Cambridge Centre for Housing & Planning Research

Housing Digital Built Britain Network

Position paper 1: How can digital tools and technologies support independent living for older people, now and into the future?

Kathryn Muir
Dr Gemma Burgess

July 2018

UNIVERSITY OF CAMBRIDGE

Cambridge Centre for Housing & Planning Research

Contents

Contact:
Dr Gemma Burgess
glb36@cam.ac.uk
01223 764547
Cambridge Centre for Housing and Planning Research
Department of Land Economy, University of Cambridge
19 Silver Street, Cambridge CB3 9EP
www.cchpr.landecon.cam.ac.uk

This project was funded by the Centre for Digital Built Britain.

cdbb
Centre for Digital Built Britain

Cambridge Centre for Housing & Planning Research

1. The question

How can digital tools and technologies support independent living for older people, now and into the future?

2. What are the key issues and why is this important?

The world's population is ageing, with the number of people aged 60 years and above expected to more than double by 2050 - rising from 962 million globally in 2017 to 2.1 billion in 2050 (United Nations, 2017). The increase in the proportion of older people has been described as "one of the most significant social transformations of the twenty-first century" (United Nations, 2015, p.1), with huge implications for the health and social care budgets of governments around the world. It has been suggested that technological developments can help meet the challenge of aging populations.

One application of technology, increasingly being adopted, is products and services which assist older people to live independently in their own homes. A wide range of technological solutions are now available which can assist with older people's health and care needs, and also help them remain connected to their family, friends and the wider community – therefore addressing issues of loneliness and social isolation that are common amongst the older population, particularly those who live alone (Davidson and Rossall, 2015). These technological solutions may allow older people to 'age in place' rather than having to move to specialist housing or residential care.

There are several potential benefits of enabling older people to 'age in place' in this way. Previous research has found that most older people prefer to grow old within their own home (Gitlin, 2003; Sixsmith and Sixsmith, 2008), because it provides them with a sense of independence, security, privacy and comfort, which may be beneficial for their wellbeing and quality of life. There are also financial benefits of enabling older people to remain in their own homes, as this solution is far more cost-effective than funding residential or nursing care (Tinker et al, 1999). For these reasons, ageing in place has been a major thrust of UK policy on older people and housing (Sixsmith and Sixsmith, 2008).

However, there are significant barriers to older people remaining in their own homes. Almost half of adults over the state pension age are disabled, the most common disabilities relating to mobility and lifting and carrying. Most mainstream housing stock is not accessible - a

recent review found that only 5% of homes had the four key features required for access: level access, flush thresholds, sufficiently wide doors and circulation space, and entrance level toilets (Department for Communities and Local Government, 2014). Financial assistance such as the Disabled Facilities Grant administered by local councils can pay for adjustments to make homes accessible. However, in some properties adjustments are not feasible. Also, the reduction in home ownership rates may create a challenge to adjusting homes because rented accommodation appears to be less likely to be adapted (Torrington, 2014).

3. What does current research and evidence tell us?

3.1 What digital tools and technologies are currently available to support independent living for older people?

3.1.1. Telecare

Telecare is the term for technology used to help older people live independently. Telecare has its origins in pull-cord systems introduced in sheltered accommodation schemes in the 1960s (Fisk, 2003, cited in Hamblin, 2017). This has led to the development of a range of user-activated devices such as push buttons and pendants: in an emergency, the user pushes a button which alerts a monitoring service, who then contacts a relative or informal care giver. These technologies are widely used in the UK; pendant alarms are used by approximately 1.5 million people[1] (Steventon et al., 2013).

These types of product are now referred to as 'first generation telecare'. The significant limitation of these 'first generation' products is that they require the user to take action in order to create a response. Another drawback of pendants is that older people often take them off, meaning they are out of reach in an emergency (Taylor and Agamanolis, 2010). 'Second and third generation telecare' is now available, which consists of devices with sensors that gather and transfer information automatically to monitoring centres, which then prompt attention from carers if needed. 'Second generation' refers to devices which automatically detect certain alert conditions (such as a fall). 'Third generation' refers to systems which include lifestyle monitoring, meaning sensor-based technologies – sometimes called Ambient Assisted Living (AAL) technologies – collect data on patterns of behaviour and analyse it to monitor wellbeing and assess the need for help and support. Some also offer interaction through video, and support groups.

[1] Figure includes people of all ages, not only older people

The industry body for technology enabled care services, TEC Services Association, give examples of second and third generation Telecare products, summarised in the table below (TEC Services Association, no date). These are based around a base unit which is connected to the telephone landline and power socket. Sensors, buttons or alerting devices communicate with the control box by radio signals. If the sensors detect certain conditions, they will alert the monitoring centre.

Telecare product	**Automatically alerts monitoring centre if detect these conditions**
Activity monitors	No movement in a room for a period of time. Person not entering a certain room regularly (e.g. if not entering kitchen regularly, as may indicate the person is not eating).
Bed or chair occupancy sensors	Person has got up and not returned within a certain (agreed) period of time
Carbon monoxide monitor	Carbon monoxide at dangerous level
Epilepsy sensor	Vital signs (heart rate and breathing patterns) indicate a seizure
Fall detectors	A serious fall – detected by sudden movement or change in position (one type of detector is smart shoes which can detect a fall)
Smoke alarm	Smoke
Flood detector	Water (overflow or leak)
Gas shut off valves	Gas (will also physically cut the gas supply)
Incontinence sensors	Dampness in bed
Medication management units	Tablets not removed at the pre-set time they are dispensed.
Property exit sensors	Person leaves the property and does not return within a pre-set period of time
Temperature sensors	Extremes of temperature

3.1.2. Telehealth

Many older people are living with chronic conditions like hypertension, diabetes, osteoarthritis and heart disease. Telehealth is where electronic sensors or equipment that monitors vital health signs remotely are placed in service user's home. These readings are automatically transmitted to an appropriately trained person who can monitor the health vital signs and make decisions about potential interventions in real time, without the patient needing to attend a clinic. This technology could enable huge financial savings for the health

service, as well as offering peace of mind for older people. The TEC Services Association give a list of examples of telehealth products (TEC Services Association, no date):

Telehealth product	Measures and transmits to monitoring centre
Blood pressure monitor	Blood pressure and heart rate
Pulse oximeter	Oxygen saturation levels
Glucose meter	Blood glucose level
Body weight scales	Weight measurements

mHealth

Fitness and health/care apps available for use on smartphones and tablets and are often referred to as mobile health or mHealth. For example, the NHS Apps Library was launched in April 2017. It provides information about digital tools to help people manage and improve their health. Some of these Apps are particularly relevant to older people with ongoing health problems. The example given below is used to self-manage COPD, diabetes or high blood pressure.

myCOPD: Designed to help users manage their COPD independently. Users have access to a dashboard of self-care tools and educational resources, including inhaler videos, breathing exercises, medication diary and symptom tracker. Clinicians can also use the app to check in with their patients remotely, track their condition, update medication and improve their overall care.

My Health Fabric: Users with long-term health conditions like diabetes or high blood pressure can access a self-help plan, and can also keep a health diary that tracks healthcare measurements like blood pressure readings, glucose levels and oxygen saturation.

One of the apps is designed to help family, friends and carers to organise care and support for an older person, which could help them stay in their own home:

Rally Round**:** Enables informal carers, relatives or friends of older people to create private online support groups so they can get support from each other. Features like the to-do list, email and text notifications, and the noticeboard keep everyone in the loop.

3.1.3 Technology to prevent social isolation

There are various internet-based technologies which could help prevent loneliness amongst older people, including video-calling (e.g. Skype) and social networking (e.g. Facebook, Twitter and WhatsApp, and also social networking sites designed specifically for older people). But many older people lack the skills and knowledge to use these technologies,

known as the 'grey digital divide' (Morris, 2007). Commenters have suggested that equipping older people with the skills to use the internet could combat loneliness and sustain social relations. Some examples of interventions which aim to do so are given below:

Good Things Foundation: This charity runs a 'Future Digital Inclusion' Programme funded by the Department for Education, and also ran a three year 'Widening Digital Participation' programme funded by NHS digital. Both programmes aim to increase digital skills. Many of the participants in both schemes were older people and those with dementia were a particular target group for the NHS Widening Participation project. (Good Foundation, no date).

Care Online: A two-year pilot project which introduced computers and the internet into the homes of 50 older and vulnerable volunteers (Green and Rossall, 2013)

3.2 Who uses these technologies at the moment?

3.2.1 Telecare

Telecare policy is built around a mixed economy: local authorities commission and oversee telecare services for people assessed as being in need and financially eligible; some people have this service fully funded by their local council or NHS trust, and others pay subsidised charges. A separate private market exists for people to privately purchase care and support services for the home. The telecare market in 2010 comprised 90 percent public and 10 percent private spending (Deloitte Centre for Health Solutions, 2012)

An analysis of the English Longitudinal Study of Ageing (ELSA) found that just over 2% of people aged 50 and over had a personal alarm and just over 4% had an alerting device fitted to their property (Lloyd, 2012). This research found that around half of personal alarm users, and 31 percent of alerting device users, pay for their alarms themselves or with the help of a family member. When studying the characteristics of who uses telecare, the study found that, on average:

- Telecare users were older than non-users
- Take-up is higher among women than men
- Take-up is lower among minority ethnic groups
- Net non-pension wealth is significantly lower among telecare users than non-users, this reflects tenure, with a low-rate of owner-occupation among alerting device users.

Mainstream telecare services are mostly limited to first-generation systems. Second and third generation systems are mostly used in pilot programmes and research activities, but some are now commercial available. For example:

Canary Care: offers packages of wireless sensors to be placed around the home, to track movement, temperature and door activity. Monitoring activity is sent to a personal online portal. The sensors are battery-powered and the hub uses mobile data to send the information.

Ross and Lloyd (2012) estimate that there are around 4.2 million potential users of telecare aged 50 and over, of whom 2.5 million live alone and could be considered a higher risk. They recommend that policy-makers should aim to boost the usage of telecare to at least double current prevalence, focusing on individuals living alone. They also found that certain groups appear to under-use telecare, therefore recommend policy-makers investigate whether and how social care policy and delivery is resulting in a bias in who uses telecare.

3.2.2 Telehealth

Telehealth services are comparatively under-developed in the UK. Clark and Goodwin (2010) estimate that there are only around 5,000 users, mostly participating in pilot studies. NHS England's *Technology Enabled Care Services (TECS) Evidence Database* (NHS England, 2014) lists 110 studies that have been completed in this area. However, these technologies have not yet been adopted at scale. NHS England's TECS programme (short for Technology Enabled Care Services) provides support and guidance for health and social care professionals on how to commission, procure, implement and evaluate these services (NHS England, no date) but there are barriers to adoption, which will be explored in section 4.5 below.

3.3 Are these technologies effective?

3.3.1 Telecare and Telehealth

A great deal of research has been conducted into the effectiveness of telecare and telehealth, and assessments of their effectiveness remain mixed. Many evaluations of individual schemes detail various benefits, including cost reductions and improved patient satisfaction. However, many of these studies are small and lack a control group. Comparison and generalisation are also problematic due to the differences in the studies, which vary in type of intervention, context (e.g. rural/urban location, level of deprivation) and design (e.g. nature of control group; variation in type of impact measures) (Goodwin and Royer, no date). The evidence from systematic reviews is also inconclusive, with some concluding that telecare and telehealth are beneficial and others finding no benefits (systematic reviews

listed in Coulter and Mearns, 2016, p.17).

From 2009 to 2011 the Department of Health funded a randomised controlled trial into telehealth and telecare known as the Whole System Demonstrator project. More than 6,000 participants were recruited from 238 general practices in three regions in England, including participants who had diabetes, chronic obstructive pulmonary disease (COPD) and/or heart failure (who were potential candidates for telehealth) and people with social care needs (who might be helped by telecare). Despite seemingly positive initial findings the study ultimately found no reduction in GP consultations or social care use and no evidence that these forms of remote care were cost-effective. There was a suggestion of a beneficial impact on quality of life for telecare users, but not for those using telehealth services. The study also found no evidence that this form of remote monitoring strengthened people's self-management capabilities (Coulter and Mearns, 2016).

Various plausible reasons have been put forward to explain the largely negative results of the Whole Systems Demonstrator trial, including with the design of the trial, the selection of sites, the top-down nature of its implementation and the relatively short intervention period. Therefore, NHS England is encouraging health care commissioners to consider investing in a variety of remote services. The information for commissioners includes guidance on measuring impact (NHS England, no date).

Following the Whole System Demonstrator project, Innovate UK funded the Dallas project (Diving deeper into Delivering Assisted Living Lifestyles at Scale). This project funded four consortia who ran innovation programmes from 2012 to 2015:

'Living it Up' wanted to empower over 50s to use technology to manage their health.

'More Independent' (Mi) set out to help citizens to take control of their health.

'Year Zero' looked to provide the tools for people to look after their health.

'i-Focus' targeted interoperability across the other three programmes.

Each of these "communities" had to keep six Cs at the core of their work – choice, control, connecting with community, contribution and collaboration. Unlike the Whole System Demonstrator project, there was no randomised control trial and the project was user focused.

3.3.2 IT interventions for social inclusion

Chen and Schulz (2016) carried out a systematic review of 25 publications measuring the impact of ICT interventions on reducing social isolation in the elderly. They concluded that ICT use was consistently found to positively affect social support, social connectedness, and social isolation, but the results for loneliness were inconclusive. ICT was found to alleviate the elderly's social isolation through four mechanisms: connecting to the outside world, gaining social support, engaging in activities of interests, and boosting self-confidence.

3.4 How might digital tools and technologies be used in the future to support independent living for older people?

3.4.1 Smart homes

'Smart homes' is a term used to describe homes which have embedded third generation telecare technologies which gather data on health and patterns of movement. There is very little research on this in Europe, but one example of a pilot project is given below:

Great Northern Haven (GNH) is a demonstration housing project in Ireland consisting of 16 purpose-built smart homes, equipped with a combination of sensor and interactive technology to support AAL for older people. Each apartment is equipped with ambient sensor and interactive technology including sensors to detect movement, contact sensors on doors/windows and electricity sensing, supporting monitoring of patterns of behaviour over long time periods and detection of deviations from normal patterns. Interactive technology includes physiological sensing (blood pressure and weight) as well as iPads and smart TVs to feedback information on home security, energy and wellbeing to residents.

The internet of things (IoT) is the name given to computing devices embedded in everyday objects that are interconnected via the internet. In the future many household appliances are going to become connected and interactive. These devices have the potential to assist older people in ways that may enable them to age in place. Some of this technology already exists, for example:

- Smart plugs can notify family members any time a device is turned on (e.g. The 3rings plug)
- Smart hearing aids can link to smart doorbells or smoke detectors, alerting the wearer of a visitor or of an emergency (e.g. Oticon Opn)
- Smart fridges can monitor food supplies and create automatic shopping lists, which can used to order items online though a touchscreen (e.g. Samsung)
- Smart ovens can be controlled by smart phone. They monitor temperature and duration, before switching off automatically after a certain amount of time (e.g. June Oven).

In the future, Internet of Things devices will also be able to speak to the individual living in the home to generate alerts and reminders about health behaviours. Options for the applications of this smart technology are going to expand in the future as the technology becomes more advanced. Currently most of this technology is expensive, but it is likely to become much more affordable in the coming years.

3.4.2 Augmented reality for social inclusion and participation

As the 'grey digital divide' closes, older people will have access to online resources that will enable them to participate more fully in society. Augmented reality services may facilitate virtual participation in family and social events, learning opportunities, work, or leisure activities such as the pursuit of hobbies or virtual tourism (Lewin et al., 2010). Teleworking services may allow older and disabled people to continue to contribute their skills to the economy and to society, and also enable greater job flexibility for potential informal carers who might otherwise struggle to combine a part-time job with responsibilities as a carer (ibid.)

3.4.3 Elder care robots (developed in Japan)

Japan has the oldest population of any country. People over the age of 65 make up more than a quarter of its total population of 127 million. By 2065 this is expected to rise to 40 percent. The Japanese government has introduced different initiatives to deal with the challenge of the aging population, including funding the development of robots to help with the provision of care. Robotic devices could help in the following areas: transferring patients from beds and wheelchairs; personal mobility; toiletry assistance; bathing assistance; monitoring; social interaction and therapy (Ries and Sugihara, 2017).

Some examples from Japan are given below. These have been designed for within formal care settings, but it is possible that they could have application in the home environment too:

- Resyone: a robotic device that transforms from a bed to an electric wheelchair, eliminating the need for multiple caregivers.
- HAL (Hybrid Assistive Limb): a robotic suit that detects muscle impulses to anticipate and support the user's body movements, designed to help the elderly with mobility or help care-givers lift patients.
- Paro: A robotic toy seal which can be petted to reduce anxiety, stress and depression

3.4.4 Ongoing research

There is ongoing research into the development of new digital technologies for older people. The Active and Assistive Living (AAL) Programme is a €700 million European initiative which funds cross-national projects focused on developing ICT solutions for active and healthy ageing.

3.5 Potential barriers and solutions

3.5.1 Ethical issues

It has been stated that the uptake of technology in the health services is slow because of issues of confidentiality and worries that information on patients could be accidentally or deliberately accessed. There are similar concerns about data security in telecare, as it involves confidential, identifiable information moving between service providers. There are also questions about whether informed consent is possible when the technology is being installed for people with cognitive impairments. The Social Care Institute for Excellence (Perry et. al, 2010) sets out guidelines for addressing these ethical issues around privacy and consent:

- Service providers should be clear about the purpose for which information generated from telecare is being collected
- Telecare users and their carers should be informed, prior to installation, about what information will be collected and how it will be used
- Data should be securely stored and transferred between agencies using industry good practice standards and agreed joint protocols.

The Social Care Institute for Excellence guidelines also outline that dependence on telecare may have negative impacts on individuals. Firstly, family and care professionals may overestimate the risk to which a person might be vulnerable, resulting in the telecare inhibiting their independence and potentially doing harm. Secondly, face-to-face forms of care may be reduced due to the presence of telecare, potentially making users more isolated. They state:

- Due to the potentially isolating effect of telecare, it should not be considered as an alternative to direct social care or informal support, unless this is the expressed wish of a person using the service who has full mental capacity
- Telecare should be combined with direct social care and informal support to maximise people's motivation and facilitate carer involvement in supporting social engagement.

The Social Care Institute for Excellence guidelines also express concerns about the lack of competition in the current UK telecare market, because many authorities have a contractual relationship with particular suppliers. Further, there is a possibility of differences in the range of equipment available to self-purchasers compared with local authority-funded clients, which they view as a threat to justice. They make the following recommendations to ensure a fair and equitable allocation of resources for telecare:

- Telecare should be seen as a mainstream option for all people with needs and should not be restricted to any particular groups.
- There is a need for high quality information and advice on telecare equipment and installation, independent of manufacturers and telecare service providers. This should enable self-funders and personal budget holders…to purchase appropriate telecare services to meet their needs.
- Manufacturers and telecare providers should work towards greater interoperability of equipment so that as much choice over telecare elements and packages are available to the people who need them, wherever they live.
- Telecare must be fully costed so that personal budgets reflect the real cost of telecare provision.
- Nationally, there should be an emphasis on competitive pricing and interoperability of equipment.

3.5.2 Funding

There is a lack of clarity in how to fund technologies, and also tensions due to different sources of funding for different things: telecare is funded largely from social care budgets, and telehealth from healthcare budgets. Paul Flynn, doctor and deputy chairman of the British Medical Association's Consultants Committee, states that although the telehealth technology may save money in the long term, the savings won't be realised for some time, making it difficult to justify investment: *"The NHS is often looking at very demanding targets, without the capacity to take a loss this year because of the future savings in a year to come*"(Hall, no date). Similarly, cuts to local government funding restrict the ability to invest in telecare technologies. Policy-makers should work with industry to align incentives and develop effective pricing models (Deloitte Centre for Health Solutions, 2012).

3.5.3 Fragmented local authority provision

In the UK, the telecare and telehealth market is highly fragmented, made up of over 80 players. Different local authorities commission different providers, so the type of telecare services received varies by locality. The number of people using telecare services also varies significantly between different local authority areas, for example Sheffield City Council reported having 12,015 people using telecare services in 2011/12, while Swindon Council

reported having just 75 users (Corbett-Nolan and Bullivant, 2012). The vast majority of local authorities have eligibility criteria or an assessment process for the provision of telecare services, but these processes are inconsistent across the country (ibid.).

For these technologies to be adopted at scale, health and social care providers and industry need to develop new ways of working together, based on partnerships and collaboration. An industry group called 3millionlives was established in 2012 aiming to support commissioners and providers in rolling out telecare and telehealth. In 2013 this group was incorporated into NHS England's Technology Enabled Care Services project. The aim is "*integrating these technologies into the NHS and wider health and social care services, so they become a mainstream service, not a side-line proposition*" (Cashman, 2013).

3.5.4 Organisational issues

Another potential issue with the implementation of telecare and telehealth is that professionals and organisations will be required to adjust to new ways of working. Changing work practices – supported through staff development and fostering an understanding of the benefits of changes – are key to implementing new technologies, particularly in telehealth (Giordano et al., 2011). The proactive involvement of providers, and carers in service redesign may help with the adjustment.

3.5.5 Lack of consumer market

Numerous products and services are already available that have the potential to support people to live independently for longer. However, these existing products and services have not been taken up at scale. This is arguably because innovation policy has had a supply-side focus. The Mi programme, one of the four Dallas projects funded by Innovate UK, aimed to boost the demand side by acting as a stimulus for the creation of a consumer market (Dawson, 2014). Their interim report suggests the following ways in which the consumer market agenda can be realised (ibid.):

- Conduct further market research into market categories, product pricing and affordability
- Support product development for more desirable products and services (tailored for different sub-sections of the market)
- Seek clarity and create certainty about who is entitled to funded technology through social care and state health provision (currently lack of clarity is influencing consumer decisions about making purchases)
- Develop the product to market chain: developing links between suppliers, retailers and consumers

- Explore the Business to Business sector: employers could purchase smart solutions (for self-care and enhancing healthy lifestyles) in bulk for their workforces, but this is currently under developed.

Co-production with older people, carers and care organisations in the design stage could make a big difference to uptake. Technologies should be customisable and adaptable to fit with how individuals live and manage their health issues, rather than expecting patients and their carers to conform to a standardised model (Coulter and Mearns, 2016). Industry also needs to work with social care providers to raise awareness of the technology.

3.5.6 Factors that will affect uptake by individual users

The following factors may influence individual's uptake and ongoing engagement with digital technologies (adapted from Curtis and Price, 2017 and Hamblin, 2017):

Perceived benefits: older people are more likely to engage if they can see personal benefit in doing so.

Timing of introduction: older people are more likely to engage if technology is introduced soon after diagnosis of a medical condition, or following a significant event such as hospital discharge.

Design features: The design of the product is an important factor. Co-design with older people can improve uptake of products. Older users prefer simple interfaces that are user-friendly. They dislike products that appear to label users as frail or disabled and may be less likely to use products if they are uncomfortable, excessively noisy, ugly or incongruent with their general appearance.

Understanding: if older people are unsure how to use a device they are likely to avoid using it. It is important that information given during installation is correct and complete.

Perceived trustworthiness: Older people are concerned about the nature of data that is collected by technologies. Explaining the purpose of the devices in person has been found to reduce user anxieties about this issue.

Practicalities: practical issues such as poor battery life or poor integration with users existing technology can prevent ongoing use. Proactivity in the design features and support service could mitigate against this, for example, devices automatically reminding users when to replace batteries or fast technical help response times when users identify problems).

Feedback on progress: Some interventions include behaviour change techniques that enable users to set individualised goals and encourage them to monitor their progress using diaries. They can therefore give positive feedback at regular intervals, encouraging ongoing use.

Support and peer networks: Some applications have online forums or chat rooms which provide peer support which can encourage use. With health products, support from healthcare professionals encourages their continued use.

Control over social care arrangements: older people are more likely to accept their devices or view them positively if they have some element of choice or control over their installation and their use.

4. What are the gaps in knowledge?

This rapid review of the literature has identified several areas in which further research is needed.

4.1 Evaluation of impact and benefits

The outcomes of research into the benefits of telehealth and telecare remains mixed. Further good quality research is needed into this area, to weigh up potential benefits (e.g. increased wellbeing, cost savings) against potential costs (e.g. dependency, increased isolation). Research should aim to identify which interventions work best for which people. A solid evidence base would give commissioners confidence to commission technology which is both appropriate and cost-effective.

4.2 Ethics and unintended consequences

Various potential ethical issues with telehealth and telecare were outlined in section 3.5.1 above. Research will need to be carried out in this area as the technology continues to develop and become more widespread, and the existing systems adapt around these developments. There are concerns that use of the technology may result in unintended consequences such as increased loneliness and isolation, and a decline in mental health – due to the reduction in face to face contact. Research should investigate this area.

4.3 Access and inequality

The fragmented nature of social care around the country means that telecare provision seems to be a 'postcode lottery' with services varying by geographic area. In particular, the four countries of the UK have taken very different directions in their provision of telecare.

Research is needed into the provision in different areas so best practice can be shared and, ideally, access can become more standardised across the country.

There is also a disparity in the technology available for self-funders versus social care recipients. Lack of awareness of the technology or how to access it may mean that there is considerable inequality in the services received by different older people. Further research is needed in this area.

4.4 Consumer market

Very little is known about the private economy in telecare, how many individuals privately purchase telecare services, what needs they have and whether these needs are being met. More research is required on which products are most desirable and how telecare can reach potential users and beneficiaries.

4.5 Attitudes and acceptance

More research is needed into the attitudes of older people to different types of technology. Attitudes vary significantly by country - for example, it has been reported that there are cultural differences between the UK and Japan which make it difficult to predict whether care robots will be as widely accepted here as they are there. It is also likely that different cohorts of older people in the future will have different expectations and desires from technology in their home. Further research is needed in this area to anticipate future demand.

4.6 Integration

More research is needed into how digital technologies will fit in with existing services and ways of working, including public service delivery. Research will also be needed into the application of this technology into homes in different circumstances. For example, a greater number of older people are expected to age in the private rented sector and it is not known how applicable the technology is to this group.

4.7 Work and employment

If these technologies become widespread it is likely that roles in the care sector are going to change dramatically. Further research is needed into the impact on this area, and how this sector should adapt.

4.8 Governance and regulation

Management of the digital technologies described in this report requires robust governance and regulation, covering issues such as who owns the data collected and who has access to this data. Current telecare products should comply with the following guidance (Croner-i, no date):

- Using Surveillance — Information for Providers of Health and Social Care on Using Surveillance to Monitor Services, Care Quality Commission.
- NG21: Home Care: Delivering Personal Care and Practical Support to Older People Living in Their Own Homes, National Institute for Health and Care Excellence.
- Health and Social Care Act 2008 (Regulated Activities) Regulations 2014.

Standards in the telecare sector are established by the TSA, the industry body for Technology Enabled Care (TEC), who provide a quality standards framework and a code of conduct for suppliers. As new types of technology emerge, research will need to be conducted into whether the existing guidance is sufficient and what sort of regulation is required to best safeguard older people.

4.9 Poverty and poor quality housing

Older people are disproportionately likely to live in poor quality housing, particularly when they live in socially disadvantaged areas. Research undertaken on behalf of Public Health England (Garrett and Burris, 2015) found that one fifth of all older household groups lived in a home that failed to meet the Decent Homes standard in 2012. The main reason for failure was that homes contained at least one Category 1 hazard under the HHSRS, such as excess cold and risks from falls. Physical home adaptations can be claimed by those who are assessed as having sufficient need but provision is patchy. Additionally, 780,000 households aged 55 years and over were in fuel poverty (ibid.), which negatively impacts the the physical and mental wellbeing of occupants. It is not known whether investing in digital technologies for the home is the right solution, when more basic provisions to aid health and wellbeing such as grab-rails and sufficient heating are not available to significant numbers of older people. Further research is needed into these areas to ensure that older people are receiving the help which best meets their needs.

Cambridge Centre for Housing & Planning Research

References

Cashman, R. (2013) *New technology can improve the health services delivered to millions of people.* NHS England. [Online] Available at: https://www.england.nhs.uk/blog/new-tech-imprv-hlt-serv/

Chen, Y.R. and Shulz, P.J (2016) The Effect of Information Communication Technology Interventions on Reducing Social Isolation in the Elderly: A Systematic Review. *Journal of Medical Internet Research*, 18 (1), p.e18.

Clark, M. and Goodwin, N. (2010) *Sustaining innovation in telehealth and telecare: WSDAN briefing paper.* The Kings Fund [Online] Available at: https://www.kingsfund.org.uk/sites/default/files/Sustaining-innovation-telehealth-telecare-wsdan-mike-clark-nick-goodwin-october-2010.pdf

Corbett-Nolan, A. and Bullivant, J. (2012) *Care and support at home: An audit of telecare services in England.* Good Governance Institute. [Online] Available at: https://wel.bbyl.uk/wp-content/uploads/2017/03/ggi-telecare-audit.pdf

Coulter, A. and Mearns, B. (2016) *Developing care for a changing population: Patient engagement and health information technology*. Nuffield Trust. [Online] Available at: https://www.nuffieldtrust.org.uk/files/2017-01/patient-engagement-and-health-information-web-final.pdf

Croner-i (no date) *Telecare: In-depth.* [Online] Available at: https://app.croneri.co.uk/topics/telecare/indepth?product=134

Curtis, K. and Price, K. (2017) Factors that influence older people's engagement with digital health technology. *Nursing Older People*, 29(10), p.27.

Dawson, J. (2014) *Creating the Infrastructure for a Consumer Market in Life Enhancing Technologies: Mi Programme's Achievements and Challenges.* NHS Liverpool Clinical Commissioning Group. [Online] Available at: http://www.moreindependent.co.uk/wp-content/uploads/Mi-Retail-Report.pdf

Davidson, S. and Rossall, P. (2015) *Evidence Review: Loneliness in Later Life.* Age UK. [Online] Available at: https://www.ageuk.org.uk/our-impact/policy-research/loneliness-research-and-resources/

Deloitte Centre for Health Solutions (2012) *Primary care: Working differently. Telecare and telehealth – a game changer for health and social care.* Deloitte. [Online] Available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-telehealth-telecare.pdf

Department for Communities and Local Government (2014) English Housing Survey: Profile of English Housing 2012. Available at: https://www.gov.uk/government/statistics/english-housing-survey-2012-profile-of-english-housing-report (accessed 19 July 2018)

Garrett, H., Burris, S. (2015) *Homes and ageing in England*. BRE Bracknell, IHS BRE Press. [Online] Available at: https://www.bre.co.uk/filelibrary/Briefing%20papers/86749-BRE_briefing-paper-PHE-England-A4-v3.pdf

Giordarno, R., Clark, M. and Goodwin, N. *Perspectives on telehealth and telecare.* The King's Fund. [Online] Available at: https://www.kingsfund.org.uk/sites/default/files/Perspectives-telehealth-telecare-wsdan-paper.pdf

Gitlin, L. (2003). *Conducting research on home environments: Lessons learned and new directions.* The Gerontologist, 43(5), 628–637.

Good Foundation (No date) *Our projects* [Online] Available at: https://www.goodthingsfoundation.org/projects. Accessed 23 July 2018.

Goodwin and Royer (No date) *The impact of telehealth: a review of the evidence.* [Online] Available at: https://www.kingsfund.org.uk/projects/whole-systems-demonstrator-action-network-wsdan/impact-telehealth-review-evidence

Green, M. and Rossall, P. (2013) *Age UK Digital Inclusion Evidence Report 2013.* Age UK. [Online] Available at: https://www.ageuk.org.uk/our-impact/policy-research/publications/reports-and-briefings/

Hall (no date) https://www.computerweekly.com/feature/Telemedicine-in-the-NHS-The-benefits-and-costs-of-implementing-telecare-services

Hamblin, K. (2017) Telecare, obtrusiveness, acceptance and use: An empirical exploration. *British Journal of Occupational Therapy*, 80(2), pp.132-138.

Lewin et al. (2010)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/455176/gs-15-17-future-ageing-attitudes-new-technology-er08.pdf

Lloyd, J. (2012). *The Future of who uses Telecare*. London: The Strategic Society. [Online] Available at: http://strategicsociety.org.uk/wp-content/uploads/2013/01/The-Future-of-Who-Uses-Telecare.pdf

Morris, A. (2007). E-literacy and the grey digital divide: a review with recommendations. *Journal of Information Literacy*, 2 (3), 13–28.

NHS England (2014) *Technology Enabled Care Services (TECS) Evidence Database.* [Online] Available at: https://www.england.nhs.uk/wp-content/uploads/2014/12/tecs-ed-telehealth.pdf

NHS England (no date) *Technology Enabled Care Services (TECS).* [Online] Available at: https://www.england.nhs.uk/tecs/

Perry, J., Beyer, S., Francis, J. and Holmes, P. (2010) *Ethical issues in the use of telecare*. London: Social Care Institute for Excellence. [Online] Available at: https://www.scie.org.uk/publications/reports/report30.pdf

Ries, N. and Sugihara, T. *Robot revolution: why technology for older people must be designed with care and respect.* The Conversation. [Online] Available at: https://theconversation.com/robot-revolution-why-technology-for-older-people-must-be-designed-with-care-and-respect-71082

Ross, A., & Lloyd, J. (2012). *Who Uses Telecare?* The Strategic Society Centre. [Online] Available at: http://strategicsociety.org.uk/wp-content/uploads/2013/01/Who-Uses-Telecare-Slide-Pack.pdf

Sixsmith, A. and Sixsmith, J. (2008) Ageing in place in the United Kingdom. *Ageing International*, 32(3), pp.219-235.

Steventon, A., Bardsley, M., Billings, J., Dixon, J., Doll, H., Beynon, M., Hirani, S., Cartwright, M., Rixon, L., Knapp, M. and Henderson, C. (2013). Effect of telecare on use of health and social care services: findings from the Whole Systems Demonstrator cluster randomised trial. *Age and ageing*, 42(4), pp.501-508.

Taylor and Agamanolis (2010) *Evaluation of the User Experience of a Standard Telecare*

Product – the Personal Trigger. IEEE Computer Society. [Online] Available at: http://radar.gsa.ac.uk/2143/1/3950a051.pdf

TEC Services Association (no date). *Telecare and Telehealth: The technology behind the service.* [Online] Available at: https://www.tsa-voice.org.uk/consumer-services/telecare-and-telehealth. Accessed 23 July 2017.

Tinker, A., Wright, F., McCreadie, C., Askham, J., Hancock, R., & Holmans, A. (1999). *Alternative models of care for older people. Report for the royal commission on long term care*. London: TSO.

Torrington, J. (2014). What developments in the built environment will support the adaptation and 'future proofing' of homes and local neighbourhoods so that people can age well in place over the life course, stay safe and maintain independent lives. Future of an ageing population: evidence review. Foresight, Government Office for Science. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/445583/gs-15-11-future-ageing-homes-neighbourhoods-er21.pdf

United Nations (2015). *World Population Ageing.* Department of Economic and Social Affairs, New York: United Nations. [Online] Available at: http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

United Nations (2017). *World Population Prospects: The 2017 Revision. Key Findings and Advance Tables.* Department of Economic and Social Affairs, New York: United Nations [Online] Available at: http://www.un.org/en/sections/issues-depth/ageing/