

Primary care: Working differently Telecare and telehealth – a game changer for health and social care



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The Deloitte Centre for Health Solutions

The Deloitte Centre for Health Solutions part of Deloitte UK, generates insights and thought leadership based on the key trends, challenges and opportunities within the healthcare and life sciences industry. Working closely with other centres in the Deloitte network, including the US centre in Washington, our team of researchers develop ideas, innovations and insights that encourage collaboration across the health value chain, connecting the public and private sectors, health providers and purchasers, and consumers and suppliers.

Foreword

Welcome to the Deloitte Centre for Health Solutions second report on the theme '*primary care – working differently*'. The report presents the Centre's view that telecare and telehealth can help transform health and social care by enabling commissioners and providers to respond effectively to rising demand and give patients confidence to manage their own condition more effectively. This is not just a question of technology but of service integration and service redesign; with telecare and telehealth most effective if adopted as an alternative way of engaging with and supporting service users rather than simply as an "add on" to the traditional ways of working.

The past few decades have seen significant improvements in life expectancy in many countries. In the United Kingdom (UK), for example, women aged 65 can, on average, expect to live another 20.2 years and men another 17.6 years. However, rising longevity brings increasingly complex and chronic health conditions, placing substantial demands on health and social care services. At the same time, services are experiencing significant financial pressure and need to find ways of lowering costs while maintaining or improving the quality of care provided. This requires new ways of working in order to meet increasing demand and deliver care that is safe and cost-effective, while reducing reliance on hospital and institutional based care. Technology can help to support these new ways of working.

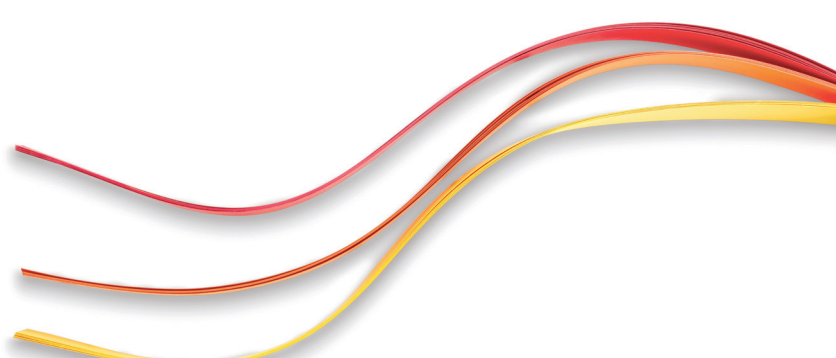
Telecare provides a range of assisted technologies, such as alarms and sensors in the home, which monitor activity changes over time, providing support and assurance to vulnerable people. Telehealth is the remote capture and relay of physiological measurements for clinical review, aimed at educating and supporting people to identify and manage changes in their condition. Trials have shown that this technology helps reduce costs, improve outcomes and enhance the patient experience; it can increase efficiency in case management; and bolster the user's confidence in addressing their own care needs. Together, telecare and telehealth can provide a patient-centred, integrated and home-based care system to help people live independently for longer and support clinicians in case management and decision making by providing them with relevant, reliable information to help them target clinical care where it is needed most.

Telecare and telehealth can help overcome a number of barriers to accessing health and social care, including geographic distance, cost, elevated demand and a shortage of provider organisations. However, there are impediments to adoption, including: concerns over installation costs; cultural resistance from clinicians; lack of clarity over the way that services should be funded; a deficit in public and patient understanding; inadequate staff education; and a requirement for leadership and change management. While a number of developing countries have moved to mainstream technology-assisted care (particularly remote patient monitoring), progress in the UK is more localised and fragmented.

This report provides a synopsis of the available evidence on the costs and benefits of telecare and telehealth. It is based on literature reviews, case examples, discussions with key stakeholders and our experience in working with technology companies and health and social care providers in the UK and other countries. We have sought to balance the facts with insight and examples of good practice which we believe demonstrate the need to look beyond the short term to a future that includes telecare and telehealth as an equitable way of enabling more people to live independently for longer.

Karen Taylor

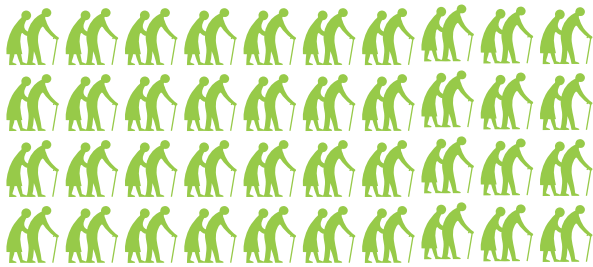
Director, Centre for Health Solutions



Telecare and telehealth

A game changer for health and social care

The past few decades have seen significant improvements in life expectancy in many countries



In the UK, the elderly population aged 65 and over has risen from **9.1 million** in 1991 to **10.5 million** in 2011, and is expected to reach **12.2 million** by 2020 and **14.8 million** by 2030.

Rising longevity brings with it increasingly complex and chronic health conditions – placing substantial demands on health and social care services.

75% of people over 75 suffer from chronic disease – with the incidence expected to double by 2030.



The demands on the healthcare system are increasing at about **4%** a year – for example the average number of primary care consultations per person increased from **4.2** in 2000 to **5.5** in 2008, with a striking increase in the average number of consultations among the over 75s, from **7.9** in 2000 to **12.3** in 2008.

At the same time A&E attendances and emergency admissions have increased year on year.

Health and social care service providers are facing increasing budgetary pressures (for example the need to reduce spending on health care by up to £20 billion by 2015) and are expected to reduce costs while maintaining or improving the quality of care provided.



Growth potential of the telehealth & telecare market

The global telehealth and telecare market has been around for some time but Telehealth has failed to become mainstreamed.

The global market is forecast to grow to **£14.3 billion by 2015** compared with **£6.2 billion in 2010**.

Telecare

The UK annual spend on telecare in 2010 was **£106 million**, compared to **£155 million** in the whole of Europe.

Projected UK spend by 2015 is **£252 million** and **£277 million** in Europe.

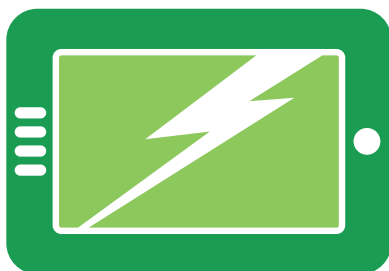


Telehealth

The UK annual spend on telehealth in 2010 was **£35.7 million**, compared to **£148 million** in Europe.

Projected UK spend by 2015 is **£70 million** and **£296 million** in Europe.

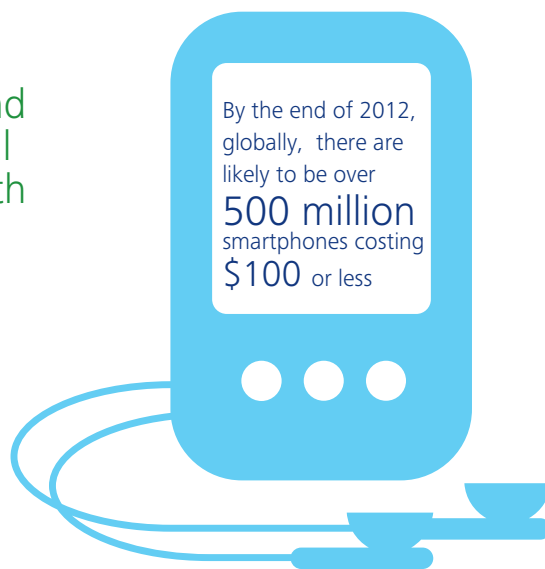
Acceleration of Innovative technology – development of mHealth?



The developments of mobile technology and apps has the potential to transform telehealth and telecare



The UK has the biggest app market in Europe: over 88 mobile subscriptions per 100 individuals and an explosion of tablet computer users



By the end of 2012, globally, there are likely to be over **500 million** smartphones costing **\$100** or less

There are over **40,000** medical, health and fitness apps alone



Part 1. Introduction

Technology has the potential to enable more people to be cared for in their own homes by supporting them in managing their own care needs more effectively. It also provides health and social care professionals with information that can help them understand changes in the patient's condition and when intervention might be needed. Telecare and telehealth were highlighted as technology-based solutions in the Deloitte report *"Primary Care: Today and tomorrow: Improving general practice by working differently"*.¹ In this report, we explore in more depth the potential for this technology to help the NHS change the way it responds to the growing demand for care.

What are telecare and telehealth?

There is no universal definition of telecare or telehealth, nor is there a single uniform type of technology. Rather, they comprise a wide range of assistive technologies targeted to individual needs. For the purposes of this report, we have adopted the following definitions.

Telecare:

Uses alarms, sensors and other equipment to help people live independently for longer, particularly those who require a combination of social care or health services. Telecare comprises assistive technologies and services tailored to individual needs. It monitors activity changes over time and can call for help in emergencies. For instance, a bed occupancy sensor can monitor when a person gets out of bed at night and raise an alarm if they do not return within a certain period.

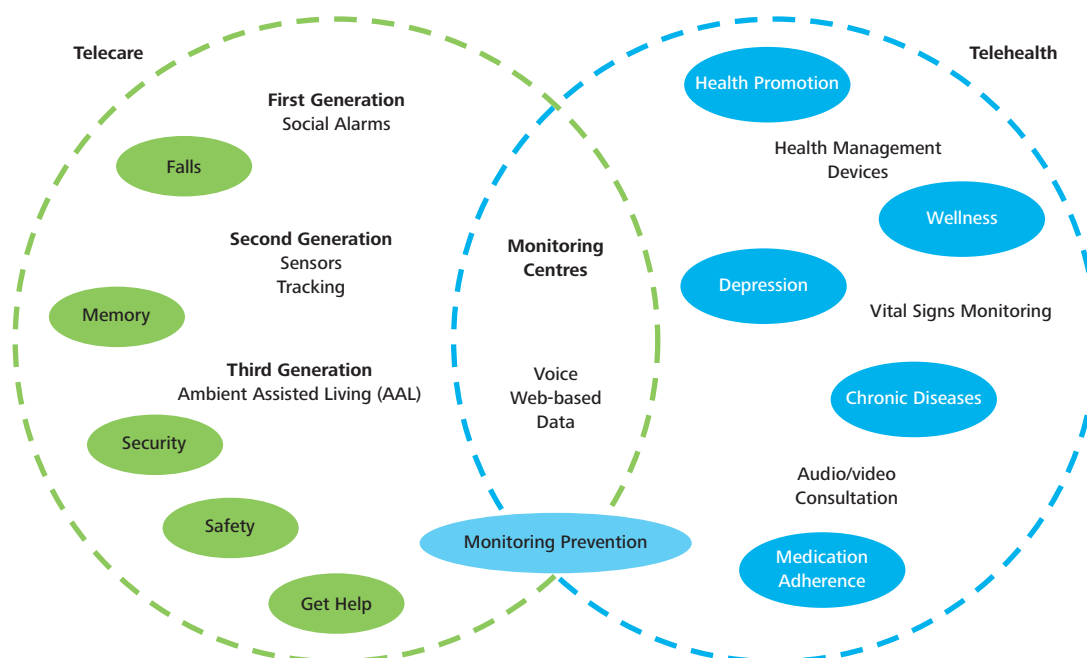
Telehealth:

Is aimed at supporting people, typically with long-term health issues, to monitor and manage their own condition. It uses a combination of devices to monitor people in their home and involves the exchange of data between the patient and healthcare professional. The equipment monitors vital signs, such as blood pressure, blood oxygen levels and weight, supporting diagnosis, healthcare management and patient education. The clinician monitors periodic readings to look for trends that could indicate deterioration in the patient's condition. Telehealth solutions can help deliver care tailored to a patient's specific needs that can improve quality of life, prevent avoidable hospital admissions and reduce surgery visits.

The use of telecare has evolved over decades, predominantly as a social care support tool; telehealth is a more recent development, used largely to monitor the vital signs of people with chronic diseases such as heart failure, chronic obstructive pulmonary disease (COPD) and diabetes (Figure 1). The use of telehealth in the UK is accelerating, putting the country at the forefront in Europe. In England, the expansion has been driven by initiatives such as the Department of Health's (Department's) Whole System Demonstrator Programme;² the 3MillionLives campaign³ and the Concordat between the Department and the telecare and telehealth industry⁴. There have also been national initiatives in Scotland⁵, Northern Ireland⁶ and Wales.⁷

This report is based on a detailed literature review and discussions with key stakeholders, including primary and secondary healthcare providers, GPs, suppliers, and representative organisations such as the Telecare Services Association. Building on the research conducted for *"Primary Care: Today and tomorrow: Improving general practice by working differently"*,⁸ the report explores the evidence base for the wider adoption and implementation of telecare and telehealth. It presents a number of examples of evidence-based good practice, illustrating the way such technology is starting to make a difference in supporting more people to have better health outcomes while remaining longer in their own homes.

Figure 1. The broad spectrum of telecare and telehealth uses and services



A brief history of telecare and telehealth

The evolution of telecare started over half a century ago with the development of alarms that initiated a rapid response in an emergency. Such alarm systems traditionally supported people who lived in sheltered housing and dispersed housing situations. Over the past 20 years, the development of new telecare technology has advanced at a pace commensurate with the development of electronic, computing and telecommunication innovations. Today, technology systems support individuals with mobility, sensory or cognitive problems and help improve quality of life for people with long-term conditions, enabling many to maintain a degree of independence for longer.⁹

The UK Preventative Technology Grant, launched in July 2004, was aimed at encouraging the adoption of telecare and telehealth, and creating an environment in which industry could flourish.¹⁰ While the grant helped address some of the social care needs of frail and elderly people, the use of technology to tackle health needs advanced at a much slower pace. Many healthcare providers remain sceptical about the benefits of telehealth and have tended to use it only for specific conditions, such as chronic heart failure.¹¹

Recent developments in mobile technology, particularly the smart phone and the development of mobile applications (apps), have the potential to transform telecare and telehealth. Deloitte predicts that, globally, by the end of 2012, there are likely to be over 500 million smart phones with a retail price of \$100 or less, supporting email, instant messaging and a selection of pre-loaded apps. Some 200 million of these phones are likely to have near-field communications capabilities, with potential to transmit patient vital signs and other physiological measurements to healthcare workers at a central site.¹² The UK has the biggest app market in Europe¹³ and by the end of 2012 there will be over 88 mobile subscriptions per 100 individuals and an explosion in tablet computer users.¹⁴

Apps are changing fundamentally the way that the public interacts with technology. Across Europe, there are over 40,000 medical, health and fitness apps alone, a volume which can make product choice and navigation difficult.¹⁵ These provide information about diseases, medicines and medical devices and can track symptoms and send alerts (known as mHealth). Many apps are aimed at healthcare professionals but increasing numbers are designed for patients. Healthcare providers are watching this development closely, aware that while patient-oriented health apps have the potential to help patients understand and manage their medical conditions better, they can also mislead. Ultimately, they will change the doctor/patient relationship.¹⁶ This report focuses on the traditional approach to telecare and telehealth; developments in “mHealth” will be covered in a future report.

Telecare and telehealth can help tackle a number of the challenges facing care providers

The most significant influences on health and social care in the past ten years include:

- more people living longer, accompanied by increasing and complex long-term health problems;
- acceleration of innovative technology; and
- recognition that budgetary pressures across health and social care services require the development of new ways of managing and delivering care that are cost-effective and meet the rising expectations of service users and carers.

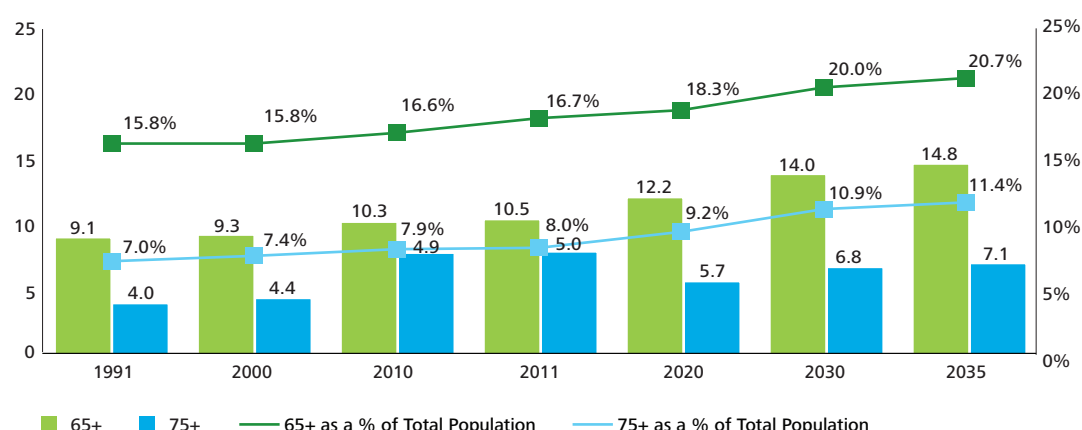
In absolute terms, the UK’s elderly population (aged 65+) has risen from 9.1 million in 1991 to 10.5 million in 2011 and is expected to reach 14.8 million by 2035. The population of people aged 75 or over has grown from 4.0 million in 1991 to 5.0 million in 2011 and is expected to reach 7.1 million by 2035 (Figure 2).¹⁷

Figure 2. UK Elderly Population Trends

The UK’s elderly populations (65+ and 75+) are expected to reach 14.8 million and 7.1 million respectively by 2035

UK Population Trends (1991-2035)

Population (millions)



- The 65+ and 75+ population grew from 9.1 million to 10.3million (13.2%) and from 4 million to 4.9 million (22.5%) during 1991-2010, and are expected to increase by 43.7% and 44.8% respectively, during 2010-2035.
- From 2010, the 65+ and 75+ age groups will increase year on year as a percentage of the total population and by 2020 will represent 18.3% and 9.2% respectively and by 2035, 20.7% and 11.4% respectively.

Source: Office of National Statistics, UK

For many people, these extra years of life may be undermined by long-term illnesses that are not curable but need active management rather than episodic treatment. Such care is complex, particularly as many people over the age of 65 have more than one health condition; some have as many as five or six.¹⁸ The Department of Health (Department) estimates that up to 75 percent of people above the age of 75 suffer from chronic disease, with the incidence of chronic disease expected to double by 2030.¹⁹

Between 1999-2000 and 2010-11, spending on the English NHS increased on average by around 5.5 per cent per year, with similar increases in the other UK countries, in an attempt to raise healthcare spending to the same level as in other developed countries.²⁰ However, the recent economic slowdown has led to the development of austerity plans, with NHS budgets expected to increase by no more than 0.4 percent per year for at least the next five years.²¹ Given that demand for NHS services is anticipated to continue increasing at around four percent per year, the Department expects the NHS to bridge the gap through efficiency savings and productivity and improvements of around four percent per year, or up to £20 billion by 2015 (the Nicholson Challenge).²² Likewise, local authorities are required to find unprecedented year-on-year savings.²³

Meanwhile, an increasing number of people are competing for the services of a decreasing number of carers, with the number of people of working age compared to those who are retired likely to fall from a ratio of 4:1 to only 2.5:1 in much of the developed world within the next 40 years.²⁴ At the same time, the over 65s are placing increasing demands on primary and hospital care services. For example, in England:

- the number of primary care consultations has continued to increase year on year, from an average of 4.2 per person in 2000, to 5.5 in 2008, but with a striking increase in average annual consultations among the over 75s, from 7.9 in 2000 to 12.3 in 2008;²⁵
- across all acute trusts there are year-on-year increases in A&E attendances, which have grown at a rate of 1.2 percent per year for the past four years to 15.9 million in 2010-2011;²⁶ and
- in 2009-10, there were more than 2 million unplanned admissions for people over 65, accounting for 68 percent of hospital emergency bed days and 51,000 acute beds at any one time; the average length of stay for patients under 65 was three days but for over 65s was 9 days.²⁷

These increases in demand illustrate the scale of the challenge facing healthcare providers and the need to change the way this demand is managed. In the remaining sections of this report, we examine: the size and scale of the telecare and telehealth market at a Global, European and UK level (Part 2); the challenges to wider adoption (Part 3); and solutions in the form of case examples where measurable improvements in outcomes have been demonstrated (Part 4).

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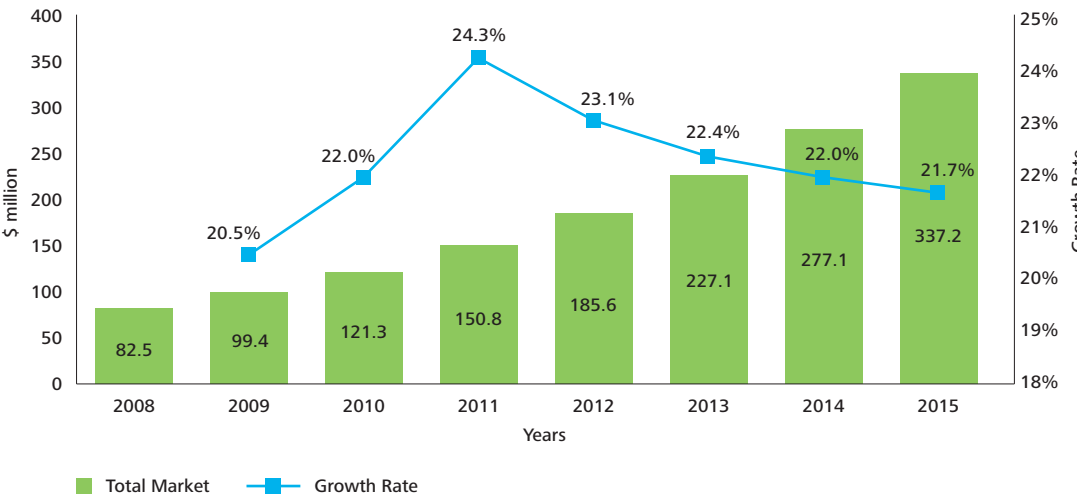
Part 2. The telecare and telehealth market today and tomorrow

Growth in the telecare and telehealth market – today and tomorrow

The global telecare and telehealth market is forecast to grow to £14.3 billion by 2015, up from £6.2 billion in 2010.²⁸ The European market in particular is growing fast, with governments investing heavily in the infrastructure required to tackle increasing population needs. However, this market is highly fragmented and relatively small, and with social, institutional, economic and technical barriers to overcome, its growth potential is unpredictable. From an industry perspective, there are blurred conceptual and market boundaries; from a provider perspective, there are blurred frontiers between health and social care; and from a user perspective, there are problems distinguishing types of user as well as an overlap between health, social care and wellness.²⁹

Currently, the telecare market is most mature for first-generation telecare (social alarms), which are widely used compared to second-generation equipment like tracking sensors, and third-generation equipment like ambient assisted living devices (see Appendix). Indeed, first-generation telecare is mainstreamed in the majority of developed countries, although levels of penetration vary from below one percent to more than 18 percent of over 65s. Second and third generation telecare have yet to be mainstreamed in any country. The UK is arguably a leading nation in this respect with a total estimated annual spend of £106 million in 2010 (compared to £154.8 million in Europe). Projected spend in the UK by 2015 is £251 million (a 12.5 percent compound annual growth rate (CAGR)), compared to £277 million in Europe.³⁰ In 2010, the United States of America (USA) and European telecare markets were considered the most promising for growth (Figures 3 and 4).³¹

Figure 3. Estimated growth in the USA telecare market



Source: ITRI (Industrial Technology Research Institute), Taiwan, 2010

Figure 4. Estimated growth in the Europe telecare market



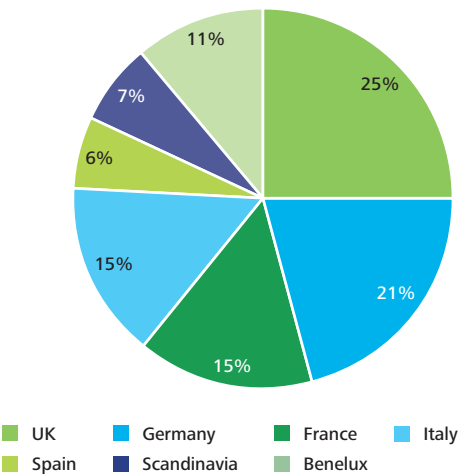
Source: ITRI (Industrial Technology Research Institute), Taiwan, 2010

At present, telehealth is much less mainstreamed, with the USA and Japan considered the most advanced. There have been some large-scale trials in Europe and some local trials in other countries. The estimated spend on telehealth in Europe in 2010 was some £148 million, of which £35.7 million was spent in the UK. This spend is expected to increase to £296 million and £70 million respectively by 2015.³²

The combined telecare and telehealth market in Europe recorded revenues of approximately £303 million in 2010, and these are expected to rise to £573.5 million by 2015. The combined UK market was £141.7 million in 2010 and is expected to reach £320 million by 2015.³³ Overall, the market is expected to grow by 12.2 percent per year (CAGR) from 2010 to 2015, compared with 10 percent between 2006 and 2009. Even with a conservative estimate of future use, the European market for telecare and telehealth equipment is likely to be worth billions of pounds.³⁴

The European market in 2009 was dominated by the UK and Germany with 25 percent and 21 percent market share respectively (Figure 5). Other prominent markets include France, Italy and Benelux (comprising Belgium, Luxemburg and the Netherlands).³⁵

Figure 5. European telecare and telehealth remote patient monitoring market share



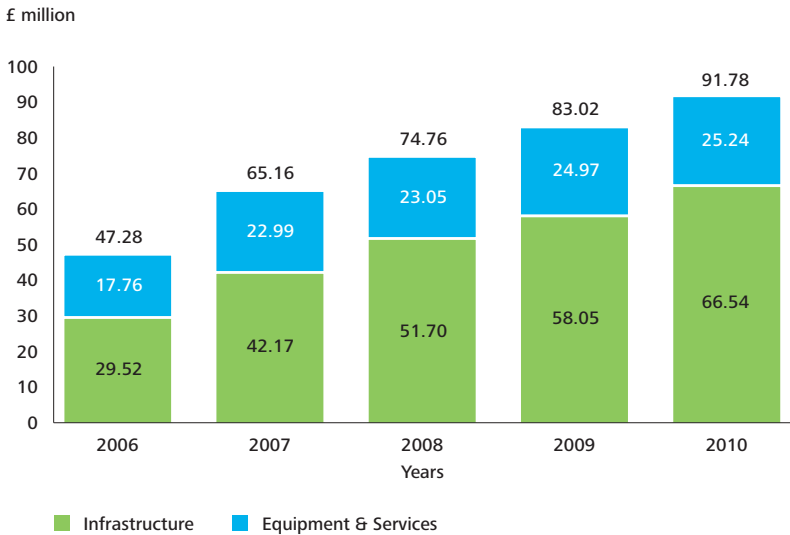
Source: Frost and Sullivan, 2010

Expansion of the telecare and telehealth market in the UK

In the UK, the telecare and telehealth market is highly fragmented with over 80 players, including over 25 players on the National Telehealth Framework. Tunstall is the dominant player, providing telecare sensors, monitoring software and monitoring centres. Other leading firms include Doboco, O2 Healthcare, Chubb Community Care, Just Checking, Phillips Healthcare, Care Innovation, Bosch, Tynetec, Telesupport and Invicta Telecare.³⁶

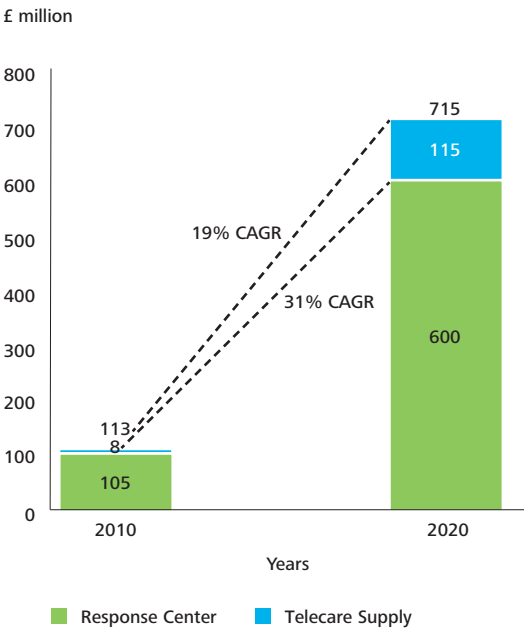
The telecare market in 2010 comprised 90 percent public and 10 percent private spending. There were around 1.6 million users each spending on average around £66 on telecare (including alarm installation and response centres). The highest penetration of telecare was within the over 65 age group.³⁷ According to the UK's local authorities' expenditure reports, the public sector telecare market in England was worth £91.8 million in 2010, with 75 percent of spend on equipment and services (Figure 6). This expenditure has been increasing at a steady rate of 18 percent per annum with the fastest growth seen in equipment and services at 23 percent. Using Department of Health data, we estimate that the total income from telecare in the UK could rise to £7.15 billion by 2020, a growth rate of 19 percent from 2010. The market for private response centres could exceed this growth rate as local authorities move to more outsourcing (Figure 7).

Figure 6. The UK public telecare market



Source: Local authority area (CQC data) <http://www.telecarelin.org.uk/solutions>

Figure 7. The potential UK telecare market



Source: Deloitte analysis of Department of Health data

From 2006 to 2010, the telecare user base in the UK increased from 1.3 million to 1.6 million, a CAGR of 5 percent. The penetration level for the population aged over 65 increased from 17 percent to 19 percent.³⁸

The Whole System Demonstrator Programme

The Whole System Demonstrator (WSD) Programme, launched by the Department of Health in 2008, is Europe's largest randomised control trial of telecare and telehealth services. Interim results, published in December 2011, showed that telehealth services appeared to reduce mortality, increase speed of clinical care delivery, reduce the need for hospital admissions, lower the number of bed days spent in hospital and reduce costs to the NHS.³⁹ In June 2012, the British Medical Journal published an independent review of the WSD programme,⁴⁰ led by researchers at the Nuffield Trust and leading healthcare academics (Case example 1). The Nuffield Trust published separate research which reiterated the interim findings but urged caution, because of uncertainty over costs.⁴¹

Case example 1. The impact of telehealth on use of secondary care and mortality – results from the Whole System Demonstrator trial (June 2012) ⁴²

Background In 2008, a new randomised control trial was launched, providing telehealth services to some 3,100 patients in three parts of England (with a further 3,000 in the control group). The participants had been diagnosed with COPD, heart failure or diabetes. Recruitment of these patients and installation of equipment took 17 months, after which the trial was monitored for 12 months.

Results The results showed that telehealth delivered significant reductions in mortality (a 45 percent difference in mortality); reduced emergency admissions by 20 percent; led to 14 percent fewer elective admissions and 14 percent fewer bed days. Differences in hospital use were most marked at the start of the trial when there was a distinct rise in admissions of the control group (which arguably could have been due to increased awareness by patients and/or clinicians). The overall costs of hospital care were £1,888 less than those for the control patients (which was not statistically significant).

Launch of the 3millionlives campaign

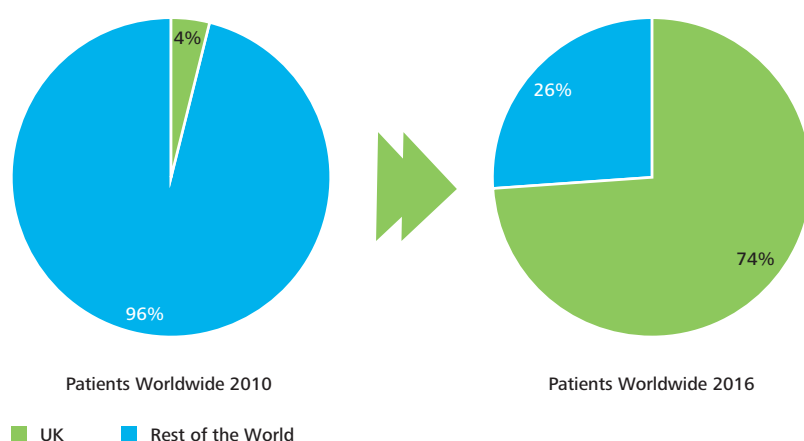
In January 2012, the Department launched a campaign to use telecare and telehealth technology, aimed at improving the lives of three million people over the next five years – the “3millionlives campaign.” The Department estimated that at least three million people with long-term conditions and social care needs could benefit from the use of such services. Paul Burstow, the former Minister for Care Services, announced a Concordat between the Department and the UK telecare and telehealth industry, aimed at demonstrating the intent of both sides to work together over the next five years to accelerate the use of technology under the banner of 3millionlives.⁴³

The main objectives for the 3millionlives campaign are:

- to work together over the next 5 years to develop the market and remove barriers to delivery;
- to create the right environment to support the uptake of telecare and telehealth, including rewarding organisations for adopting and integrating these technologies; and
- for industry to work with the NHS, social care and other stakeholders to simplify procurement and commissioning processes for telecare and telehealth services at scale.⁴⁴

The campaign is expected to extend the reach of telecare and telehealth, and improve the lives of many people through integrating services. Implemented effectively, it is expected to “alleviate pressure on long-term NHS costs and have a profound impact on the world telehealth market, catapulting the UK into pole position”. Should the 3millionlives campaign be implemented in full, estimates suggest that by 2016 the UK might account for 74 percent of worldwide telehealth patient numbers, up from 4 percent in 2010 (Figure 8).⁴⁵

Figure 8. Telehealth patients – UK Vs. Rest of the world



Source: Frost & Sullivan, InMedica, 2011

In November 2012, the Secretary of State for Health launched the first NHS Mandate structured around five key areas where the government expects the NHS Commissioning Board to make improvements:

1. Preventing people from dying prematurely.
2. Enhancing quality of life for people with long-term conditions.
3. Helping people to recover from episodes of ill health or following injury.
4. Ensuring that people have a positive experience of care.
5. Treating and caring for people in a safe environment and protecting them from avoidable harm.

Included in the Mandate is an objective to achieve a significant increase in the use of technology, with specific reference to telecare and telehealth. Although no specific targets are set, it states that by March 2015, "significant progress will be made towards 3 million people being able to benefit from telehealth and telecare by 2017; supporting them to manage and monitor their condition at home and reducing the need for avoidable visits to their GP practice and hospital."⁴⁶ The continued support for the technology has been welcomed by the industry group which acknowledges its key role in "helping to make the doctor's life easier whether by system integration or care pathway redesign or via patient engagement and evidence of outcomes".⁴⁷

Strategies for the wider adoption of telehealth vary by country in the UK

The four nations of the UK have taken different strategic approaches to promoting the wider adoption of telehealth. In England, the WSD programme, 3millionlives campaign, Delivering Assisted Living Lifestyles at Scale (DALLAS) and the NHS Mandate demonstrate the positive support at the national level for the wider-scale adoption of assisted technology. However, the delivery of these ambitions rests with the new Clinical Commissioning Groups (CCGs) in partnership with local authority Health and Wellbeing Boards. CCGs will have responsibility for some £60 billion of healthcare expenditure and they are expected to be well placed to commission services that best meet these needs.

With over 212 CCGs and clinicians' concerns about the perceived lack of robust evidence on cost-effectiveness of telehealth, industry will need to develop new networks, relationships and metrics to demonstrate the benefits of the wider adoption of the technology.

The Scottish Government has arguably been at the forefront of telehealth for a number of years. The Scottish Centre for Telehealth was set up in 2006 and became part of NHS 24 in 2009. In April 2010, it was renamed the Scottish Centre for Telecare and Telehealth (SCTT), with a remit to implement five major national projects and create a set of standards for telehealth use aimed at supporting the development of strategic long-term solutions. The SCTT considers there to be a very strong evidence base for the adoption of telehealth solutions as a means of reducing unscheduled care and improving access to NHS services.⁴⁸

In Wales, there have been three demonstrator projects testing new ways of managing chronic conditions, including the use of predictive risk software (PRISM) and telehealth. In 2009-10, reported savings were over £2.2 million. The Chronic Conditions Management Demonstrator sites in 2010-11 showed improved patient care, reduced emergency admissions and NHS savings. Other projects include the introduction of a virtual clinic, which involved consultants visiting GPs to review referrals and the trialling of an email consultation service. The second-year report showed that between 2008 and 2009 there had been a fall in bed days of between 16.5 and 27 per cent and a 10.8 percent reduction in emergency medical admissions which NHS Wales estimate saved £2.4 million.⁴⁹

Northern Ireland has adopted the largest mainstreamed telehealth service procurement in the UK, involving an £18 million remote tele-monitoring contract awarded in 2011 to TF3 (a consortium of Tunstall, FoldHousing and S3). This was intended to support 6,000 patients with diabetes, stroke, heart and respiratory conditions over 6 years, by testing pulse, blood pressure and body weight on a daily basis. It is expected to lead to a better patient experience and outcomes as a result of earlier interventions and reducing exacerbation in people's conditions.⁵⁰

Other initiatives aimed at helping to improve use of assisted-living technology

In 2011, the Technology Strategy Board announced a competition to identify 4-5 sites to run a £37 million pilot, DALLAS, running in parallel to the 3millionlives campaign. Four communities (projects) to run over 2 years were announced in May 2012. They cover long-term conditions and the wider wellness, health and wellbeing agenda. A key requirement was interoperability in the information flows between the different systems. The aim is to unlock new markets in social innovation, service innovation and wellness, enabled by technology, and show that technologies and services can be made available at a sufficient scale and cost to enable independent living. The intention is to help expand the sector and position UK companies to take advantage of increasing global demand for assisted living goods and services.⁵¹

Nationally, there remains significant scope to expand the use of and improve equity of access to telecare. In September 2012, the Good Governance Institute published a report on an audit of telecare use in England. This showed significant variations in the number of people using telecare services across local authority areas. For example, one reported that over 12,000 people were using telecare services while another reported only 75 users. There was also a mixed understanding among local authority commissioners of what telecare services are and how they should be incorporated into the council's social care services. Although research suggests that some 1.6 million people are using telecare, the figures reported by councils accounted for a fraction of this. Furthermore, only £28 million (4%) of the additional £648 million allocated to local authorities by the NHS to support social care services in 2011-12 went towards funding telecare services.⁵²

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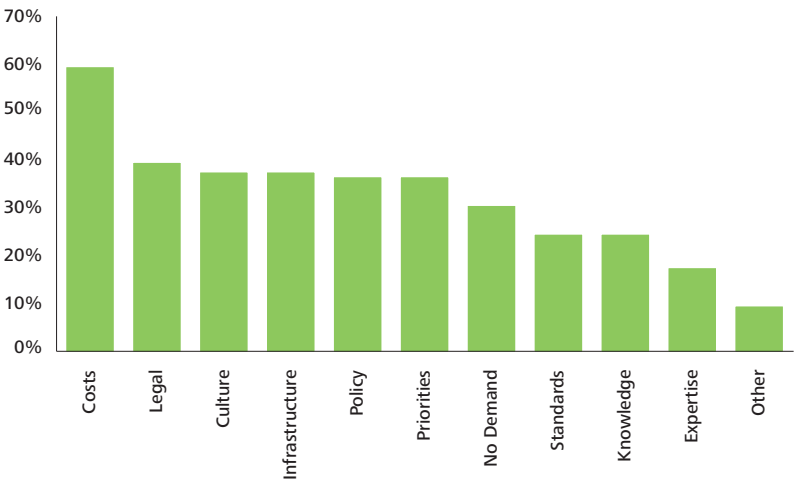
Part 3. Challenges to the wider adoption of telecare and telehealth

While telecare and telehealth can overcome or diminish multiple barriers to healthcare, including geographic distances, high costs and a shortage of providers, their adoption creates its own obstacles. The high perceived cost associated with installation remains one of the biggest hurdles in their worldwide adoption. As does the lack of a convincing business model which clearly demonstrates that the benefits will outweigh the associated costs and efforts required to implement a technology solution. This part of the report explores some of the main hurdles to the successful adoption of telecare and telehealth.

Several perceptions act as a barrier to wider adoption of telehealth

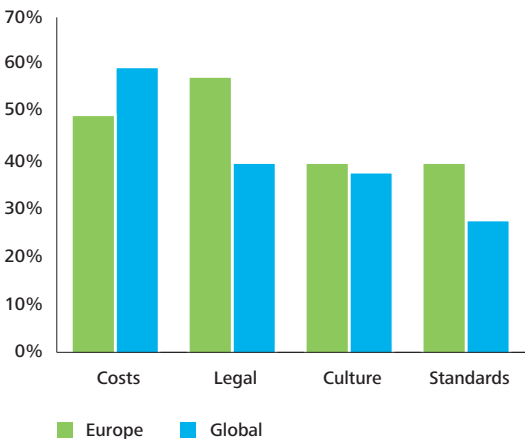
Some of the main barriers to the wider adoption of telehealth are based largely on perceptions. According to a World Health Organisation (WHO) survey, the most prevalent barrier to the implementation of telemedicine programmes globally is the perception that costs are too high. Other barriers reflect the stage of development of the healthcare infrastructure; for example, European countries were more likely to consider barriers such as patient privacy and confidentiality and a perceived lack of demand, compared to developing nations whose concerns tended to be about costs, underdeveloped infrastructure and lack of technical expertise (Figure 9). Another important barrier is the presence of organisational cultures unaccustomed to sharing skills and knowledge, in which professionals are perceived as remote and patients as passive recipients of care with limited IT skills (Figure 10).⁵³

Figure 9. Barriers to telemedicine globally



Source: WHO telemedicine opportunities and development in member states: report of second global survey of eHealth

Figure 10. Barriers for the European region



Source: WHO telemedicine opportunities and development in member states: report of second global survey of eHealth

Barriers to wider adoption of telecare and telehealth in the UK

The lack of a robust funding or reimbursement model inhibits wider adoption in the UK

A key challenge is the lack of clarity as to how to fund such initiatives, as well as tensions due to different sources of funding: telecare is funded largely from social care budgets and telehealth from healthcare budgets. In both cases, funding decisions are largely determined locally which risks the emergence of a postcode lottery as regards access to telecare and telehealth in the absence of an agreed funding structure.

The need for a workable funding model for telehealth continues to be one of the most pressing challenges to its adoption. The majority of providers have no direct incentive to use telehealth as they are typically paid by patient visits or by procedures. Providers fear that meeting demand may drive up costs, rather than viewing areas such as home care and virtual wards as significant cost-reduction tools. Providers are also suspicious if change is perceived to lack robust evidence on cost-effectiveness. Planned changes to the delivery model, which reduce the focus on fee-for-service and face-to-face visits and concentrate more on health outcomes and patient experience, including the development of appropriate tariffs, could help tackle this barrier.⁵⁴

Indeed, there is a clear need across Europe for well-defined reimbursement models. In 2012, the European Medical Technology Association, CRM Telemonitoring Group's white paper, on the development of a concrete recommendation for a country-level reimbursement scheme for telemonitoring for patients with cardiac implantable electronic devices, identified five key questions that needed to be addressed:

1. What services, materials and service users will be funded?
2. What is the payment method or basis on which the user will be funded?
3. Who is the payer – who pays?
4. How are price and allocation determined – who receives payment and how much?
5. What are the goals – do the goals align with the broader health systems objectives and policies?⁵⁵

The research found a lack of a national framework or tariff to reimburse clinicians' services and hardware cost and no consistency in the approach to reimbursing remote follow-ups (although the Netherlands introduced an "activity code" for telemonitoring in 2012). It also found that, typically, payment responsibility is with insurers and national health systems but commitment and motivation to pay are unclear. Furthermore, payments are often focussed on the clinicians' services and not on clinical outcomes and efficiency. The research suggested that industry needs to deliver solutions that reduce the investment hurdle needed to develop the infrastructure. It proposed that this could be achieved by industry providing the infrastructure and charging an annual fee and by demonstrating the efficiency gains that could be realized. Further, that providers needed to encourage uptake by promoting the benefits and convincing patients of the benefits of replacing face-to-face with remote follow-ups.⁵⁶

In the UK, a report in 2010 from 2020 Health promoted a more proactive approach to telehealth to galvanise the NHS into action. Amongst its recommendations was the need to align incentives and tariffs. The report argued that the first-year investment, which was then around £2,000-£3,000 per user, required a longer payback period than the 12 months that some commissioners were expecting; also, that patient selection was important and needed to be driven by those utilising high levels of expensive acute care, as reducing one or two unplanned admissions could recoup costs. The authors noted that the typical telehealth payback period was 18-24 months for patients who are very high users of unplanned secondary care and that the current tight financial environment required a new economic/business model.⁵⁷ Since 2010, the cost of equipment has begun to fall.

Changing the role and approach of the industry

For telecare and telehealth to be adopted at scale, health and social care providers and industry need to develop new ways of working, based on partnerships and collaborations. While the type of equipment is an important consideration, so, too, is the overhead cost associated with the storage of equipment, inventory control, installation, de-installation, cleaning, data removal and storage – all of which will affect costs. From an industry perspective, unit costs are falling, but some of the new, cutting-edge technologies often end up sitting on a shelf. Therefore, to be effective, telehealth needs to be based on a symbiotic relationship.

This is the principle behind the establishment of the 3millionlives industry group, which comprises 19 industry players who, through the Concordat, have come together to support the Department, commissioners and providers in rolling-out telecare, telehealth and telecoaching across the country. They acknowledge that industry needs to develop a different proposition and that it can no longer be about selling the technology, taking the money and walking away. Industry is therefore looking at how to reduce that initial upfront cost; how best to provide a revenue stream; and develop an end-to-end service where health and social care providers can, for example, buy on a per patient per day, per patient per month or per patient per episode of care basis. In this way, resources and finances can be more closely managed whilst meeting the needs of service users more effectively.

The Industry group recognises that there is no one size fits all solution and that it needs to support commissioners, providers and clinicians in improving their understanding of the technology and how best to use it.⁵⁸

Poor public and patient understanding

Despite the public launch of the 3million lives campaign in January 2012, which received extensive press coverage, there remains widespread public ignorance about the use of such technology in healthcare. A YouGov survey in March 2012, commissioned by the Telehealth Forum, found that of 2,054 adults surveyed, only 5 percent knew what telehealth was; of those who considered that they knew, some thought it meant health programmes on TV or advertisements on TV or in GP surgeries and others that it referred to healthcare providers who promote healthcare services.

Of the people surveyed who were aged over 55, and therefore statistically more likely to have a long-term health condition, 93 percent had never heard of telehealth and the same percentage had never heard of telecare.⁵⁹ This lack of public awareness means that patients and carers are unlikely to be proactive in raising the possibility of using such technology with their healthcare providers. Case example 2 illustrates how one approach is helping to address this issue.

Case example 2. Expanding the role of the Smart Living Telecare service⁶⁰

Situation Smart Living, is a service offered as part of a care and support charity in the South East, had been providing services since 2010. Initially as a pilot, using telecare for people with learning disabilities, it expanded to cover all client groups and has social-funded and private-funded clients across the UK. It is also commissioned by Hampshire County Council for people with learning disabilities and NHS Isle of Wight for learning disabilities and mental health, covering assessment, installation, monitoring and maintenance. Whilst telecare had been around for a number of years, various factors, especially a lack of knowledge, were stopping widespread adoption of the equipment. Care managers had limited knowledge and the general public virtually none. There was also stigma and concerns about the appearance of the equipment, with people embarrassed if it was seen by their friends, especially younger clients. There was only limited hard evidence around cash savings, but there was a consensus that telecare would be cost-effective, and a need to change the attitude that support could only be given by a person and that technology was a second-class service.

Methodology From the outset, Smart Living recorded savings. For example, one person was changed from having a waking night carer to a sleeping night carer, saving the local authority £52,000. The process for referral and installation was simplified and the service offering kept up to date, including regular communication to care managers about new equipment and evidence of effectiveness. Smart Living personnel attended team meetings and developed partnership working based on mutual trust. Importantly, the offering is a pay as you go system, in recognition that capital purchase is often the main barrier. Invoicing customers, both local authority and private, is on a monthly basis. Customers can cancel at any time and return the equipment. The aim is to make the equipment simple and easy to use and for suppliers to integrate telecare and telehealth, eliminating the need for people to have two sets of equipment. There has been a marketing campaign on the Isle of Wight, using social media, advertising on buses and a radio campaign, to inform people about the services and equipment.

Results Smart living is now supporting about 300 clients. People are now asking for the equipment and are making assisted technology the norm, not the exception.

Staff engagement is critical to the success of telecare and telehealth projects

In 2011, a qualitative evaluation of 12 of the Whole System Demonstrator sites by the King's Fund and Department of Health Care Networks, *"Perspectives on Telehealth and Telecare"*, identified:

- leadership; working practices, skills and development; and data management as particularly important considerations for the adoption of telehealth and telecare;
- that key characteristics for growth and sustainability included collaboration, leadership, developing alliances and partnerships, identifying critical services, developing a shared vision, cultivating participation, building capacity, exploiting funding opportunities, and working across professional boundaries; and
- that in order to succeed, there is a need to foster fundamental service redesign, support professional development and staff training, analyse and design the infrastructure prior to deploying the equipment, apply recognised standards, decisions based on robust data, and develop governance arrangements at national level to avoid regional variations in services.⁶¹

The research also identified innovative thinking and a determination to identify and solve problems as they arise, as well as a focus on delivering benefits to patients' carers and their families, as important success factors. However, it uncovered considerable challenges, including the need for evaluation to support the business cases, working at scale, staff turnover, data handling and incomplete service transformation.⁶²

On the critical issue of leadership, different characteristics were exhibited by health and social care leaders, with social care leaders being more entrepreneurial and tolerant of risk taking and healthcare respondents placing more emphasis on evidence, particularly on return on investment. The analyses found that both health and social care identified workforce skills as a weakness and resistance to change as a threat to the programme. Changing workforce practice was seen as more difficult in health than social care, largely because of social care's historical familiarity with telecare; and GPs' and nurses' strong belief in the need for face-to-face contact. Indeed, many nurses and other healthcare professionals found it difficult not to visit patients, obviating the logic behind the application of telehealth.

There was, therefore, a need for training to manage case loads differently. Both groups identified data management as weaknesses, specifically data integration and interoperability as well as data governance and using data to drive decisions.⁶³

Robust information governance is a key consideration

A further challenge in the implementation of telehealth and telecare is information governance and the security of access to confidential, identifiable information as it moves between providers of services, some of which will not reside within the NHS, such as call centres and private healthcare and social care providers. Where the NHS has regularly used private providers, for example in mental health and provision of community services, it has found ways to manage this issue. Nevertheless, it is vital that service users and clinical staff feel confident that the system is secure and understand the risk of security breaches of either local or national databases. Obtaining user consent to share records with other providers is one solution as long as users understand the scope of that consent and the security surrounding confidentiality, balanced against the benefits to be gained from using the technology.⁶⁴

Ensuring the security of the link between home and monitoring centre is a further key consideration that has driven the implementation of one-way data uploads. However, this excludes some of the richer possibilities of patients accessing their own data to see trends, and so on. All staff handling patient information will need to be made aware of, and trained in, the importance of handling confidential patient information.⁶⁵

Future potential in developing the self-pay market

Although the NHS provides care free at the point of need, social care is means tested which has opened up the potential for growth in assisted technologies in the private pay market. This has increased in those areas where there has been a dedicated awareness campaign (see case example 2). Consumers are increasingly buying their own blood pressure monitoring kits, and so on, from pharmacies and in the US, for example, Wall Mart already sells off-the-shelf telehealth technology. Furthermore, around a third of homes in the UK have bought a Wii Fit, which could arguably be classified as telehealth if used by individuals to provide information to their clinicians. Companies like Nintendo, which are normally associated with the interactive gaming market, could therefore use their technology to develop the private-pay telehealth and telecare market.

Part 4. Telecare and telehealth – a game changer?

The main challenge faced by health and social care providers globally is how to reduce costs while providing better quality of care. This has led to an active search for better ways to deliver care that help to prevent ill health and are cost-effective, especially in providing effective home care for people with long-term conditions. It is a challenge that provides a timely opportunity for telecare and telehealth technologies. This part of the report presents details of the costs, outcomes and other benefits emerging from national and international case examples.

Case-based evidence of improvements in quality of care and cost

There have been numerous national and international research studies and evaluations regarding the benefits of telecare and telehealth.

The majority of studies have shown a positive impact across a range of criteria, although less conclusively on cost-effectiveness. One difficulty is that the quality of evidence varies, largely due to the diversity of definitions and technology used and the varying needs of the different patient groups; the criteria used for evaluation; and the length of the studies.

Telecare case examples

A 2012 study of telecare carried out by FACE and sponsored by Tunstall, estimated that the cost benefits of telecare for an average local authority were over £3 million. The report recommended that councils should actively promote the provision of telecare as a 'mainstream' activity (Case example 3).⁶⁶

Case example 3. Cost-effectiveness of telecare deployed by local authorities in England: Study conducted by FACE Recording and Measuring Research sponsored by the Tunstall Healthcare Group⁶⁷

Situation On average, a local authority council in England serving a population of 250,000 has 38,500 people aged over 65 with a social care budget of around £40 million, of which over £14 million (35 per cent) is spent on residential care provision. The study was conducted by FACE Recording & Measuring Systems Research and was aimed at assessing the suitability and cost-saving potential of telecare solutions for social care clients, and developing a methodology to support the routine evaluation and comparison of the cost-effectiveness of local telecare implementations. It was funded by an educational grant from Tunstall and involved 50 residents who completed the FACE overview assessment process.

Methodology The assessment used a sliding scale of measures for need and dependency. The scores were assigned relative to the environment in which the client was living. So, for example, a client who could not climb stairs unaided was scored as needing the support of one person to climb stairs if they did not have a chairlift installed. However, they would be rated as being able to climb stairs independently if a stair lift was installed (and they could use it unaided). This approach to scoring therefore took into account changes in the environment, such as the deployment of telecare or other equipment. FACE and Tunstall assessors reviewed the social care assessments and suggested appropriate telecare solutions. Those data items that ought to change as a result of deploying telecare (for example, how long the client could be left alone safely for an extended period of time) were re-scored. Telecare is about giving clients greater control of their lives and enabling them to make the choices they wish to make, and this formed the basis of the assessment.

Results The social care costs of meeting the client's needs before and after provision of telecare, estimated using the FACE resource allocation system (RAS), confirmed previous studies and showed that substantial savings are achievable through the widespread targeted use of telecare. The researchers estimated a potential saving of £3-7.8 million for a typical council (between 7.4 and 19.4 percent of the older people's social care budget). Average weekly cost of telecare provision to meet each service user's needs was £6.25 compared to an average weekly pre-telecare package cost of £167.¹⁷

Conclusion The estimated cost benefits were over £3 million. The study concluded that councils should actively promote the provision of telecare as a 'mainstream' activity and should make local estimates of savings realizable through telecare.

A 2012 study of telecare carried out by FACE and sponsored by Tunstall, estimated that the cost benefits of telecare for an average local authority were over £1 million.

In 2012, Wakefield Council published a report on a comprehensive three-year evaluation of telecare using data spanning 2007-2010. The results showed cost savings of over £1 million, improvements in patient wellbeing and reduced hospitalisation (Case example 4).⁶⁸

Case example 4. Wakefield Telecare Pilot Project⁶⁹

Situation Wakefield Council had decided to mainstream telecare services and integrate services around the individual to ensure that assistance was targeted and there was an economy of effort in its delivery. The approach was aimed at providing a prompt and appropriate response to emergencies like falls, smoke, and so on, and to delay unnecessary admissions to residential or nursing care.

Methodology Wakefield Council conducted a comprehensive, three-year evaluation spanning 2007-2010, to evaluate the cost-effectiveness of its telecare provision in promoting independence and wellbeing, and deferring admittance to hospital or residential care. The assessment consisted of 135 participants of all ages and abilities using telecare. The efficiency outcome was determined on the prevention of service users entering residential care and the resulting net cost saving.

Results The net savings amounted to around £1.3 million in one year for 135 people who would have been signposted to residential care without telecare. Based on the cost of delivering the current care plans deducted from the allowable residential care admission costs. For a random selection of 68 people, comprising adults and older people with learning disabilities, the net cost saving was £0.8 million per year and an average saving per person of about £12,696 per year. There was also a reduction of over 12,200 hours in deferred residential admissions. The higher proportion of people aged over 65 now being referred (85 percent of all referrals received as of December 2010), indicates that Telecare has enabled people to remain living in their homes for longer.

Conclusion In addition to identified cost savings of over £1 million due to reduced use of care homes, there were improvements in patient wellbeing and reduced need for hospitalisation. With an increasing focus on cost efficiencies, the potential for future investments is a significant consideration for the continued delivery of services.

Similarly, research published by York University in 2009 evaluating the impact of the Scottish Office Joint Telecare Project, identified indicative cost savings of some £11.15 million as a result of implementing a coherent telecare programme (Case example 5).⁷⁰

Case example 5. York Health Economics Consortium: Evaluation of the Scottish Telecare Development Programme:

Situation The Scottish Government's Joint Improvement Team focuses on supporting elderly or unwell people by creating a coherent Telecare programme running across all 32 local partnerships. York Health Economics Consortium (YHEC) evaluated the Telecare Development Programme (TDP) to: develop cost-effective monitoring, evaluation framework; assist local partnerships to identify and collect the information needed to undertake effective monitoring; and gauge efficiency gains and cost benefits to local partnerships and users by adopting Telecare.

Methodology Quarterly returns designed by YHEC, focused on monitoring progress and collecting data on a common set of outcomes and efficiencies against the TDP objectives. Postal questionnaires were designed for and distributed to service users and informal carers to capture their views and experiences. Five partnerships were selected as case study sites, providing additional information via telephone interviews and site visits.

Results Efficiencies achieved by Investment in Telecare

Efficiency Category	Monetary Savings 2007/2008
Increased speed of discharge from hospital	£1,731,944
Reduced unplanned hospital admissions	£3,343,467
Reduced care-home admissions	£3,421,621
Reduced nights of sleepover care purchased	£557,119
Reduced home check visits	£1,796,039
Locally identified efficiencies	£301,000
Total	£11,151,190

Conclusions The experiences of the partnerships showed that TDP made a promising start. Telecare equipment has also provided significant benefits to people with long-term physical conditions and learning disabilities. The indicative savings achieved by the programme are about £11.15m, roughly equivalent to 60,000 care-home days and 5,000 hospital-bed days.

Source: Evaluation of the Telecare Development Programme, York Health Economics Consortium, January 2009

A 2010 study carried out by Empirica and Work Research Centre (WRC) for the European Union to assess the benefits of telecare adoption found large potential annual cost savings. Depending on the telecare scenario applied, the savings could run to billions of Euros based on bed days saved in care homes. Additional savings were also possible as a result of avoiding the need for hospitalisation of older people, through further mainstreaming of telecare (Case example 6).⁷¹

Case example 6. Systematic literature review on the impact of using telecare in reducing admissions to care homes and hospitals

Situation Countries across the EU are facing growing costs in caring for their elderly population, largely due to increasing use of care homes, emergency hospital admissions, and so on.

Methodology Empirica and WRC were commissioned by the EU to carry out a systematic literature review and savings estimations of the benefits of telecare mapped to four different scenarios. The review found that while there is some evidence on the benefits of telecare in terms of care outcomes and quality of life, the amount of robust cost-benefit evidence is limited.

Results By extrapolating on a European scale some available evidence from national pilot projects, the review estimated the following projected savings (Figure a & b)

Figure a. Reduced annual care home admissions

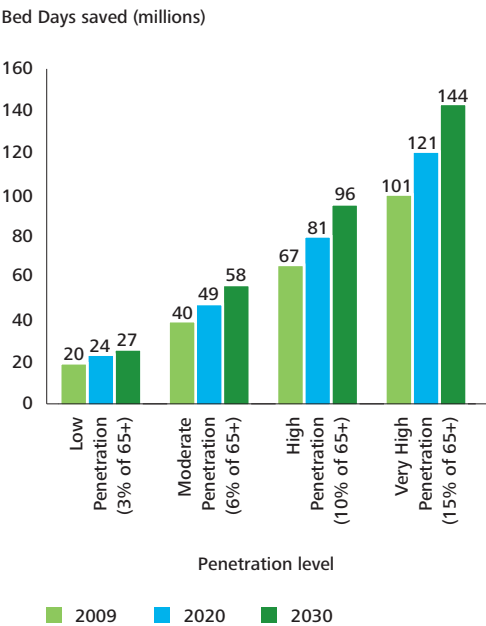
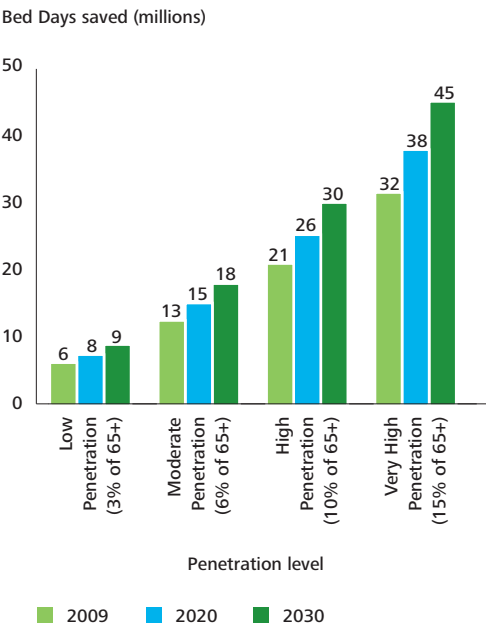


Figure b. Reduced need for hospitalisation



Source: ICT & Ageing, EU 2010

Conclusion The researchers concluded that the potential annual cost saving could be very large, running to billions of Euros, based on reduced utilisation of bed days in care homes and the extent of telecare penetration. Also, by avoiding the need for hospitalisation of older people, additional annual costs savings could be achieved by mainstreaming telecare across the EU, although these latter savings were not expected to be as high as those from avoiding care home admissions.

Telehealth case examples

Telehealth is also starting to generate a wealth of data as to its cost-effectiveness, particularly in the US where the potential for telehealth to transform the care experience and save costs is now being widely acknowledged. For example, both Kaiser Permanente and the US Veterans Health Administration (VHA) have adopted extensive home telehealth services for older people and demonstrated large-scale benefits. The VHA, for instance, has demonstrated a 20 percent reduction in hospital admissions and 25 percent reduction in bed days. Drawing on evidence from the Veterans Association, 2020Health applied the lessons from its review of the VHA to the NHS in England (Case example 7).

Case example 7. 2020 Health: Applying the evidence of impact of the Veterans Health Administration to the NHS in England ⁷²

Situation The VHA is a large, publicly-funded system delivering comprehensive services to a veteran population of 23 million and with an annual budget of over £30 billion. With the help of telehealth, VHA aims to support patients with long-term conditions through care 'at a distance' and self-management skills, leading to significant reduction in acute care. According to various studies, VHA consistently provides a cost-effective and better quality of care than other health systems in the US. Around 50,000 VHA patients received telehealth services in 2011. The programme relies on health informatics, disease management and home telehealth technologies to enhance access and improve healthcare services. With the use of telehealth, the VHA was able to integrate both vertically and virtually; in other words, the patient was treated in an integrated fashion by the appropriate VHA care organisation or non-VHA provider through the use of a care agreement and providers being able to integrate and share information via the patient's Electronic Health Record, irrespective of location.

Results Drawing parallels for England, based on the evidence from the VHA experience, the report approximates costs and utilisation savings for four key disease areas as follows:

Condition	Prevalence	Approx annual direct costs in England	Potential decrease in bed utilisation
Diabetes	2.2 million	£ 9 billion	20.4%
Hypertension	10 million	£ 7 billion	30.3%
Heart failure	0.75 million	£ 625 million	25.9%
COPD	0.9 million	£ 492 million	20.7%
Depression	12.75 million	£ 37 million	56.4%

Conclusion The wider adoption of telehealth along the lines implemented in the VHA has significant potential to improve care and save costs with key success measures including leadership, clinician engagement, a key requirement for success is having a single patient record and the organisation having responsibility for providing integrated services.

The Blue Sky Consulting Group Systems research study also made the case for telehealth expansion and associated savings, in a study carried out for the Medi-Cal program in California (Case example 8).⁷³

Case example 8. Expansion of telehealth across California – Blue Sky Consulting Group Systems

Situation Telehealth has been reimbursable under California law since 1996. The Assembly Bill 415 (AB 415) was introduced in California to modernise reimbursement law and promote increased use of telehealth. The study, commissioned from the Blue Sky Consulting Group, was aimed at assessing the financial impact of AB 415 on the State of California, primarily focusing on the Medi-Cal program, as well as on the benefits to health services payers in California.

Methodology The study utilised available published research to identify the cost-saving potential of telehealth. The focus was on home monitoring for chronic diseases, particularly heart failure and diabetes, seen as one of the areas where telehealth has the greatest potential to reduce healthcare costs. By applying the findings from several published studies on the impact of telehealth in home monitoring of patients with heart failure and diabetes, it estimated that telehealth has the potential to generate significant savings for the Medi-Cal program.

Results The quantitative research estimated that the full implementation of telehealth could lead to reduced healthcare costs, reduced transportation costs, reduced home healthcare costs, increasing access to cost-effective treatments and more timely care for stroke patients. Home monitoring of service users with chronic diseases could yield substantial savings, depending on the extent to which telehealth is adopted. Additional savings were possible if used for patients with COPD and other chronic diseases. If implemented fully, the total savings were estimated to be as high as \$408 million.

Conclusion The results, published in September 2011, supported the proposal for a wider-scale roll out of telehealth for people in the Medi-Cal program across California.

In 2011, Bosch healthcare, provider of the Bosch Telehealth System, published a study showing that implementing telehealth-enabled care management programmes in physician practices for patients with chronic diseases could help significantly reduce healthcare spending while improving mortality (Case example 9).⁷⁴

Case example 9. A cost-benefit analysis of telehealth in the US – Bosch Healthcare

Situation The study explored the economic impact of using remote patient monitoring along with physician-led patient-centred care management for high-cost patients with congestive heart failure, COPD and/or diabetes mellitus. The aim was to examine the impact of introducing telehealth on changes in spending for targeted, chronically ill, Medicare patients who were in the traditional fee-for-service portion of the programme.

Methodology The study involved 1,767 Medicare patients in two clinics. Care management teams at both clinics used content-based remote patient monitoring to improve communication with patients, monitor vital sign and symptom data and increase the patient's knowledge about their health and chronic illness. The telehealth system facilitated the ability of doctors and care navigators (nurses) to continuously monitor symptoms and improve the patient's knowledge. In this way, they could identify and intervene with at-risk patients more effectively, helping to reduce exacerbations, improve patient care and clinical outcomes.

Results The research identified improvements in outcomes through reduced hospitalisation and improved medication compliance. There were spending reductions of around 7.7 to 13.3 percent (£197.17-£342.52) per patient in relation to acute hospital costs per quarter over the two-year period studied. There were also some significant mortality differences between the treatment and control groups.

Conclusion The study identified the scope to reduce critical aspects in hospital utilisation and improve quality, satisfaction and cost outcomes for patients and providers in the local region.

Erasmus University and the University of Maastricht examined the benefits of increasing the scope of Ehealth and “self-management” on both the healthcare budget and the healthcare workforce in the Dutch healthcare sector (Case example 10).⁷⁵

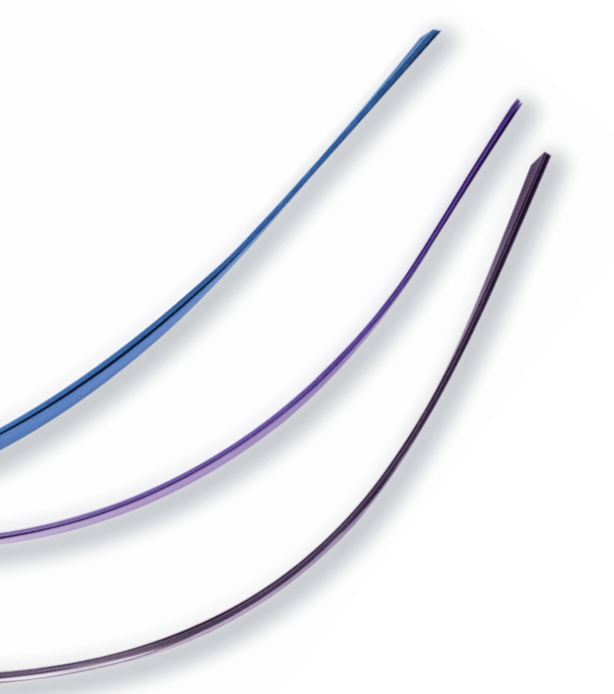
Case example 10. The potential impact of eHealth and self management on healthcare costs in the Netherlands

Situation Erasmus University and the University of Maastricht, together with a research company, investigated the potential impact of increasing the scope of eHealth and “self-management” on both the healthcare budget and the healthcare workforce in the Dutch healthcare sector.

Methodology The research was focused on specific, large chronic disease areas namely, asthma, cardiovascular, diabetes and psychological conditions. The study combined the results of a literature review and data analysis using data collected from healthcare databases on resource use in the Netherlands to estimate the potential budget savings and reductions in resource consumption.

Results Four eHealth and self-management applications were identified that can potentially save costs and lead to reduction in utilization of healthcare staff time. These areas were: self-management in asthma using a peak flow meter; telemonitoring of heart failure; improving treatment compliance in diabetes; and internet-based therapy sessions for depression. A fifth application on telemonitoring of coagulation levels for patients on warfarin therapy as a secondary prevention of strokes led to an increase in overall costs. However, this particular monitoring method might become irrelevant in the near future with the launch of new oral anticoagulants which do not necessitate close monitoring of patients.

Conclusion The estimated cost savings were around €112 million or 3 percent of the disease costs for these four applications. This calculation takes into account direct savings as a result of reduced hospital stays and/or GP visits. Furthermore, if productivity gains and reduction in social security expenditures were also included, the researchers estimated that overall savings could be as high as €1 billion.



In addition to the examples above and the evidence from the Whole System Demonstrator programme (Part 3), a number of other telecare, telehealth or combined telecare – telehealth projects have been established across the UK. For example, a telehealth project in Kent supporting 250 people with long-term conditions between 2005 and 2007 identified a 60-70 percent reduction in acute care costs. Similarly a telehealth project in NHS North Yorkshire and York involving 24 patients, mostly with COPD, identified reductions in hospital expenditure of some 24.8 percent and savings of £19,354 between 2009 and 2010.⁷⁶ Meanwhile, Birmingham City Council has embarked on a large-scale transformation of its services, with one aim being the widespread adoption of telecare and telehealth (Case example 11).⁷⁷

Case example 11. Transformation of social care services across Birmingham City Council

Situation Birmingham City Council undertook a major strategic review of its social care services, involving an extensive consultation exercise with service users/providers and stakeholders. Support for the implementation of telecare and telehealth was high; for example, respondents to the survey of carers felt that the use of equipment or assistive technology (telecare and telehealth) could not only make the carer's job easier and safer but also prove good value for money in allowing carers to have a life outside of caring without the need for replacement care. The review concluded that there was strong evidence of the preventative benefits of community alarms and in facilitating the development of telehealth and telemedicine services.

Methodology Following the review, the Council developed a strategy aimed at empowering service users to be able to make their own decisions as to the nature of the care they receive, when it is received and who provides that care. They further supported a shift away from residential care into domiciliary care and other forms of support in the community, and from provision delivered by the City Council to provision purchased externally. The strategy included disinvest from capital assets, making resources available to support service users to obtain the care that they require, including the use of telecare and telehealth to help people continue living in their own homes with the minimum of intervention. It earmarked capital receipts from the sale of redundant assets to reinvest in this strategy. The Directorate has continued to deliver its core vision over the last four years, resulting in the closure of: 25 residential establishments, 16 of which had attached day centres; 7 day centres; 4 office buildings; and 1 Adult Education Centre. Over this period it has opened 4 Care Centres that provide support to service users with high levels of need.

Results The rationalisation of assets has enabled the Social Services Directorate to implement its Transformation Strategy and change the way that services are provided to the community, as well as allowing the Directorate to reduce its workforce by some 1,100 full time equivalent posts over the last 2 years. In 2012-13 and 2013-14 it aims to spend some £4.7 million in revenue and £7.3 million in capital on telecare and telehealth to help complete the transformation of its care services.

Conclusion

The impact of tightening budgets at a time of increasing demands for health and social care, coupled with the policy requirement to provide more care closer to home and support service users to understand and self manage their condition more effectively, provide an opportunity to scale up the adoption of telecare and telehealth and to support health and social care to work differently. The case examples in this part of the report illustrate how some service providers have done just that. However, Parts Two and Three demonstrate respectively that the scale of adoption and diffusion of technology-assisted home-based care is largely underdeveloped and that there are a number of challenges to its wider adoption that need to be overcome. The following actions are intended to provide stakeholders with suggestions as to how they might start to tackle these challenges and use telecare, telehealth and telecoaching to support more people, with chronic health and social care needs, to live independently for longer.

Actions for stakeholders

Policy Makers in each of the four countries of the UK have demonstrated a leadership role in support of the use of telecare and telehealth which needs to be maintained and, indeed, strengthened. In England, the NHS Mandate issued in November 2012, gives the NHS Commissioning Board a clear leadership role. It will be important that this one includes providing support for the development and promotion of agreed service standards, including interoperability standards; service re-design standards; and local commissioning advice and support on the use of telecare, Telehealth and telecoaching.

Policy makers need to develop clinical and information governance frameworks, which act as enablers and not barriers to adoption. Policy makers and regulators therefore need to work with industry to develop clear national guidance on, for example, the extent to which telecare and telehealth solutions are affected by medical device and information governance directives and, in the light of this, industry needs to work collectively with customers and other stakeholders around the practical implementation of relevant directives.

Policy makers need to work with industry to align incentives and develop a pricing model based on a cost-effective end to end system and service solution. The pricing models need to reflect innovative commercial approaches to large-scale delivery which year on year provides measurable benefits to patients and providers.

Policy makers also need to work with industry to develop effective funding models. For example, a year of care tariff or alternative incentivisation schemes that recognise and reward technology-enabled services on a consistent basis across local and regional health and social care economies – with emphasis on payment for improved outcomes. To be fully effective, the funding model should aim to encourage whole system behaviour change.

Industry needs to develop new business models to support deployment of the technology. This should include consideration of how best to build development and installation costs into the running costs, for example, whether on a pay as you go basis or a risk reward model.

Health and social care providers should consider the merits or otherwise of “prescribing” telecare and telehealth for service users who the research evidence suggests would benefit most from the technology. Such an approach could include not only the equipment that best meets the user’s needs but also an information prescription to help users understand and manage their condition more effectively. Commissioners should in turn equip providers with robust information and regular updates on tariffs, logistics and supply chain management.

Industry needs to work with health and social care providers to raise awareness of the technology. This might include developing marketing campaigns, such as social media campaigns, bill board advertising and radio campaigns, aimed at educating the public about the services and equipment.

Clinical engagement in the use of telecare and telehealth is essential. For clinical engagement to be effective, it needs to be underpinned by a robust level of understanding and awareness of the strengths and weaknesses of technology-enabled care. This understanding and awareness should be developed as part of the education and training curriculum and should be covered as part of both pre- and post-registration training.

Closing thoughts

History has shown that, technology and innovation are two of the main drivers of productivity. Yet healthcare, whilst utilising technology to deliver many of the major advances in patient care, is arguably the last major industry to adopt technology in its daily interaction with service users. While telecare and telehealth are not new to the health and social care systems; the barriers to implementation discussed in this report have, until now, undermined their widespread adoption. The lack of growth money in the face of increasing demand for health and social care means that new ways of working are needed more than ever. Scaling up the implementation of technology-assisted care is one way to manage the increasing demand being placed on the traditional model of face-to-face care. This is not simply a technological issue; it is about service redesign and being bold about working differently by integrating such equipment into everyday health and social care provision.

Technology continues to advance at a pace.

Most people now use telephones, video, mobile and web technology as an everyday method of sharing knowledge, information and expertise. Such technology can enable clinicians and service users to talk directly to each other and allow services that were previously ward-based to be delivered by community and home based teams. Yet the potential for technology to make home care more effective, convenient and personalised is still widely underdeveloped. More and more people also have smart phones and tablets with access to increasing number of health Apps. The potential for technology to make home based care more effective, convenient and personalised has never been stronger. Adoption of a technological assisted approach to self management will happen. The question is whether this will be with or without the involvement of health and social care commissioners and providers?

Scaling up the implementation of technology-assisted care is one way to manage the increasing demand being placed on the traditional model of face-to-face care. This is not simply a technological issue; it is about service redesign and being bold about working differently by integrating such equipment into everyday health and social care provision.

Appendix. What are telecare and telehealth?

Telecare

Telecare provides health and social care from a distance with the help of telecommunications. It includes the use of information and communication devices/sensors to transfer medical information for the diagnosis and therapy of service users in their home. It is nothing but provision of healthcare services at a distance, the transmission of voice, video or graph data using ICT technology. Broad spectrum of applications and service elements fall under the definition of telecare and can be classified into three generations of telecare (based on an evolution of the traditional 'social alarm' model).⁷⁸

First Generation: These use telephone unit and an attachment with a button that can be triggered by the user in case of required assistance. After receiving the call by monitoring centre systems, an initial diagnosis of the nature and urgency of the need can be explored by voice link. Following an established protocol, the required personnel are alerted at the time of an emergency.

Second Generation: These are more advanced and automated social alarm systems adding an automatic dimension as the alarm is triggered automatically, enabled by the implementation of sensors such as smoke, fire and flood detectors, and there is no need for the older person to actively trigger the alarm. When activated, these trigger an alert to the monitoring centre and initiate the necessary response.

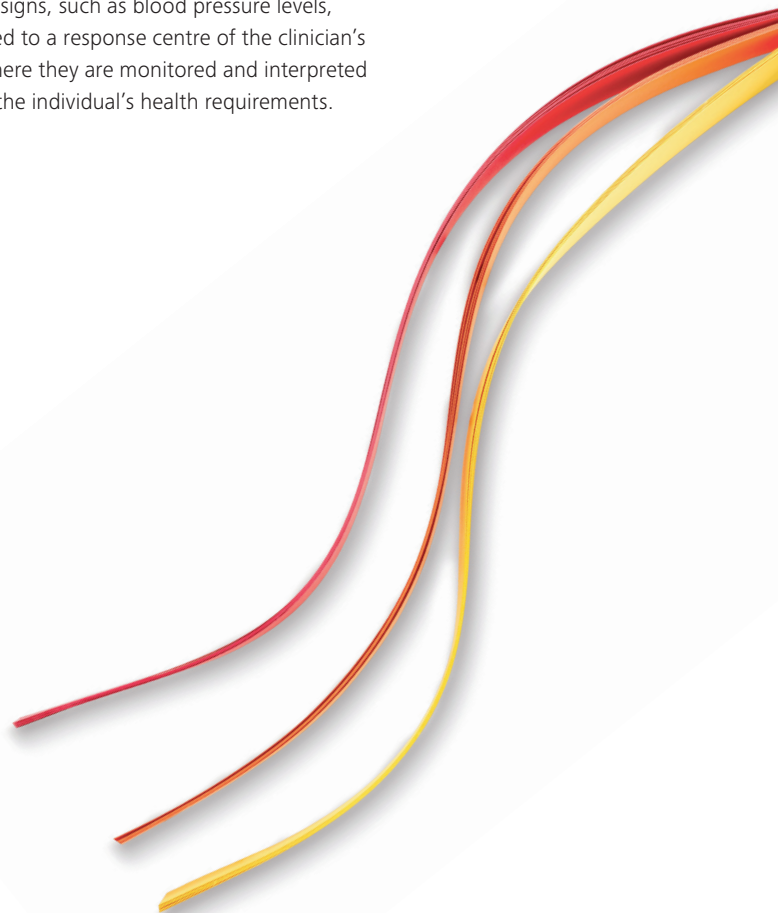
Third Generation: These are the most advanced telecare devices which automatically record everyday data through various sensors such as front door open/close detectors, fridge open/close detectors, pressure mats, bed/chair occupancy and electrical usage sensors. The data is analysed on a regular basis by the concerned person/centre to monitor wellbeing and assess the need for help and support.

Recent telecare devices include Mobile Telecare and Video-based Telecare. These are mobile phones and GPS systems enabling the traditional home-based telecare services along with visual communication between older people and carer personnel or family carers.

Telehealth

The World Health Organisation (WHO) defines telehealth as "The delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities."⁷⁹

Telehealth provides remote monitoring of a service user's vital signs through various devices. Fundamental signs, such as blood pressure levels, are transmitted to a response centre of the clinician's computer, where they are monitored and interpreted according to the individual's health requirements.



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