The Future of Telecare Services

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Abstract

Telecare services developed quickly in the UK between 2000 and 2010 by embracing the robust infrastructure provided by the social alarm network. Improvements in access to the Internet, together with faster telecommunications speeds have allowed services to expand into areas of assessment and medical support using telemonitoring . These have allowed improved assessment of lifestyle, activity levels and vital signs, opening up numerous opportunities for managing long term conditions, including diabetes. By today, telecare includes a range of standalone devices, which were previously referred to as electronic assistive technologies, and is set to operate outside the home by utilising the mobile networks. It might also embrace Personal Electronic Assistants (PEAs) to provide remote care services as a natural support for monitoring. This paper considers the business case for telecare services to transform community care, giving older and vulnerable people more independence to improve their well-being in a cost-effective manner, as well as the need for integration of health, social care and housing-based remote and prevention services.

Introduction

The introduction of grants for preventive technology applications in England, Scotland and Wales in 2006 led to a rush to introduce telecare services using the established service model [1]. This exposed vast differences in the level of preparations and in the ambitions of local authorities. Organisations that maintained responsibility for the provision or monitoring of social alarm system were well-placed to build on this platform and to use smart sensors to manage the risks to independence in the way shown in Figure 1.

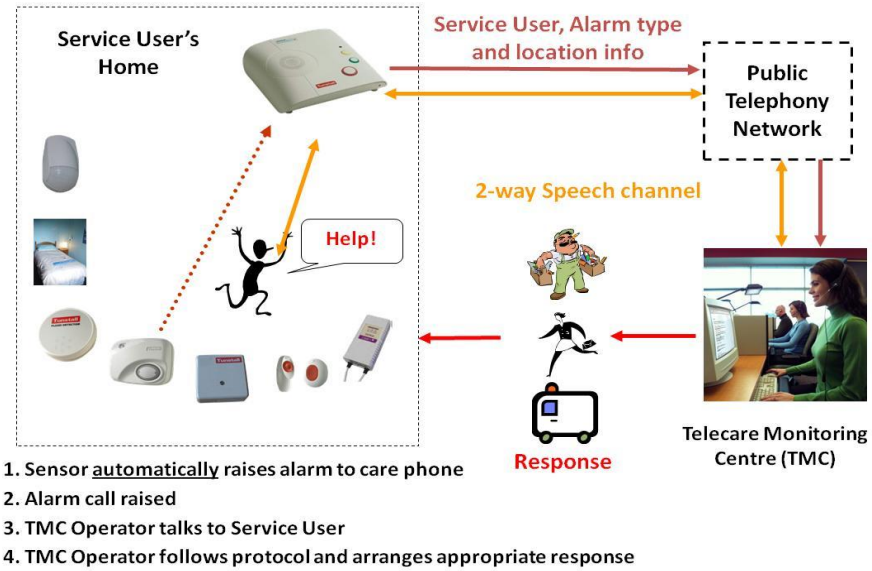

Figure 1: Representation of Telecare Service Providing an Emergency Response

Local authorities (especially the English shire counties) that had not developed a relationship with organisations that could provide the expertise in prescribing, installing, monitoring and responding to telecare alarms struggled to position telecare services within their community support portfolios. Consequently, the uptake of telecare services was often delayed and the quality extremely variable. They became the commissioners who had to learn how to specify the elements of the service that they wanted. By today, they have learnt about the potential and limitations of existing technologies and are often at the front of moves to extend service provision into new preventive applications covering a wider range of social and medical care needs.

Local Vision and Service Commissioning

Telecare is the use of information and telecommunication technologies, together with appropriate support mechanisms, to provide *additional* opportunities to help vulnerable and at-risk individuals to continue to live independently in their own home or in assisted living accommodation. It can help to achieve this by helping people to exercise self-care, by managing identified risks, and by instigating appropriate health and social care-based interventions according to need. Importantly, telecare is available *on a continuous basis* enabling a 'safety-net' approach to independent living by helping to support individuals even when family members, informal carers or conventional home care or NHS services are not present. It follows that telecare could play a major role in the modernisation of social care services and its integration with many NHS functions , and the challenge is to use telecare and its technologies to transform the system along with people's expectations.

Figure 2 illustrates the key aspects to consider when planning, commissioning or delivering a telecare service. A telecare strategy is often used to define the overall vision and objectives of the service normally in relation to local needs and priorities. A *service specification* can then be used to define *how* the service will be implemented and to specify the required *level of performance* and *quality of service* it will be required to provide.

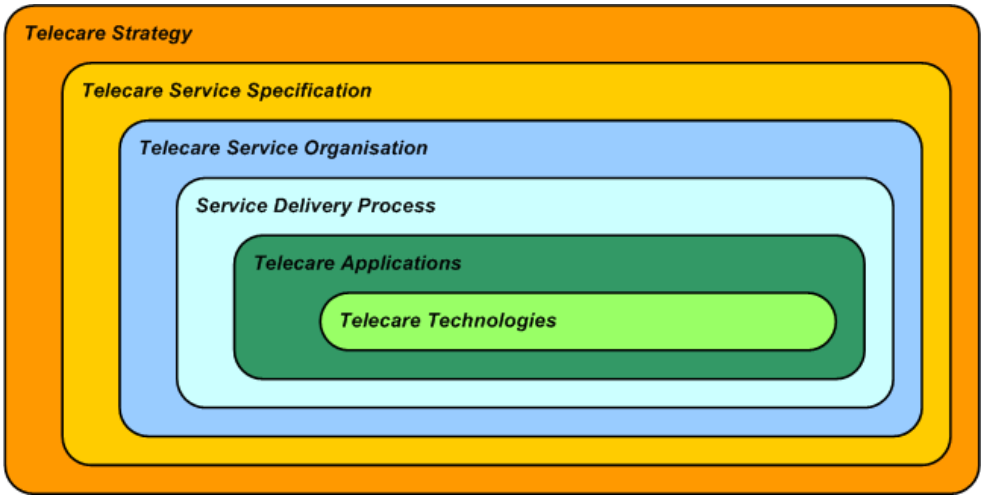

Figure 2: The key aspects of delivering telecare.

In practice, effective telecare needs to be organised as part of an *integrated service* incorporating a robust *service delivery process* that is geared towards a common goal of providing the right *telecare applications* (using the most appropriate *telecare technologies*) to the *right people* at the *right time*. The structure and governance of a service will vary between service providers. Many services

continue to be run by local authorities, but many are delivered by housing associations or by private providers. Some local authorities provide all of the functions associated with a telecare service in-house; others may outsource elements to third-party providers. However, irrespective of how the service is organised, the processes involved in delivering a telecare service are common as are many of the applications and technologies in use. Irrespective of who is commissioned to deliver the various components of a telecare service, the *key processes* that need to be undertaken are always the same, as shown in Figure 3. This is an extended "Referral to Review" model.

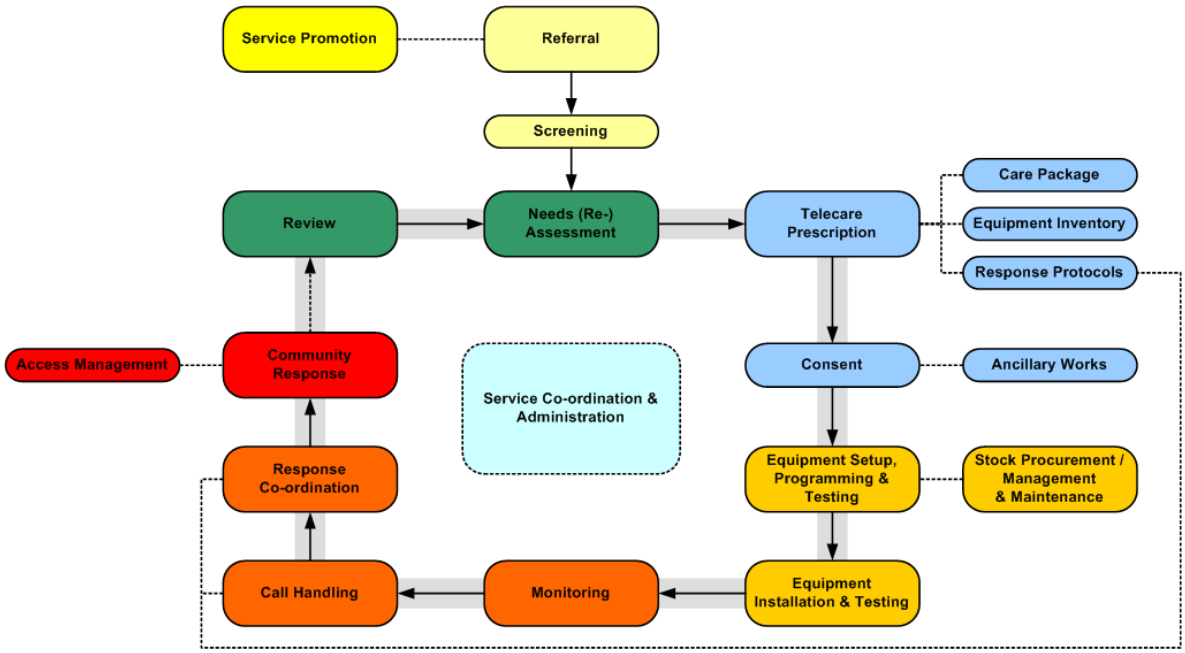

Figure 3. A typical telecare service delivery process.

Role of Equipment in Transformation Process

Assistive technologies are designed to enable their users to live more independently [2]. They can belong to 3 standard classes:

(i) Fixed devices or systems – these are adaptations to the local environment to enable the user to perform activities of daily living without help. Examples include grab rail, ramps, level access showers and stair lifts; they are generally large mechanical or electromechanical items that take time to install and which can be expensive

(ii) Portable devices – which are aids to daily living; they are low cost and small enough to be carried around at all times and sold over the counter. Examples are walking sticks and frames, special cutlery and devices to make it easier to turn handles.

(iii) Sophisticated electronic controllers – these are bespoke system that compensate for a major deficit such as profound physical disability by empowering the use to control their environment by operating electrical appliances, switches and valves, and by creating speech. They cost several thousand pounds and need expensive and reliable maintenance contracts.

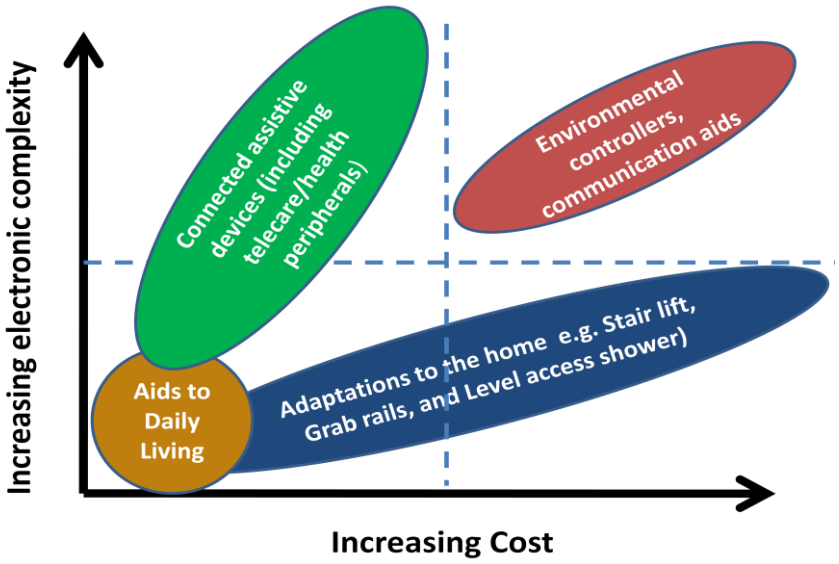

Figure 4: Cost-Complexity Profiles of Different Forms of Assistive Technology.

To the above should be added a fourth class product – namely, ***connected assistive devices*** including telecare/health sensors and peripherals. Figure 4 shows how these combine electronic and computing complexity at relatively low cost [3]. This makes them ideal to support an increasing range of older people with cognitive or physical problems , often as a result of having one or more Long Term Conditions such as arthritis, depression or diabetes.

In order to support a transformation and modernisation agenda for which both equipment and telecare will play an important role, a role needs to be developed for all forms of Assistive Technology that might form part of a support package. Indeed, a service user who has been given a personal or individual budget will be expected to choose the equipment and telecare option in place of a standard package of support based on interventions by formal carers. The Retail Model for Community Equipment can support this idea by giving everyone access to a wide range of equipment that could be used with a prescription, or which could be used through a direct sale. Telecare devices and services would, quite naturally, sit in this equipment demonstration area and could be available for sale to the public.

Telecare Service Providers

Self directed support using telecare will work only if there are services available to meet the needs of the community. Current providers have an established user-base consisting of 3 main groups:

- Older people in sheltered housing who have a community or social alarm system installed as part of their tenancy agreement, and paid for as part of their rent – their needs are generally low, and alarms tend to be handled by scheme managers during the working week;
- Self-referrers – these are people who usually live on their own and who have faced some sort of crisis after which time they (or their families) realised that they would all be less anxious if they had a telephone link to a 24 hour monitoring centre. They are usually older than the tenants of sheltered housing, and some may have significant needs but may not be eligible for community services. They are self-funding; and

- Telecare customers – they will be the people (and their carers) who receive a service following an assessment of need by a social worker, or by a professional from a partner organisation. Their service will be commissioned by the local authority.

In the future, service providers will need to consider significant changes in their business plans as a result of technical innovation and market forces:

Supporting People funding, which subsidises tenants of Registered Social Landlords in paying for their alarm and associated services, is under extreme pressure, forcing reductions in the level of charges that monitoring centres can levy. Telecare Service Providers who rely on this funding could see income drop by 50% in 2011 and beyond.

Personal Budgets, which will be available to increasing numbers of vulnerable people, will allow people to exercise choice and to look for best value, leading to intense competition amongst service providers. Personal health budgets for many who are suffering from long term conditions will increase demand which supports the monitoring of vital signs and the support that may be provided through telecoaching and other forms of service delivery.

Access to New Technology, will open up opportunities for mobile devices to replace panic pendants and downloadable applications for smart phones offering a low-cost means of monitoring physiological and lifestyle functions with sensors carried on or in the body. In the home, there will be a general digital convergence which allows set-top boxes to become the hub for home sensors, increasingly built into items of furniture, and control technologies that link with smart meters. The television will offer entertainment using broadcast and recorded programmes but will also be used as a ubiquitous means of displaying advice and information from a monitoring centre or from the Internet. Built-in or external cameras will facilitate video teleconferencing and monitoring. The expertise required by service providers to prescribe, install, train, maintain and operate this equipment, and to ensure seamless integration with primary care and with out-of-hours and emergency services is considerable, and generally unavailable through existing service providers

<u>The Proposed Models</u>

The differences between community alarm monitoring systems designed to meet the needs of landlords and their tenants, and those of advanced telecare/health that can provide support to people across the spectrum of needs, are likely to become so great that specific groups may emerge.

1. ***The housing model*** - this will be a local registered social landlord who provides monitoring services for his own tenants, but also for other RSLs in the area, and elsewhere in the country. They may offer a small range of telecare services to private individuals, and will therefore have their own installation and response services. Expertise may be developed in niche areas perhaps catering for particular ethnic groups or to people sharing a condition. It does, however, encourage the development of "community support" organisations that can operate locally to extend the influence of the monitoring centre. Social enterprises and the voluntary sector may be very influential.
2. ***The teleservices model*** – this will be regional and will offer partnership with social services and with GP commissioning groups and hospitals. It will offer the highest standard of traditional support and will be regulated through appropriate UK and European standards.

Some will attempt to reduce costs through the adoption of a single monitoring centre while others will use a hub and spoke arrangement that uses existing local centres to provide the platform for local organisation and delivery that will allow different priorities and initiatives to be developed to support the different requirements of populations in different areas.

3. ***The hybrid private/housing model*** - this will be run either by a large social landlord which has properties across the country, or by a private organisation with national or international links. These organisations will become the competitors to both the smaller centres and to the regional centres, often using local centre resources for delivering services (such as home surveys, installation and emergency non-medical response) more widely. In order to succeed, they must be more cost-effective than their regional counterparts whilst offering access to the same range of high quality tele-services.

In each case, the relative success of organisations following each model will be dependent on their ability to market services simultaneously to private pay individuals (who are looking for an individual service) and to commissioners who wish to support larger groups. As the effects of the White Paper [4] on the future of the NHS become clearer, commissioners will need to factor in teleservices to ensure that they reach targets relevant to delayed transfers of care, number of unscheduled hospital admissions, number of hospital readmissions and the role out of prevention strategies including smoking cessation, obesity reduction, and increased levels of activity and exercise. The direction of travel in the UK's devolved nations (Scotland, Wales and Northern Ireland) may be broadly similar but may be accelerated because of the smaller number of existing service providers, and because the respective governments may be more prepared to issue new frameworks or guidance for future service delivery.

In addition to monitoring, the availability of appropriate response mechanisms will be essential. The existing emergency and GP services may not be able to cope with the additional demands posed by an ageing population, especially if they are equipped with systems that can automatically detect problems. This will demand more efficient response mechanisms, some of which will involve the formation of local response teams (including First Response volunteers) that are capable of dealing with the type of emergencies that the equipment will detect. This includes inflatable hoists to lift people who have fallen but, despite having no injuries, are unable to get up without help, but also automatic defibrillators to deal with heart attacks as first responders, and some medication to cope with other medical situations. The appropriate training of such staff members will be critical to the success of these teams.

Many of the emergency and routine care and support situations described above could be dealt with by smart personal electronic assistants. Existing devices are proving useful in performing basic household tasks such as cleaning the floor but are increasingly becoming involving in the support of rehabilitation. They have robotic arms and, when exoskeleton features and camera vision are included, they will be capable of responding to many of the situations where human support is currently needed. They will have the physical strength and stability to take the strain when increasingly obese older people need help to get up out of bed and to get dressed or undressed. When activity monitoring detects a problem situation, these devices will be capable of turning of water, gas or electricity supplies and of opening doors and providing advice to the occupants on the safest way to proceed.

Conclusions

The technologies that are relevant to health and social care are maturing quickly as the communications infrastructure develops. This enables ubiquitous platforms such as the set-top box for the TV, and the smart mobile phone, to provide access to remote care and well-being services both inside the house and when people are on the move. Their widespread adoption will drive telecare services away from the old community alarm model and towards a more specialist provision based on larger monitoring centres where there is adequate technical expertise and support, perhaps in conjunction with smaller local centres that organise assessments, surveys, reviews and emergency response operations.

References

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