

# Empowering Patients through ICT Organisational Impact on Healthcare Systems in England and Scotland

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**Abstract:** This paper reports on the efforts carried out by England and Scotland to promote the widespread use of telehealthcare within Personal Health Systems (PHS) for patients with chronic conditions. In each setting, it explains the political drive, the trends in empowering patients, the needs for healthcare systems to treat chronic patients at home, the search for evidence supporting the case for telehealthcare, the reorganisation of services around these technologies and the need to coordinate and/or integrate different tiers of care in order to address the needs of patients suffering from chronic conditions. It details the achievements to-date and building on recent policy developments, it provides an overview on the likelihood of these services becoming a routine form of care. Following the two different approaches on telehealthcare in England and Scotland, it puts into perspective the need for adequate systemic governance and institutional reforms required to address the challenges associated to ICT implementations at organisational level and how the industry may be able to deliver solutions supporting them.

**Key words:** healthcare, organisational impact, ICTs, health information technology, remote patient monitoring and treatment (RMT), telehealthcare, Personal Health Systems (PHS), ageing population, chronic disease, patient empowerment.

Healthcare systems are at risk due to increasing demand, spiralling costs, inconsistent and sometimes poor quality of care, and often inefficient, poorly coordinated care processes. In response, Governments are developing various strategies, one of which consists of heavy investments in information and communication technologies (ICT) for health or health information technologies (HIT) (EC, COM(2010)245; OECD, 2010). Today the range of possible applications of HIT in healthcare organisational systems is enormous: electronic health records (EHR); computerised provider order entry (CPOE); picture archiving

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and communication systems (PACS); clinical decision support systems (CDSS); videoconferencing for doctor appointments; ePrescriptions; and new emerging applications such as telehealthcare within Personal Health Systems (PHS).

Despite their promise, HIT have proved difficult to implement (TAYLOR, BOWER *et al.*, 2005) which is particularly true of telehealthcare systems. While significant investments have gone into research on telehealthcare technologies over the last decade, only few initiatives have gone beyond the pilot stage (ABADIE, CODAGNONE *et al.*, 2011).

The advantages of telehealthcare over traditional care pathways are readily discernible to techno-enthusiast clinicians. Results are higher-quality enabling patient-centred care that is more responsive to patients' needs and, at the same time, more efficient (appropriate, available, and less wasteful) (OECD, 2010). However, without clearer evidence, stakeholders interested in promoting the adoption of telehealthcare may not be able to assess or demonstrate benefits in particular for chronic disease management and coordinated care; how best to implement a telehealthcare system in order to maximize efficiency and achieve patient empowerment as well as better health outcomes; or how to direct policy for better and more efficient healthcare delivery as a whole. Moreover, because telehealthcare is transforming the overall healthcare system, there is a need to use holistic approaches to understand the organisational impact of telehealthcare in the role distribution amongst healthcare professionals (COIERA, 1999; HARROP, 2002; COIERA, 2006; GLASGOW, 2007; PARE & TRUDEL, 2007; SIMON, RUNDALL *et al.*, 2007; DOBREV, JONES *et al.*, 2008; TUFANO, 2009; WALKER & CARAYON, 2009).

This article aims to analyse the development of telehealthcare with a particular focus on England and Scotland, two countries where two similar health and social care systems have aimed at widespread deployment of telehealthcare for chronic disease management through different strategies. The work draws on research carried out in the course of the SIMPHS Project<sup>1</sup> and unveils the organisational factors surrounding telehealthcare implementation.

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<sup>1</sup> Strategic Intelligence Monitor on Personal Health Systems carried out by EC DG JRC IPTS in cooperation with EC DG INFSO, see <http://is.jrc.ec.europa.eu/pages/TFS/sps.html>

It first sets the scene placing telehealthcare into the wider context of healthcare challenges posed by chronic diseases, using the example of the UK. After describing what telehealthcare systems do, the paper looks at the health and social care systems in England and Scotland, the search for evidence on the benefits of telehealthcare in each context, the policies adopted for promoting their widespread use and the organisational change required for their implementation. It concludes by identifying the likely future of telehealthcare in each setting drawing lessons from these two experiences for other European healthcare systems interested in promoting these applications as well as for industry.

## ■ Setting up the scene

### The challenge of long-term conditions

The statistics speak for themselves. In 1950, less than 1% of the global population was aged over 80 years. In OECD countries, the share of those aged 80 and over is expected to increase from 4% in 2010 to nearly 10% in 2050 (OECD, 2011). This ageing population is generating high demand and pressures on costs to healthcare systems. Already the 30% of the population with long-term conditions accounts for 70% of NHS spending in the UK (The Health Foundation, 2011).

Amongst these long-term conditions, some are more prevalent than others: e.g. Diabetes<sup>2</sup>, Chronic Obstructive Pulmonary Disease (COPD)<sup>3</sup> and Cardiovascular disease (CVD)<sup>4</sup>.

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<sup>2</sup> Diabetes is a condition where the amount of glucose in a person blood is too high because the body cannot use it properly. The development of diabetes can be prevented with exercise and a healthy diet. Diabetes can cause far-reaching health implications like heart disease, nerve damage and kidney damage. Amputation, blindness and even death can all result from not properly diagnosing or treating diabetes. (Diabetes-UK, 2010).

<sup>3</sup> COPD is a term used for a number of conditions; including chronic bronchitis and emphysema. COPD leads to damaged airways in the lungs, causing them to become narrower and making it harder for air to get in and out of the lungs. Severe forms of COPD result in shortness of breath impacting day-to-day life and often resulting in oxygen therapy. Other co-morbidities as a result of COPD can be developed often involving heart conditions. (BLF, 2011).

<sup>4</sup> Cardiovascular disease (CVD) - also known as heart and circulatory disease - includes conditions such as coronary heart disease (angina and heart attack) and stroke. Coronary heart disease (CHD) is caused by a gradual build up of fatty deposits in the walls of the coronary

For instance, the prevalence<sup>5</sup> of diabetes (Diabetes-UK, 2010) in the adult population across the UK was over 2.6 million in 2009, corresponding to 5.1% of the population in England and 3.9% in Scotland. For COPD, an estimated 3.7 million people have COPD in the UK, although only an estimated 900,000 (1.5% of the population) are correctly diagnosed. 24,160 people in the UK died of COPD in 2005 (BLF, 2011).

In order to better grasp the impact of chronic diseases, detailed data for CVD is provided. CVD (BHF, 2010), the UK's biggest killer, accounted for more than 190,000 deaths in 2007. In the UK, around 2.6 million people are living with coronary heart disease (CHD).

**Table 1 - Total deaths by cause, 2007, UK**

	<i>All ages</i>
Coronary heart disease	91,458
Stroke	53,186
Other CVD	48,643
Lung cancer	34,552
Colo-rectal cancer	16,025
Breast cancer	11,995
Other cancer	96,739
Respiratory disease	78,330
Injuries and poisoning	20,371
<b>All other causes</b>	<b>115,852</b>

*Source: British Heart Foundation (BHF, 2010)*

CVD is also a major cause of premature death (death before the age of 75). But although mortality from CHD, the most concerning within CVD, is falling rapidly, the prevalence of CHD and other circulatory diseases appears to be rising over time, especially for men in older age groups. Since the late 1980s, it has risen by 52% in men aged 75 and older. Nearly all deaths from CHD are from a heart attack. Approximately, 1.4 million people in the UK have had a heart attack at some point in their lives and 2 million people suffer from angina, the most common symptom of CHD. In 2007, 141,000 people suffered from a heart attack and 720,000 had definite heart failure.

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(heart) arteries, which can then cause them to narrow. Over time, the artery may become so narrow that it can't deliver enough oxygen to the heart which can lead to angina or a clot may be formed leading to a heart attack. Obesity, diabetes and physical inactivity are all major risk factors for CHD (BHF, 2010).

<sup>5</sup> Prevalence is defined as the total number of cases of a disease in a given population at a specific time.

The cost of CHD to the healthcare system in the UK is huge - around £3.2 billion a year. Hospital care accounts for the vast majority of these costs - about 73%. But looking only at the costs of CHD to the healthcare system grossly underestimates the total cost to the nation. CHD also costs the UK economy over £5.8 billion because of days lost due to death, illness and informal care of people with the disease. In total, CHD costs the UK economy about £9.0 billion a year (BHF, 2010)

**Table 2 - Decrease in death rate from CHD  
Men and women under 65, 2002-2007, UK and Europe**

	<i>Men</i>	<i>Women</i>
UK	24%	31%
England	25%	32%
Scotland	15%	26%
Wales	26%	33%
Northern Ireland	19%	26%
Netherlands	31%	38%
Finland	17%	22%
European Union	14%	17%

*Source: British Heart Foundation (BHF, 2010)*

Data for other OECD countries is similar and has driven healthcare systems to conclude that they cannot afford to ignore this evidence. As a result, there is a need to find new ways of delivering care reducing people's dependence on health professionals and increasing their sense of control and wellbeing is a more effective way of working.

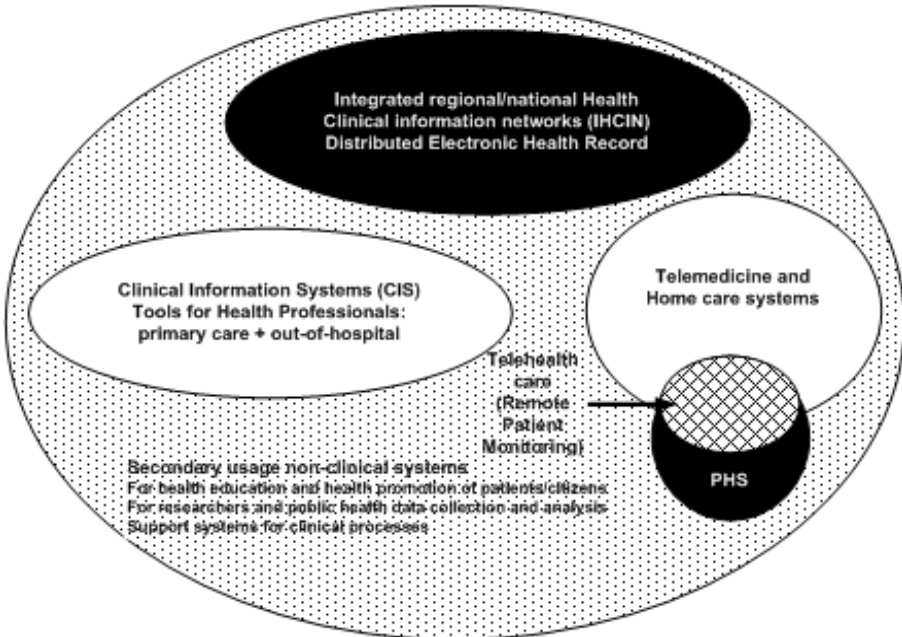
## **The role of PHS and telehealthcare <sup>6</sup>**

Telehealthcare which comprises Remoted Patient Monitoring and Treatment (RMT) is a segment within Personal Health Systems (PHS). The latter can be defined as technologies that assist in the provision of continuous, quality controlled and personalised health services to empowered individuals regardless of location. For the sake of simplicity, the rest of this document will use the term telehealthcare indistinctively for both RMT and telehealthcare whilst the terms telehealth and telecare will be used to denominate specific applications within telehealthcare.

<sup>6</sup> The context and definitions provided have been extracted from ABADIE *et al.*, 2011; ABADIE, CODAGNONE *et al.*, 2011).

The chart below illustrates how PHS and telehealthcare fit in the overall eHealth landscape, as defined by the eHealth task force supporting the Lead Market Initiative (LMI) (EC, 2007).

Figure 1 – Constituent elements of eHealth



Source: ABADIE, CODAGNONE et al., 2011,  
adapted from eHealth Task Force Report, 2007 (EC, 2007)

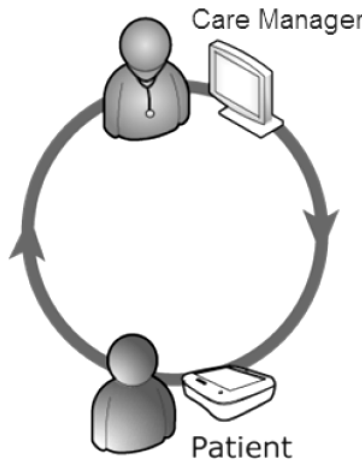
To be more specific, PHS consist of the following elements:

- Ambient and/or body (wearable, portable or implantable) devices, which acquire, monitor and communicate physiological parameters and other health related context of an individual (e.g. vital body signs, biochemical markers, activity, emotional and social state, environment);
- Intelligent processing of the acquired information and coupling of it with expert biomedical knowledge to derive important new insights about individual's health status;
- Active feedback based on such new insights, either from health professionals or directly from the devices to the individuals, assisting in diagnosis, treatment and rehabilitation as well as in disease "prevention and lifestyle management."

Within PHS, telehealthcare systems include technologies that help patients with chronic diseases monitor vital signs (e.g. blood pressure, heart rate, blood glucose, weight, oxygen contents, ECG) enabling the prediction of aggravations and exacerbations of their chronic condition thus improving the quality of care and the quality of life of the patient.

By using telehealthcare systems, patients can keep control over their health conditions and can live independently or with limited need for care. Currently, telehealthcare applications are mostly used for patients suffering from CVD, diabetes and/or COPD. As a general principle, PHS and telehealthcare systems can be seen as a particular instance of healthcare professional-to-patient services as opposed to healthcare professional-to-healthcare professional applications and as such they differ from the broad definition of telemedicine, which includes healthcare professional-to-healthcare professional services (e.g. tele-radiology)

**Figure 2 – Telehealthcare application**



*Source: author's development*

As visualized in Figure 2, telehealthcare provides the patient with a home-based interface for delivery of a range of services to measure symptoms and vital parameters. It often incorporates a system for prompting patients to take their medications and record their symptoms. Patients are expected to routinely initiate the process of taking measures of the vital signs defined according to their health condition and the results are then submitted to a central system available to the care manager, who may contact the patient or their care providers if readings are out of range.

Telehealthcare and PHS address the challenges of chronic conditions and 21<sup>st</sup> century healthcare system trends in several ways: (a) empowering patients and enabling them to live independently longer by learning about their condition and to self-manage it; (b) improving health care outcomes while helping control costs; (c) more importantly, they can help extend the reach of the limited –and eventually shrinking– pool of health care professionals; and (d) they are believed to ignite entrepreneurial activities and innovation in healthcare contributing to job creation and European competitiveness.

However, as simple as telehealthcare looks in Figure 2 from a patient perspective, organisational changes behind the care manager interface are complex and challenging to deliver. A number of barriers still hamper full deployment of telehealthcare in Europe. Healthcare professionals are confronted with an unfavourable structure of incentives for introducing telehealthcare, due to conflicting responsibilities for telehealthcare within healthcare organisations. This is mirrored by ambiguities in reimbursement schemes, in particular between primary, secondary, and social care. In addition, the lack of awareness of positive outcomes already analysed in many studies and meta-reviews presenting compelling evidence and of education for patients and carers alike on such outcomes are considered a major bottleneck. Furthermore, the lack of strategic leadership for structural change hampers the natural uptake and diffusion of these technologies. Finally, companies providing the technology, report constraints about market scale, lack of reimbursement, unclear Return on Investment and business model choices, purchaser fragmentation and the difficulties in obtaining approval and certification from healthcare organisations (ABADIE, CODAGNONE *et al.*, 2011).

In light of the above, the experiences in England and Scotland offer two distinct approaches to tackle these barriers which others could learn from.

## ■ The case for telehealthcare within the UK organisation of health and social care services

The case for telehealthcare solutions in the UK was driven by the anticipated challenges of providing care for an increasingly aging population where 17.5 million adults suffered from chronic illnesses set to rise to 35 million by 2030 (DoH, 2004). Although a variety of chronic diseases



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jeopardize the sustainability of healthcare systems, the impact of CHD, diabetes and COPD as well as their very nature, made them an attractive target for telehealthcare applications. Hence, the interest in the potential (and implications) of using telehealthcare to enhance home-based care for these long-term conditions and minimise hospital admissions, building on different visions of digitally mediated healthcare, from the extension of existing clinical services through to the reconfiguring of the disparate clinical, social and community care services.

Both England and Scotland developed a set of strategies and policies to launch and deploy telehealthcare. How they were launched, challenges faced and the likelihood of home-based care as a routine form of care in each setting will be discussed in the following sections.

It is relevant at this stage to highlight that healthcare competencies in the UK are devolved to the respective home countries, thus, policies in each home country often vary. What both the English and Scottish healthcare systems had in common when launching telehealthcare applications was Health being under the responsibility of the Secretary of State and the system being run by the publicly-financed National Health System (NHS), mostly free at the point of service regardless of each individual's ability to pay. Responsibility for commissioning health services at the local level lied mainly with primary care trusts (PCTs) in England and NHS Boards in Scotland, each covering a geographically defined population. They both followed a model where the general practitioner (GP) held a gate-keeping role (BOYLE, 2011).

Regarding social care, it has traditionally been the competence of the local authorities or councils with adult social services responsibilities. The organisation of long-term care has shifted over time from residential (or institutional) care to care provided in the community, while the provision of care has shifted from the public to the private - and voluntary - sector organisations. Financing of social care is a mix of public, through local government bodies and private, mainly out of pocket with some payments through insurance schemes. For each individual, the public-private mix varies as it is means-tested (BOYLE, 2011).

## ■ The experience in Scotland

The deployment of telehealthcare in Scotland is closely related to the adoption of the National Telecare Development Programme (TDP)<sup>7</sup> Launched in 2006, the TDP did not only aim to promote the use of telehealthcare technologies but also to coordinate health and social services. In total £20m were invested between April 2006 and March 2011 over two rounds of funding. One requirement to obtain funding was the joint application by a *local partnership* between health and social care services, thus reflecting the aims of getting these two tiers of care to work together and provide integrated services to patients. Funds were allocated to selected partnerships based on their population and distributed by the Joint Improvement Team (JIT) - established specifically to work directly with local health and social care partnerships across Scotland -. The second round of funding (2008-2010) introduced satisfactory progress as a criterion for funding (BEALE, SANDERSON *et al.*, 2009). It should be emphasized that the first round of TDP funding was mainly targeting telecare and some telehealth services whilst the second one prioritised telehealthcare.

### Operationalisation of telehealthcare at partnership level in Scotland

In each TDP pilot, telehealthcare implementation and day-to-day activity were mainly driven by trained, community nurses<sup>8</sup>. For the pilots, community nurses received additional, specific training about the conditions they were dealing with and about the telehealthcare technology. They were also responsible for training the patients. In all cases, patient-level data collected through telehealthcare readings was not integrated with the EHR. However, in many of them community nurses also had access to the EHR, often using a remote desktop application. This allowed nurses to better assess the condition for each patient and better coordinate each case. In addition, community nurses would also coordinate with social care services, thus achieving the desired coordination between primary care and community nursing.

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<sup>7</sup> Although this study focuses on diabetes, COPD and CHD, TDP funding was made available for additional conditions including mental disabilities or substance misuse

<sup>8</sup> There are different categories and responsibilities of nursing in Scotland. Community nurses are generally NHS staff contracted by each NHS Board. In addition, GP practices may contract their own practice nurses. In small communities, such as rural areas in Scotland, interaction among staff at GP practices and community nurses is frequent and smooth.

Long-term care services were traditionally the competence of adult social care services and often delivered through elderly care wards. Through the partnerships and their pilots, patients were meant to be at home using telehealthcare, thus freeing up resources in the wards.

In addition, a project management team was appointed, which was responsible for the coordination between health and social care services, technology procurement, supporting implementation and reporting on the development of the partnership amongst others.

### **From evidence to policy initiatives: trends and challenges**

The evidence on these experiences was evaluated in a variety of forms.

- The York Health Economics Consortium (YHEC) was commissioned by JIT to evaluate the TDP for the 2006-2008 period where the main emphasis was on telecare rather than telehealthcare). They concluded that a stronger culture of evaluation within partnerships would promote the accountability of telecare services (BEALE, SANDERSON *et al.*, 2009).

- Newhaven Research, also commissioned by JIT to assess the development of telecare for 2006-2010, concluded that efficiencies achieved by TDP funding reached approximately £48.4 million at 2010 prices resulting from reduced visits and hospitalisations, which was close to expectations (Newhaven Research, 2010).

In addition, individual partnerships also went through detailed evaluation, in particular those experiences that evolved from telecare to telehealthcare:

- The evaluation of the use of telehealth in Argyll and Bute for COPD patients with home Pods compared the periods March-November in 2008 and 2009 for 12 patients (i.e. pre and post-Pod installation) concluding that there was a reduction in GP visits (47-28), A&E attendances (9-2) and hospital admissions related to COPD, both in terms of numbers (11-1) and days of bed occupancy (72-8) (ROBERTS, GODDEN *et al.*, 2010).

- A qualitative evaluation of the Telescot trial for COPD patients in Lothian concluded that patients using the telehealthcare applications felt safer and reassured. Patients felt that telehealthcare facilitated access to a GP/intervention; it facilitated greater anticipatory care; and, it reinforced lifestyle changes and supported compliance (URE, TARLING *et al.*, 2009).

At the time of writing, many of the partnerships were still at quantitative evaluation stage, including the Telescot programme in Lothian which is carrying out a randomised control trial (RCT) on patients suffering from a variety of conditions (COPD, diabetes, hypertension and CHD). Despite this fact, the evidence already available was considered sufficient for policy makers to decide mainstreaming telehealthcare in Scotland and thus, no new pilots were needed. Indeed, the second round of TDP funding actually aimed at establishing a common approach to the broader question of 'telehealthcare' implementation, that is the organisational evolution towards health and social care convergence (Newhaven Research, 2010).

The increasing importance for policy makers of this organisational evolution is also reflected in the terminology used in policy documents over time: in 2006 the term telecare (meaning third generation telecare services) was used while towards 2010 the term telehealthcare gained presence, reflecting the involvement of both health and social care in the process. The Scottish government believes that the TDP funding was very effective in changing the way care was traditionally delivered by inducing the organisational changes needed to coordinate health and social care and the cultural change for stakeholders involved at local level: healthcare professionals, patients and carers and the overall community. Taking advantage of this change and the momentum generated, mainstreaming implies consolidating this change, by taking advantage of the momentum.

It actually translates into various policies having a strategic impact also at local level.

A Strategic Framework (NHS24, 2010) aiming to assist the transition from discrete projects into mainstream service delivery for telehealthcare was approved. Also, as a result of this, the Scottish Centre for Telehealth (SCT) and the JIT team have recently been integrated within NHS24 (the out-of-hour services). The aim is to develop the right structure to deliver the national telehealthcare programme with all services coordinated. However, for this to happen, interoperability, training and education for healthcare professionals (nurses, doctors and call handlers from NHS24) as well as patients and carers are required.

In addition, social care services, so far run by local councils, will focus on providing services to children, adult services now being the responsibility of NHS Boards, thus integrating adult health and social care services into one sole organisation.

At local and operational level, the re-organisation underway also mirrors the above policies and initiatives. Telehealthcare alarm call handlers being the responsibility of the NHS Boards would now be co-located with NHS24 service staff, community nurses and ambulance services. A team of social workers is also planned to be co-located with them as part of the service coordination. The aim is to deliver the adequate care and to cover the actual needs of patients. Trained call handlers would be the first contact point responsible for phone calls and telehealthcare alarms triage towards the appropriate service.

Two main sources are foreseen for financing the mainstreaming of telehealthcare. On the one hand, part of the new NHS budget has been ring-fenced for re-shaping services and keeping patients with long-term conditions at home, £70 million for 2011 and the same amount for the next 3 years. This is where telehealthcare as one of the interventions for these £70 million will fit. This builds on the reorganisation that has taken place between health and social care in the local partnerships and shows that policy making is not imposing telehealthcare but is framing budgets and objectives in a way that NHS Boards will find telehealthcare appealing. In spite of this, NHS Boards are still free to choose how to achieve these objectives, be it through telehealthcare or other means.

In addition, £10 million will be invested to promote assisted living technologies and services enhancing well-being and providing top quality health and care, enabling people to live independently. This is co-funded by the Scottish government and the Technology Strategy Board<sup>9</sup> as part of their DALLAS programme – Delivering Assisted Living Lifestyles at Scale (DALLAS/anno/NS/mar11/B 2011). As telehealthcare applications fall within this programme, this will involve implementing and evaluating the use of these technologies and reorganising healthcare service delivery for the 10,000 users coming from different socio-economic backgrounds, as established by the DALLAS co-funding. Results are expected by 2015.

If the impact of the DALLAS initiative in 2015 proves positive, and since these 10,000 patients will be located in different areas of Scotland, Scotland will have succeeded in mainstreaming telehealthcare. The main reason is that the services would have been reorganised around these 10,000 patients

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<sup>9</sup> Note that the TBS is UK-wide business-led government body. The DALLAS programme aims at 5 initiatives each of them in different parts of the UK and here only the one planned for Scotland is being discussed.

nationwide, with much more profound implications than one might think at first sight.

However, some challenges to be tackled for successful delivery in Scotland have already been identified. Following the integration amongst tiers of care, the latter shall also share information and this would imply making their IT systems compatible, to integrate patient EHR information, telehealthcare data and information recorded through NHS24 besides integrating the different EHR systems currently in use. Notwithstanding that interoperability of the different IT systems used in the different tiers of care remains a challenge, some of the funding made available is meant to be used for this purpose.

Furthermore, at local level, NHS Boards are expected to develop the right policies for A&E and hospitals to re-shape services and keep patients with long-term conditions at home. Against this background, NHS Boards should support a consolidation process stimulating better communication and coordination between GPs at community level and hospital care which may represent an additional challenge.

## ■ The experience in England

Following £80 million funding to local authorities through the Preventative Technologies Grant to further consolidate and enhance telecare services in England, the White Paper "Our health, our care, our say: a new direction for community services" (2006), highlighted the need:

"To demonstrate on a wider scale that this significant shift from hospital care (through telehealthcare) is now possible and that more people can be supported to retain their independence in the community" and the "need to provide credible evidence that it will benefit the individual and their carer's quality of life, and deliver gains in cost-effectiveness of care" (p. 118).

This White Paper sets the scene for the Whole Systems Demonstrators (WSD) programme, established to prove that health and social care working together would reap joint benefits. In 2007 twenty-five bids were received, six were shortlisted, and three final sites were selected to be funded by the Department of Health as a two year research project: Cornwall, Kent and Newham were chosen due to the diversity amongst their populations (DoH, 2008).

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## The Whole Systems Demonstrators (WSD)

The three sites, started by establishing teams, then during 2008, they recruited patients through GP practices and started data gathering for evaluation. Over 6,000 participants were recruited making the programme the largest trial of telecare and telehealth to date in the UK and likely worldwide. Half the participants were in the intervention group receiving either telecare or telehealth and half were in the control group receiving "usual care" for 12 months.

The telecare service was aimed at vulnerable people who need the support of Social Care or Health Services to keep living independently, for example, those with physical disabilities, the frail and elderly or those suffering from dementia or epilepsy. The telehealth service was aimed at helping people manage their long term health conditions in their own home. (Conditions include - diabetes, CVD and/ or COPD).

By 2009, recruitment was completed and by September 2010 the trial period ended. Shortly after, data gathering was completed (ELLIS, 2011).

Originally, WSD was to prove that health and social care working together would reap joint benefits in terms of costs, effectiveness and promoting patients to stay in the community. However, the final trial evaluation assessed the added value of telehealth and telecare over a reorganised service and not the benefits of whole systems redesign compared to conventional care. Therefore, generalisability of the results will be limited to reorganised services (Bower, Cartwright *et al.* 2011). (*et al.*)

While the WSD evaluation is still underway, the WSD programme is not the only experiment in England. In parallel, other smaller pilots took place in 50-70 PCTs often coordinated under the WSD Action Network umbrella (CLARK & GOODWIN, 2010).

The total funding allocated to the WSD was £31 m, including evaluation costs representing 12-15% of the overall budget. The operationalisation of telehealth at the WSD sites was run in a similar way to in Scotland and with community nurses, staff contracted by the PCT, having a leading role. Reorganisation of services and coordination between health and social care took place in the three sites, like in Scotland.

## From evidence to policy initiatives: trends and challenges

As stated earlier, scientific evidence to date on the impact of telehealthcare is insufficient and the combination of evaluation methods applied to the WSD is expected to provide very robust evidence on these applications to reorganised service delivery systems (BOWER, CARTWRIGHT *et al.* 2011). Whilst a policy commitment is unlikely to take place until results, are delivered at the time of writing, PCTs in Kent and Cornwall were mainstreaming the service through their own funding sources. For how long they will be able to finance it remains to be seen.

In the light of additional policy reforms currently taking place in England, Newham (the WSD third site) concluded they were not in a position to mainstream. These policy reforms refer to the 2010 White Paper "Liberating the NHS" (2010) suggesting GPs organise themselves into GP consortia – the so-called 'clinical commissioning groups' (CCGs) - for commissioning services. As a result PCTs would be dismantled and community nurses with them.

This has been accompanied by job cuts within the NHS which press sources revealed to translate into 53,150 posts due to be lost across 155 hospital trusts, 126 PCTs, 23 ambulance trusts and 54 mental health trusts in England (PRINCE, 2011).

Some of the current challenges for mainstreaming telehealth in England are common with those of Scotland: interoperability and reorganisation of services to coordinate different tiers of care. Meanwhile, recent policies promote healthcare services reorganisation which may have a serious impact on telehealth applications. The new GP commissioning model would imply that telehealth services would have to be delivered in a way that suits those GP consortia which are interested in providing this service to their patients.

Interoperability however, seems to be progressing through the National Programme for IT (NPfIT), certainly with delay, but so far making its way ahead (NAO, 2011). On the other hand, telehealthcare solutions developed in England so far are not interoperable with current systems used in primary care and the uptake of the NPfIT applications once completed remains to be seen. In addition, England is relying on evidence from the WSD programme to define policies (and funding) around telehealth. Until this evidence is delivered, telehealth services will be surrounded by uncertainty which may result in losing momentum, as seen with Newham.



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## ■ What can others learn from it?

In the UK, the interest in telehealth was highly influenced by the positive experience of the US Veterans Health Administration with these applications. In both England and Scotland, the case for assistive technologies has been growing as a result, with a number of successful pilots and trials across the two home countries. Telecare is well established in both settings whilst broader telehealthcare applications are not yet widespread.

England is still waiting for robust scientific evidence from the WSD programme to develop policies around telehealthcare applications while the evidence that Scotland gathered seemed to be sufficient for them to build the case for further roll-out. Thus, what represents enough evidence for one policy maker may not be sufficient for another. It can be argued that Scotland being more rural than England, the telehealthcare case seems more attractive from the outset. For instance, in some areas in the Highlands some patient emergencies require the transfer of the patient by helicopter with the associated resource consumption. Although, the evidence gathered in Scotland never included a case of helicopter transfer given the small number of patients involved, the policy-maker is likely to include this kind of issues during the decision-making process.

Scotland has secured funding till 2015 to mainstream the service. Complementarily, policies have given room for telehealthcare applications within the healthcare system. This is an interesting learning point for other European countries, like Spain or Italy, where mainstreaming would require reimbursement for telehealthcare activities and coordination with primary care, given that GPs also hold a gatekeeping role in these countries. In Scotland however, direct reimbursement for telehealthcare is not the issue, instead, it is about developing the appropriate policy framework and funding for these applications, if required, but not direct reimbursement.

In countries where primary care does not hold a gatekeeping role, policy-makers interested in promoting telehealthcare initiatives may first have to consider who would be the coordinator of care for these initiatives and policies around 'patient-ownership' would be needed as well as defining the appropriate paths for patients.

As much as Scotland is likely to go ahead with their plans, budget cuts in the Scottish government have not taken place yet and such cuts are likely to

reach them in the coming months. Whether a budget reduction would have an impact on their telehealthcare strategy remains to be seen.

In England, if the GP commissioning strategy is successful, GP consortia would decide whether to invest in telehealth services or not, and the extent to which commissioning for telehealth services will take place will partly depend on the evidence from the WSD programme.

For people with long-term conditions to be kept at home which is at the core of savings projected and where telehealthcare applications can play a role, the assumption is that patients want to stay at home and actually, when the time comes, patients also prefer to die at home instead of in hospital. If this is not their preference, any strategy aiming at keeping patients at home is likely to fail. The case for innovation in how patients in England cope with dying is made by the findings of a recent YouGov poll. Results showed that 66 per cent reported preferring to die at home, a figure in line with other polls on the subject (LEADBEATER & GARBE, 2010). Yet if healthcare systems do not manage to reorganise their services and deliver care around this, they will fail to address patients' needs whilst at the same time exposing their sustainability.

From an industry perspective, and assuming the situation in each setting stands as pointed out by their recent policy developments, the type of solutions they deliver in each of England and Scotland will differ given that services, financing and their needs will be organised differently. The same would apply if they were to deliver solutions outside the UK. It is not only about the technology developed, it is about delivering a solution that suits the needs in each setting based on their specific context and policies which includes interoperability issues where the industry contribution is crucial.

## ■ Conclusions

A number of countries struggling to reduce costs and to adequately support patients suffering from chronic conditions find telehealthcare an attractive way forward. However, most of them hesitate in developing telehealthcare at wide scale and implementation often remains limited to small pilots. There are few exceptions to this, including the cases of Scotland and England described in this paper.

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Some of the challenges exposed in the two experiences discussed here are likely to apply in other settings such as interoperability and reorganisation of services to coordinate different tiers of care. Developing adequate systemic governance and institutional reforms are required to address them.

Other challenges for wider telehealthcare implementation might be specific to each setting such as policies developed in parallel having unintentional effects which may influence – positively or negatively - the adoption of these technologies. In addition, it has also been described that establishing what represents enough evidence is relative and what may be enough in one setting might not be valid enough in different one. Thus, policy-makers need to make clear what represents enough evidence based on their reality and make appropriate decisions in line with it.

Finally, the industry needs to take into account the policy context and organisations surrounding any implementation and develop suitable solutions accordingly. They are likely to be better off by becoming a partner in a wider reaching organisational reengineering process rather than by focussing on simply selling a technology.

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