

Public sector

National report

Implementing telecare

Strategic analysis and guidelines for policy makers,
commissioners and providers

The Audit Commission is an independent body responsible for ensuring that public money is spent economically, efficiently and effectively, to achieve high-quality local and national services for the public. Our remit covers more than 15,000 bodies which between them spend nearly £125 billion of public money every year. Our work covers local government, housing, health, criminal justice and fire and rescue services.

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Preface

In April 2004, the Audit Commission published a series of five reports under the banner of Independence and Well-being¹. The fourth report in the series examined the opportunities for public services to promote the well-being and independence of older, disabled or vulnerable people through the use of assistive technology (AT), particularly telecare services.

In order to help increase the impact of this work, the Audit Commission commissioned a team from Imperial College, University of London to prepare this implementation guide. It has been prepared by Professor James Barlow, Dr Richard Curry, David Wardle, Steffen Bayer and Marian Trejo Tinoco. Their analysis is partly based on findings from three telecare pilot projects in South East England, funded by the Modernisation Agency. The report also draws on research carried out over the last three years by a team at Imperial College London, funded partly by the Engineering and Physical Science Research Council through its Integrated Healthcare Technology and EQUAL programmes. Part of the research was carried out when three of the authors worked at SPRU – Science & Technology Policy Research (University of Sussex). The study team is grateful to Charles Botsford for his input to early versions. The final preparation and editing of the guide was undertaken for the Audit Commission by Nick Mapstone.

¹ Available from www.audit-commission.gov.uk/olderpeople

Executive summary

'Telecare' can be defined as a service bringing health and social care directly to a user, generally in their own homes, supported by information and communication technology. It provides safety and security monitoring, physiological and activity monitoring and information. Telecare addresses a range of government policies and the Department of Health (DH) has outlined ambitious targets for telecare to be available in all homes that need it by December 2010. New grant funding has been made available to local councils as a first step (section 1).

Telecare systems can support the independence and well-being of older or disabled people. They enable carers to respond to a crisis and can help prevent problems arising in the first place by providing early indication of deterioration in an individual's well-being (section 2). Telecare consists of assessment and referral of users; installation and maintenance of equipment; monitoring of users, and response in the event of an alert or change in condition (section 3).

A local telecare strategy needs to start from an identification of priority users and the level of service deemed appropriate to meet their needs. Many of the problems in implementing telecare services relate to the organisational context within which it is being implemented, rather than the technology itself, and in the difficulties in apportioning the investment costs between different agencies. Different business models can be envisaged, depending on the local conditions and care priorities to be addressed. Telecare also raises ethical questions about surveillance and possible loss of privacy and autonomy, and legal issues relating to confidentiality and data protection. As telecare is a care service delivered by means of technology, quality standards need to cover the organisation of services and equipment (section 4).

There is a pressing need for better co-ordination of telecare implementation at both national and local levels and for more integrated guidance to support local implementation. The guide concludes that a central change agent team should be established to promote telecare services (section 5).

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Introduction

- 1 Telecare involves the use of information and communication technology (ICT) to support the delivery of care directly to people in their own homes. It addresses a range of government policies and a large number of policy reports have argued for its wider introduction. The Department of Health (DH) report *Delivering 21st century IT support for the NHS* has outlined ambitious targets for telecare to be available in all homes that need it by December 2010.
- 2 As an important first step to meeting this commitment, the 2005-08 Spending Review introduced a new preventative technology grant that will provide £80 million over two years to fund local councils to provide alarm technology to 160,000 vulnerable older people, helping to keep them safe and out of hospital. New pilot projects will be funded to encourage innovative joined-up preventative services for older people across the NHS and social care. The publication of this report, therefore, could not be better timed.
- 3 However, the use of telecare systems in the UK has for the most part been limited to a handful of trials, although some of these are being expanded (Curry et al, 2003). Further stimulus has been provided by the DH Change Agent Team, which has established three more pilot sites at Lewes-Eastbourne, Medway and the Isle of Wight. This increase in activity is partly a consequence of its promotion by a variety of organisations, notably the DH ICES team, Audit Commission, FAST and ASAP¹.
- 4 This guide complements the recently published ICES document *Telecare: Getting Started Resource Pack* (ICES, 2004) and the Audit Commission's publications on assistive technology and telecare (Audit Commission, 2000, 2002, 2004a). Among other things, it outlines the challenges that will need to be overcome in order to deliver the government targets. It is in four further sections:

Section 2: describes what telecare is and what it can do, and discusses the evidence for its benefits at both the individual and health system levels

Section 3: describes the generic components of a telecare service

Section 4: provides guidelines on developing and implementing a telecare service, drawing on the lessons from pilot and trial projects

Section 5: provides the conclusions on the part that can be played by government in helping to unblock the current implementation barriers

¹ ICES – Integrated Community Equipment Services (www.icesdoh.org)
Audit Commission (www.audit-commission.uk)
FAST – Foundation for Assistive Technology (www.fastuk.org)
ASAP – Association of Community Alarm Service Providers (www.asap-uk.org)

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What is telecare and what can it do?

- 5 'Telecare', 'telehealth', 'telemonitoring' and 'telemedicine' are terms that are used interchangeably to describe the remote delivery of health and social care using information and communication technology (ICT). To simplify the debate, *telecare* can be defined as a service bringing health and social care directly to a service user. It differs from *telemedicine*, which involves ICT applications to support the exchange of information between health care professionals, generally for diagnosis or referral, and tends to focus on specific applications (for example, teledermatology or teleradiology).
- 6 The policy environment within which telecare is being deployed is complex, fluid and fast-moving, and local services are consequently engaged in a continuous process of change^I. The policy agenda and specific measures that provide a context for the introduction of telecare are described in Appendix 1.

What is telecare?

- 7 Telecare is based on the premise that older, disabled or vulnerable people should be able to remain independent and participate in their community as much as and for as long as possible. Care should therefore be delivered where it is most appropriate and potentially anywhere in normal physical environments. This may be in the user's home or in a 'low intensity' care setting. To deliver such a comprehensive care service remotely, a telecare service should comprise three components: monitoring safety and security; physiological parameters and activity^{II}; and providing information (**Exhibit 1, overleaf**).

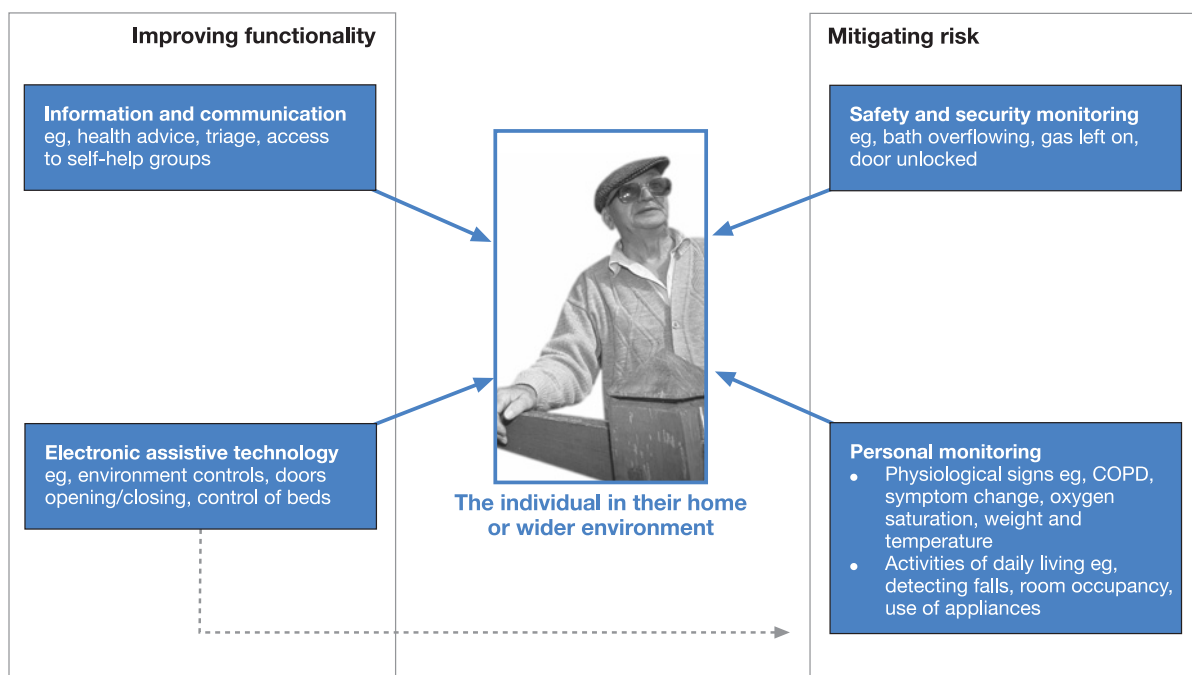
I This discussion of the policy environment for telecare focuses on the NHS, social services and housing in England. While policy orientations may be similar in the devolved administrations, there are increasingly different arrangements for the delivery of care services.

II Activity monitoring is sometimes described as 'lifestyle' monitoring.

Exhibit 1

Features of a telecare service

Telecare services monitor safety and security; assess physiology and activity and provide information.



Source: Barlow et al (2003b)

8 Safety and security, and personal monitoring, are largely designed to manage the risks associated with care outside formal care institutions. When data from the use of electronic assistive technology (EAT), which is designed to improve the functionality of the home by providing greater control over features such as doors, furniture and beds, are integrated into lifestyle monitoring, carers are provided with a better picture of how users are coping within their home environment. Providing care-related information to users over the telephone or through the internet or digital interactive TV is the third component of telecare. Some of this information can be customised around users' specific needs. Examples include general or customised health advice and personalised advice and reminders, for instance, to support medication compliance. Some applications can also help to prevent isolation, such as teleshopping services for people with mobility problems^I.

I Further details on specific telecare applications can be found in Curry et al (2003).

II This is demonstrated in the case study in Appendix 2 which has been adapted from a real patient episode.

9 Particular users will not necessarily need all three features of the telecare service at any given time. They have multiple requirements which vary as they get older or as a particular medical condition changes^{II}. Since telecare can be customised around a person and their environment, and reconfigured as required, it is capable of addressing their evolving care needs in a flexible and adaptable way. It can form an essential part of an overall care package derived from an individual assessment of need that could include domiciliary care, assistive technology and home nursing care.

- 10 Telecare systems enable carers to respond to a crisis and to help prevent problems arising in the first place. Some telecare services provide a response to an immediate need, for example a fall or a sudden change in a person's vital signs. This type of telecare can be described as *response mode* (*r-mode*) telecare. Other telecare services, either singly or in combination, can provide evidence of a change in an individual's health or well-being. Lifestyle monitoring in conjunction with data from the use of electronic assistive technology (EAT) can provide an indication of, for example, a reduction in the use of the cooker or fridge, indicating a slow deterioration in a person's condition. Such information could also contribute to an individual's chronic disease management programme. This can be defined as *preventative mode* (*p-mode*) telecare.
- 11 Information services can contribute to both *r-mode* and *p-mode* telecare services. There have been several trials of patient information services in the UK. Web-based services are generically referred to as Interactive Health Communication Applications and have recently been comprehensively surveyed (Gustaffson et al, 2001).
- 12 The focus of most trials in the UK has mainly been on providing safety and security for older people (such as, *r-mode telecare*). In other countries, notably the USA, more attention has been paid to chronic disease management, where there are both *r-mode* and *p-mode* projects. In either case, however, the introduction of telecare has important implications for the location of care delivery because it can transform a previously unsuitable environment into one that is sufficiently safe for a patient to be discharged into, or to remain in, as their condition changes.

Who benefits from telecare and how?

- 13 Telecare can benefit individual users and the care system as a whole by supporting the independence of a range of users (**Table 1, overleaf**). Different categories of users need different services, although what complicates the situation in real life is the fact that users often move from one category to another. Telecare can be adapted to accommodate these changes and may even change the patient journey (**Appendix 2**). A variety of stakeholders in the health and social care community can benefit from telecare (**Table 2, overleaf**).

Table 1**The role of telecare in supporting different patient groups**

Patient group	Role of telecare
Chronic disease	Provides facilities to self-manage care at home but allow patients to stay in contact with carers
Increasing frailty	Provides facilities to allow people to remain at home for longer
Disabled people	Increases home safety and security, share risk of independent living
People with learning difficulties	Increases home safety and security, share risk of independent living
Palliative care	Provides facilities to manage end-of-life debility at home

Table 2**Potential benefits to care system stakeholders**

Stakeholder	Key benefits to stakeholder
Individual	Quality of life – access to care in the location of choice, reduction in anxiety, providing reassurance, sustaining independence
Informal carer	Quality of life – reduction in anxiety and stress, providing reassurance
Professional carer	Additional options for care, better information on progress and outcomes for individual users and across professional communities, reduction in the volume of inappropriate work
Statutory services (NHS, social services)	Better management across populations, better resource management, avoidance of hospital admission, fewer delayed transfers of care, prompt discharge, development of self-care and prevention
Private care and specialist housing providers; alarm service providers	New market opportunities
Industry (telecommunication and equipment suppliers)	New market opportunities
Government	Modern, responsive care service; better co-ordination between different departments involved in care delivery; better resource management

Evidence for telecare outcomes

- 14 Evidence for telecare outcomes needs to distinguish between *clinical* or *quality of life outcomes* at the individual level; and the effect on the distribution of resources across the whole health and care system. The trials of telecare services have generally been evaluated with a view to exploring their clinical outcomes, rather than their affect on the whole system. Some have argued that telecare and telemedicine projects have substantial benefits at the macro level (Hyer and Rudick, 1994; Rooney et al, 1997; Wooton et al, 1998; Naylor et al, 1999). In the UK, early results from the West Lothian 'Opening Doors for Older People' telecare scheme, which is by far the largest in the UK, show that users are remaining longer in community and hospital delayed transfers of care have been reduced to 2.14 per 1,000 population compared to national average of 3.48 per 1,000 population.
- 15 Some progress in identifying the possible whole-system impact of telecare is now being made through modelling (Bayer et al, 2003, 2004). Emerging findings suggest that the effect of telecare on the institutional care population may be small in the short term because of the time required for substantial numbers of older people to become so frail as to need high intensity care. Telecare's impact on the institutional population of older people will, however, be more pronounced over the long term. The implication of this is that the focus for telecare development should be on medium, rather than high, frailty groups.

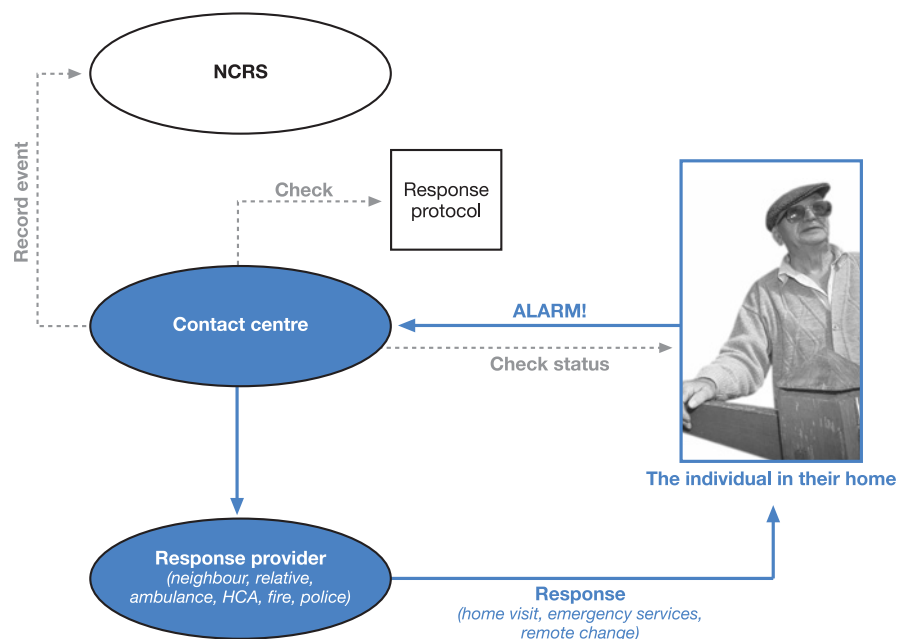
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Components of a telecare service

- 16 Whatever telecare service is being provided, there are several core elements. For an r-mode telecare service these are:
- assessing and referring users;
 - installing equipment and monitoring users; and
 - responding to an alert.
- 17 Another element is required for fully developed p-mode telecare: operational links to the National Care Record Service (NCRS). Access to a person's care records is required so that data from installed sensors can be interpreted in the context of a full appreciation of a person's health and social condition. In addition, a telecare service generates information on a person's condition which is important for both professional and informal carers to know as it could trigger a review and re-assessment of needs.
- 18 The existing components of telecare services and their interrelationship provides the basis for increasing amounts of information on individuals and overall population needs (**Exhibit 2**). These are described in the rest of this section, together with a summary of the attributes of a successful service.

Exhibit 2

Basic components of a telecare service



Source: Barlow et al

Assessing and referring users

- 19 An important part of a telecare service is the creation of referral protocols and staff training to identify users who could benefit (**Case study 1**). For example, people who are failing in the community because of a general deterioration in their condition or because of an abrupt change of circumstances are potential users of a telecare service. Similarly, those people who have visited A&E or had in-patient stays are also potential users. These people are usually known to GPs, district nurses, and other community care workers. When they come to the attention of the health, housing or social services, for example through a visit to A&E, this should trigger a telecare assessment as part of the general assessment of need. For many people, a referral to the community alarm service in their area could provide the initial support they need. There is a clear link between the telecare service referral and assessment process and the single assessment process (SAP). The SAP sets out to capture user data and contains trigger questions that are used to assemble a care package. This could be extended to trigger the inclusion of telecare in the care package.

Case study 1

Assessment and referral

Project: Safe at Home services for people with dementia

Eligibility criteria and referral sources: For this project, the eligibility criteria for referral was that the person should live within Northampton Borough and have a formal diagnosis of dementia via a CPN, psycho-geriatrician or other person appropriately qualified to make a diagnosis (actual referrals came from Care Managers and CPNs).

How the assessment worked: A dedicated project worker (part time) was responsible for the assessment of referrals, making use of an **assessment tool** developed by the Alzheimer's Society. The tool focused on capacities as well as impairments.

Information about the **needs of service users** at the point of referral came from two sources: Social Care and Health Directorate eligibility statement scores and Alzheimer's society assessment tool scores.

As part of the project findings, 'Safe at Home' revealed that the assessment process needs to focus more clearly on environmental as well as social contexts in understanding and defining need. In Northamptonshire, the assessment processes needed to be amended to **reflect a role for technology in the assessment process**.

Source: Based on Curry et al (2003)

- 20 The establishment of community 'at-risk' registers could also provide a mechanism to refer individuals for telecare. The at-risk registers identify vulnerable individuals living in the community and the information in the registers can be used to assemble appropriate care packages to support independent living.

- 21 The role of telecare, an assessment of its appropriateness to the individual and, if appropriate, an installation instruction could automatically be included in the care package. As telecare develops from an r-mode to a p-mode service, it will require, as a prerequisite, ever more sophisticated population databases identifying levels of need in the community.
- 22 To be able to offer a telecare service to people, all community care workers need to be aware of its existence and capabilities, and how to refer potential users to it (**Case study 2**). Initially, this will require community care workers to attend telecare awareness training sessions.

Case study 2

Awareness and training

Project: West Lothian Opening Doors for Older People

A heavy emphasis on education and a **special team** was established to support staff and develop a training programme. Activities included the production of a '**smart technology**' **workbook** targeted at assessment and care management staff, and **online learning modules**.

Project: Columba

As well as organising several **workshops** and a training programme for care staff at the rehabilitation unit, a separate **education and training unit** was established at the local community hospital to demonstrate what telecare could do.

In both cases the general lack of experience of telecare and smart homes made it hard to identify specific training requirements.

Source: Based on Curry et al (2003)

- 23 For the community care worker who identifies a potential user there must be a clear and simple route to having the user formally assessed to determine if telecare will meet some of his or her needs (**Case study 3**). This multi-disciplinary assessment will have to cover their health, housing and social care needs.

Case study 3

Insight

Project: Safe at Home

Care Managers, Occupational Therapists or other carers have only **limited access to information** that will help them identify appropriate technology. Within the assessment process, Care Managers and Occupational Therapists and others **need to know more** about potential technological solutions and **where to obtain them**.

Source: Based on Curry et al (2003)

Installing equipment and monitoring users

- 24 Once a user has been assessed and an appropriate package of care identified – including other services such as assistive technology, home care and nursing care – the prescribed package of telecare sensors needs to be delivered, installed and set to work.
- 25 In most telecare trials, the local community alarm service (CAS) has generally been responsible for installing telecare equipment, providing the monitoring and liaising with response services. R-mode telecare is a natural extension to their existing service, which already provides basic monitoring using fall and pendant alarms to over 1.5m people in the UK (**Case study 4**). For practical reasons, it is therefore sensible for care authorities considering telecare trials to partner with the local CAS as they have the skills in installing equipment in people's homes, periodically checking its correct operation and taking calls from users.

Case study 4

Example of advanced community alarm services

Project: North Cumbria Community Alarms Consortium (Intermediate Care)

Early hospital release discharge scheme. The project aims to provide a short term alarm service package of care to assist in the provision of intermediate care to reduce delays in hospital discharge and thus prevent bed blocking and inappropriate hospital admissions, and support those with long term illnesses or suffering post trauma stress. A community alarm telephone and appropriate triggers are provided for up to six weeks after discharge from hospital.

Source: Based on Curry et al (2003)

- 26 However, there is no reason why the CAS should be the only provider of r-mode services. Indeed, there have already been trials of stand-alone services with independent sector care providers such as Nestor Healthcare or services provided in conjunction with registered social landlords which the government sees as having a growing role in care provision, such as Hanover Housing in Scotland (Case study 5) and Anchor Trust in England.

Case study 5

A local strategy for installation of equipment

Falkirk Council has an established relationship with a local electrical contractor who is able to install ordered equipment on a contractual basis. The contractor can install within 48 hours of the order being placed if this is requested by the social worker.

Source: Based on Curry et al (2003)

- 27 While the CAS may be a sensible solution for r-mode telecare, as the service grows both in size and by expansion to p-mode telecare in the future, it may not be the correct long-term partner, and specialist service providers may be required where complex chronic conditions are being monitored.

Responding to an alert

- 28 Of the three components of a telecare service, the speed and appropriateness of the response is the most visible and defines the quality of the service in the user's and care professional's mind.
- 29 In most telecare trials, CAS call-centre staff manage the call from the user and in r-mode telecare use the agreed response protocol to summon assistance. The exact nature of the response depends upon the user's wishes and the community care services available locally. The response services that have been put in place by CAS across the UK vary considerably. Most contact either a relative or neighbour in the first instance and then the emergency services. Some have access to community care teams as well so that the chain of response – the 'escalation process' – becomes relative or neighbour, community team and, finally, ambulance. Calls for assistance do occur at night when the community team may not be in operation and come from users who have only distant relatives and no near-neighbours, so there is no alternative but to call an ambulance. Calling the ambulance often means a visit to A&E but several ambulance services have now developed flexible response protocols in conjunction with primary care. Examples are the various falls services around the country in which the ambulance service attends the home and assesses the situation against a menu of options. The outcome may be a referral to the GP, Intermediate Care Team or falls clinic rather than an attendance at A&E. Telecare which includes falls detectors fits logically into this model and could enhance these falls services (Case studies 6, 7 and 8).

Case study 6

Example of a falls management project

Project: Falkirk MECS Falls Management Project

This project evaluated use of body-worn automatic fall detectors linked to **Mobile Emergency Care Passive Alarm Service (MECS)**. Falls risk assessments were used to indicate need for automatic fall detection equipment. Early intervention through information provision, monitoring of falls attended by mobile wardens and referral to falls management clinics for people identified as frequent fallers in the community.

Source: Based on Curry et al (2003)

Case study 7

Example of response scheme

Project: People at Home and in Touch (prevention pilot)

The project involved six alarms service control centres and five NHS rapid response schemes including the Sedgefield Home Assessment Rehabilitation Partnership (SHARP).

Source: Based on Curry et al (2003)

Case study 8

Social response

Project: Safe at Home Project

The report of this project highlighted the importance of **the agreement of protocols for the social response**. For example, as a desirable standard it would be helpful to **secure the support of emergency services**. Thus the fire service would respond to fire or carbon monoxide alarms or the ambulance service respond to falls monitors. Relatives, neighbours and other unpaid carers would respond to wandering detection devices. However, the social response in Northamptonshire was arranged by the Northampton's Call Care Centre – managed within the council's housing department and provided mostly by unpaid carers -mainly **close relatives** or less frequently by **paid care staff** contracted by the local Care Management Team (managed by the County Council's Social Services Department). The number of stakeholders involved in this relatively simple social response illustrates how **intricate** the provision and management of a prompt and **adequate response** can be for a telecare service.

Source: Based on Curry et al (2003)

- 30 Some telecare trials have developed the role of existing support teams based at the control centre itself. Others have used teams that have been created specially for the task from within existing community care teams. Both these approaches are a pragmatic solution to the need to create a response service but can militate against mainstreaming the service. In both cases the telecare service is isolated from other care teams. It is therefore important from the outset to expand the role of existing teams, and not create new teams, even though this may be time consuming at the project planning stage (Barlow et al, 2003a).

Attributes of a successful telecare service

- 31 Four important attributes of a successful telecare service are:
- information flow;
 - flexibility;
 - scalability; and
 - continuity.

Information flow

- 32 Information handling and information flow is what binds the key elements of a telecare service together, with the call-centre as the hub. There must be a clear assessment process and response process, and information feedback between the two, for the service to work well. An important contribution of a telecare service is that it has the potential to stimulate better flow of patient information to carers, by informing the response team and other carers of an event, and identifying changes in a user's pattern of behaviour.
- 33 If the response team can visit a user knowing his or her background and having information on what has happened, the response and the outcome will be improved. The call-centre is the only agency that has the complete history of the event and, for maximum benefit, this information should be supplied to other carers – either professional or family – so that they are better informed. The call-centre also builds up a pattern of behaviour for a user – for example, an increasing number of calls for help following a fall – which may not be apparent to other agencies. This may lead to a review and re-assessment of the user's needs.

Flexibility

- 34 The technical infrastructure for telecare is little more than a telephone with additional sensors and devices, which are easily installed. Different levels and types of services can be provided using this infrastructure. These range from wearable personal alarms and fall detectors to patient self-administered physiological monitoring. Packages of sensors and devices can be put together to meet most conditions. As a user's condition changes over time their requirements will vary and this can be readily met by installing new sensors. The call-centre can also contact users at set times, for instance to allow them to report on their condition or to remind them to take medication.

Scalability

- 35 When a telecare alarm is triggered the signal is received at the call-centre. Similarly, when a patient wishes to send monitoring data to a carer it is sent first to the call-centre. At the call-centre an appropriate response is made. Because the call-centre has multiple incoming telephone lines and several operators, it can handle a large number of calls – in other words it can be available to a large number of people at any one time. In this way one provider can provide services to a large number of people. This facility is often referred to as 'service amplification'. NHS Direct is based on the same type of call-centre operation servicing a large population. As new users join the service they can be accommodated by the existing infrastructure, although at some point new telephone lines and further operators will be required. The telecare service can easily be scaled up to accommodate new users as well as increased functionality.

Continuity

- 36 The telecare service is always present, unlike domiciliary visiting which is only provided at set times of the day. In this way, telecare turns an episodic service into a continuous service. Furthermore, when domiciliary services make their routine visit, they will know what has happened since their last visit from data available through telecare monitoring.

4

Designing a telecare service

37 A local telecare strategy needs to start from an identification of the priority user group(s) and the level of service required. These have been referred to as the 'scale' and 'scope' of the telecare service (Barlow et al, 2003b). The scale of a telecare service is simply the number of people it serves (or is designed to serve), while the scope is the functionality of the service described in terms of the number of sensors included or the features of the service. Designing a telecare service requires an understanding of:

- scale and scope; and
- alternative operational and business models.

Scale and scope

38 At its simplest, a telecare service can be an r-mode service providing basic reassurance to users and a uniform, straightforward response service. In general, the lower the functionality of the service the more likely it will be implemented as an extension to the existing CAS, mainly because the response service currently provided needs only to be extended. But a telecare service can be much more than that, serving a wide user group and offering both supportive services and preventive services.

39 Additional complications will arise on expanding the functionality of the service, accommodating users with more complex needs or increasing the number of people served. All three demand increases in integration: technical integration; information integration; and service integration (**Case study 9**). Case studies demonstrate that the technical aspects are easier to address than the service integration. The technology is straightforward whereas service integration requires co-ordination of assessment and referral processes, workforce development, integration with existing community care teams and information sharing.

Case study 9

Technical barriers?

Project: Safe at Home

The evidence collected in the Safe at Home report suggested that in most cases the performance of the **technology** that was used in service user's homes did match the specifications of manufacturers: **it did what it was expected it would do**. **Difficulties** that did arise were as much due to **inadequacies in the social response as in technical failure** or problems with reliability. Pre-existing safety concerns in the users' home environment were a factor in almost half of all cases (for example, falls detectors detecting the fall but loose carpets causing the fall).

Source: Based on Curry et al (2003)

- 40 Research scenarios have shown that there are several basic service options, depending on the development of future care policy (Barlow et al. 2003b). One might involve telecare being made available in a relatively indiscriminating way to all who need it, perhaps through an enhancement of the CAS. Other approaches might be to target specific problems or groups of people, with services which vary in their level of functionality. For example, services might be aimed at people with highly complex demands in a similar way that electronic assistive technology is currently provided, but with more integration with home safety and security and personal monitoring. Another model might comprise telecare that is specifically targeted at people with a range of conditions such as dementia, diabetes, chronic obstructive pulmonary disease, asthma and hypertension, rather than providing more generic functionality.
- 41 Ultimately, the largest benefits may lie in p-mode telecare. This implies a service that is large both in scale and scope, and consequently more complex to implement. This may be some way away but local strategies should have a development trajectory to enable them to move from small-scale and scope r-mode telecare to large scale and scope p-mode telecare. There is no single correct development strategy to achieve this aim as local conditions will dictate the starting point. However, making the assumption that CAS is a good place to start, the development trajectory will be:
- r-mode service with CAS;
 - service expansion to include more sensors, including physiological monitoring;
 - improved response by integration with existing community teams;
 - expanded referral mechanisms through involvement of SAP and 'at-risk' registers;
 - involvement of all health and social care professionals through links to NCRS; and
 - p-mode service through incorporation of sophisticated lifestyle sensors, whole system modelling and community care needs registers.
- 42 An important strategic consideration is the extent to which the current configuration of industry, public and voluntary sector stakeholders is capable of addressing the requirements for a full p-mode telecare service. This may require new partnerships or modifications to existing ones (**Case study 10**).

Case study 10

An example of p-mode telecare

West Lothian's Opening Doors for Older People (ODOP) is the first successful UK pilot project that was rolled out on an incremental basis to become a mainstream service.

West Lothian Council and its partners are developing housing-based alternatives to traditional residential care, using multi-skilled staff teams and telecare. There are three aspects to ODOP: a new care model to encourage independence, a telecare / smart homes service (Support at Home), and four housing developments that combine about 30 new homes in each development with centralised care facilities linked by a

telecare system (Housing with Care). Support at Home will eventually provide a telecare service for all people over 60 who need it. People will receive a core home safety and security package, with individual assessments identifying any additional technology needs. The service targets the district's entire population of vulnerable people who are living at home, thus offering a preventative service.

In ODOP the new care model was developed in advance of telecare deployment, outlining the approach to individual needs assessment, the creation of an individual action plan and the response procedures.

Source: Based on Curry et al (2003)

Alternative operational and business models

- 43 Designing a telecare service involves the engagement of several stakeholders. Consequently a number of operational or business models are possible. The term 'business model' is used deliberately as there are important issues of payment and reimbursement that must be addressed at the planning stage.
- 44 The business model finally adopted depends on the local conditions and care priorities to be addressed, but three broad service model types can be envisaged:
- one where the service is wholly within the statutory services, such as, health, social care and housing (type A – Table 3);
 - where there is a partnership between the public and private sectors (type B); and
 - where the service is provided by the private sector (type C).

In each model the stakeholders have different roles and responsibilities (**Table 3**).

Table 3
Illustrative roles and responsibilities in a telecare service

	Business Model		
	A	B	C
Stakeholder			
Health & social services	Assessment and referral Monitoring Response Training	Assessment and referral	Commissioning
Community alarm service	Monitoring	Monitoring	n/a
Private sector equipment suppliers	Hardware supplier*	Hardware provider to CAS*	Hardware provider to care service provider
Private sector care service providers	n/a	Response Training	Assessment and referral Monitoring Response Training

* There is a distinction between telecare equipment suppliers and providers. Suppliers, in this terminology, market and sell products whereas providers will include an additional service installing the sensors, maintaining them, upgrading them and recovering them.

- 45 Each model has its advantages and disadvantages in terms of risk and rate of return on investment. However, the current lack of system-wide evidence may inhibit the development of sustainable telecare business models as potential telecare service providers cannot make accurate pricing decisions.
- 46 The models will be shaped by the degree to which it is necessary to integrate a specific telecare service into the wider health and social care system. Risk management forms of telecare, customised around an individual's care needs and closely integrated into mainstream care delivery, will involve different business models from information-based telecare services, some of which could be commercially provided.

Implementing a telecare service

- 47 Many of the problems in implementing *telemedicine* – which compared to telecare involves fewer stakeholders from different parts of the care system and is generally aimed at a single condition – relate to the organisational context within which the technologies are being implemented (Gask et al, 2002; Jennett et al 2003; Hailey & Crowe, 2003). These lessons are replicated in telecare services (Barlow et al, 2004). Implementing a telecare service requires consideration of:
- organisational complexity and identifying stakeholder needs;
 - differences in organisational cultures and values;
 - project evaluation arrangements;
 - apportioning the costs of telecare;
 - ethical issues; and
 - quality standards.

Organisational complexity and identifying stakeholder needs

- 48 Telecare can change the roles and responsibilities of care delivery teams so understanding how it affects different stakeholders is critical. This involves two related tasks. Firstly, there is a need to recognise the extent to which the telecare service being provided needs to be integrated with other aspects of care delivery. Services targeted at people with higher levels of dependency require much closer integration. For example, the maintenance of safety and security within the home could be provided on a stand-alone basis but chronic disease monitoring has to be integrated into the primary and specialist health care system.

- 49 Secondly, the needs of all the relevant stakeholders involved in telecare service delivery have to be identified in the early phases of service development. This is crucial for a service with high integration requirements. However, it is not always possible to identify all of the relevant stakeholders during initial planning stages and their motivations and needs may not immediately be clear. Furthermore, in a situation where there are multiple stakeholders from the care services it may be difficult to identify a 'lead user' who can drive an implementation project. Tensions over the 'ownership' of projects – which may be located at the interface of health and social care and require the contribution of individuals from a range of organisations – may become more prominent in structurally complex organisational environments (Case study 11).

Case study 11

An example of some organisational challenges

Project: Columba

Enrolling all the necessary stakeholders: This proved to be extremely time consuming, partly because of difficulties in identifying all those with an interest in the new service and partly because staff shortages and a continuous restructuring of local health and social care services meant there were frequent changes in personnel.

Continuous revision of agreed protocols: This was a result of the way new stakeholders emerged and became involved in the project, requiring existing protocols to be revised.

Lack of clarity over who was the lead sponsor: This partly arose as a result of the complexity of the environment within which it was being developed.

The amount of **time taken for planning and development** for this and many other projects illustrate how a combination of objectives, local care service complexity and organisational and behavioural factors affect scheme outcomes.

Source: Based on Curry et al (2003)

Differences in organisational cultures and values

- 50 Care delivery involves a multiplicity of stakeholders from different organisations. Not only do these perform a variety of roles, but the cultures within which they operate mean that there is a need to accommodate differing perceptions of risk and different value systems. Those held by care professionals with a medical and those with a social care background are rather different. This tends to manifest itself in perceptions of hospital and other institutional settings as an environment where patients can be 'looked after', rather than social care perspectives which emphasise rehabilitation, 're-enablement' and the promotion of independence.

Project evaluation

- 51 Evaluation includes not only how well the project met its clinical objectives but also its operational and business objectives. In order to develop services so that their performance can be measured, it is necessary to plan ways to gather data and evaluate them at the outset. Adequate resources are required for this purpose.

Apportioning the costs of telecare

- 52 Investment in telecare requires expenditure by the statutory services but the benefits will not be uniformly distributed. For example, paying a call-centre to provide a monitoring and response service to support a patient with a chronic disease may keep the patient out of hospital for longer and reduce any period of hospitalisation. Superficially this is a benefit to the healthcare provider and the NHS should therefore pay. However, the support provided by the telecare service may increase the patient's confidence and that of their family carers, so that they do not have to transfer to sheltered accommodation with a care package or to a residential home. The result is a benefit to social services. This simple example illustrates the difficulty of apportioning costs. In practice, there is the added complication that the eligibility criteria for nursing care and home care are different, so in some instances the user would pay and in other cases they would not. The result is that the costs to the statutory services will vary according to the user and over time as the user's savings are used up.

- 53 Decisions on service development and implementation therefore need to be made on the basis of a clear understanding of telecare costs. These can be divided into the *direct* and *indirect* costs associated with an r-mode telecare service, and the additional *indirect* costs of p-mode telecare (Table 4). This ignores the not inconsiderable initial costs associated with the planning stage before a decision has been made to implement a telecare service. Indirect training costs and costs associated with revising procedures will occur throughout the lifetime of the service.

I The response itself consists of two sub-components: the first-line response and the second-line response. The first-line response is provided by the call centre staff who take the call and decide on an immediate response. They activate the second line response through any one of several existing community care teams who visit the user and initiate further action.

Table 4

Direct and indirect costs associated with telecare

R-mode telecare		P-mode telecare
<i>Direct cost</i>	<i>Indirect cost</i>	
Visits by assessment team to users and preparation of report	Developing referral guidelines	Developing and maintaining a wide area user database
Ordering of telecare equipment from stores	Training staff in the use of referral guidelines	Developing links to allow information to be inserted into the database
Purchasing and storing telecare equipment	Developing assessment guidelines (which may be part of the SAP)	Training staff in the use of the database as a referral tool
Installation and commissioning telecare equipment	Training staff in the use of assessment guidelines	Making information available to the second-line responders ¹

R-mode telecare		P-mode telecare
Monitoring of telecare equipment	Developing installation guidelines and working practices	
Maintenance of telecare equipment	Training staff in installation	
Developing individual user response protocols	Developing guidelines on equipment maintenance	
Maintaining a local user record base	Training call-centre staff	
Visits by the response team	Developing response protocols	

Ethical issues

- 54** Telecare raises ethical questions about surveillance and possible loss of privacy and autonomy. However, pilot projects have shown that, if used correctly, telecare is accepted by users and carers and connotations of ‘Big Brother’ can be overcome (Gillies, 2001). A common theme that emerges from the pilot projects and the literature is that it is not the *form* of technology which determines the ethics of its use, but *how* it is used in an individual case. There is wide agreement, for example, that telecare should be used within the context of an overall care plan to support independence rather than to control ‘problem’ behaviour, and that it should not lead to increased isolation or unacceptable reductions in staffing support.
- 55** The Astrid Guide (Marshall, 2000) provides useful guidance on ethical issues in the implementation of telecare and assistive technology, based on fundamental values such as autonomy and justice and doing good rather than harm. While its main focus is on the use of technology in dementia care^I, its principles are applicable elsewhere. It points out that similar ethical issues, such as the balance between risk and safety, arise in the provision of other forms of care where technology is not involved. It suggests how to develop ethical protocols and how to deal with the issue of ‘informed consent’. Important questions include how often consent should be sought (every time a service is changed?) and who should be asked to provide consent (informal carers as well as the service user?).
- 56** Voluntary organisations and professional bodies have contributed to the debate on the ethical use of technology. Counsel and Care has published a report (Clarke and Bright, 2002) which covers the use of new technologies in care homes, but contains principles which are more widely applicable and are similar to those in the ASTRID guide. The Alzheimer’s Society^{II} has published a position statement on electronic tagging, which recognises that tagging and other forms of surveillance such as sensors may have benefits for people with dementia and their carers, but calls for more research and for a balance to be struck between benefits and possible infringement of civil liberties.

^I Further guidelines on the ethical design of home environments for people with dementia are contained in Bjorneby et al (1999).

^{II} Alzheimer’s Society website: www.alzheimers.org.uk

57 There is also an emerging literature about the legal aspects of telecare covering such issues as confidentiality and the patient's or client's rights of access, data protection and malpractice (Stanberry, 1997, 1998a, b). Further discussion of ethical and legal issues can be found in Brownsell et al (2003). Some of the issues in this area relate to ownership of the data and data protection and security. Information on the application of the Data Protection Act 1998 in and across health and social services is on the Department of Health website (www.dh.gov.uk).

Quality standards

58 Service specifications and monitoring arrangements will need to include quality standards that have been developed in consultation with service users and are based on legal requirements, government policy guidance, professional values and full consideration of ethical issues. As telecare is a care service delivered by means of technology, quality standards will need to cover the organisation of alarms services *and* equipment provision.

59 The Association of Social Alarms Providers (ASAP) Code of Practice has been endorsed by the Office of the Deputy Prime Minister as the applicable technical standard for the funding of alarms services from within the Supporting People budget. The Code is in three parts covering: Call Handling Operations, Dispersed Alarms Services, and Mobile Response Services (being developed) and these are supported by good practice guides. Attainment of the standards within the Code is determined by ASAP following an independent audit leading to accreditation. Further information about ASAP publications and activities is on its website^I. A topic sheet on the ICES website^{II} covers legislation and guidelines on a range of issues for community equipment services including health and safety, risk management, controls assurance, governance, equipment management, maintenance and repair, adverse incident reporting, and professional and product liability.

I The Association of Social and Community Alarms Providers (ASAP), 4 Beaufort House, Beaufort Court, Sir Thomas Longley Road, Rochester, Kent ME2 4FB, Telephone: 01634 304200, website: www.asap-uk.org

II ICES topic sheet: Health and safety at www.icesdoh.org/article.asp?Topic=25

5

Conclusions and recommendations

Conclusions

- 60 The potential of telecare systems to support the independence and well-being of older, vulnerable or disabled people is clearly demonstrated in a raft of pilot studies, and the weight of policy guidance around supporting people's independence makes the case for its wider introduction compelling. And yet the development of telecare continues to be characterised by research activity, pilot projects and ad hoc schemes based around some community alarms services.
- 61 The key challenge for telecare services is now to move from the current pilot phase and into a mainstream service in order to support the independence and well-being of an increasingly large number of potential users. This will need to be supported by the sort of effective planning described in section 4 of this guide. The important point to remember is that the basic technology is robust and much less of a risk than the challenge of getting public services to work across organisational boundaries. In this respect, the challenges for telecare services are similar to the much larger challenge of delivering the NPfIT: the debate often focuses on technology but misses the point that the effectiveness of organisational development will determine success or failure.
- 62 In looking for a way forward for telecare, it is worth reflecting on other initiatives in the wider field of assistive technology (AT). Services like community equipment, wheelchair services and audiology services have all made significant strides since the Audit Commission first examined them in 2000 (Audit Commission, 2000). The common factor shared by these services is the active presence of a central change agent, whether led by government or by user groups. AT services that have not been supported in this way (for example, orthotics) have made less progress. Thus the case for creating such support is compelling.

Recommendations for service commissioners and service providers

- 63 When planning new telecare services, commissioners and service providers need fully to consider the lessons about implementing telecare projects set out in this guide. For example, one strategy would be to move incrementally from r-mode to p-mode telecare along a planned development trajectory; another might be to build on the back of telehealth schemes. The characteristics of successful projects are also described in the Audit Commission's previous work on telecare services (Audit Commission 2004).

Recommendations for government

- 64 A change agent team to support local health, housing and social care services to promote telecare should be established under the leadership of either the Office of the Deputy Prime Minister or DH. As well as providing support to local services, this body could tackle the following issues identified in this guide:
- **The problem of apportioning costs must be addressed.** Telecare implementation will need to be based on a better understanding of the system-wide distribution of costs and benefits. Without this, mechanisms for the reimbursement or payment for services cannot be established. Shared planning and service commissioning as opposed to shared budgeting may present a way forward.
 - **Practical guidance on service development and procurement such as the ICES guidance should continue to be developed.** The Audit Commission has published guidance for success in partnership working within the community equipment services.
 - **There should be mechanisms for improving learning across telecare projects and across localities.** Many projects are developed in isolation and without an awareness of the existing knowledge base. While mechanisms to foster learning within the health service are being introduced, such as the Telemedicine and E-Health Information Service (TEIS) and Housing Learning Improvement Network (LIN), the multiple stakeholders involved in telecare suggest that this may need to be extended to embrace other agencies, including social and housing services.
 - **There should be a better mechanism for co-ordinating R&D activity in telecare between government departments, the research councils and the care services.** One of the more recent research activities has been modelling. Telecare affects the whole health and social care system. Individual trials explore particular applications across the system but it is very hard to gain an overall view. Modelling is one way of bringing this information together.
 - **There is a need to discuss and provide guidance on the ethical implications of telecare.** Telecare raises questions about surveillance and possible loss of privacy and autonomy. Pilot projects have shown that, if used correctly, telecare technology is welcomed by users and carers. However, the mainstream introduction of telecare is likely to require closer attention to the ethical aspects of its use, including guidance on such issues as informed consent and the need to avoid unacceptable reductions in staffing support. Public awareness-raising activities and demonstration facilities for telecare should also be developed to overcome concerns.

Telecare remains an emerging field. There have been positive results from a limited number of trials and government, care providers and industry have great expectations for its future use. It is clear that the barriers to implementation are organisational rather than technical. These arise mainly from the need for multi-agency and multi-disciplinary working. Without effective partnership working, it will be hard to deliver the ambitious targets for the mainstream deployment of telecare.

Appendix 1 – The policy environment for telecare

Telecare addresses a variety of different care policy agendas. Some of these relate to helping vulnerable people live independently and safely at home; others to the reform of health service delivery. At least a dozen major policy reports have highlighted the potential of telecare. These date at least back to *Information for Health*, published by the NHS Executive in 1998, the Department of Health (DH) report *Modernising Social Services* (1998) and the Royal Commission on Long Term Care (1999). Together, these recognised the potential contribution of future developments in telecare and assistive technology in helping older, disabled or vulnerable people live independently in the community as far as possible. Housing-led policy statements have also called for telecare, notably the joint DETR/DH report *Quality and Choice for Older People's Housing* and the policy guidance for the Supporting People initiative (DETR, 2001). Telecare is relevant to a range of policy initiatives (**Table A1**).

Table A1
Telecare contribution to policy initiatives

Initiative	Examples of telecare contribution
NSF for Older People: General Falls Dementia	Safety and security; physiological monitoring medication reminders if needed Fall alarms; medication reminders Safety and security; medication reminders; movement detectors; lifestyle monitoring
National Service Frameworks (NSFs) for Coronary Heart Disease, Diabetes, Long Term Conditions	Physiological monitoring; medication reminders
Expert patient programme	Physiological monitoring; information provision and others as requested
Valuing people	Safety and security; movement detectors; lifestyle monitoring
National strategy for carers	Information resources, reduction in stress
Supporting people	Safety and security
Extra care housing	Safety and security; lifestyle monitoring
Home safety, fire safety and crime reduction	Safety and security; lifestyle monitoring

The NHS Plan

A key policy document framing the development of potential telecare services is the NHS Plan, published in 2000. It outlined the importance of health and social care services working collaboratively, putting the needs of the patient first. The NHS Plan set out a programme of investment and reform up to 2005 to improve the capacity and performance of the care system. It placed particular emphasis on the services that affect the most people – cancer, heart disease, mental health and older people's services – and on improving access to acute services. To help achieve the plan's goals, a modern and reliable information technology infrastructure was seen as essential, with details outlined in subsequent documents (DH, 2001a, and b).

The goals outlined in the NHS Plan are reflected in the current Priorities and Planning Framework 2003-2006, which incorporates the Department of Health's Public Service Agreement (PSA) with HM Treasury. Objectives and performance targets are matched with 'national capacity assumptions', whereby capacity is increased through additional resources but is also managed better through improved ways of working and service re-design.

Key targets include reducing waiting times for outpatient appointments and reduced inpatient treatment and waits in accident and emergency (A&E) departments. The importance of these 'access targets' has been emphasised in performance management by the DH and strategic health authorities. It has also been a key priority for local NHS trusts. Improving processes for admission and discharge has been a prominent part of the work of the DH's Modernisation Agency.

Several important policy themes have emerged from the NHS Plan and other reports which are of direct relevance to the agenda for telecare implementation. Recurrent themes include the promotion of independence, the impact of this on improving capacity in the care system, choice and diversity of provision and chronic disease management.

Key policy themes

Promoting independence and improving capacity

It is a long-standing policy objective of successive governments that older, disabled or vulnerable people should be supported to live as independently as possible in the community, and that this is in line with their own wishes (DH, 1989, 1998). Promoting independence for older people is a key theme in the NHS Plan and in the subsequent National Service Framework (NSF) for Older People (DH, 2001c). This objective is reflected in the Priorities and Planning Framework 2003-2006 (DH, 2002a) and in the key performance indicators or 'thresholds' for social services (SSI, 2004). The latter include the balance between intensive home care and admissions to care homes, timeliness in delivering community equipment, and waiting times for assessment and care packages.

It is a core argument in the NHS Plan and subsequent policy development that the care needs of an ageing society can only be met when care is provided at the most appropriate level, as close to home as possible. The Plan argues that NHS and social services should support older people in recovery from illness by encouraging independence and providing reliable, high quality continuing support at home.

Housing policy has also emphasised the need for independence. The report *Quality and Choice for Older People's Housing. A Strategic Framework*, published in 2001, states that housing, care and support policies need to focus on enabling older people to live as part of the community in their own homes, in comfort and safety and in the best possible health, for as long as they wish to do so. As well as endorsing the use of assistive technology and telecare to help older people live safely at home, *Quality and Choice*¹ recognised the benefits of community alarms services and the potential to graft passive alarms and movement sensors on to these services. Policy guidance for the *Supporting People* initiative develops this vision further, stating that 'remote communication and support services will... increasingly be part of a wider package of linked authority and other services.'

Promoting independence has received less prominent attention within health and social care than improvements in NHS acute treatment, and has primarily been focused on older people rather than disabled people. It has not been seen as a policy imperative in its own right, which would drive the implementation of related services such as telecare.

Significantly, however, the link between the management of NHS acute capacity and improvements in services which treat illness in non-acute settings and promote independence, is now being made. Developing services like telecare, intermediate care or community equipment services to help provide support in the home are now seen as preventative, 'upstream' interventions to ease pressure on other services, particularly acute hospitals.

Choice and diversity of provision

The 'choice agenda' is seen by Department of Health Ministers as the second phase of NHS reform after the investments in capacity and delivery. The strategy is set out in *Building on the Best: Choice, Responsiveness and Equity in the NHS* (DH, 2003a). Offering a choice of provider, with appropriate information, is intended to empower patients, produce more efficient and responsive services, and lead to greater equity of treatment. Although the consumer model will increasingly be applied, health care will still be free at the point of delivery.

A range of service providers, which includes the independent (private and voluntary) sector, is seen by the government as a necessary condition of choice for service users and a spur to efficiency and innovation in the public sector, and not merely as a source of extra capacity. There is, of course, already considerable diversity of provision in social services, which purchase the bulk of their domiciliary and residential care from private and voluntary sector providers, and a similarly diverse pattern in the housing sector.

The government is also promoting other ways of offering choice and flexibility to service users. It wants to see greater use of direct payment schemes, where users of social services are offered cash payments to arrange care packages for themselves.

The choice agenda goes wider than simply offering a choice of provider, however. Its other – somewhat more intangible – aspects may have equal or more relevance for telecare developments. *Building on the Best* talks about 'responsiveness', giving people 'a bigger say in how they are treated' and giving them 'the right information at the right time'.

Chronic disease management

Around 17.5 million people in the UK live with chronic conditions such as arthritis, asthma, diabetes, heart disease and depression¹. Prevalence is increasing because survival across a wide spectrum of diseases and traumas has improved due to medical advances. 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, at a huge cost to society. There is therefore a growing concern to manage chronic disease as far as possible in the community and calls for individuals to take more responsibility for their healthcare (Wanless, 2004; cf. House of Commons, 2002a). In addition, PCTs will have financial incentive under payment by results to manage illness in the community (Health Services Journal, 29/04/2004, p.31).

¹ The NSF for Long-Term Conditions will be published in 2004, with a view to implementation in the ten years from 2005. This focuses largely on neurological conditions, such as, brain injury, spinal cord, epilepsy, MS, motor neurone disease and cerebral palsy.

Key measures for achieving policy aims

A range of measures are being put in place to achieve the aims of the NHS Plan and other policy themes described above. A number are emphasised because of their relevance to telecare deployment.

National Service Frameworks

The National Service Frameworks are seen as vehicles for redesigning care services to tackle various key health challenges. The NSF for Older People's Services aims to integrate and improve access to health and social care, to raise standards and to promote independence for older people. It provides eight standards (including person-centred care, strokes, falls and the promotion of health and active life) and milestones to monitor progress. It also advances the idea of a single assessment process (SAP) for health and social care.

The most common problems faced by older people relate to mobility, vision and hearing. Previous reports by the Audit Commission (2000, 2002, 2004a) have emphasised how assistive technology and telecare can reduce the effects of these conditions. There are two specific areas in the NSF where the use of telecare is explicitly encouraged: reducing injuries from falls (Standard Six) and helping people with dementia to remain independent (Standard Seven).

In 1999, there were 648,000 A&E attendances for fall-related injuries in people aged 60 and over (Audit Commission, 2004a). These falls cost the Government £981 million, of which the NHS incurred 59 per cent. The NHS and local councils are required to develop multi-agency strategies to prevent falls and to establish specialist falls services. 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 leads to early admission into institutional care.

Using assistive technology and r-mode telecare could make significant inroads into the problem of falls, while people with dementia could receive safety and security packages and medication reminders, supplemented by movement detectors where wandering is an issue, and lifestyle monitoring as appropriate. However, while there are passing references throughout this NSF to the use of assistive technology and telecare¹, there are no associated action points or performance measures.

¹ Similarly, the NSF for Coronary Heart Disease emphasises the need to identify and monitor patients who have this condition and the NSF for Diabetes aims to refocus services towards primary care.

Improving capacity by reducing care in the acute sector

The NHS Plan announced investment in a range of services to support independence for older or disabled people, including intermediate care, home care and community equipment services. These investments were intended to release acute hospital beds by reducing admissions and facilitating discharge, thus contributing to the Plan's access targets. Community equipment services were to be modernised through the Integrating Community Equipment Services (ICES) initiative (DH, 2001d, e), which included the introduction of new telecare technologies.

As well as achieving the targets on waiting times set out in the NHS Plan, there is particular concern to reduce the number of emergency hospital admissions for older people and ensure there is no growth in re-admissions (Priorities and Planning Framework 2003-2006). There is also a drive to alleviate the problem of 'bed-blocking', delayed transfers of care following the completion of patients' treatments, because of a lack of places in sheltered, residential or nursing homes, a lack of intermediate care facilities or services, or a lack of staff to deliver the appropriate home care package. Following a critical report by the Health Select Committee in 2002 (House of Commons, 2002b), the Government announced further investment and reform in social services for older people (DH, 2002b).

In its report, the Health Select Committee pointed out the potential contribution of telecare. Because it helps to control the risks associated with home care, remote telecare could contribute to increasing effective capacity in the community sector, when used in conjunction with redesigned care services and the provision of associated support such as assistive technology and home adaptations. Telecare could also contribute by creating new service options for the care of people at home as an alternative to residential care through, for example, its facility to provide regular patient self monitoring and reporting or automatic monitoring of changes to a patient's condition.

It appears, nevertheless, that for many local NHS organisations the main emphasis has been on work within hospitals to directly improve access, reinforced by the star-rating system. Local commissioners and providers have not necessarily made the link between managing hospital capacity and investment in services to support independence, let alone innovative services such as telecare or intermediate care. Social services, for their part, have to devote considerable attention to children's issues and are faced with an imminent reorganisation of children's services.

Recently, however, the Community Care (Delayed Discharges etc) Act 2003 has given local authorities the financial responsibility for reimbursing the NHS for delayed transfers that they cause, matched by a grant to support the transition to these new arrangements. This may lead to more NHS and social services organisations working together to improve discharge processes and community services for older people in the way envisaged in the NHS Plan. There is also likely to be an increased focus on the implementation of the NSF for Older People's Services in 2004, with the introduction of the Single Assessment Process, a joint review by the Healthcare Commission, the Audit Commission and the Commission for Social Care Inspection, and inclusion of older people's services in the 2005 comprehensive performance assessment of local authorities.

Housing related support

The Supporting People programme (DETR, 2001)¹ provides a strategic framework for planning and funding 'housing-related support' services for vulnerable people, such as warden support in sheltered housing and community alarm services. The aim is to move towards the delivery of services to people regardless of the tenure of their accommodation. Funding from the existing complex and uncoordinated funding streams was transferred to a single Supporting People budget, administered by local councils from April 2003.

Specific guidance on community alarms within the Supporting People programme (ODPM, 2002) addressed the transition to the new funding arrangements and the opportunity for commissioning bodies (housing and social services, with the NHS and other partners) to review their services, including community alarm services. It argued that reviews should take into account issues such as the needs being met by current service provision, whether the various alarm services provided by health, social services and housing are being jointly planned, and whether best use is made of new technology. The guidance recognises that community alarms serve a variety of purposes, including meeting health needs following hospital discharge, and that not all provision involves 'housing related support' to support independent living, the key criterion for Supporting People funding. Local authorities and their partners are therefore encouraged to take a broad-brush approach to apportioning costs as part of the discussions on commissioning the service as a whole, rather than on an individual basis.

For older people who cannot remain in their own homes, the government continues to support the provision of sheltered housing and the newer option of 'extra care housing' or 'very sheltered housing', positioned between conventional sheltered housing and residential care (DH, 2004a). The implementation guide for extra care housing (DH, 2004b) points out that this provision can prevent unnecessary hospital admissions and reduce delayed transfers of care. The guidance note has emphasised the role that assistive technology and telecare can play in enhancing extra care housing.

¹ Also see Supporting People website: www.spkweb.org.uk

Chronic disease management

Telecare could help in chronic disease management through physiological monitoring related to the specific condition or conditions, supplemented by a safety and security package and medication reminders if appropriate. The Audit Commission report *Assistive Technology* discusses the potential contribution of physiological monitoring to a range of common conditions and points out that self-monitoring at home has been shown to be more accurate than measurement in a clinical setting (Audit Commission, 2004a). Specific measures being implemented or trialled include the following:

- Recognising that many people with chronic disease know how best to manage their conditions, the government has developed the Expert Patients Programme¹ with partners such as the Long Term Medical Conditions Alliance. Telecare, in conjunction with improved primary care, could support this through its ability to ensure that those with chronic illness become more informed, with self-monitoring and self reporting allowing patients to become more involved in their treatment. More generally, information services and lifestyle monitoring can help those concerned with maintaining a healthy lifestyle or caring for minor conditions themselves.
- Proactive care management, as opposed to reactive care delivery, is also on the agenda. Pilot projects using case management approaches, which have cut hospital admissions in the USA, are also being established (DH, 2004c). Telecare may help support such a model because it turns episodic monitoring into continuous monitoring and ensures information about patients is kept in a central place such as the call centre.

Developments in primary care and the new GP contract are supporting this increased focus on chronic disease management. Primary care trusts (PCTs) are responsible for commissioning and providing a wide range of primary and community services, as well as commissioning most secondary care (DH, 2001f). The recent policy document *Building on the Best* (DH, 2003a) envisages a wider range of primary care providers offering more diverse and convenient primary care services, as well as traditional GP practices. Current providers of out-of-hours services, which include GP cooperatives and private companies and typically involve call centres, could also provide day-time care. These developments will affect the range of potential business models for telecare services. There will be further development of walk-in centres and of NHS Direct, which intends to develop out-of-hours services. A wide range of diagnostic procedures and treatments, previously only available in acute hospitals, will be delivered closer to home in community settings. This includes better support and monitoring of patients with long-term conditions and chronic disease.

¹ Expert Patients Programme website
www.expertpatients.nhs.uk

Improved support for carers

The National Strategy for Carers (DH, 2001 g) includes examples of assistive technology that might help carers to carry on caring. Telecare could relieve carers of some simple, tedious and often intrusive tasks and provide valuable reassurance. Home safety and security packages and medication reminders in particular can supplement their efforts, ease their burden and provide valuable reassurance. This could 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.

Appendix 2 – Case study

The potential role of telecare in supporting independent living for a frail older person¹ is well illustrated through a case study. This describes a typical sequence of events and explores what difference telecare might make in improving their outcomes. The individual events have been identified with superscripts in the text. The role of telecare in each event is described in the case study below.

Mr T is an 80 year old man who has a fall. He manages to summon help and the GP is alerted. Initially, the District Nurse comes round. He has lain on the floor for several hours¹. She picks him up, puts him back to bed but can't find anything obviously wrong except some confusion. To be on the safe side she asks the GP to make a home visit and he does so the next day. Unfortunately it is a locum GP who does not know the patient and does not know that he is not normally confused². This is unknown to both of the assessors thus far. The patient has had another fall before the GP gets there³. However, the GP does not make a diagnosis as to the cause of the fall and simply suggests that Mr T is at risk on his own at home. He arranges for him to have a period of convalescence in a local residential home⁴. Convalescence from what has yet to be determined! Unfortunately the staff at the home don't know Mr. T either and he ends up being bed-bound⁵.

His regular GP, returning from annual leave 10 days later, goes to visit Mr T in the residential home and finds him in a very sorry state. Mr T has extensive sacral pressure sores, probably created when he lay on a hard floor twice, ten days before, and worsened by the fact that he is now bed-bound in the home. He also has bronchial pneumonia.

He is admitted to the local hospital's acute unit, where he remains for the next three months, just surviving the pneumonia, desperately debilitated by the pressure sores and remaining relatively immobile. The hospital suggests that on discharge Mr T goes into a nursing home.

Fortunately Mr T has regained some of his cognitive function by then and refuses to go. His nephew and niece don't want him to be institutionalised either. They request that he be considered for a rehabilitation package and he is taken into a rehabilitation unit⁶. Two and a half months later Mr T goes home. His sacral sores have finally healed. He is gaining some stamina. Initially he walks with a frame, but he discards that a few weeks later. He is back to many of his former activities and lives another ten years of active life⁷.

¹ We are grateful to Dr. Beverly Castleton, Medical Director North Surrey PCT for providing the material.

Potential impact of telecare in a typical care pathway

Event in case study	Role for telecare	Improvement in outcome
1. Mr. T's first fall	Mr. T is wearing a pendant alarm	Mr. T summons help immediately, talks to and is reassured by call centre, appropriate carer sent
2. Mr. T's normal mental state not known to GP on home visit	Better information available to GP via, for example, SAP	Mr. T's confusion would have alerted GP to a more appropriate diagnosis
3. Mr. T's second fall	Following first fall Mr. T is automatically given a fall alarm	Call-centre knows Mr. T has fallen for second time and sends carer at once
4. Mr. T has period of 'convalescence'	Full telecare package installed in Mr. T's home in conjunction with domiciliary care and assistive technology	Mr. T managed at home. No need for 'convalescence'
5. Mr. T is bed bound in residential home	Telecare installed in residential home	Mr. T and residential home staff take supported risks
6. Mr. T refuses to go to nursing home going to rehabilitation unit instead	Telecare installed in rehabilitation unit	Mr. T and rehabilitation unit staff take supported risks. Mr. T's length of stay is reduced
7. Mr. T goes home	Full telecare package installed in Mr. T's home	Mr. T's well-being monitored for the rest of his life ensuring support when it's needed and reducing inappropriate admissions to hospital

From the case study it is clear that at every stage in this patient's care, telecare could have played a beneficial role. Furthermore, if some simple telecare technology had been available to Mr. T at the outset the whole story might have been different with steps (4), (5) and perhaps (6) omitted altogether. Clearly, Mr T's quality of life is improved through the introduction of telecare.

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Audit Commission
1st Floor, Millbank Tower,
Millbank, London SW1P 4HQ
Tel: 020 7828 1212 Fax: 020 7976 6187
www.audit-commission.gov.uk