

Public sector

National report



Assistive technology

Independence and well-being 4



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As an independent watchdog, we provide important information on the quality of public services. As a driving force for improvement in those services, we provide practical recommendations and spread best practice. As an independent auditor, we monitor spending to ensure public services are good value for money.

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Preface

Powerful forces are changing the nature of health and social care. With better access to higher education, information sources like the internet, and greater personal wealth, people want more say in how their health and social needs are met. In addition, massive advances in information management, technology and science are taking place. These forces, facilitated by an increasingly pervasive electronic and radio-enabled environment, are rapidly converging to create exciting new ways to improve public services.

Harnessing these forces will help public services to meet the challenges posed by an ageing population and the needs of people with disabilities. The potential of technology to support independence is enormous. It offers one way to break the downward spiral that all too often leads to dependency, wasted lives and higher public expenditure.

Until recently, ‘aids and appliances’ resided in the organisational shadows of the NHS and social services. This is now changing. A more modern expression ‘assistive technology’, or AT for short, is now becoming commonplace as a result of technological advances and a growing appreciation of the ways in which such equipment can support independence.

The Audit Commission’s previous work in this area has examined ‘traditional’ AT: orthotics, prosthetics, wheelchair services, ‘standard’ community equipment and audiology services (**Refs. 1, 2**). This report now concentrates mainly on some of the newer electronic assistive technologies of telecare and telehealth¹. The core messages are still very relevant to all those with an interest in promoting the independence of older or disabled people.

This report is aimed primarily at service commissioners, service managers and Government; though users, carers and their representatives will hopefully find it of value as they develop a more prominent role at the centre of health and social care. It is one of a number of reports by the Audit Commission that share the common theme of promoting independence. Other reports to be published look at:

- older people’s views of what keeps them independent, and the public policies in place to help them to do so;
- the approaches that can be deployed to support frail older people in their own homes;
- the policy frameworks and various initiatives to support carers; and
- developing local strategies to promote independence and well-being.

A fuller and properly referenced version of this report is available at:
www.audit-commission.gov.uk/assistivetechology

¹ The expressions ‘e-Health’, ‘telemedicine’ and ‘telehealth’ tend to be used interchangeably. ‘Telehealth’ is considered the more accurate expression, and so is used throughout this report.

Introduction

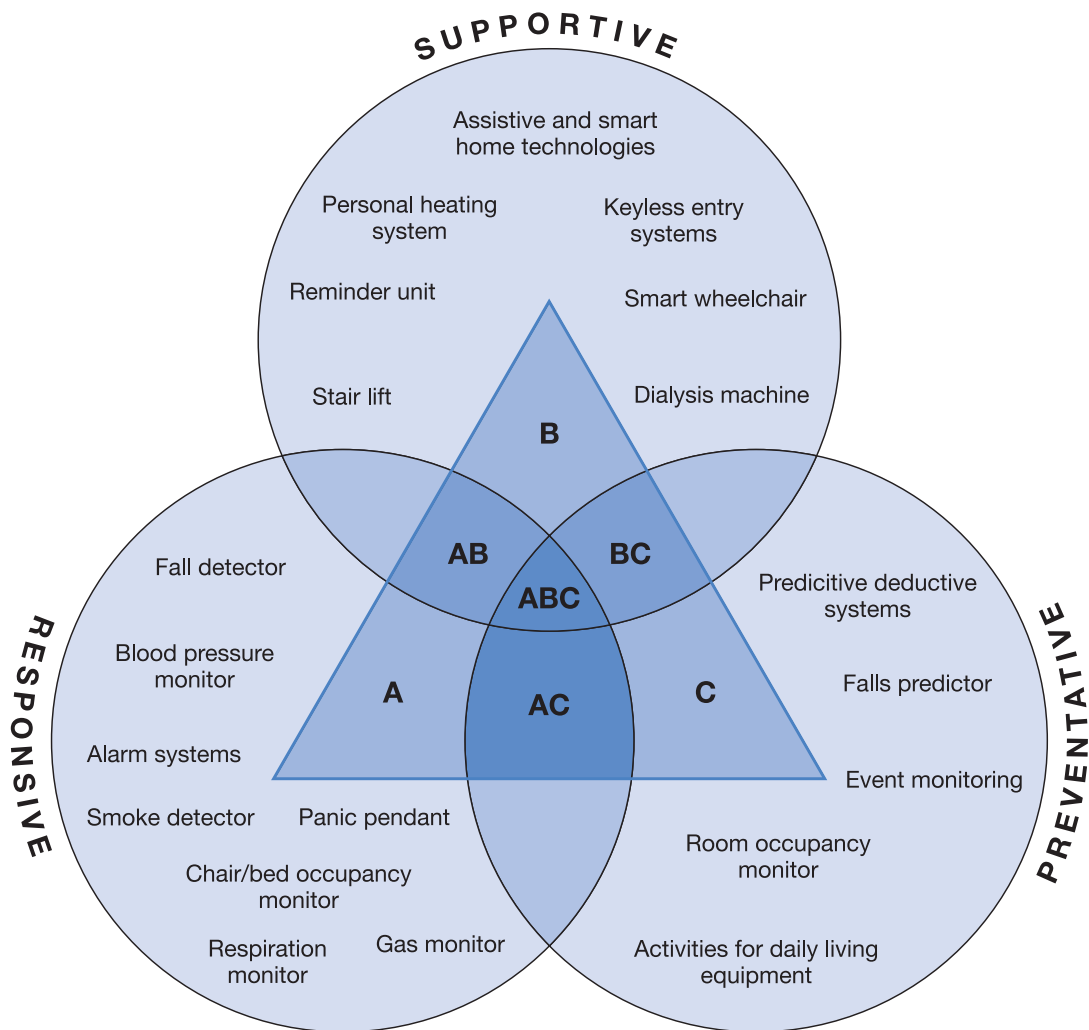
Background

New assistive technology can play a vital role in supporting the ways in which millions of older or disabled people can maintain or regain their independence. It also has the potential to modernise the way in which many aspects of health and social care are currently delivered to the benefit of users, carers, service providers and the taxpayer.

- 1 Promoting independence has become central to public policy in recent years. In 1989, the White Paper *Caring for People* sought to provide a coherent framework to shape services ‘over the next decade and beyond’ (Ref. 3). The subsequent 1990 NHS and Community Care Act highlighted the promotion of choice and independence as fundamental values (Ref. 4). These objectives were echoed in the 1997 NHS White Paper *The New NHS: Modern, Dependable* (Ref. 5) and in the 1998 Public Health Green Paper *Our Healthier Nation* (Ref. 6) – one of its main themes the need to ‘improve the health of the population by increasing the length of people’s lives and the number of years people spend free from illness.’
- 2 Since *Caring for People* was published, the gap between policy and intention on the one hand and the reality of users’ experiences has remained stark. Yet there is a new way of bridging the gap: new assistive technology (AT) can not only support people to maintain or regain their independence, it also has the potential to redesign the way in which many aspects of health and social care are delivered. AT can be defined as: *any item, piece of equipment, product or system that is used to increase, maintain or improve the functional capabilities and independence of people with cognitive, physical or communication difficulties*. This broad definition incorporates an incredibly large number of devices, ranging from ‘low-tech’ mobility devices such as a walking stick to ‘high-tech’ speech synthesizers or stair-climbing wheelchairs. These technologies can be used to support a wide range of user needs (Exhibit 1, overleaf) and to support people to maintain their independence (Box A, overleaf).

Exhibit 1**Ways in which AT can support independence**

AT can support a wide range of user needs.



Possible AT provision for the zones identified in Exhibit 1

Zone	User characteristics	Possible AT provision
A	People supplied with equipment to support earlier discharge from hospital	Blood pressure monitor Fall detector 'Panic' pendant Environmental control systems
B	Patient with muscular sclerosis People receiving palliative care at home	Wheelchair with integrated electronic technology Environmental control systems
C	People undergoing needs assessment, perhaps following a change in personal circumstances	Simple equipment to support activities of daily living Environmental control systems
AB	People who require some basic assurances and support in order to lead an independent lifestyle in their own homes – 'well older people'	'Panic' pendant Fall detector Video doorbell Medicine dispenser/compliance unit
BC	People with dementia requiring support to lead an independent life in their own homes or in supervised accommodation	Reminder unit General long-term monitoring
AC	Older person living at home requiring reassurance	'Panic' pendant Chair occupancy monitor Room occupancy monitor Security system Event analysis system Fall detector
ABC	People at risk of accident or relapse People with physical disabilities People with chronic conditions, such as diabetes, heart failure or respiratory disease People with dementia Anyone attracted by the design or convenience of assistive technology	Equipment for daily living Reminder unit Fall detector Environmental control system Chair occupancy monitor Room occupancy monitor Medicine dispenser/compliance unit Virtual consultations

Source: Derived from Ref. 7

Box A

Independence defined

The independent living movement uses the word independent: ‘in a practical and common-sense way to mean simply being able to achieve our goals. The point is that independent people have control over their lives, not that they perform every task themselves. Independence is not linked to the physical or intellectual capacity to care for oneself without assistance; independence is created by having assistance when and how one requires it.’

Source: Ref. 8

The purpose of this report

- 3 Previous Audit Commission reports have demonstrated how AT can deliver high-quality services at low cost. A few health and social care communities already use AT to deliver innovative services to the benefit of users, their carers, the wider public services and the taxpayer. But not all are making good progress. This report is aimed primarily at them and it is presented in five chapters:

Chapter 1 – examines the place of AT in the current policy context;

Chapter 2 – describes the current evidence to demonstrate how AT supports independence;

Chapter 3 – analyses the current obstacles to progress;

Chapter 4 – explains how change can be introduced; and

Chapter 5 – provides the conclusions of this report.

1



Why assistive technology services are important

AT can support the aspirations of many older or disabled people by providing them with greater choice. As the average age of the population increases and the pressure on formal and informal carers intensifies, the use AT will become increasingly prominent. Indeed, AT is the key to delivering many public policy initiatives across Government. Future advances in technology will increase this potential and should lead to more AT products being readily available in the high street.

4 Several forces are driving the development of AT:

- users' aspirations;
- the ageing population;
- current Government policy; and
- likely future opportunities.

Users' aspirations

- 5 The aspirations of older or disabled people are similar to everyone else's. They want to be seen as individuals with a range of friendships and relationships; 80 per cent of older people want to live in their own homes; they want to be independent and to be as healthy as possible; and most of all they want to be in control of their lives. They do not want others to define their limitations. AT can support these aspirations by allowing people to maintain or regain their autonomy. It can provide them with the choice of staying in their own home rather than having to move into residential care.

Impact of the ageing population

- 6 A greater proportion of the population is now living to an old age. As people get older, their need for care services increases, due to greater frailty and chronic disease. A range of ATs can improve their lives (**Box B**).

Box B

AT can help those who suffer from common ailments

Common conditions affecting people over age 65	Incidence in the population over age 65	ATs that can help to alleviate the condition and help to maintain independence
Arthritis	50 per cent	Equipment for daily living
Hypertension and heart disease	30 per cent	Wheelchairs; telehealth for remote monitoring of vital signs such as heart rate and variability and body weight
Diabetes	11 per cent	Orthopaedic footwear; telehealth for remote monitoring of blood glucose, hypoglycaemia alarms and medication reminders
Hearing problems	32 per cent	Hearing aids, induction loops, text-phones
Cataracts and other forms of visual degeneration	26 per cent	Visual aids, better lighting, reading magnification cameras and displays, colour sensors, text to sound converters
Mobility problems	35 per cent	Wheelchairs, walking-frames, stair-lifts, fall detectors, bed monitors, personal environmental controls
Dementia	5 per cent	Telecare systems to monitor safety and movement

Source: Audit Commission

The place of assistive technology in Government policy

- 7 The Government's objectives for supporting older or disabled people should be delivered through an array of policy initiatives. Some of the main ones are listed here and described below:
- managing hospital capacity;
 - National Service Framework (NSF) for Coronary Heart Disease (**Ref. 9**);
 - NSF for Mental Health (**Ref. 10**);
 - NSF for Diabetes (**Ref. 11**);
 - NSF for Older People (**Ref. 12**);
 - Services for people with learning disabilities (**Ref. 13**);
 - NSF for Long-Term Conditions;
 - National Strategy for Carers (**Ref. 14**);
 - policy on information and communications technology (ICT) (**Ref. 15**);
 - housing policy;
 - New Deal for Disabled People (**Ref. 16**); and
 - the Expert Patient Programme (**Ref. 17**).

Managing hospital capacity

- 8 The Department of Health's (DH's) Priorities and Planning Framework for 2003/06 (**Ref. 18**) requires growth in emergency admissions is to be less than 1 per cent annually. AT has a significant part to play in achieving this target by supporting the independence of older or disabled people (**Box C**).

Box C

How AT supports top NHS priorities

- AT helps to keep people safer and independent
- AT therefore helps to reduce admissions to acute hospitals
- AT therefore creates bed capacity to enable acute hospitals to (i) tackle waiting lists; (ii) reduce the number of outliers and the associated poorer quality of care and longer than average lengths of stay
- AT facilitates prompt and appropriate discharge

Source: Audit Commission

NSF for Coronary Heart Disease

- 9 The NSF for Coronary Heart Disease (**Ref. 9**) emphasises the need to identify and monitor patients who have condition. AT offers opportunities to monitor from patients from their homes through the use of telehealth systems. This is more convenient for patients and reduces demand on acute hospital outpatient services.

NSF for Mental Health

- 10 The NSF for Mental Health (**Ref. 10**) aims to reduce depression among older people. Depression affects 17 per cent of men and 23 per cent of women. It is particularly common in residential care, where 40 per cent of residents are affected. If people can be supported independently in the community, prevalence of depression may reduce, which will improve quality of life as well as reducing costs.

NSF for Diabetes

- 11 Implementing the NSF for Diabetes (**Ref. 11**) will increase demand for services, since one-half of all people with the disease are currently undiagnosed. Without service modernisation, this increase will place more pressure on hospital outpatient services. AT offers a solution, as many people with diabetes can be monitored at home through telehealth systems. Such an approach is consistent with the aims of the NSF, as it seeks to refocus services towards primary care.

NSF for Older People

- 12 The NSF for Older People (NSF (OP)) (**Ref. 12**) aims to integrate and improve access to health and social care, to raise standards and to promote independence for older people. The most common problems relate to mobility, vision and hearing. Previous reports by the Audit Commission (**Refs. 1 and 2**) have emphasised how AT can reduce the effects of these conditions; and there are two other target areas in the NSF(OP) where AT can make an important contribution: (i) reducing injuries from falls; and (ii) helping people with dementia to remain independent for longer.
- 13 In 1999, there were 648,000 A&E attendances and 204,000 admissions to hospital for fall-related injuries in people aged 60 and over. These falls cost the Government £981 million, of which the NHS incurred 59 per cent. Using AT to reduce the number of falls would make significant inroads into this problem.
- 14 There are about 600,000 people in the UK with dementia, of whom one-quarter live alone. Concern for their welfare or lack of carer support often lead to early admission into institutional care. There is, however, emerging evidence that AT can open up opportunities for them to maintain their independence and quality of life for an extended period. However, as with all AT, it is essential that services are provided in a timely fashion in order to anticipate future needs. The 'crisis management' approach that typifies many public services simply leads to poorer outcomes and higher cost.

Services for people with learning disabilities

- 15 The White Paper, *Valuing People: A New Strategy for Learning Disability for the 21st Century* (Ref. 13) acknowledges that AT can increase 'control, choice and independence' for people with learning disabilities. Many of the technologies that can help people with dementia can also be adapted to support people with learning disabilities and vice-versa.

NSF for Long-Term Conditions

- 16 The NSF for Long-Term Conditions will be published in 2004, with a view to implementation in the ten years from 2005. Many people with long-term conditions need AT to support their independence. Prevalence is increasing because survival across a wide spectrum of diseases and traumas has improved due to medical advances.

The National Strategy for Carers

- 17 The National Strategy for Carers (Ref. 14) includes examples of AT that might help carers to carry on caring, particularly by improving safety. AT can amplify the efforts of carers, thereby helping to bridge the demographic gap between the growing needs for personal care and the shortage of carers available to provide it. Telecare technology in particular can relieve carers of some simple, tedious and often intrusive tasks. (A national report on the role of carers in supporting independence is currently being prepared by the Audit Commission and will be published later in 2003.)

ICT policy

- 18 Information and communication technology (ICT) comes under the umbrella of ATs that can help older or disabled people to live independently and safely at home. *Information for Health* (Ref. 15) recognised that 'telecare technology' will be used to provide 'reliable but unobtrusive supervision of vulnerable people who want to sustain an independent life in their own home.' The development of telecare services is also included in the latest national ICT programme, which has set targets that by December 2007, telehealth facilities are to be available in all GP surgeries; and by December 2010, home telecare is to be provided in all homes where it is needed.

Housing policy

- 19 The safety and independence of older or disabled people has much to do with their environment. The use of telecare to help older or disabled people to live safely at home is reflected in Government policy. Architects are also being encouraged to introduce greater flexibility into housing design, based partly on the concept of 'lifetime homes'. This approach promotes designs that anticipate peoples' changing needs.

New Deal for Disabled People

- 20 The New Deal for Disabled People (**Ref. 16**) is designed to help people with an incapacity, illness or disability return to work. There are 3.5 million people registered with a long-term disability, 2.9 million of whom receive sickness, disability or incapacity benefit. Of these, 1.2 million report that they would like to work. The Department of Work and Pensions should plan ways to use AT in the workplace to help bring a significant proportion of this number back into employment and off state benefits.

The Expert Patient Programme

- 21 One-third of the population of the UK has chronic diseases, such as arthritis, asthma, diabetes, heart disease and depression. Many of these people are expert patients and know better than clinicians how best to manage their individual conditions. Sixty per cent of GP consultations relate to chronic conditions, which in total account for roughly 70 per cent of all healthcare costs. Chronic disease has an impact not only on health but it also affects social inclusion, employment and mobility. Telehealth systems have the potential to provide great support to many of these people.

Future opportunities afforded by AT

- 22 Technological developments are proceeding apace, particularly in the field of electronics, information and communications. Faster computer processing units, miniaturisation and short-range wireless communication are now established in many electronic-based AT products. This trend is predicted to continue, leading to the development of more sophisticated and less expensive AT products that better address users' aspirations. This potential is further enhanced by three other important factors:
- using AT as a complement to formal human care;
 - rising public awareness and accessibility of AT; and
 - public/private partnerships to promote AT.

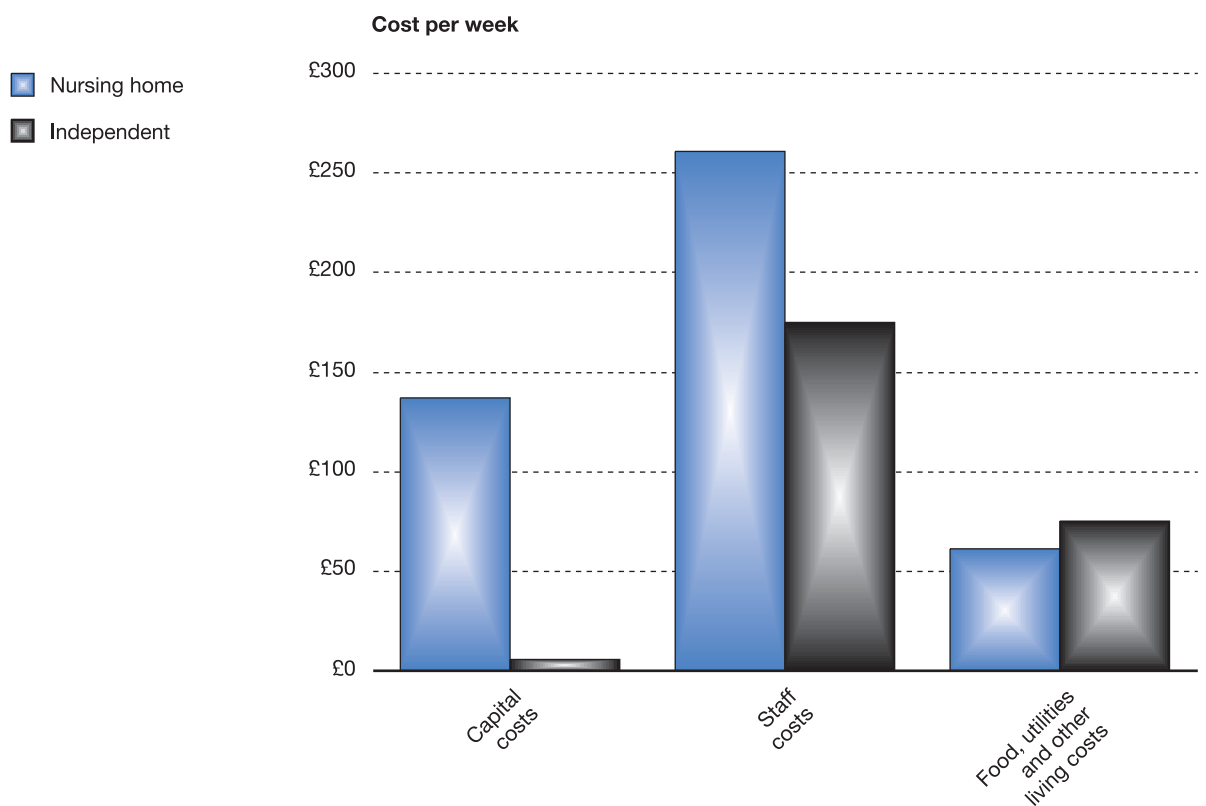
Using AT to complement formal care

- 23 A key driver for the development of AT is its potential to support and make the best use of human effort. Many public services face shortages of care workers and recognise the need to relieve the pressure on informal carers. AT can play an obvious role. Indeed, it has been demonstrated that for most people, AT by itself is more efficacious than personal assistance. This evidence is highly relevant given the escalating cost of providing reasonable standards in nursing and residential care. Keeping people independent with the support of AT rather than formal carers is a more economic alternative (**Exhibit 2**).

Exhibit 2

Alternative costs of care

Keeping people independent in the community with the support of AT costs less than residential care.



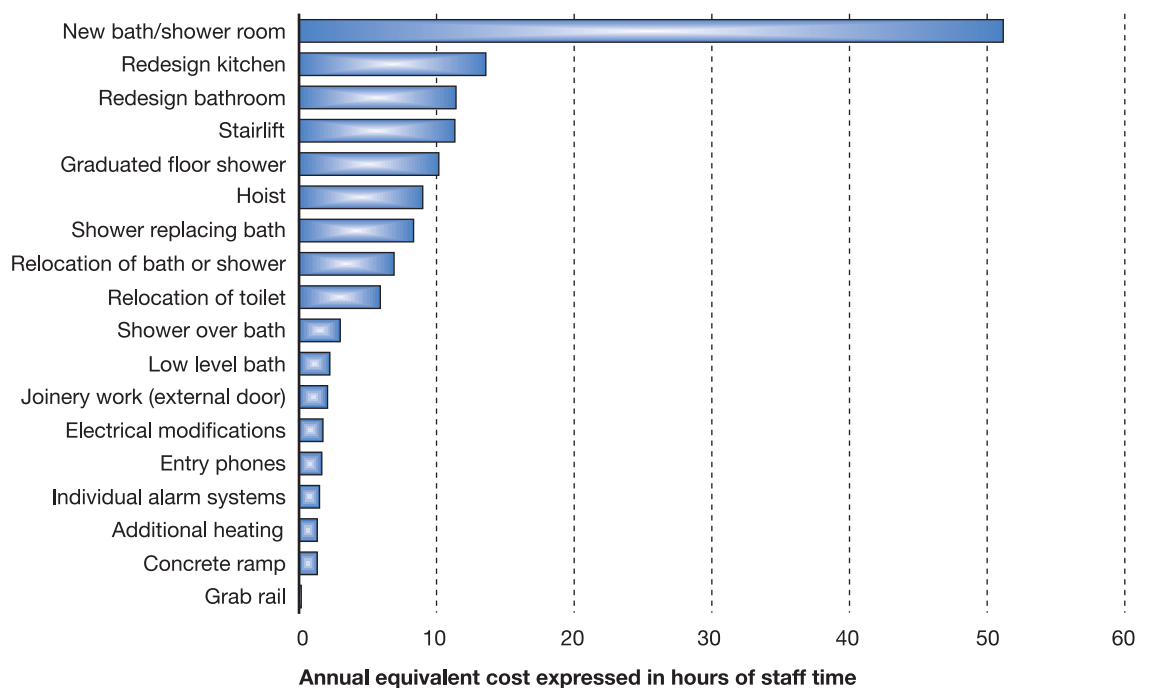
Source: Derived from Ref. 19

- 24 More importantly, using AT is a preferable alternative to human effort for most people, especially because it may help them to maintain their dignity. There can be few more degrading experiences than needing help from someone after going to the toilet. WCs that can wash and blow dry have been available for the last 20 years, and yet they have not been widely introduced because of their apparent high cost. Yet in actual fact, AT is inexpensive compared with the equivalent cost of nursing and care staff. For example, the median cost of installing a new bath is £10,470, which equates to an annual discounted cost over its ten-year life (at 4 per cent) of £1,291. This is only enough to buy around 50 hours of care each year (**Exhibit 3, overleaf**). It makes economic sense wherever possible to substitute AT for human effort.

Exhibit 3

The annual cost of various equipment or adaptation, expressed in equivalent hours staff cost

Assistive technology is inexpensive compared with care staff.



Source: (see footnote)

- 25 It is also important to remember the improvement in productivity that using AT brings about. In every industry when costs rise, employees have to increase productivity or go out of business. This is currently the situation in the care industry; the use of more AT offers probably the only way to achieve significant productivity gains.

Awareness and accessibility of AT

- 26 Almost everyone is becoming familiar with a range of technologies and older or disabled people are no exception to this. On the contrary, one survey of residents in sheltered housing found that 44 per cent had their own video players and 45 per cent had their own microwaves. Familiarity with one technology makes it easier for people to manage other technologies, and this is not inhibited by age – newly-retired people are the fastest growing group of internet users. Clearly, the internet will have a particularly significant impact on the delivery of health and social care. Building awareness is key to creating a paradigm shift from a model dominated by state provision and control of AT to one where the suppliers of AT market products to individuals.

I Data were collected from 40 local authorities and adjusted to current prices using BCIS/ABI House Rebuilding Cost Index. Major variations were reported, reflecting the range of work undertaken and local eligibility criteria thus the median rather than the mean has been used to overcome the spread of reported costs. Costs should therefore be taken as illustrative rather than statistically representative. Annual equivalent factor assumes a ten-year life. Annual equivalent factor index from Lumby, S., *Investment Appraisal and Financing Decisions*, 1988, VNR, Table E, p. 483.

- 27 It is very important that access to AT is provided early enough to make a long-term difference. For example, AT schemes that seek to support people with dementia need to be introduced as soon as the diagnosis is confirmed in order to encourage familiarity while mental faculties are strong. Similarly, people who are at risk of falling, perhaps because of failing vision, need AT systems to be installed as soon as the problem is identified, not after they have had a serious fall.

Public/private partnerships to promote AT

- 28 Public services alone cannot and should not be the sole provider of AT. Many people would prefer to buy their own equipment rather than seek an equivalent, statutorily provided device that attracts a real or perceived social stigma. Only when AT becomes more visible in the high street will its full potential be achieved and unit costs of production fall. The market for manufacturers and retailers selling directly to consumers will increase as the population ages: at present, over four million people in the UK use AT. The major telecommunications giants and some high street retailers sense an opportunity.

2



Evidence of how assistive technology can support independence

The value of AT in alleviating dysfunctions and preventing health and social problems has also been demonstrated in a wide range of studies and literature reviews in the UK and overseas. Telecare and telehealth systems have huge potential improve the quality of care and to reduce costs.

29 The last section covered the prominent part that AT has to play in policies that aim to support the independence of growing numbers of older or disabled people. But how strong is the supporting evidence and existing practice? This section describes the types of research evidence and the current evidence base. It then concentrates on two broad categories of ATs that have not previously been examined by the Audit Commission: telecare and telehealth.

Types of evidence about AT

30 Research evidence is commonly graded according to a system widely used in the formulation of guidelines and standards of care (**Table 1**).

Table 1
Strength of evidence and grade of recommendations

Level of evidence	Type of evidence
1a	Meta-analysis of randomised controlled trials (RCTs)
1b	At least one RCT
2a	At least one well-designed, controlled trial but without randomisation
2b	At least one well-designed, quasi-experimental study
3	At least one well-designed, non-experimental descriptive study (for example, comparative studies, longitudinal studies, correlation studies, case studies)
4	Expert committee reports, opinions and/or experience of respected authorities

Source: Ref. 20

31 Most of the evidence to support investment in AT is at levels 3 and 4. There are few examples of randomised controlled trials for ATs because developing outcome measures is difficult. The services by their nature are often preventative and many users have progressively deteriorating conditions. Moreover, there is a difference between efficacy (what works in perfect conditions) and effectiveness (what works in the real world). The effectiveness of AT chiefly depends on whether it is used as intended. This problem extends to other areas of clinical research: for example, non-compliance with medication regimes is known to be a major problem (and yet no one would declare a new medicine to be useless if it did not achieve its purpose because a patient has not taken it correctly).

The current evidence base

- 32** The DH has commissioned an overview of the current developments in the application of ICT to support independence. Information is presented from the UK National Database of Telemedicine and from the Housing Innovation Knowledge Bank. The overview concludes that AT has enormous potential to support independent living but says that developments have largely been undertaken as a series of individual initiatives, which are incremental and outside of any national strategy. The consequent lack of co-ordination has led to some technical incompatibility and duplication of effort.
- 33** The value of AT in alleviating dysfunctions and preventing health and social problems has also been demonstrated in a wide range of studies and literature reviews in the UK and overseas. A considerable body of evidence has been assembled by the University of Buffalo's Centre for Assistive Technology and the Rehabilitation Engineering Society of North America. In aggregate, this accumulated pool of evidence is strong and growing stronger.
- 34** Previous reports by the Audit Commission have also examined the contribution that orthotics, prosthetics, wheelchair services, audiology services and community equipment services can make to supporting independence (**Refs. 1 and 2**). This report now looks at the evidence supporting the success of two other broad categories of AT, sometimes called telecare and telehealth.

Telecare

- 35** Telecare is based around homes in which a variety of functions are controlled with various technologies and which provide communications to the outside world. Once telecare systems, 'electronic assistive technologies' and 'environmental controls' are integrated, the term 'smart housing' is sometimes used to describe the whole system. Telecare systems allow people with a range of needs to retain their independence through:
- avoiding hospitalisation;
 - virtual visiting;
 - reminder systems;
 - home security; and
 - social alarm systems.

Avoiding hospitalisation

- 36 A number of studies of telecare in the USA provide the basis on which to judge its potential in intermediate care in the UK. It is reasonable to assume that telecare supported home care could replace the need for hospital admission in 5 per cent to 15 per cent of patients aged 70 years and over. The average length of stay in hospital could be reduced by between 20 per cent and 60 per cent.

- 37 The NHS Plan (**Ref. 21**) introduced the concept of intermediate care that provides a 'bridge between hospital and home... (to) speed up discharge from hospital when patients are ready to leave. The new services will give older people more independence rather than being forced to choose a care home.' This level of care seeks to address a shortfall where 24 hour a day care may be provided in hospital one day and the next day after discharge, no assistance may be provided. However, AT can also be positioned as a form of intermediate care where people could be discharged from hospital and then be provided with technology in their own home. Some people, perhaps with carers or family at home, can be provided with modular technologies in which certain components can be withdrawn incrementally as their rehabilitation progresses.

- 38 Such an approach has the advantage of shifting a fixed cost (in terms of the bricks and mortar of an intermediate care facility) to a marginal cost (in terms of equipment placed in people's homes.) It gets people home more quickly where independence is likely to be maintained and avoids introducing another step in the process from hospital to home, where there will be more transfers, more hand-overs and more opportunity for things to go wrong.

Virtual visiting

- 39 Home visiting significantly reduces mortality (by around 25 per cent) and admissions to long-term care (by around 45 per cent) among older people at risk. But such support has all but disappeared in Wales, and in England services are under considerable pressure. So although home visiting is beneficial, it is not undertaken as often as desirable because of cost and staffing pressures. Telecare offers an alternative. Studies of community nursing activity have found that up to 46 per cent of visits could be replaced with remote monitoring. There are high levels of user and professional satisfaction with this approach and no evidence of any negative affect on communication. Virtual visiting is particularly powerful when used to monitor the safety of dementia sufferers who live alone.

Reminder systems

- 40 Telecare systems can provide reminders for a variety of users. For example, short-term memory loss is a natural part of the ageing process, but for people in the early stages of dementia, it can rapidly curtail independence. Simple technologies can combine the features of an alarm, communicator, diary and reminders. Attaching such technology to the ubiquitous mobile telephone also allows carers and others to stay in touch or be contacted.
- 41 Similarly, reminder systems can be used to help people to manage their medication. Adverse reactions to medication account for 10 per cent of hospital admissions and somewhat more result from poor compliance with medication regimes, particularly among older people. Various strategies have been developed to address these issues, ranging from compartmentalised pillboxes that sound reminders when medication is due, to call-centres or carers reminding patients.
- 42 A concept developed in the USA is a modification of the automated pillbox that operates from a small workstation in the patient's home. The workstation reminds the patient to take their medicines and asks standard questions to monitor their well-being. It also asks questions about their condition and delivers educational material if they get the answer wrong. In one study, such devices improved compliance with medication regimes from 34 per cent to 94 per cent and reduced admission rates for patients with congestive heart failure by 41 per cent.

Home security

- 43 The benefit of telecare systems extends beyond health and social care. Other public agencies are showing interest as its potential. Some local authorities and police services are aware that the improved security opportunities provided by telecare systems offer a means reducing crime through better surveillance. Furthermore, some fire services are becoming interested in the potential of automatic fire detectors that can alert a call-centre to the presence of smoke or significant increases in heat. Such innovative projects involving the piloting of integrated call-centres with the police, ambulance, fire and rescue services have been funded by HM Treasury's *Invest to Save* scheme. The funds available to local authorities through the *Supporting People* initiative can also be applied to these housing-related services.

Social alarm systems

- 44 Telecare systems can provide feedback to individuals to help them to retain their independence. The final piece of the jigsaw is the provision of a response service to provide help when it is needed. Social alarm systems were introduced shortly after the Second World War and about 1.4 million users are connected from their homes via the telecommunications network to people at call-centres who can provide reassurance or obtain assistance. Such technology is reactive and responsive rather than proactive and preventative, but nevertheless it can deliver impressive results. One study of over 100 users found that following the introduction of a scheme, there was a 25 per cent reduction in the number of hospital admissions and average hospital in-patient days fell from 9.2 to 5.7 days.

- 45 The current network of some 300 call-centre systems operated by local authorities provides a platform on which to build much more advanced telecare services. This could be done by integrating a range of services aimed at providing reassurance, improving crime surveillance, fire alarm services, community safety, telehealth and many others. One of the longest-established telecare projects in the UK is provided by West Lothian Council. The scheme demonstrates significant benefits (**Case study 1**).

Case study 1

Findings from the West Lothian telecare project

Services provided

- A rapid response service for emergency care: packages of personal care that may include smart technology and active rehabilitation.
- A home safety service: assessment and installation of technology packages and support services are provided by home safety team.
- Housing with care provision: housing with care facilities with smart technology installed in each tenancy and a 24-hour housing support team located on site.

Service outcomes

Number of people using the rapid response service:	394
Average number of visits per rapid response service user:	30
Number of people using the home safety service:	1,275
Number of housing with care tenancies:	92

The above services, along with other changes in service delivery across the whole system, have resulted in the following achievements:

Estimated number of NHS bed-days	3,364
NHS opportunity cost saving	£841,000

Service costs

Housing with care tenancies + 75 home safety users:	£750,000
Home safety upgrade to 1,200 service users:	£750,000

Continuing telecare project work

Further expansion of the home safety service is to take place in 2003/04 to a further 1,900 service users at a capital cost of £750,000 and a revenue cost of £4.87 per week. An additional 30 housing with care tenancies will be completed in March 2004 at a capital cost of £90,000 for technology. Stirling University is undertaking a three-year evaluation of the housing with care developments and home safety service. It is due to be completed in December 2004.

Source: Derived from References 31 and 32

- 46 Social alarms have a potential to go beyond reactive 'push-button' systems. Smoke detection, burglar alarm, activity monitoring, and the integration of the social alarm into a universal electronic network at home have all been technically feasible since the 1980s. Now there are ever-growing possibilities, such as providing social alarms via TV networks, integrating social alarms with environmental control systems and life-style monitoring. The health status of older or disabled people can be determined remotely by monitoring simple parameters, such as measures of mobility, use of cooking and washing facilities, sleep patterns and toilet usage, that measure the interaction of the individual with their environment. Such monitoring offers huge potential to reassure carers and to target scarce care resources effectively.
- 47 It would be wrong, however, to suppose that building on the existing call-centre network is the only way forward. Indeed, the network is often criticised as being inefficient, and it is true that there is considerable scope for rationalisation, particularly of much of the supporting 'back-office' computer technology. There is also the potential to outsource call-centres to private sector partners or to establish links with projects such as NHS Direct.

Telehealth

- 48 Telehealth (or clinical home monitoring) enables a clinical process to be conducted remotely. In a sense, it has been used since the invention of the telephone. But increasingly, new AT enables the routine monitoring of vital signs to be carried out by patients at home. The potential of telehealth is growing with the development of multi-media capability (using voice-recognition, vision, images, and data); the range of remote sensors available for diagnosis, monitoring and treatment; the ubiquity of key technology; the introduction of systems that do not need to be 'hard-wired' and the potential for systems to be made artificially intelligent. Such developments mean that telehealth can be used to improve access to services in terms of time, place and convenience, as well as being a means of overcoming distance.
- 49 The potential of telehealth can be further described with reference to the following common conditions:
- chronic obstructive pulmonary disease;
 - congestive heart failure;
 - hypertension;
 - asthma; and
 - diabetes.

Chronic obstructive pulmonary disease

- 50 Chronic obstructive pulmonary disease (COPD) is a chronic disease that includes bronchitis and emphysema. It affects 5.4 per cent of the population and kills 30,000 people each year. The number of undiagnosed people in the UK is unknown but in the USA one estimate is that only one-half of all cases are diagnosed. The disease accounts for one in eight medical admissions and costs the NHS as a whole £800 million each year. Emergency admissions for COPD have recently risen dramatically, putting pressure on hospital beds.
- 51 AT offers a partial solution to the challenge of COPD. Early discharge schemes have shown that time spent in hospital due to acute exacerbations can be reduced by one-half if patients are supported at home with AT and an appropriate treatment package. Such intensive nursing care at home costs £125 a day. It has been found that about one-third of patients admitted to A&E with acute exacerbation of COPD could have been successfully managed at home. One study also found that a single 24-hour period of more intensive monitoring at home uncovered unsuspected and treatable co-morbidity, principally heart failure and obstructive sleep apnoea, in one-third of cases. Longer-term monitoring also helped to reduce acute exacerbations, but interestingly the participating carers believed this was more to do with daily contact and a subsequent improved sense of security rather than the monitoring itself. These findings are confirmed by studies in the USA, which have found that COPD patients who remain at home with telehealth support were able to manage their own health conditions with a higher quality of life, and with significant savings.
- 52 The case for telehealth to support people with COPD is compelling. In England in 2001/02, COPD accounted for 81,283 admissions for 725,790 bed days. If 30 per cent of cases can be managed at home, then assuming a typical cost of a day in hospital of £250 per day this would release 217,000 bed days or over £50 million. Savings would also come from reducing the average length of stay for COPD (mean 9.1 days; median 6.0 days) (**Table 2**). Further savings would result from the reduced nursing visits that are otherwise needed when the patient is discharged from hospital.

Table 2**Potential savings from investing in telehealth to manage patients with COPD**

	Improvement opportunity	Patients	Bed-days	Total cost
Current provision		81,000	726,000	£181m
Reduce admissions by	30 per cent	24,000	218,000	£54m
Reduce remaining admissions by	50 per cent	28,000	254,000	£64m
Total gross saving opportunity			254,000	£118m
Annual cost of telehealth to provide continuous monitoring for all patients supported at home				£55m
Total annual saving opportunity				£63m

Source: Audit Commission

Congestive heart failure

- 53** The NSF for CHD (**Ref. 7**) stated that by April 2002 all primary care trusts (PCTs) were to have in place protocols for the systematic assessment, treatment and monitoring of people with CHD. Many could be supported by telehealth. Similarly, the Priorities and Planning Framework for 2003/06 (**Ref. 16**) includes the target that local health communities should improve the management of people with heart failure in line with the National Institute for Clinical Excellence (NICE) clinical guidance due in 2003 and should set local targets for reducing the number of patients who are admitted with heart failure.
- 54** Congestive heart failure (CHF) affects over 1 per cent of the population, mainly older people. It is usually due to CHD or to high blood pressure. It accounts for 5 per cent of all medical admissions to hospital (120,000 hospital admissions annually) costing an estimated £360 million to the NHS. There are 6,000 deaths each year from CHF. The disease has a poor prognosis with a median survival time of 16 months from first hospital admission, which is worse than for most common cancers. But many patients with CHF can be managed in the community. Effective management with medication can improve the function of the heart and reduce the amount of fluid retained in the body, thereby reducing the number of exacerbations and improving the quality of life.

- 55 Many patients do not adhere to their medication regimes and so enter a cycle of recurrent acute exacerbations and admission to hospital. Typically, their hearts have failed to the extent that fluid accumulates in the lungs and legs. However, potential crisis points can be predicted by the patient monitoring and reporting their weight: fluid in the body will accumulate for about seven days before patients become acutely ill and their weight will increase by about 1Kg. per day. Daily weighing enables carers to monitor patients' condition and to take corrective measures. It also provides direct positive feedback to patients to encourage compliance with medication regimes. This simple concept has been shown to reduce A&E attendance from 30 per cent to 3 per cent and to reduce the need for hospital admission by 60 per cent. Re-admissions are high for patients with CHF, though with telehealth it is estimated that about one-half of re-admissions may be preventable. Again, there is a strong case for investing in telehealth to support patients with CHF (**Table 3**).

Table 3

Potential savings from investing in telehealth to manage patients with congestive heart failure

	Improvement opportunity	Patients	Bed-days	Total cost
Current provision		120,000	1,072,000	£268m
Reduce admissions by	67 per cent	80,400	718,000	£179m
Reduce remaining admissions by	50 per cent	19,800	177,000	£44m
Total gross saving opportunity			177,000	£224m
Annual cost of telehealth to provide continuous monitoring for CHF patients supported at home				£105m
Total annual saving opportunity				£118m

Source: Audit Commission

Hypertension

- 56 Hypertension is common and is a significant predisposing factor for heart disease and stroke. Treatment is life-long, expensive and can have unpleasant side effects, which reduces compliance with medication regimes. Yet measuring blood pressure in a hospital or clinic environment produces an artificially high reading in 40 per cent of cases because of patient anxiety. Consequently, one-in-five patients are given medicines that they don't need. Self-monitoring at home has been shown to be more accurate; and to reduce anxiety, outpatient appointments and costs. In one controlled trial, the patients in an intervention group who monitored over the course of one year their own blood pressure, changes in their medication, and any side-effects needed an average of 1.5 visits to their doctor compared with 2.7 visits per year by patients in the control group.

Asthma

- 57 Some patients with asthma need continuous monitoring of peak flow breathing, but studies have found that paper-recording of results leads to poor adherence and falsification of data. Telehealth systems with electronic recording devices have been shown to improve adherence from 44 per cent to 91 per cent and to enable optimal self-management.

Diabetes

- 58 Several studies of patients involved in home monitoring of diabetes have found improved outcomes. In one study, a significant improvement in glycohaemoglobin concentrations was found in a group of 56 diabetic patients sending details of their glucose concentrations through a modem to their doctors compared with a control group entering their glucose concentrations in diaries. Two other studies also found that glucose monitoring by telehealth led to significant reductions in glucose concentrations.
- 59 In the UK, a number of projects are underway to support the care of people with diabetes. Taking advantage of the fact that nearly all homes have a telephone and a television, NHS Direct proposes to combine these old technologies with a new interactive digital television service that will be offered through the NHS Direct Digital television channel from April 2004. The management of patients with diabetes is under trial at Salford General Hospital: a contact centre staffed by healthcare assistants is managing 600 patients through phone contact. An electronic record is used to support the care pathways and it is linked to care providers, such as GPs, community clinics and opticians. BT is a partner in this project. Preliminary results suggest a significant improvement in the quality of care. Similar projects are underway in Hillingdon and Manchester.

Chapter summary

- 60** An extensive body of literature demonstrates the potential value of AT and although much of it comes from the USA leading clinicians have acknowledged in another context that clinical research is usually eminently transferable. Moreover, some of the benefits of AT are so palpably obvious that they do not require such procedures as randomised controlled trials. Nevertheless, to convince the risk-averse, the newer ATs of telecare and telehealth would benefit from the legitimising effect of 'official' evaluation. NICE has already leant its weight to one form of AT in respect of digital hearing aids. NICE, in association with the British Thoracic Society, is now developing clinical guidelines for managing COPD. These are expected to be issued in 2004 and it would be enormously valuable if this work included an evaluation of the associated AT. NICE may also consider undertaking a series of cost-effectiveness studies to evaluate the impact that AT could have in the management of other chronic conditions. Further legitimisation of AT could be provided by making specific reference to AT in the National Service Framework for Longer-Term Conditions, which is currently being produced.
- 61** In view of the huge potential of AT, service providers should now take some practical steps to use it as a way of meeting local delivery plans. Service providers may wish to consider establishing a working group led at a senior level to be responsible for drawing up a local implementation plan for AT. This group should include representatives from across the health and social care community. They should also review their implementation plans for the delivery of the NSF for Older People (**Ref. 12**) and consider whether practical AT solutions are afforded adequate prominence. Similarly, they should review their ICT implementation plans and make sure that telecare and telehealth projects are included. All health and social care communities should include at least one major AT project in their local delivery plans in each of the next three years.

3



Obstacles to progress

Strong evidence of the virtue of AT has been available for some time and yet it is not widely used. Obstacles to progress include the volume of change faced by public services, the lack of consumer pressure in the AT 'market' and problems with finding the initial investment money needed to get started. Organisations are risk-averse and sometimes staff are reluctant to change the way that they work.

- 62 The potential of AT to promote independence and save money across public services is not in doubt. For many people, it provides a better quality and less expensive alternative to other forms of health and social care. But strong evidence has been available for some time and yet AT solutions have not been widely implemented. This chapter seeks to analyse why this is so.
- 63 The failure to act on evidence is not confined to AT services. Many examples of positive research findings that have not found timely acceptance in practice. Many assume that if research evidence is disseminated, practice will change automatically but this is not the case. Simply providing information is unlikely to produce change, and this observation applies across all public services. Therefore, there is no strong relationship between the strength of the evidence base and the rate of adoption into practice.
- 64 To better understand the obstacles to progress and the ingredients of success, two pieces of research were undertaken. Firstly, in 1998, the Health Education Authority produced an analysis of 33 cases studies of innovative UK practice in accident prevention, many involving AT (**Ref. 20**). The present status of each project was examined. Secondly, a significant boost to AT services has been given by the requirement in the NHS Plan (**Ref. 21**) for community equipment services to be integrated by April 2004: again some of the organisations involved in this process were examined. The common findings from these two initiatives were then matched against the existing literature on change management to provide an understanding of what factors may obstruct or support the introduction of AT services. The need to understand these organisational obstacles to the implementation of AT appears to be gaining prominence in the research community.
- 65 The overall findings emphasise the difficulty in delivering service changes: only 8 of the 33 Health Education Authority projects are still operating. Similarly, at the time of writing, at least one-third of community equipment services were judged unlikely to deliver an integrated service by April 2004. The common obstacles identified are discussed under the following headings:
- the volume of change;
 - changes in organisational structure;
 - lack of consumer pressure;
 - funding of AT;
 - organisational fragmentation; and
 - staffing issues.

The volume of change

- 66** Senior managers in the public services invariably face an extensive agenda. Integrating community equipment services has in some places been seen as an unwelcome addition to these pressures, especially if it does not coincide with local priorities and if there is inadequate management capacity to deliver. It is also clear that many organisations do not have a clear set of strategic priorities. Instead they have many things that become urgent. Such organisations invariably seem unable to introduce service improvements such as AT which help to improve service quality and reduce costs.

Changes in organisational structure

- 67** Analysis of the accident prevention projects found that at least one-third have fallen victim to imposed structural reorganisations through the creation of unitary local authorities, PCTs or the demise of GP fundholding schemes. Similarly, progress towards the integration of community equipment services has been impeded in some health communities by the creation of new PCTs, which have had to concentrate on structural issues rather than on service development. Many of the old health authorities had built up close working relationships with local social services, whereas new PCTs have had to build relationships afresh. An important side-effect of structural change is that, firstly, key personnel move on; and, secondly, it leads to a sapping of energy around new projects. This problem is not limited to AT services: research has found that organisations that avoid structural change are the most able to deliver frontline service improvements.

Lack of consumer pressure

- 68** While users of public services are now far more aware of their rights and are more vociferous in claiming them, they do not exert genuine economic pressure in the way that customers and shareholders of private sector organisations do. Service changes are seldom generated by direct consumer pressure. Moreover, older or disabled people are not always sought out to participate in the planning and running of new schemes.
- 69** The statutory involvement of patients in the NHS through the new Commission of Patient and Public Involvement and the presence of Patients' Forums in each PCT may add some genuine consumer pressure to hitherto 'Cinderella' services. Similarly, the emphasis on public involvement in local government through the best value regime may also add weight to consumer pressure. Local authority health overview and scrutiny committees should also have a positive role in helping to focus attention of the user's perspective and thus generate more pressure. There is mounting case-study evidence of the value of user-run services in the promotion of independence.

- 70 Proving better advice and information needs to become a top priority for service providers and industry – a better-informed public will enable people to make informed decisions. This will be particularly important when direct payments start to become a vehicle for people to purchase their own through public sector routes.

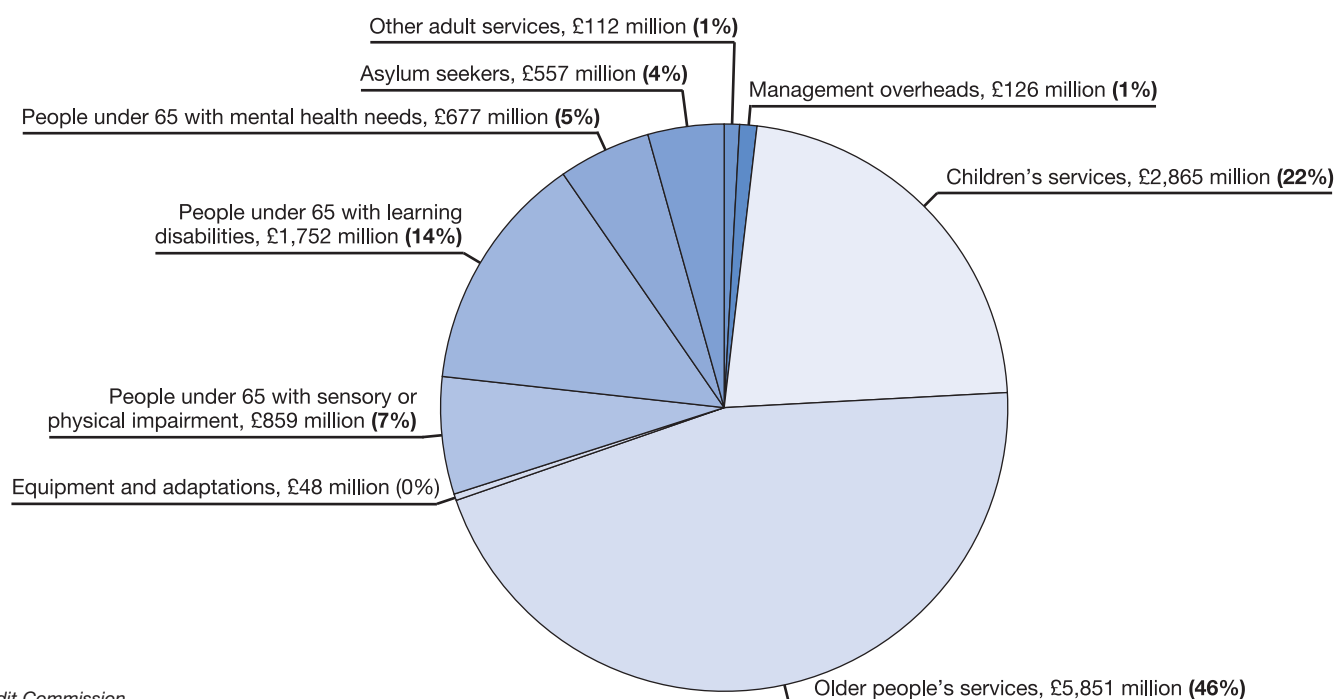
Funding AT

- 71 Several significant funding obstacles are impeding AT services. Firstly, there is the low financial profile of AT services, which currently accounts for less than 1 per cent of personal social services expenditure (**Exhibit 4**). The 150 social services authorities spend on average just over £400,000 each. So it is hardly surprising that AT often fails to register on the organisational radar.

Exhibit 4

Gross expenditure on Personal Social Services, 2000/01

AT accounts for less than 1 per cent of personal social services expenditure.



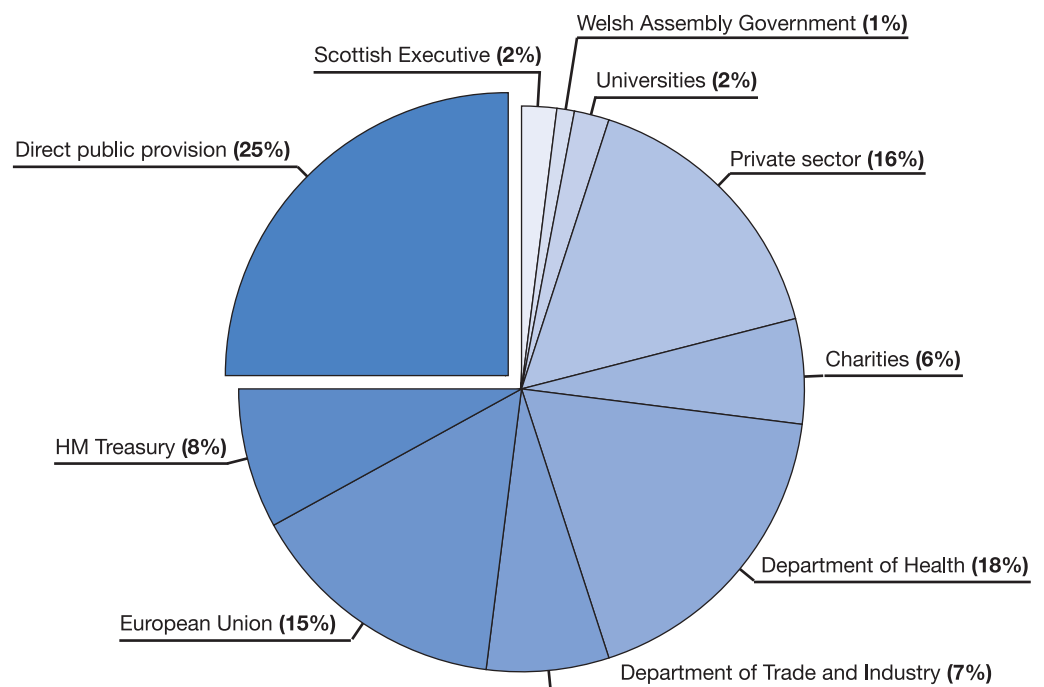
Source: Audit Commission

- 72 This low level of baseline funding for AT often means that projects have to be developed with pump-priming funds, which can leave them vulnerable when the funding stream dries up. Analysis of 165 AT projects shows that only one-quarter had recurrent funding (**Exhibit 5**).

Exhibit 5

Funding AT developments

Only one-quarter of a sample of AT projects have recurrent funding.



Source: Audit Commission (analysis of data provided on www.tis.bl.uk/tm/owa/orgs)

- 73 A further financial obstacle is the transition costs of modernising services. Most health and social care communities have many other demands on their block capital allocations, leaving little to invest in service modernisation. Most organisations will prioritise clear and present financial risk before wider organisational risks.
- 74 A final funding problem is the concern that resources released through AT projects may simply lead to a lowering of admission thresholds and to higher costs overall. The savings derived from using AT as a substitute for existing services may simply be swallowed up by more demand because of the very large measure of remediable disability and undiagnosed chronic conditions that are currently left untreated.

- 75 Curing these financial problems is harder than diagnosing them. One difficult solution is for PCTs to take far more radical steps in commissioning by investing in AT while taking capacity out of the acute hospital sector. Theoretically, the benefit for acute hospitals would be that fewer emergency admissions would help them to achieve the 85 per cent target bed occupancy cited by the DH as being the optimum figure for efficiency in acute bed management.
- 76 The Government also has a role to play and sees the virtue in providing non-recurrent funding through grant mechanisms to pump-prime AT services: specific grants were made available in February 2003 to support targets for the improvement of community equipment services (£7.6 million) and to support home care and intermediate care (£125.8 million).

Organisational fragmentation

- 77 Financial obstacles are overlain with problems of organisation. In particular, the NHS is seeking to remodel service delivery patterns to reduce the number of people who are inappropriately placed in acute hospitals. But it is clear that older people are admitted for a variety of reasons that are often a complex interaction of health, social, personal and economic factors. If public services are to use AT to help people to stay independent, they will have to address a range of factors and not ones that simply fit neatly into the category of health, housing or social services. Without integrating mechanisms, service improvements are difficult to achieve.
- 78 But public services are often organised into units responsible for specific functions. Although some have tried to break down the silos, many are still characterised by highly stratified departmental structures with their own cultures and processes. This is a particular problem for AT services, which typically need input from several departments (**Table 4, overleaf**). Problems of integration are even greater where social services and housing are run by different tiers of local government and when the respective boundaries of PCTs and local authorities are not aligned. Trying to mediate between their individual organisational interests can make progress painfully slow.

Table 4
Local authority departments typically involved in promoting independence

Department	Service
Social services	Care services for older people, families and children
Housing	Adaptations
Education	Supporting life-long learning
Economic development	Anti-poverty strategies and access to work
Environmental health	Healthy housing
Technical services	Built environment
Community services	Community safety

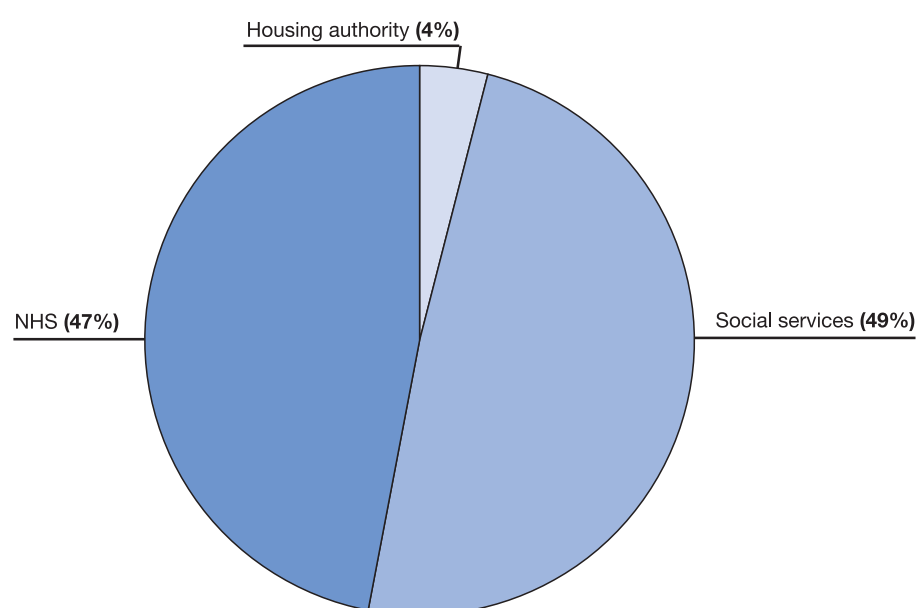
Source: Audit Commission

- 79 These problems are exacerbated if partnership working creates perverse organisational incentives. For example, housing departments are usually expected to fund telecare systems but the financial benefits accrue mainly to social services and the NHS (**Exhibit 6**). So what is in the interests of users and the public services as a whole may not necessarily be in the narrow interests of the agency making the investment. Trust boards and chief executives, as accountable officers, have a statutory responsibility for their organisations to deliver in-year financial balance. This tension has bedevilled ‘whole systems’ working down the years.

Exhibit 6

The distribution of savings accruing from telecare projects to contributing agencies

The financial benefits of telecare systems accrue disproportionately to social services and the NHS.



Source: Ref. 36

- 80** A further organisational challenge is that the forward momentum of the change process can easily be lost, or even go into reverse, very quickly. ‘Leading’ organisations can be ‘nearly there’ but unforeseen problems, such as an unbalanced budget or the turnover of key personnel can cause the project to stall fatally. Typically, social services, housing and the NHS all need to be involved in AT projects and it needs only one of these to have a local problem for the project to collapse. The way to insulate the change process is to establish a formal partnership as early as possible in order to safeguard incremental progress.

Staffing issues

- 81** The flexibilities available under the Health Act theoretically address some of these financial and organisational obstacles (**Ref. 22**). But the presence of statutory power does not in itself mean that those responsible for running services will respond in a timely manner. Lack of management time and capacity are further obstacles to progress. Most managers acknowledge the potential of AT, but avoid the challenge of changing the way that people work. For example, the introduction of telecare and telehealth requires difficult and time-consuming job redesign.

- 82 Introducing AT projects would become easier if technology suppliers were to move towards 'whole package' solutions that offer both the technology and support with implementation. For example, suppliers could work with public agencies to support initial assessments for AT and subsequent reassessments as users' needs change. They could also provide the integrated care pathways or care protocols that need to be used alongside their technology. This would ease the adoption of the technology into the public services and reduce some duplication of effort. If some suppliers could offer more ready-made service solutions to public services, then those involved in designing public services may be more likely to respond.
- 83 The thrust of public private partnerships (PPP) and local strategic partnerships between public services, communities, the voluntary sector and business requires a new approach. Business has a key role to play as a systems integrator and service provider to overcome the skills and organisational deficit in some health and social care organisations. A recent report from the Scottish Executive, *Equipped for Inclusion*, makes important points about the need to marry developments in the public sector with those in the wider commercial world, which is the key to creating better public awareness and offering wider choice (Ref. 22).

4



Delivering change to introduce assistive technology

A number of key attributes are present in organisations that have introduced AT projects successfully. These include a prominent role for user groups and the private sector; strong project management arrangements; the collection of evidence to demonstrate progress and value for money; and robust partnership working across health and social care communities.

84 This section describes the attributes of organisations where AT schemes have been successfully introduced. Research has confirmed the variability in the rate and pace of change between NHS organisations with broadly similar change objectives. Such variation is explained by the complex interplay at a local level between the content, context and process of organisational change. Research into change in private sector organisations has shown that local circumstances and context are critical. There are no ‘simple recipe’ solutions: one right answer doesn’t exist and a belief in it leads to solutions that seek to impose one template on everybody and everything.

85 Notwithstanding these broad caveats, it is possible to study services that have implemented AT projects successfully and inductively to identify some common attributes that lead to success. However, the energy and the capabilities needed to underpin these attributes cannot be conjured up over a short period of time: the past weighs a heavy hand in determining local perceptions, and layers of competence emerge only slowly to enable and protect the introduction of AT. The relative importance of the following attributes will also vary from place to place:

- role of users and the public;
- project management arrangements;
- availability of key people;
- collecting evidence;
- effective relationships between managers and clinicians;
- simple and clear goals;
- orchestrating financial pressure; and
- fit with local circumstances.

Role of users and the public

86 Long-term pressure from users’ and carers’ groups has been shown to be important in delivering AT projects. For example, the recent progress achieved in improving audiology services was in large measure a product of the pressure maintained by the Royal National Institute for Deaf People and National Deaf Children’s Society. Pressure and support from users’ groups also appears to be a key success factor in those accident prevention projects that have thrived. In other areas of AT, there is a lack of strong and united user associations.

- 87 Good information and advice about AT is the key to providing better services. The provision of AT is too often associated with professional control, rather than consumer choice. Many people would have the confidence to purchase products themselves if they had access to reliable information and were able to try products first. This will become ever more important as direct payments are used to enable people to arrange their own care. Facilitating the quality and flow of information should become a central role for public services.

Project management arrangements

- 88 Plans to introduce AT need to be consistent and clear and they must be supported by strong project management arrangements. This allows people at different organisational levels to become committed, and allows top-down pressure to be married to bottom-up concerns as frontline people become involved. The inertia around some community equipment services can be traced to the absence of a shared view of the future in different layers within organisations. The common vision has also to be shared across several organisations. Partnership between them needs to be developed as 'core' business, not an optional 'add on'.
- 89 A strategic decision-making body is needed, along with an operational group that takes responsibility for day-to-day operations and the development of the joint service. The strategic group, made up of senior managers from the funding agencies, needs to work at the boundary between the AT project and the wider executive in order to address strategic priorities. Involving executive and non-executive directors and council members is important to both top-level buy-in and to implementation. It has an important legitimising effect on the development of partnership and on the promotion of cross-agency consensus.
- 90 Plans have to be matched to a realistic and achievable financial framework. Annual budgets can destabilise large projects making it necessary for progress to be planned in incremental steps. In this way, plans can be matched with operational practicality by breaking down the overall project components into actionable pieces.

Availability of key people to lead AT projects

- 91 Analysis of the accident prevention projects and the integration of equipment services across England show that the stability of key personnel is vital to project sustainability. The importance of local champions in introducing change has been emphasised, both in terms of keeping the project on the agenda and shepherding it through internal processes. The link between the unplanned movement of key personnel and the draining of energy, purpose, commitment and action from major change programmes is well established. Projects can easily lose impetus as a result of the turnover of key personnel. This can leave new people to start again in a non-receptive context for change.

Collecting evidence

- 92** Grant funding can be a useful way to pump-prime innovative projects, but while such money is available, it is vital that systematic evidence about the value of the project is collected to build a subsequent case for recurrent funding. For example, Herefordshire County Council's Home Check Scheme has collected detailed evidence on the performance of the project against its original objectives from its inception. Systematic collection of evidence also helps to maintain the consistency of the approach if key people do move on.

Effective relationships between managers and clinicians

- 93** Good relationships between managers and clinicians are always desirable but they are especially critical to the introduction of telehealth systems, which fundamentally redesign the way that senior clinicians work. Similarly, community equipment services will operate most effectively where there are shared protocols of care between the professional staff using the equipment service. Clinicians can exert a powerful block on progress when they oppose projects, so establishing common ground and involving them is central to successful implementation. Considerable management acumen is needed to build trust and alliances. Relationships are slow to build up, but they can sour quickly.

Simple and clear goals

- 94** Where AT has been introduced successfully, managers have been able to narrow the change agenda into a set of key priorities, and to insulate this core from the constantly shifting short-term pressures. Persistence and patience in the pursuit of objectives over a long period is associated with successful AT implementation. Managers need to minimise some of the ever-changing sources of pressure, while using others to amplify their pre-existing change agenda. When everything is crucially important, few things get done: greater progress is achieved when there are explicit attempts to buffer the change programme from energy-sapping short-term pressures.

Orchestrating financial pressure

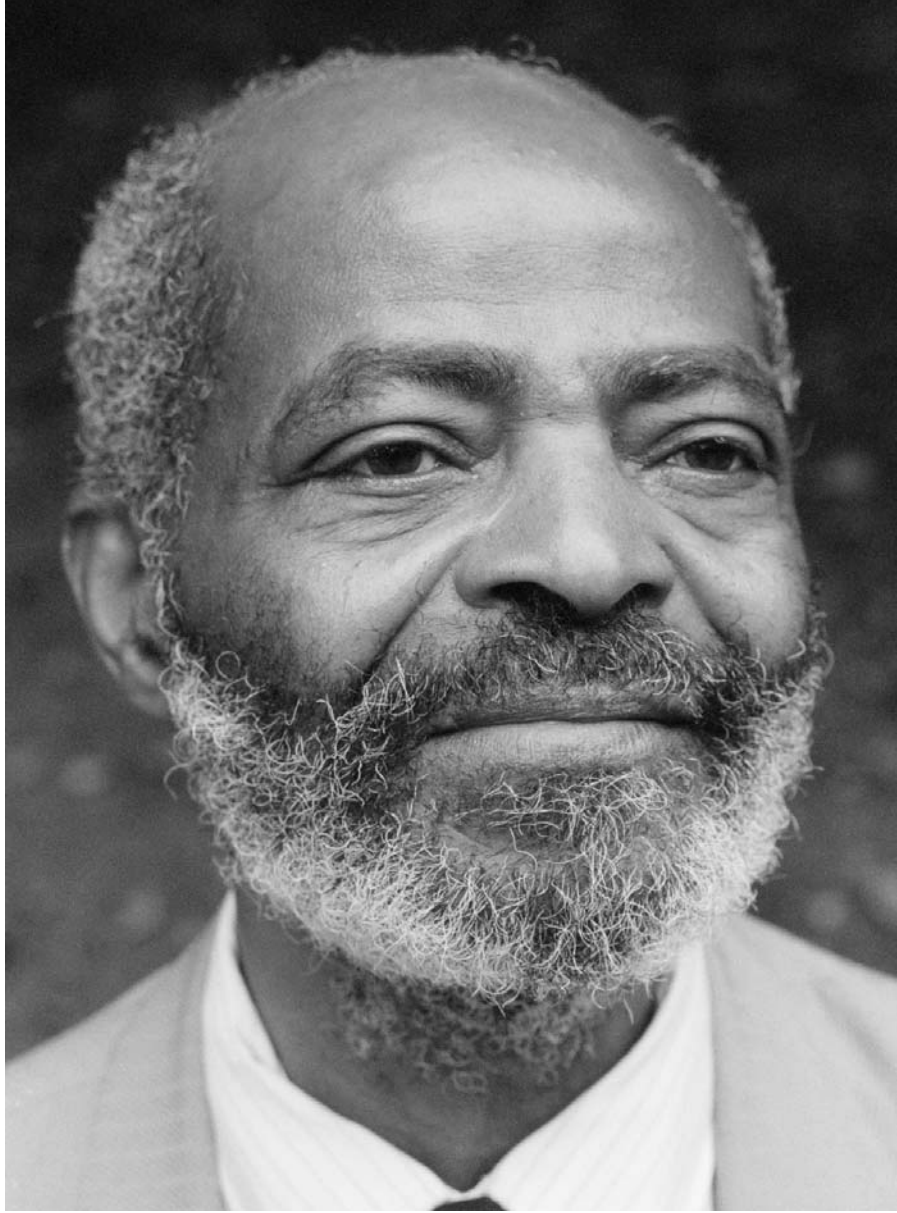
- 95** Continuing financial pressure often drains the energy from project implementation. However, those same financial pressures can be turned to advantage and used as an opportunity for radical reconfiguration of services through the introduction of AT. The gradual introduction of AT needs some initial investment but it then releases savings which can be invested in more AT, releasing even more savings in a self-financing cascade.

- 96 One way in which some organisations have put telecare and telehealth on the agenda is to link them with the organisation's long-term ICT programme, which has both Government backing and guaranteed ring fenced funding. This provides an important legitimising effect and serves to buffer the AT project against short-term pressures.
- 97 Outside such programmes, shortage of capital money remains a problem, especially where one organisation needs to invest for the benefit of others. This common problem would most readily be overcome in the case of telecare schemes by extending central funding, such as *Invest to Save* or *Supporting People*. In the case of telehealth schemes, the way forward is simpler because most of the responsibility resides within the health community. PCTs as service commissioners need to invest in AT as part of their service modernisation strategies. The new NHS financial framework, based around healthcare resource groups will provide a potent incentive for PCTs to commission services very differently in the future. Strategic Health Authorities (SHAs) may wish to consider establishing designated modernisation funds to provide the necessary capital for service modernisation using telehealth schemes.

Fit with local circumstances

- 98 Private sector change studies demonstrate the importance of local circumstances for building the right climate for change. In the case of AT services, the following are important: the degree of co-terminosity with social services; whether there is one centre of population or two; and the strength and nature of the local political culture. A recent examination of the take-up of the flexibilities available under section 31 of the Health Act 1999 (**Ref. 22**) showed that where the powers had been applied successfully, the partner organisations tended to make equal financial contributions to the partnership; they were clear about the nature of mainstream or external funding; and they had local organisational stability with co-terminus boundaries and local service networks. Local context would appear to be the prime pre-disposing factor that contributes to effective partnership working. Awareness of its critical influence enables effort to be focused on where it is most needed.

5



Conclusions and recommendations

There is the tantalising possibility for public policy to meet more people's desire to remain independent for longer, while at the same time saving money overall. A vision is emerging of an AT supported health and social care system that is able to deliver care where it is most appropriate thereby increasing the flexibility of care packages and improving the quality of peoples' lives.

Conclusions

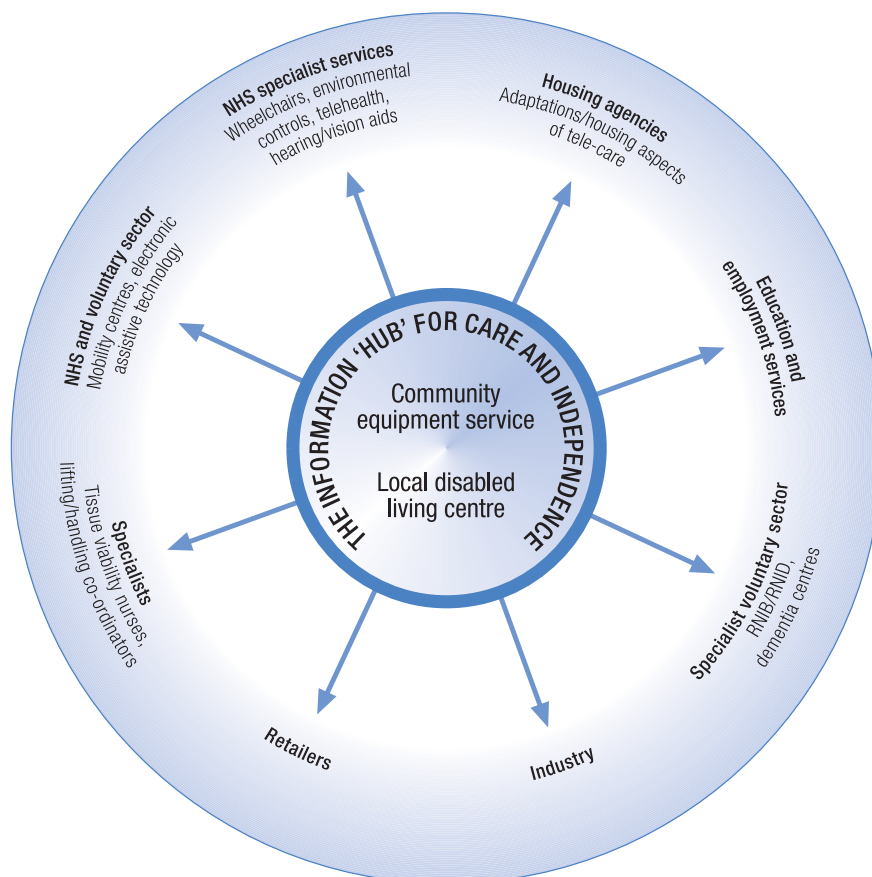
- 99 AT can help to deliver many of the goals and targets set out in NSFs and in the Public Service Agreement for 2003/06. In particular, the effective use of AT to keep people at home offers one very powerful way of reducing the pressure on most acute hospitals, both by preventing emergency admissions and reducing the number of delayed discharges. Thus there is the tantalising possibility for public policy to meet more people's desire to remain independent for longer, while at the same time saving money overall. So a vision is emerging of an AT and ICT supported health and social care system that is able to deliver care where it is most appropriate, increasing the flexibility of care packages and improving the quality of peoples' lives.
- 100 However, this will require extra investment in the short-term, whereas any cost benefits will only become clear in the longer term to other parts of the health and social care system. And, of course, there is the risk that the additional capacity created by AT may simply be consumed by improved quality or increased access, leading to increased costs overall. Funding strategies that integrate a whole health and social care community are needed in order to target modernisation strategies and money at the most appropriate level of care. Government should encourage agencies to make greater use of the flexibilities available under section 31 of the Health Act **(Refs. 22)**.
- 101 Faster progress will be made if investment money is made available. HM Treasury should therefore consider extending its *Invest to Save* project, and the Office of the Deputy Prime Minister its *Supporting People* initiative, specifically to support AT developments. Similarly, the DH should encourage individual SHAs to establish designated modernisation funds in order to provide the necessary capital money for telehealth schemes.

102 Previous reports have stressed that the fragmentation of AT services presents a major obstacle to progress. A broad range of interests exist associated with AT. These need to be knitted together across natural health and social care communities. Some ideas about possible organisational models have been discussed. A view is emerging supporting the notion of using integrated community equipment services, supported by a Disabled Living Centre, as an information ‘hub’ through which people can access more specialist ‘spoke’ services (**Exhibit 7**). Telecare technologies would fit very comfortably within such arrangements, and would avoid an overly ‘medicalised’ organisational model. Such an approach could be supported by an extension of the role of the DH’s Integrating Community Equipment Services Implementation Team to cover telecare.

Exhibit 7

Community equipment services as the information ‘hub’ for Assistive Technology

Integrated community equipment services could provide the gateway to information about more specialised services.



Source: Derived from Ref. 24.

- 103 Telemedicine schemes, on the other hand, are very clearly an alternative or an extension of acute hospital care. As such, their most appropriate organisational location is with PCTs.
- 104 A debate about the ‘best’ organisation location for telecare and telemedicine is secondary to the need to support organisations that are seeking to use AT as part of their overall rehabilitation strategies and their strategies to promote independence. Central organisations such as the Improvement and Development Agency (for local authorities) and the NHS Modernisation Agency are well placed to assume this important function. The latter has already undertaken some important work in promoting wheelchair and orthotics services. There may be merit in extending this work to a broader *Action on Independence*, which could bring together current work programmes and the wider agenda of independence and choice. A practical first step would be to transfer the existing DH Integrating Community Equipment Services Team to the NHS Modernisation Agency to start integrating these efforts.

Recommendations

- 105 These conclusions lead to the identification of several obstacles and corresponding possible solutions that form the recommendations of this report (**Box E, overleaf**). These are fully referenced back to the body of the full report, which is available at www.audit-commission.gov.uk/independenceandwellbeing/AT.

Box E**Main obstacles to progress and recommendations****Obstacles to progress/problems*****Recommendations for service providers***

The huge potential of AT remains largely untapped.

Possible solutions/recommendations

All agencies should review their service plans and consider whether AT has an appropriately prominent part.

Social care organisations should review their current arrangements for the provision of formal care and consider whether AT has an appropriately prominent part.

Service providers should review their implementation plans for the delivery of the NSF for Older People, particularly their falls reduction strategies, and consider whether practical AT solutions are afforded adequate prominence.

Service providers should review their ICT implementation plans and consider whether telecare and telehealth projects are afforded adequate prominence.

Service providers should include at least one major AT project in their local delivery plans in each of the next three years.

Performance management incentives do not always encourage investment in prevention and independence.

SHA's modernisation agendas should emphasise the potential of AT to promote independence and to reduce pressures elsewhere in the healthcare system.

Local authority overview and scrutiny committees should monitor aspects of NHS performance that have a direct bearing on social services' performance, such as AT services.

Where AT receives pump-priming funding and becomes established, there is often a failure to plan ahead and collect evidence to demonstrate the local benefits and thus achieve long-term recurrent funding.

AT services need carefully to plan how they will collect evidence of service improvements across the health and social care community.

Project management arrangements for introducing AT are sometimes not strong enough.

Carefully planned project management arrangements for the introduction of AT need to be broken down into incremental, annual delivery plans; with the rigorous collection of evidence of service improvement to judge the case for continued investment.

Obstacles to progress/problems

Recommendations for service providers continued

AT services are marginalised within many health and social care communities and are thus neglected when considering wider agendas.

The uptake of AT is impeded by the inadequacy of information available to users.

Obstacles to progress/problems

Recommendations for Government

The model for the provision of AT is dominated by state provision and control.

Better use of AT provides an opportunity to improve employment opportunities for disabled people.

The newer assistive technologies of telecare and telehealth would benefit from the legitimising effect of 'official' evaluation.

Not all local authorities and PCTs are promoting a whole-systems approach. In the absence of an integrated approach, AT developments are unlikely to thrive because the agency required to invest in home or intermediate care (typically social services) is not the principal financial beneficiary (typically NHS hospitals).

Investment money is needed to support AT.

Possible solutions/recommendations

Hub and spoke models of care should be established where appropriate with the community equipment service placed at the information hub with particular responsibility for telecare services.

Facilitating the quality and flow of information about AT should become a central role for public services and user groups.

Possible solutions/recommendations

Government, suppliers and healthcare trade associations should encourage the marketing of AT to private individuals.

The Department of Work and Pensions should devise ways to use AT to help to bring a significant proportion of this number back into employment and off state benefits.

NICE should evaluate the benefits of using AT as part of an integrated care pathway for COPD as part of its current investigation with the British Thoracic Society.

NICE should consider undertaking a series of cost-effectiveness studies to evaluate the impact that AT could have in the management of other chronic conditions

Specific reference should be made to the ways that AT can support independence and targets should be included in the National Service Framework for Longer-Term Conditions.

Government should continue to encourage close working between agencies within a whole systems approach and greater promotion of section 31 flexibilities.

HM Treasury should consider extending its Invest to Save project specifically to support AT developments.

The Office of the Deputy Prime Minister should consider extending the Supporting People initiative to support telecare services.

SHAs should consider establishing designated modernisation funds to provide the necessary capital to support telehealth systems.

Some demonstration projects for integrated call-centres should be established and evaluated.

Obstacles to progress/problems

Recommendations for Government continued

Delivering the ICT strategy targets in respect of telecare and telehealth creates a significant market.

There is no change agent to drive forward the opportunities afforded by telecare and telehealth.

Recommendations for the supply industry

Management capacity to deliver the improvements available through the widespread adoption of AT is limited in many health and social care communities. Pressure on management costs will always make it difficult for public bodies to innovate and adopt new schemes and methods of working required by the adoption of AT. This is a serious obstacle to service improvement. This problem could be partly addressed by private sector suppliers being more creative in the package of solutions they offer to the market.

Possible solutions/recommendations

The NHS Purchasing and Supply Agency should start work now on estimating the size of the market for ICT systems that support telecare and telehealth and develop procurement plans to take this agenda forward in concert with local purchasing confederations.

The DH's Integrating Community Equipment Services team should be transferred to the Modernisation Agency; and its remit extended to cover telecare.

Currently, many suppliers of AT are simply in the business of providing the kit, not a service. They may consider the business opportunities that would be afforded through vertical integration to support potential customers in the task of redesigning peoples' jobs. For example, as well the technology, suppliers could also provide the integrated care pathways that need to be used alongside the technology. This would ease adoption of the technology into public services and reduce duplication of effort.

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Assisting Independence Fully Equipped 2002. This Update from the Audit Commission looks at the progress that has been made by NHS trusts and social service authorities in the provision of equipment services to older or disabled people since, Fully Equipped was published in 2000.

Update, 2002, ISBN 186 240 3678, Stock Code HUP2771, £12



Fully Equipped – The Provision of Equipment to Older or Disabled People by the NHS and Social Services in England and Wales. Equipment services are the gateway to independence for many people and can make or break the quality of their lives. This report makes recommendations at a local and national level to help authorities to deliver more modern and effective services.

National Report, 2000, ISBN 186 240 2132, Stock Code HNR1384, £20



Integrated Services for Older People – Building a Whole System Approach to Services in England. This report look at the lack of co-ordinations in care services for older people. It offers advice on how to work towards a more 'whole-system' view of services for older people and draws on some good practice examples.

National Report, 2002, ISBN 186 240 4038, Stock Code GAR2880, £25



The Way to Go Home – Rehabilitation and Remedial Services for Older People. This report argues for a more strategic and whole-systems approach that looks at rehabilitation in the round and makes full use of new financial flexibilities. It proposes solutions for practitioners, local authorities and users who depend on these services.

National Report, 2000, ISBN 186 240 2213, Stock Code HNR1401, £20

This is the fourth in a series of five papers looking at ways to promote the independence and well-being of older people. A report summarising the series is also available.

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