

ESSENCE SUMMARY 1

# Telecare for older people: Economic evidence

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# BACKGROUND

More people in the UK are living longer, but many are living with one or more long-term conditions, and for the majority of them, advancing age brings complex needs. Technology could potentially promote independence, support the individual to stay at home as they age and live well and safely,

and reduce negative outcomes on the carers. Local authorities are keen to promote such objectives and, despite funding cuts, there has been considerable investment recently in developing and evaluating assistive technologies (including telecare) for older people.

## KEY POINTS

- Telecare is a form of assistive technology that is available in different packages according to the wide range of products featured.
- There is great policy interest in the potential of telecare to improve outcomes, including functional independence, psychological and quality of life, as well as carer outcomes.
- There is also policy interest in whether wider use of telecare could reduce or contain use of other services and costs.
- The evidence suggests that telecare, as deployed in England at the present time, does not deliver the outcomes of effectiveness and cost-effectiveness that everyone might have wanted.
- Having said this, telecare is a tool. Whether or not it is cost-effective will depend on how it is used, and in what circumstances.
- More research is needed to evaluate technologies in use, strengthen workforce training and share learning across settings.

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## CONTEXT

Assistive technology refers to assistive, adaptive and rehabilitative devices for people with disabilities or age-related needs. Simple assistive technologies may include ramps, rails and bath equipment. Advanced assistive technologies may include telemedicine via video-link, health 'apps', and robotic devices.

Telecare, also sometimes referred to as 'telemonitoring' or 'remote care', is one example of an assistive technology. It can be viewed as a 'preventive' intervention as there is some evidence to say that it can delay dependence, promote 'independence' and enhance quality of life (1,2,3). It is also been suggested as a potentially cost-effective way to deliver social care (4). This means that telecare technologies may be able to improve a person's independence, ability to function as

part of the community or their quality of life, while using resources in an efficient way.

There is still debate around technology, partly driven by continuing technological innovation, and it can be challenging to get the appropriate technology for the individual providing the support they need. Local authorities and service providers are focused on delivery of first-, second- and third-generation telecare technologies (see below), but there is also emerging work around using everyday technologies to support people: for example, special apps for mobile phones, and connectivity using 'internet of things' technology that is starting to appear on the horizon. There are no specific good practice guides in the UK for these technologies in health and care, and they are not on the radar of local authorities, yet.

## WHAT IS TELECARE?

Telecare is a type of assistive technology that may be identified in various ways, including smart homes, lifestyle monitoring, ADL telemonitoring (5), assisted living technologies, ageing in place technologies (6,7) and gerontechnology (8). It is sometimes difficult to distinguish telecare from technologies specifically targeting health, and we have been inclusive in our comments here.

Telecare technology may be classified in terms of three 'generations' (9).

- **First-generation:** These devices include a telephone unit and a pendant alarm with a button for seeking help. A monitoring centre can receive an alert, identify the user and then contact the user via the telephone unit. The device will also alert the individual's carer. The terms 'social alarm', 'community alarm', and

'personal emergency response system' describe this generation.

- **Second-generation:** These devices include automatic, passive alarm/sensor systems (e.g. smoke alarms, bed alarms, flood detectors) added to the telephone unit. The alarms/sensors can be triggered automatically and send alerts to the monitoring centre.
- **Third-generation:** These devices include automatic, passive alarms/sensors in the home to monitor users' patterns of activity. The devices can recognise and act upon any unusual changes over time. This generation is also known as 'lifestyle monitoring' telecare (10). There is growing discussion of personal care robots, but no evidence yet (11).

## IS TELECARE EFFECTIVE?

**Health and social care utilisation:** The Whole Systems Demonstrator Telecare trial (12) studied second-generation technology. (The trial also had a telehealth trial 'arm', but given the focus of this summary the evidence presented here will refer

only to the telecare trial 'arm' only.) The study involved a large number of older people who either received second-generation telecare in addition to their usual health and social care (the intervention group), or (for those in the control

group) continued to receive their usual care. The study did not show that the use of telecare devices led to reductions in hospital admissions. The proportion of the telecare group that experienced admissions over 12 months was slightly smaller than in the control group (difference of 2.4%, 46.8% vs. 49.2% respectively), but this difference was not statistically significant. There were also no significant differences in other health utilisation measures including GP visits and emergency department visits. In the same trial (12,13), the proportion of older people who moved to a care home was small (3.1% of intervention and 3.2% of control participants) and did not differ between the groups.

**Functional independence:** Reeder et al (2013) (6) conducted a systematic review of health smart homes and home-based consumer health technologies literature, finding three studies (14,15,16). The technologies covered by the review involved an activity-sensing component accompanied by medication reminders, bed occupancy, fall-detection and other helpful aids. The studies they reviewed demonstrated support for improvements in the independence of older adults.

**Psychological and health-related quality of life outcomes:** The Whole Systems Demonstrator Telecare trial (reporting on second-generation technology) looked at self-reported outcomes (17). It found that the intervention mitigated decline in mental health-related quality of life (as measured by the 12-Item Short Form Survey mental component scores). However, the size of

this effect was small. There was no difference over the 12-month research period between the telecare and control groups in terms of change in general health-related quality of life (as measured by the Euro-QOL 5-Dimension 3-Level tool).

**Carer outcomes:** A systematic review (18) looked at the effects of telecare on carers. The review included evaluations that were heterogeneous insofar as they investigated diverse generations of telecare technology. The review produced evidence that telecare could have a positive effect in alleviating carer stress and strain. However, there was no evidence of benefit on general quality of life. The review produced inconclusive findings in relation to the impact of telecare on 'care' time and family relationships. Overall, Most the evidence does not show that use of telecare improves the well-being or functioning of carers. The research evidence on impacts on carers is not very good (19).

A sub-study within the Whole Systems Demonstrator trial examined the impacts of second-generation telecare on carers, including carer strain. One argument that has been made is that telecare may reduce carer strain by reducing worry and the pressures they experience. However, the sub-study found that telecare did not have an impact on carer burden. Nonetheless, the findings suggested a small effect of telecare in maintaining carers' mental health quality of life over time. In addition, mental health-related quality of life showed a small decline in those not receiving telecare. These findings suggested that telecare may have the potential to limit reductions in carers' mental health quality of life.

## IS TELECARE COST-EFFECTIVE?

Graybill et al (2014)<sup>7</sup> conducted a review of cost, cost-minimization and cost-effectiveness studies of assistive technologies that aim to enable older people to grow old in their own homes (i.e. age in place). It covered all three generations of telecare technology. The reviewers suggested that assistive technologies may reduce service-related costs in some cases. However, they also noted that the studies had poor methodological quality. A variety of different individual costs and

outcomes were reported across studies, making it hard to draw general conclusions. Ultimately, the review suggested an absence of robust evidence for the cost-effectiveness or cost-benefit of using assistive technologies and telecare.

The Whole Systems Demonstrator Telecare trial examined the costs incurred by the health and social care sectors (for second-generation telecare technology) (12,13). The mean annual

cost of support and equipment for these participants was estimated at £791 (at 2009–10 price levels). In the main analyses, costs for the intervention group were £1,014 higher than those for the controls. However, results suggested that there was a very small outcome gain (based on health-related quality of life and measured in terms of quality-adjusted life years) for the telecare group. The findings suggest that telecare as

deployed within the Whole Systems Demonstrator Telecare trial is unlikely to be cost-effective even if the cost of acquiring the telecare equipment had been lower (which might happen as telecare is scaled up).

Whether telecare is a 'good thing' is quite another matter (not covered by this case summary) and relevant literature considering the ethical issues of using it can be found somewhere else (19).

## WHAT IS THE QUALITY OF EVIDENCE ON TELECARE?

Much of the current evidence base in the UK rests on the findings of the Whole Systems Demonstrator Telecare trial and questionnaire studies for second-generation telecare technology. (This also remains the largest trial of telecare internationally, and has the advantage of having been funded by government, with the telecare technology provided independently of industry.) Though a large and rigorously designed study, the Whole Systems Demonstrator trial was limited in three key ways (20). Firstly, it did not take into account pre-existing good practice in the three local authorities where data were collected. Secondly, those local authorities were able to deploy telecare as they saw fit, without making sure that telecare was properly matched to

identified needs. This would require availability of customisable technology and very high levels of practitioner skill that were not available.

A third limitation was that the 12-month study duration may have been too short: a longer period may have been needed to detect the full impact of telecare on care home admissions and other consequences (12). The trial also had difficulty in recruiting, and criteria for recruitment may have meant that a proportion of those who were recruited were unlikely to be people for whom telecare would have made much difference over a 12-month period. Any potential beneficial effects on carers that may have resulted from the introduction of the telecare intervention were excluded from the cost-effectiveness analysis.

## HOW IS TELECARE IMPLEMENTED?

According to the Whole Systems Demonstrator trial, the telecare (offered in England now) does not deliver the outcomes of effectiveness and cost-effectiveness that everyone might have wanted (12,13).

After publication of the findings, various stakeholder groups reported a range of reactions:

- Central government felt that the evidence was in conflict with ongoing policies supporting the provision of telecare;
- Local authorities felt they invested large amounts of public money to support provision of a service that was no better than traditional forms of care, in a context where they were facing recurrent budgets cuts;

- Telecare manufacturers felt that the loss of confidence in telecare would compromise their business in the UK;
- Service users and carers were disappointed that telecare services appeared to have few advantages over traditional care and support.

This is the background context in which a research team from Kings College London carried out the UTOPIA Project (Using Telecare for Older People In Adult social care) (20). A key component of this important study was a survey of local authority telecare managers between November 2016 and January 2017. The researchers' goal was to find out how local authority adult social care departments in England use telecare to support older people.

The survey was structured to follow the same sequence of events as might occur when telecare was being deployed: assessment, care-plan, implementation, review, installation, responding to alarm signals, removal, person-centeredness of telecare assessments and services, training, and advice and information. Questions about evidence, strategic intentions and priorities, cost effectiveness were also included.

The findings suggested that telecare may be seen by many as a way for local authorities to save money, and as a substitute for personal care. It may be considered a successful instrument to enable people to live independently and safely. But its full potential is yet to be exploited, for example, with application to address social isolation and loneliness. (Note that a separate case summary reports on signposting and navigation services for older people as alternative ways to help address social isolation and loneliness and it can be accessed from here.) In addition, different professional groups may not have the full set of skills and experience needed to

optimise telecare use. More investment in training might be needed to make sure that telecare assessors have the skills to enable users to take full advantage of telecare.

It may be the way in which telecare 'is used', rather than telecare 'itself', that will determine how effective it is. If so, changes to the way it is currently used may be needed to get the best out of it. For example, Greenhalgh and colleagues (21) suggested that telecare (together with other assistive technologies) should be developed to take into account how their use and performance may need to adapt to different environments that make them 'work' (rather than looking at the device per se). Telecare should be developed in collaboration with the end-users and designed to meet the individuals' unique needs and preferences. Rather than acting as a stand-alone piece of technology, the telecare device should be seen as one component to be combined by the users with other devices and provide them with a unique ad hoc solution for the person.

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## OTHER INFORMATION

- Detailed information from the Whole System Demonstrator project on telecare outcomes and cost effectiveness can be found here: Steventon A et al (2013) (12); Henderson C et al (2014) (13); and Hirani et al (2013) (17).
- More information on the comprehensive evaluation of telecare in use in social care conducted by King's College London is available here: UTOPIA project – Using Telecare for Older People In Adult social care (20).
- Current NICE guidance (22) reports on the components of telecare currently used as part of a home care package for older people, and their impact.
- ATTILA (Assistive Technology and Telecare to maintain Independent Living At Home for People with Dementia) (23–24) is an ongoing study aimed at evaluating the cost-effectiveness of assistive technology and telecare interventions in the management of risk and maintenance of independence in people with dementia living in their own homes.
- Telecare Learning and Improvement Network is the professional network supporting local service redesign through the application of telecare (alongside telehealth) to aid the delivery of housing, health, social care and support services for older and vulnerable people. Details can be found at [www.telecarelin.org.uk](http://www.telecarelin.org.uk).
- The National Institute for Health Research (NIHR) published a summary review of recently completed studies (funded by NIHR and other government funders) related to the use of assistive technology (including telecare) to help older people live independently at home. A number of projects are highlighted which should be of particular interest to those delivering, planning or using adult health and social care services. Details can be found at [www.dc.nihr.ac.uk/themed-reviews/research-on-assistive-technology.htm](http://www.dc.nihr.ac.uk/themed-reviews/research-on-assistive-technology.htm)

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