responsibility for any loss incurred as a result of relying on such statements, specific advice should always be obtained on individual cases.

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