

# HSJ

# TELEHEALTH

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# WE HAVE THE TECHNOLOGY

## THE CHANGING FACE OF HEALTHCARE DELIVERY



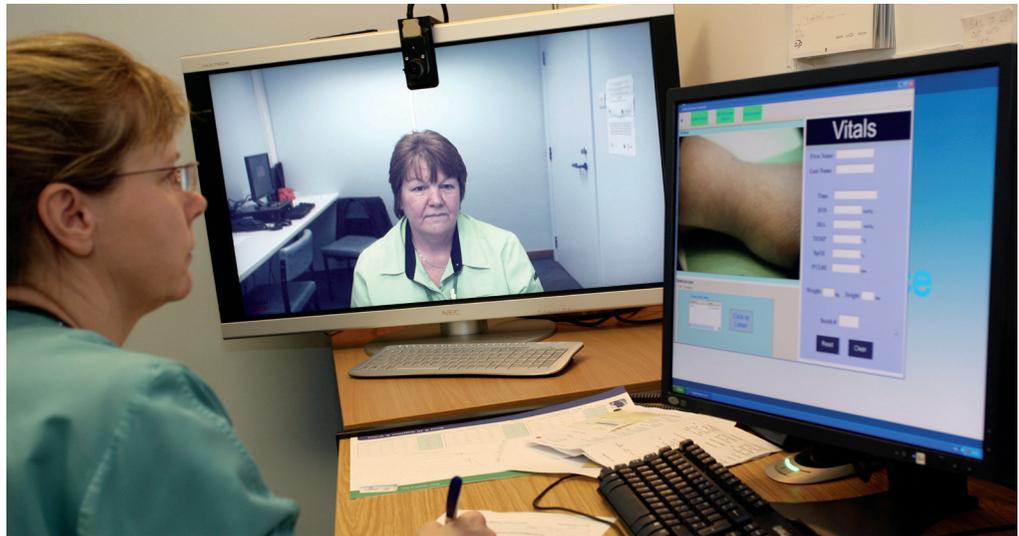
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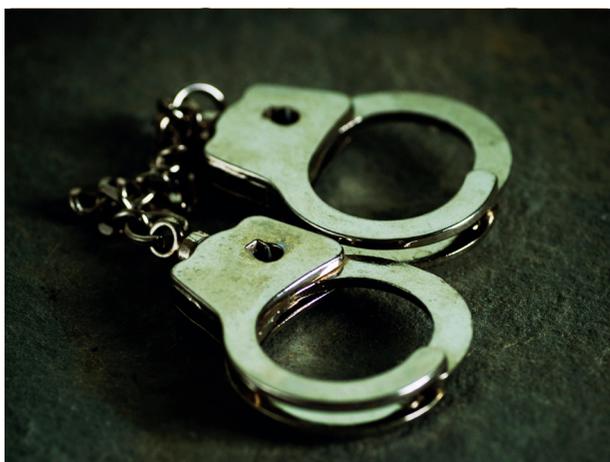
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## CONFERENCE

# LONG-TERM THINKING

Telehealth can make a difference in enabling the service transformation needed in the NHS but having supportive partnerships in place first is crucial. Claire Read reports

“It seems strange for a representative of a technology company to say that technology is not the answer,” Philips Healthcare commercial director Malcolm Hart admitted to delegates during a panel session at last month’s HSJ/Nursing Times Telehealth 2012 conference. “But technology is only part of the answer. It’s an enabler for the service transformation that needs to happen.”

It was a common theme at the session: the idea that telehealth can make a difference, but that it is not a quick fix and that it is crucial that supportive partnerships are in place first. These are lessons which Philips has ingrained in its commercial approach – one which Mr Hart characterised as “not about the boxes” but instead about service delivery.

“We have a patient fee per month – if the patient doesn’t come, Philips doesn’t get paid. It’s risky for us as a company but we’re absolutely committed to the transformation that needs to happen in society as care moves from hospital to home, and we very much want to be a part of it. We want to move towards longer-term, sustainable systems by working with our partners.”

That includes partners from the Department of Health’s whole system demonstrator (WSD) telehealth trial, for which Philips was one of the technology suppliers. “Even though it was a pilot, our goal was really to implement [the technology] – not to do the pilot and then walk away,” commented Mr Hart.

Helen Thompson, regional head of service development for NHS Direct and a speaker at the same panel session, agreed that a longer-term commitment was necessary to get fully functioning projects. “We have had a dearth of pilots in telehealth,” she argued. “But often you can’t fully begin to get to grips with integration and the problems before the pilot is over. We need to have enough time to overcome



Philips Healthcare’s Anjan Bose gives the thumbs up to patient monitoring system SureSigns VM3

problems so we can integrate and get people on board.”

The importance of time and getting people on board is illustrated by the experience of NHS South of Tyne and Wear. Paul Marriott, the organisation’s telehealth project manager, explained that the local authority had previously implemented home-based monitoring systems for patients in the area with COPD and heart failure. “But the problem was they were not going to scale and were quite expensive.”

Cue a change in approach. “We took it back to a clinical system,” Mr Marriott told the conference. “Rather than procuring equipment and then trying to deploy it we decided to work with clinicians on pathways. We meet with clinicians to talk about the pathway, not about telehealth, and then match the technology and service with the pathway.” Mr Marriott gave the example of a conversation with a local obstetrics and gynaecology consultant as evidence of the benefits of this way of working: “He said he wasn’t going to put a box in the middle of the room [to monitor patients] but as soon as we mentioned mobile phones he said all the women visiting him had mobiles, that they were texting when they came for appointments.”

Today, few of those women are coming in for blood pressure or urea checks related to pregnancy hypertension. Women are instead given the means to check these measurements at home and can then use the Florence telehealth system to text the readings to a clinician. If the values are determined to be worrying – a decision based on algorithms written by the consultant and his team – then the patient is asked to come into hospital.

It is an approach that costs just seven and a half pence per transaction. The organisation is now working to develop detailed costings for different telehealth solutions, believing such information to be crucial to the prospects of a widescale rollout. It is an approach that Mr Hart and his colleagues at Philips are also pursuing, and which they are optimistic will lead to further evidence of the worth of telehealth.

“A very small part of the population contribute to a very high level of cost,” Mr Hart explained. “If you can identify people at those different cost levels and if a supplier can have a range of services then we can deliver appropriate care to them and we should get significantly better outcomes than we have today.” ●



**MILES AYLING  
ON THE NEED  
FOR INNOVATION  
IN HEALTHCARE**

**IN ASSOCIATION WITH THE DEPARTMENT OF HEALTH**



“ Like every other health system across the globe, the challenge facing the NHS is how to drive improvements in quality and value in a much tighter economic climate. Add to that a growing and ageing population, increasing public expectations and an ever increasing pipeline of expensive new technologies and medicines, and a tricky task becomes even trickier.

Given those pressures, it is clear that carrying on doing things in the way we have always done them will not do. We need to innovate and we need to transform the way we deliver healthcare. In the *Innovation, health and wealth* report, Sir David Nicholson argued that “innovation must become a priority for the NHS”, and that we should “accelerate the use of assistive technologies for people with long-term conditions”.

We know that – when implemented as part of a whole system redesign of care – telehealth and telecare can reduce cost pressures and improve patient outcomes. But the technologies we now use in our everyday lives – things like Skype and apps – take too long to make their way into healthcare.

**‘We need to make the use of assistive technology the norm rather than the exception’**

There are, of course, pockets of best practice across the NHS. But the challenge is to take those pockets of best practice and spread them at pace and scale right across the health service.

This is a unique opportunity. We have the potential to transform the health and healthcare of millions of people but we need to take action now. We need to make the use of assistive technology the norm rather than the exception; we need to build understanding and support among clinicians; we need to engage patients and their carers; we need to redesign services and move care out of hospital settings and into the community and patients’ homes; and we need to work with industry to drive down costs and improve interoperability.

This is at the heart of the government’s 3millionlives initiative, which aims to improve the lives and life chances of three million people over the next five years. If we succeed, the benefits for patients and the NHS are enormous. It will also put UK plc at the leading edge of the development and use of these technologies globally.

We are on the cusp of a tidal wave of health innovation across the world – it would be unthinkable to leave NHS patients behind. Miles Ayling is director of innovation and service improvement at the Department of Health  
3millionlives.co.uk

**SELF-CARE**

**HOME CARE APPROVALS**

The DH’s 3millionlives programme is helping to promote telehealth and telecare services and demonstrate how people can manage their health, reports Maja Dragovic

It is now almost a year since the Department of Health made its support for telehealth and telecare abundantly clear. It created 3millionlives with the aim of enhancing the lives of three million people over the next five years, specifically by using remote monitoring to monitor a patient’s physiological status and health (telehealth) and by employing technologies to help older and more vulnerable individuals to live securely and independently in their own homes (telecare).

The precise objectives of the programme were also clear: to create the right environment to support the uptake of telehealth and telecare; to ensure that the technology industry works with the NHS, social care and others to simplify the procurement and commissioning processes for telehealth and telecare services at scale; and to promote the benefits that telehealth and telecare services can offer people in managing their health and care.

Illustrating those benefits has become easier with the publication of the first academic study on the results of the whole system demonstrator (WSD) trial. The study – one of the most complex and comprehensive studies the Department of Health has ever undertaken – began in May 2008 and is the largest randomised control trial of telehealth and telecare in the world, involving 6,191 patients and 238 GP practices across three areas: Newham, Kent and Cornwall. It specifically looked at whether telehealth and/or telecare could benefit individuals with certain long-term conditions (COPD, chronic heart failure and diabetes) or social care needs.

While the initial results of the study powered the foundation of 3millionlives, the first formal publication to come from it has bolstered the campaign further. The first of five planned papers on WSD was published in the *British Medical Journal* in June and shows that among those who received telehealth services during the trial, there was

a 20 per cent reduction in emergency admissions, a 15 per cent reduction in A&E visits and a 45 per cent reduction in mortality.

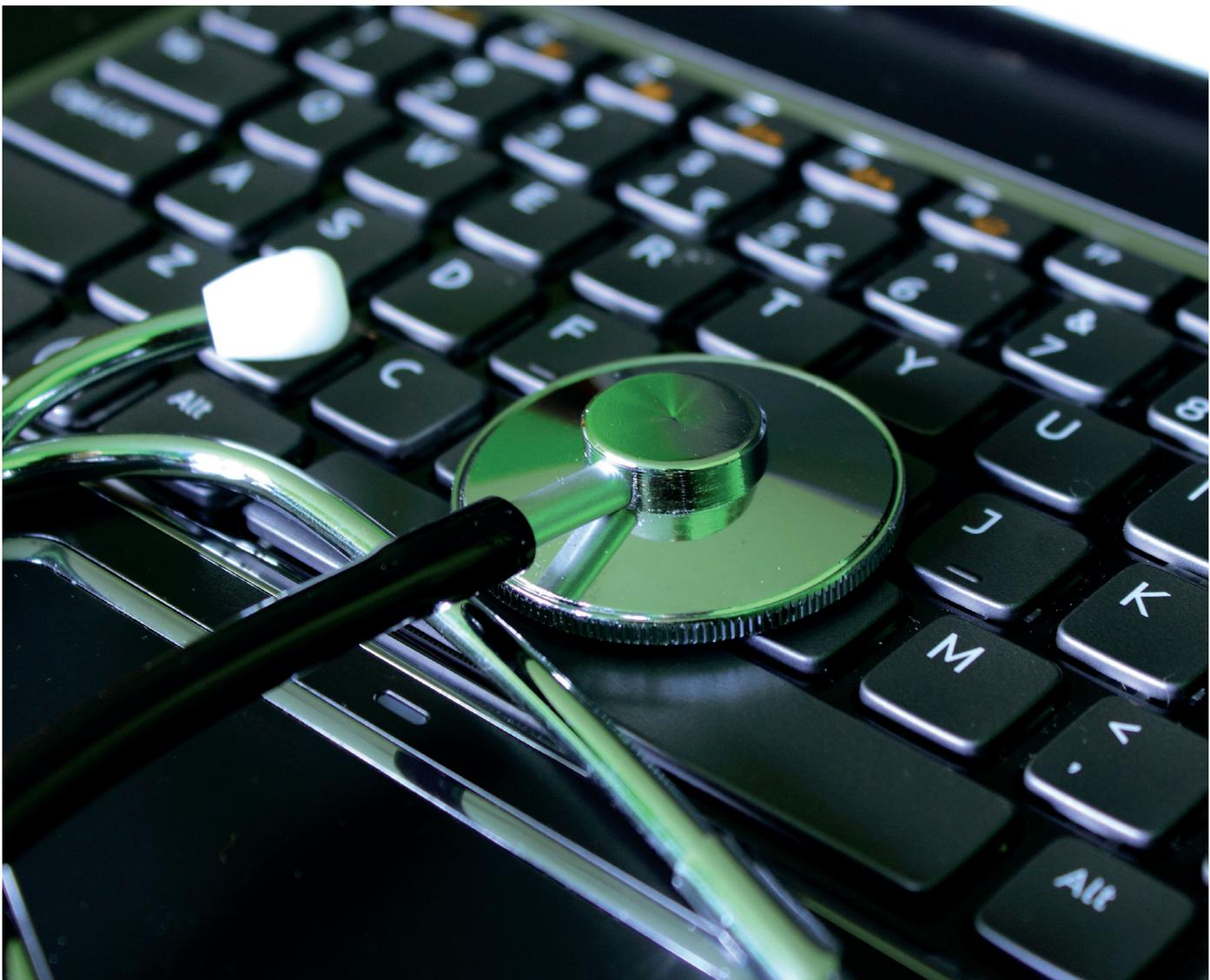
Miles Ayling, director of innovation and service improvement at the Department of Health, says: “In my view, the evidence is very clear. When used in the right setting, with the right support, and with the right economy scale, telehealth can transform outcomes and provide value for money.”

Paul Hitchcock, director of the Allied Health Professions Federation, is in agreement. “The WSD trial gives compelling results for using an assistive technology approach for patients with long-term conditions,” he argues.

The long-running trial demonstrates that telehealth and telecare are far from new areas of interest in healthcare, or even for the Department of Health. But 3millionlives intentionally seeks to take a distinctive approach, looking for more cost-effective and efficient ways to implement change. That includes contract-based purchasing of equipment rather than large up-front investment. It urges everyone to get involved – from patients to carers to healthcare providers – bridging the gap for all to make a change.

**‘When used in the right setting, with the right support and economy scale, telehealth can transform outcomes’**

The past 12 months may have seen significant progress towards this aim but most appreciate there is further to go. “I would suggest that we have to be cautiously optimistic with the results on telehealth so far,” says Peter Naylor, a GP based in the Wirral. “The WSD has a tough task. It has to



demonstrate the isolated benefit or otherwise of telehealth. While this is feasible, the question I am always interested in is what specific telehealth best supports which patient [which specific illness, personality, age, home, circumstances etc] and with what supporting system.

“I still argue that the implementation of telehealth does not actually ‘do’ anything itself,” he adds. “The change comes from the surrounding system and processes.”

It is a commonly advocated view. “What WSD and using assistive technology is about is service redesign around the needs and choices of the patient,” argues Mr Hitchcock. “It simply means taking one or more of the clinical or support processes that are currently undertaken on site and moving them to the patient’s home or immediate care environment.”

Mr Ayling agrees that the technology is the last piece of the jigsaw. “You have to build understanding and advocacy among clinicians first, redesign services and enrol and support patients to use the technology.”

To that end, the Department of Health is also leading work to get the incentives right in the system, driving down costs, improving interoperability and developing new business models with industry. “We are working with the NHS, industry, service providers and other stakeholders to redesign contracts that support the commissioning of large-scale managed services.”

One important party in the spread of telehealth services may prove to be allied health professionals. With services being redesigned to offer more parts of the care process at a distance, Mr Hitchcock argues that AHPs will be able to reallocate resources to those patients who need greater contact time or have more complex needs. This could be an apparently simple change, such as offering text reminders for patients who have appointments, to a more complex change involving remote monitoring and feedback.

“As clinicians who are part of a service using a technology-assisted approach, AHPs can educate and support patients to take

even greater control of their own health using the enabling technology,” he argues. “Another step is to involve industry partners at an early stage in the service improvement and take a collaborative approach.”

Dr Naylor, meanwhile, argues that “each area needs to consider their own local systems and the processes that the more seemingly successful projects have implemented in order to maximise their chances of benefit”.

But he believes telehealth is here to stay – with a few further improvements.

“It is unlikely in a decade we will be considering telehealth as the panacea to all our problems. I strongly suspect, however, it will have a solid place in supporting the health delivery for illnesses like COPD and heart failure if the supporting mechanisms are also in place.

“I also look forward to its simplification and the use of mobile phones and perhaps simple add-ons to household computers that may drive down the hardware cost so that it can be more accessible.” ●

CASE STUDIES

# REMOTE CONTROLS

The introduction of telemonitoring systems is benefiting patients while providing efficiency and cost savings. Here we look at three telehealth success stories

## HEART FAILURE MONITORING

As a specialist cardiothoracic centre, Royal Brompton Hospital in London treats patients from all over the country. But the introduction of remote monitoring means that many of those with heart failure no longer face frequent and sometimes long journeys to the hospital.

“The people who we are monitoring – about 30 of them at the moment out of around 2,000 patients of heart failure that we see – are the patients that either live hundreds of miles away or have had the most complex problems,” explains Martin Cowie, professor of cardiology at Imperial College London and consultant cardiologist at Royal Brompton.

The hospital has been using the telemonitoring system for two years. Patients monitor themselves by using a blood pressure cuff, taking their weight on scales, and answering a few questions. All of this information is submitted via a TV set-top box: patients just log in to an extra channel using their remote control and can even review their own progress over time.

Once the information has been submitted it is sent back to staff at Royal Brompton. The hospital itself has a web-based system and the nurses just log onto the internet to look at all of their patients – they do this twice a week. “If they don’t like the look of the information that they are getting from a patient, they will then call and ask him or her a few questions and they can give them advice over the telephone,” explains Professor Cowie.

If things look like they are going in the wrong direction for quite some time or if a patient is not doing so well, the nurses will move forward the patient’s hospital appointment. The result is that patient care is significantly improved and the number of unnecessary hospital appointments cut.

“We can tailor much more to their needs

rather than giving them a regular clinic appointment,” says Professor Cowie. “It really helps rationalise and modernise monitoring of these patients. Instead of having routine appointments every six to eight weeks, we cancel those if patients are doing fine. At other times, when patients are not doing well, we arrange for them to come and see us tomorrow.”

By using the system, patients learn more about their condition so they actually self-care more. The only potential downside is the cost that is billed back to the patients’ GPs – it costs about £70 a month to rent the equipment.

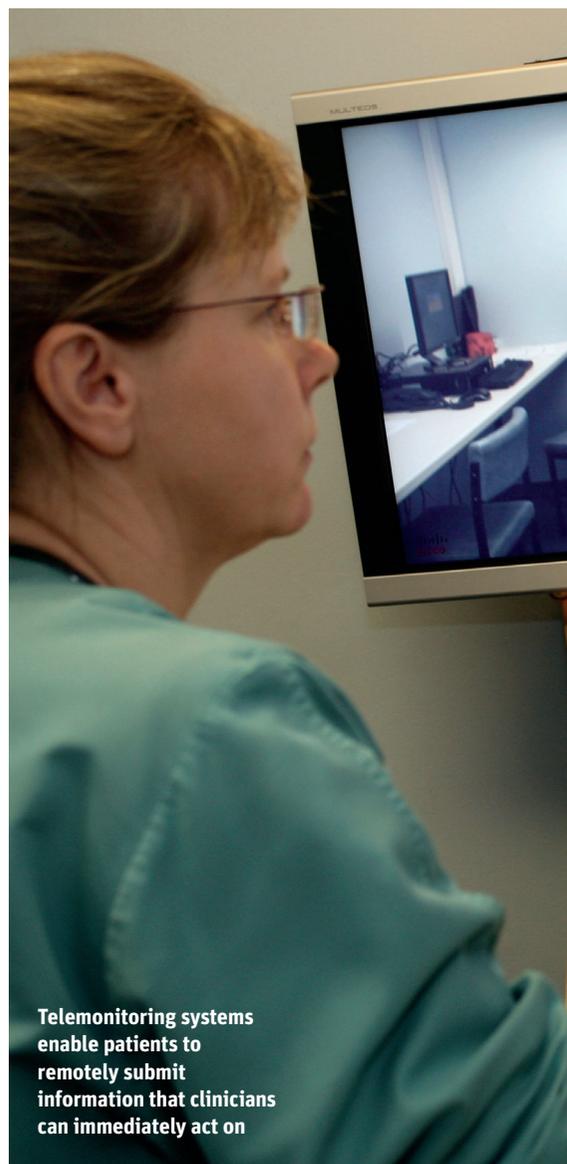
“But you don’t have to prevent very many clinic appointments to see the return on that money quite quickly,” points out Professor Cowie.

The hospital also uses telehealth to remotely monitor those with an implanted pacemaker or defibrillator. “We can actually see all the information that those devices collect: a lot of it is about whether the device is functioning properly,” explains Professor Cowie, though the data also shows how active the patient is each day, how fast their heart rate is and how much fluid is in the lungs. “We can then monitor any heart rhythm problems or how those patients are doing from wherever they are without really any contact with the patient.”

## FLORENCE

Telehealth does not always involve complicated technology, as proved by communication tool Florence. The system uses mobile phones to help people who have a lower level need of health monitoring.

It is intended to aid communication between clinician and patient via the transmission of scheduled and freehand text messages. Patients can send their vital signs data to clinicians in a text message and



Telemonitoring systems enable patients to remotely submit information that clinicians can immediately act on

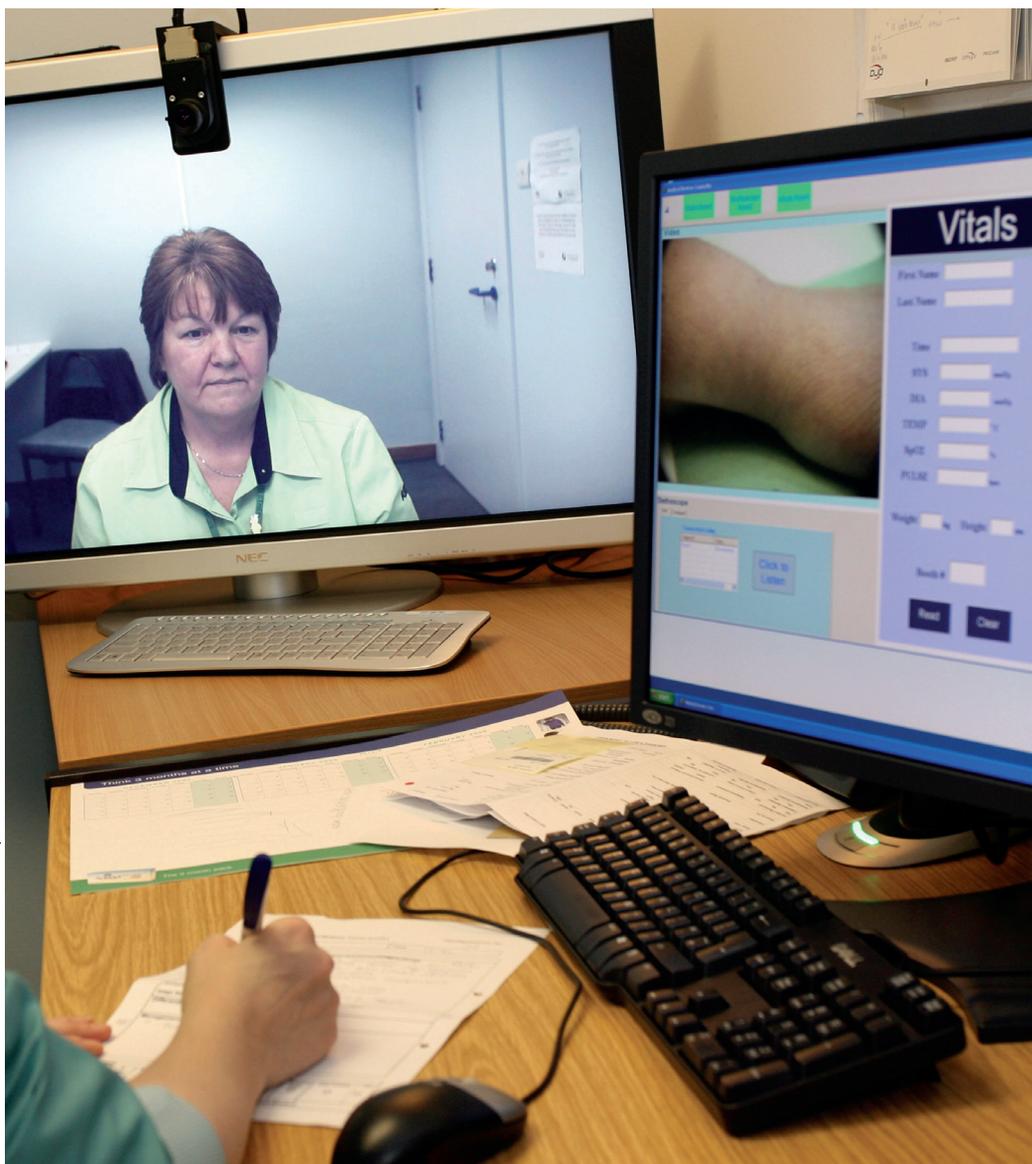
receive appropriate advice back, again via text.

The system may be simple but its development involved careful thought. Clinicians first develop protocols in the form of a series of messages and possible responses that usually reflect the self-management advice already being given to patients.

Patients opt in to the service usually via their own mobile phone and then will start to receive prompts, questions and education or informative messages, explains project leader Phil O’Connell from NHS Stoke on Trent.

“When a patient is asked to respond with something like a blood pressure reading, the system automatically checks the content of the message to ensure the content is valid and can be understood and might then compare the reading with criteria entered by the clinician for that patient,” he says.

“For example, in the case of blood pressure, the clinician may have set a response following NICE guidelines to ask for a second reading from the other arm if the initial



ideas of what telehealth is and scepticism towards efficacy and cost-effectiveness. For the system to work, wide clinical support is necessary from the outset. "Without this any telehealth project will struggle," he argues.

## LONDON BOROUGH OF HILLINGDON

In common with the rest of the country, the London Borough of Hillingdon is facing the challenge of caring for an ageing population. The number of people in the borough who are over 85 currently stands at 4,716 but that is expected to increase by 8 per cent in the next five years – compared with a forecast overall population increase of 5 per cent.

In response, the borough has introduced a free telecare service to support all its residents who are over the age of 85. The project is a collaboration between Hillingdon Council and NHS Hillingdon and the aim is to maximise independent living in the community for older people. It represents a shift in service provision away from institutionalised care and towards home-based support, risk prevention and early intervention.

"Technology like telecare can play a vital role in helping care for an ageing population and that's why in Hillingdon we are offering it to those aged over 85 for free," explains Linda Sanders, corporate director for social care, health and housing.

"For us, it is about positioning telecare at the forefront of our care provision to ensure no-one is admitted to residential care without being afforded the opportunity for telecare support at home. By enabling residents to stay in their own homes we can reduce the demand for residential or nursing care, which can in turn result in significant savings for the council."

Initial evidence suggests that such benefits have already begun to be secured. After 12 months, a combination of telecare and reablement services have delivered savings of £4.7m and a 50 per cent reduction in residential care home admissions (which are at their lowest level since April 2008). The result of a more detailed evaluation of 195 telecare users showed that in about half of cases the service has delayed or reduced the need for further services.

Feedback from users and carers has also been very positive. The daughter of one user credits the system with having saved her mother's life. Prompt emergency medical attention was made possible by her mother pressing the telecare button while collapsing due to a stroke.

The borough started offering the free service in April 2011 and has now completed 1,221 installations, of which 565 were self-referrals from Hillingdon residents. It is expected this will rise to a total of 3,000 new telecare users by 2015. ●

reading was high. If the second reading also meets the criteria, Flo would send the clinician's advice to the patient, who might be to contact their clinician straight away or make an appointment?"

The system was designed to be easy to use for both patients and healthcare professionals. The clinician interface is designed as an app, so it is intuitive and requires minimal training. Florence has already been taken up across the country, with patients in the North East, east coast, Midlands, London and south coast regions all benefiting from the system. The range of health areas for which it is used is equally wide and includes COPD, asthma and pain management, as well as more general issues such as smoking and breast feeding.

"The system can be used with most conditions and pathways and the scope of use is practically unlimited," argues Mr O'Connell. "It is used across public health, mental health, community nursing, secondary care and some of the most

## 'What we have seen is tangible clinical outcome benefits as a result of improved, appropriate contact with patients'

innovative uses have been developed by GPs for use in their own practices.

"Although there are many anecdotal stories of the system helping to avoid admissions, what we have seen is tangible clinical outcome benefits as a result of improved, appropriate contact with patients where Flo has helped the patient to adhere to their prescribed treatment and clinical advice," he continues. "We have also seen tangible productivity gains for providers."

According to Mr O'Connell, a key difficulty for any telehealth project to be implemented is addressing preconceived

**BRIAN CARTER  
ON HEALTH  
TECHNOLOGY IN THE  
DEVELOPING WORLD**



**IN ASSOCIATION WITH THE IET**

**IET** The Institution of  
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[www.theiet.org/healthtech-hsj](http://www.theiet.org/healthtech-hsj)

“ Healthcare is an issue that impacts everyone across the world but the impact is different according to which part of the world they are in.

In the West, healthcare is one of the largest burdens for governments (approaching 8 per cent of gross domestic product in many cases) but the treatments available are excellent. In contrast, in the developing world healthcare is often minimal or nonexistent.

Technology has a large role to play in addressing both situations.

In the case of the developed nations of the West, significant savings can be realised by the adoption of connected and mobile health technologies. These technologies also deliver further benefits, not least improved quality of life for patients as they often allow the patient to reduce the frequency of hospital visits, spend more time at home, feel involved in the reporting of their condition and feel reassured through access to online services.

With the rapid adoption of smartphones in the West there has been an explosion of apps to support patients, which has shown how rapidly technology can be adopted to support healthcare.

Healthcare staff also benefit from adoption of these technologies as they have new treatment options, money saving options, access to better information at the point of delivery and more satisfied patients.

**‘There is an urgent need for the roll out of “connected health” technologies’**

New developments that are based on the patient’s genetic data, as well as robotics systems used to gather the sequence data, will enable early identification of diseases and the creation of new treatment regimens for diseases. However, in order for these technologies to be effectively used and deliver their full potential there needs to be a focus on IT systems and software. It is this that will underpin the technologies and particularly important will be issues of data security.

In the case of the developing world, there is an urgent need for the roll out of ‘connected health’ technologies as they will make access to healthcare considerably easier for billions of people who currently have minimal access to advanced healthcare. In many of these nations there is a serious shortage of clinicians.

Adoption of these technologies will allow remote disease diagnosis using mobile technologies that are rapidly becoming available in these countries.

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**NETWORKING**

# MAKING THE CONNECTION

The IET is seeking to advance the concept of connected health by uniting professionals and using digital technology to bring better healthcare, writes Maja Dragovic

With more and more organisations investigating the potential of technology to improve patient care, the healthcare technology industry is booming. In 2009 alone, \$290bn was spent globally on the manufacture and deployment of medical devices. Thousands are working in the field and yet developments often happen in isolation, with little sharing of experience or expertise.

“In the UK, certainly on the telehealth side, there were many pilot projects and one of the problems is that there hasn’t been a good share of knowledge from those pilots across the system,” argues James Barlow, chair in technology and innovation management at Imperial College London and principal investigator at the Health and Care Infrastructure Research and Innovation Centre. “You tend to get the same small-scale pilot projects replicated all over the place with no real learning.”

That is a situation which the Institution of Engineering and Technology (IET) is seeking to change. The organisation’s Healthcare Technologies Network (HTN) is its concerted effort to unite those working in the field, no matter their background or their discipline. The free-to-join community is open to anyone working or interested in biomedical engineering (commonly defined as the application of engineering principles in healthcare and medicine). This includes students, academics, clinicians and those in industry. Through technical visits, conferences and seminars – as well as a website with discussion forums, webinars and blogs – the Network aims to break down the isolation which has been common in the field.

“Over our 141 year history we have always tried to share engineering and design knowledge,” explains Mike Short, IET fellow and its former president, awarded the CBE for services to the mobile industry. “It’s crucial we join together via the HTN and especially important we invite everyone to

get involved, regardless of discipline.”

The network also aims to do away with the multiple terms used to describe healthcare technology. Instead, it is seeking to advance the idea of “connected health”. “The concept is about bringing together professionals interested in this area and about using digital or connected technology to bring better healthcare to all that need it,” explains Mr Short. “It is a holistic approach and would include anything from sport to wellness or social to healthcare.”

Mr Short reports that the concept is not a difficult one to establish with clinicians and patients. “For healthcare staff, connected health is about happier patients; better information; new options to treat and support patients; new approaches that may save money, particularly based on wellness and the prevention of illness.

**‘Now’s the time to examine the priorities for what is needed to really provide added value connected health services’**

“The patients’ benefit is more of being in control; being able to see the measured condition; being involved in the reporting; assurance from online services; more home-based care; better portability of information; better choice in pathways of care. There is also a growing interest in patient-centred care which we can see with the phenomenal growth in health apps.”

He acknowledges, however, that the connected health concept “has yet to gain significant traction among engineers in general”. Many believe that if the technologies covered by the concept are to flourish, that situation will have to change. David Chilvers, former chief executive at



NHS Innovations London and now an independent advisor on medtech investments, strongly believes that the only way telehealth will really work is by bringing a large number of people together.

“Although the need for connected health and the benefits are high, the demand and implementation has been slow due to a wide range of factors,” he says. “The barriers are not insignificant – the specification, development and implementation of fully integrated connected health services requires multiple organisations to work together. That includes GPs, commissioners, local authorities, emergency services, clinicians and device, telecom and clinical informatics companies.” Mr Chilvers acknowledges it is easier said than done. “Many of these organisations and their people are busy with their day jobs and it is a substantive management task to bring these groups together with a common purpose.”

He does believe there are significant opportunities if those interested in the field start discussing their work – perhaps through an organisation like the Healthcare

Technologies Network. He suggests a large part of that discussion will involve deciding in which direction they should be moving. “Now is the time to examine the priorities for what is needed to really provide added value connected health services for long-term conditions, post-remission monitoring, the older population, disabled people, mental health and remote communities,” Mr Chilvers argues. “Such a focus could provide the stimulus for interested parties to unite and industry to invest in the required products.”

He believes that investment has been slow in coming due to regulatory worries. “Until now most companies have not migrated into this space due to concerns regarding litigation and regulatory timescales,” he suggests. “If the UK government is serious regarding the use of connected health it is probable that new legislation will have to be passed. It will have to provide better stimulus to industry to invest in this area and better prospects for patients to self-manage their health.”

The IET is clear that bringing about such changes will not be straightforward but

believes it is better placed than most to help. “Any shift from traditional approaches to cross-sector digital approaches is challenging,” Mr Short admits, “but fortunately the IET has many of the engineering and design skills needed to support this.”

The road to a complete implementation of the connected health concept may be bumpy but the signposts are visible and the benefits are making the ride worthwhile.

“We know that such technology makes a difference to patients’ lives, they do appreciate it,” says Professor Barlow. “Once we overcome the current challenges, then things will start to move faster.”

“In principle, treating healthcare holistically has the potential to radically improve provision for all stakeholders from patient to provider, policymaker to researcher, while ensuring the healthcare remains financially viable for all,” argues Mr Short. “The true value of connected health is still to come in providing much better health outcomes and patient experience as well as reduced healthcare costs.” ●

## CASE STUDIES

# UNITING IN THE ACT

Numerous telehealth applications and possibilities are being established in both developed and developing countries. Here are just a few of them

## PNEUMASCAN

PneumaScan is an example of the possibilities that are established when those working in connected health join together. The idea for the product came from the daily clinical needs of Richard Iles, a consultant respiratory paediatrician at Addenbrooke's Hospital in Cambridge, but it really took off when he took it to a local businessman.

Ward Hills, an entrepreneur and the chief executive officer of PneumaCare, the company which manufactures and markets the device, says: "Richard and I initially spoke about technological limitations in the measurement of very young children and other inaccessible patient populations such as vulnerable patients and neonates.

"Not only were there many of his patients who were not being monitored as well as they could but he was also concerned that many of the available pharmaceuticals were not tested on children because there was no consistent means of assessing the respiratory function in the paediatric population."

It is these challenges that the PneumaScan addresses. By using the device, it is possible for healthcare professionals to monitor a patient's breathing without any contact with the body. With the patient lying, sitting or standing, a small video projector casts a checkerboard pattern onto their chest and abdomen. As they breathe in and out, their chest rises and falls – and the projected pattern changes shape. Two cameras, one either side of the projector, record the changing images and feed them to a computer, where they combine to give a 3D reconstruction of the chest. PneumaCare's algorithms analyse the visual reference points of the checkerboard pattern, with the result showing how deeply and how quickly the patient is breathing and also what muscle groups are being used.

Since it is entirely non-invasive and requires minimal patient compliance, there is

a belief that the device could be used in multiple settings. "It's simple, fast, and compact," says Dr Iles. "You could use it anywhere from alongside a cot to the back of an ambulance. It could be used for home monitoring to help keep patients out of hospital or even for mass screening in schools or in the workplace."

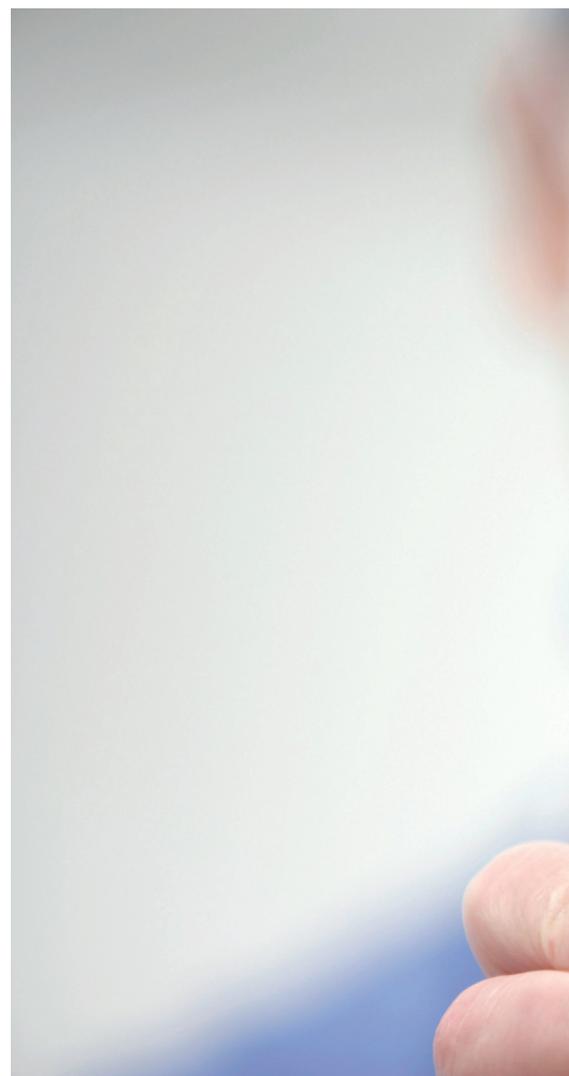
This means that patients can avoid having to come into hospitals for scans and being exposed to unnecessary radiation. The device "can be used to recognise issues earlier, allowing for rapid interventions and efficient patient management; all while avoiding high levels of unnecessary irradiative procedures", explains Mr Hills.

Just as the coming together of a clinician and a businessman was important in creating PneumaScan, so too is there a belief that its future lies in the sort of collaboration being encouraged by the IET's Healthcare Technologies Network.

"We work with our clinical partners in the UK, the US and others elsewhere to extend our products' capabilities," explains Mr Hills. "We also have an active research and development programme with Cambridge University, which is extending the range of measurements and observations available to the users of our products. Non-obtrusive visibility of a patient's respiratory function provides more information for better decisions and we are committed to uncovering as many areas as possible for our technology to aid clinicians and patients."

## EYKONA TECHNOLOGIES

Wound assessment is an important part of caring for patients, and measuring the size of those wounds is an important part of assessing healing and predicting treatment outcomes. Yet it is something that rarely happens in hospitals and, when it does, is a highly imprecise science.



**'The present executive committee is working to make the IET even more of a global centre for healthcare technologies'**

It is why Eykona Technologies believes that its handheld 3D imaging system can make such a difference. Significantly given the IET's concept of connected health and its aim to unite all those interested in healthcare technology, the company was spun out from the University of Oxford and, specifically, from efforts to commercialise research into handheld 3D imaging. The core technology was developed by Ron Daniel and James Paterson, both of the university's engineering department, and the firm aims to use this academic breakthrough to benefit clinicians and patients alike.

"The current wound assessment is very heuristic," explains Peter Bannister, chief scientific officer at the company. "At best, 2D



By using mobile phones, telehealth can remind patients to take their medication or advise of a follow-up appointment

centre for analysis and diagnosis.”

Through its Healthcare Technologies Network, the IET is aiming to promote and support the use of appropriate healthcare technology (AHT) in developing nations – AHT is one of the network’s strands. “The present executive committee is working to make the IET even more of a global centre for healthcare technologies,” says Mr Cornish.

It will be building on ongoing work. For the past 12 years, the IET has held a biannual conference to promote AHT in developing nations and to make it accessible to such countries. Mr Cornish recently completed work on organising the latest event. “It started off as a one-day seminar in 2000 and it’s now developed into a full international two day conference,” he explains.

Delegates share examples of good engineering solutions to meet the healthcare problems of the developing world, as well as investigating what makes medical devices and services fit for purpose in these countries. The participants also get an opportunity to network with equipment developers, users, technology commissioners, suppliers, NGOs and funding bodies and to hear expert advice about the operational realities of healthcare in a developing country environment. “Networking is one of the most important and enjoyable activities of the conference,” says Mr Cornish. “By learning more about what everyone is doing there is hopefully greater coordination and less duplication of effort.”

Another important part of the conference is the presentation of case studies. Most serve to highlight both the opportunities and challenges in implementing AHT in the developing world. In 2011, for instance, a study took place in Mozambique to evaluate the impact of text reminders on HIV treatment and the prevention of mother-to-child HIV transmission.

But preliminary results indicate that the biggest barrier to carrying out the study in full was right at the start: almost half of pregnant women were ineligible for the study because they either do not have a mobile phone or do not read or write.

“The problems limiting the development of telehealth not only include a lack of telecommunications infrastructure but also a lack of staff with the required training and expertise,” continues Mr Cornish. “Lack of financial resources obviously has a big bearing on these.”

There is some progress, however – not least the rapid improvement in mobile and internet coverage in certain parts of the developing world. Education and training of health workers, technicians and patients is also taking place to some extent. The IET is dedicated to continuing such improvements, particularly through its Healthcare Technologies Network. ●

imaging such as digital cameras or wound tracings are used but more often than not the size of the wound is not even assessed. In any case, full thickness wounds, such as venous leg ulcers and diabetic foot ulcers, will heal by filling up with healthy tissue before any reduction in area can be seen. This means that wound assessment techniques based on 2D measurements are very poor prognostic indicators of wound healing.”

In south Wales, the system is being used to make it easier to monitor patients living in rural areas. “Patients with diabetic foot ulcers can be visited in the community and Eykona used to take images,” explains Mr Bannister. “These images can then be analysed by staff in the regional acute specialist centres via networked computers to give objective feedback to the community staff on changes to treatment plans and the need to attend outpatients.

“We have current clinical users in diabetic foot clinics saying the system is being used to reintroduce patients to their feet and ulcers so that they have a better understanding of what is going on with their foot and so the patient is partly responsible for the outcome.

“This all leads to quicker and more cost effective treatment,” continues Mr Bannister. “There are fewer wasted trips to outpatients, fewer wasted dressings and more timely intervention in patient care.”

### TELEHEALTH IN DEVELOPING COUNTRIES

Telehealth is frequently spoken of in relation to improving healthcare in developed countries but it has an equally important role to play in the developing world.

“Telehealth can make use of mobile phones to remind patients to take their medication or come to a clinic for follow up,” explains Len Cornish, biomedical engineering consultant at disease awareness and prevention organisation Global Healthcare Projects.

“Furthermore, symptoms and/or test results can be sent from a rural health centre to a district hospital or major centre for diagnosis. In addition, more sophisticated data such as medical images or ECG recordings can be sent to a specialist



## SUE CLEMENTS ON THE CHALLENGE OF PROVIDING CARE FOR PRISONERS



IN ASSOCIATION WITH CARE UK



“ On any one day there can be up to 88,000 men, women and young people being held in custody in English prisons. The complex health needs of this population are well documented, with high levels of mental and physical health problems as well as widespread substance misuse issues.

Traditionally, prisoners' engagement with healthcare services has been poor and their health problems compounded by lifestyle. Poor nutrition and skincare have been endemic. There are new issues, too. Although many prisoners will spend a matter of days or weeks in prison, there is increasingly an older population in custody. Some will receive palliative care and die in prison.

The challenge for healthcare providers within a custodial setting remains constant: how can we maintain equivalence of care for this patient population and introduce personalised care?

One possible way of meeting this challenge is to use telehealth. We have found it offers value for money and leads to improved efficiency. With prisoners treated inside the institution, the number of escorts required is reduced and so payments for discipline officers reduced too. We also believe telehealth increases the

### ‘How can we maintain equivalence of care for this patient population?’

quality of care. Healthcare can be offered in a timely manner, so waiting times for appointments are reduced. In addition, the scope of services provided tends to be far greater than in the community. There is access to a range of secondary care services, which can be tailored to disease prevalence in any particular establishment at any given time.

Patients appreciate not needing to attend hospital appointments in handcuffs and so compliance and satisfaction is greatly enhanced. Medical staff, meanwhile, no longer find themselves working in isolation with a demanding patient group. Telehealth offers huge opportunities to increase supervision and training for these healthcare professionals.

The benefits have been such that we are now asking ourselves how we can continue to develop our use of telehealth. Could we use it to further increase compliance and patient involvement with their own care? Could we look at developing telehealth booths on the wings that allow access to healthcare professionals outside core healthcare hours?

We believe we are only just beginning to realise the benefits of telehealth. The North East offers an example of how local partnership approaches can deliver improved health outcomes for patients, and we look forward to working with the National Commissioning Board to take this work forward.

Sue Clements is offender care lead,  
Care UK  
www.careuk.com

## OFFENDER HEALTH

# GUARDED PROGNOSIS

Telehealth is being used in the North East to benefit both prisons and prisoners alike, writes Claire Read

Arranging an outpatient appointment for a patient is never a particularly straightforward process. But when that patient is a prisoner or a young offender, the complexities are significantly multiplied.

“Organising an appointment for a prisoner to go to hospital is not as simple as people in the community might think,” explains Rachel Tones, Care UK's healthcare administration manager for Her Majesty's Prison (HMP) Durham. “Risk assessments have to be done by the security department, it's expensive for the officers to go out, there's the transport to and from the hospital and then there's the distress it causes to other patients in the outpatient department. Every time somebody goes out it's a security risk. To get a category A [high risk] prisoner out on an escort is an absolutely mammoth task.”

“If you think about it, just one prisoner movement through hospital involves three parties,” continues Michael McGonnell, deputy head of commissioning of the North East Offender Health Unit, which is hosted by NHS County Durham. “The healthcare provider that books and organises the appointment, the commissioner that funds the escort and the prison service that facilitates it.”

Mr McGonnell is only too familiar with these challenges. For the past four years, he and his colleagues have worked to address the tricky issue which is offering healthcare to those in custody. The unit works across the North East on behalf of four primary care trusts, commissioning healthcare services at all prisons and youth offender institutions in the region (together, the facilities house a total of about 5,000 prisoners).

Telehealth has been a key part of the service since the outset but has been significantly developed in the past year and a half, after Care UK took over the provision of healthcare in the region's prisons. Both the terms of its contract and performance indicators created by the commissioners require the company to use telehealth

solutions whenever appropriate.

Mike Frayne, regional healthcare director at Care UK, says the firm quickly sensed the potential of this sort of technology.

“Telemedicine is an area ripe for exploitation when it comes to offender health,” he says. “From the perspective of prison governors, you want to mitigate the likelihood of an escape or an attempted escape, so every single escort to hospital has to be managed and risk assessed, and that's resource intensive.”

Such resources are being saved by the use of technology. All seven prisons in the North East region – including a women's prison, youth offender facilities and a maximum security institution – have telehealth services in place, covering a range of specialties. At the simplest level, it is possible to have consultations with consultants at Airedale General Hospital via video link. But specialist cameras and scopes also make more complex appointments possible. All say that the approach is bringing multiple benefits.

### ‘Telemedicine is an area ripe for exploitation when it comes to offender health... it's to everyone's advantage’

“It's to everyone's advantage to use telemedicine,” argues Jo Thurston, general manager for North East offender health at Care UK. “From a prison's point of view, obviously the institution is at its weakest when it has prison officers out on escorts. For a prisoner, from a dignity point of view, when a patient is sitting in a waiting room cuffed to two officers, people can't help but look.

“Finally, for Care UK staff, they are learning something brand new,” she



continues. “It’s not just the technology, but that the nurses get to see far more than they usually would – they get to see and hear what’s going on directly from a consultant and they are involved with the examination with all the scopes and cameras.”

Mr McGonnell is proud to state that, since the introduction of telehealth, next to no outpatient appointments for high risk prisoners at category A HMP Frankland have had to be held outside the building. But he emphasises that telehealth is not the only solution – or even the right one in all instances.

“In the early days, we tried to use telemedicine for most secondary medicine referrals,” he says. “But what we found over time is that we were still sending a significant number of prisoners out of the prison for both new and follow up

appointments. We therefore complemented the telemedicine service with visiting consultants from a range of specialties and added supporting diagnostics.”

Mr McGonnell feels this approach is crucial and that it differentiates offender care in the North East to that in the rest of the country.

“It’s not just about the technology,” he argues. “Telemedicine is used elsewhere in the prison estate but other places tend to put every single patient in front of it. It’s used as a triage service, which can add another step to the pathway rather than streamlining it in the way we have done. The technology should support the care pathway and be used alongside complementary services, including diagnostics.”

It has not been immediate but it seems

that a tipping point has now been reached, with North East commissioners, healthcare providers, prisons and prisoners alike all committed to telehealth. Ms Thurston says that it has taken some time to get Care UK staff fully engaged: “I think we were hesitant at first and we said, well, OK, we’ll give it a try and then oh, this isn’t too bad. We’ve gone through all those stages.”

“It does take some time to get it established,” admits Mr Frayne. “You’ve got to work up a head of steam before it really catches on and becomes part of routine business.”

But John Navein, clinical solutions lead for Care UK, says the benefits are obvious. “From everybody’s perspective, telemedicine – if it’s done well – is good. It just streamlines the health process. It’s quicker, it’s cheaper and it’s better.” ●

CASE STUDIES

# PRISON BREAKS

With Care UK responsible for the provision of healthcare in North East prisons, we look at three of the region's institutions and the benefits that telehealth offers

**HMYOI DEERBOLT**

Paula Boyle has worked at Deerbolt youth offender institute for seven and a half years. But it is only in the past 12 months that the nurse has actually been able to sit in on the appointments her patients have with consultants.

"The prisoners would go out for outpatient appointments with prison officer escorts," she explains. "We weren't present and we wouldn't know what the consultant had done. The only information we had was from the young man himself or letters of information sent from the consultant."

With telehealth services now in place, the situation has dramatically changed. Most routine outpatient appointments for inmates at HMYOI Deerbolt are now held via a video link with a consultant. That means that Ms Boyle and her colleagues are on hand throughout the appointment, hearing what the consultant has said immediately and directly and – through the use of flexi cameras with different lenses – often playing an important part in the examination.

"And, of course, we're there if the prisoners don't understand something," adds Ms Boyle. "They ask us to explain it their in terms and [we can do because] we are present for the appointment."

While there was a bit of anxiety when the new equipment went in, and the need for nurses to use it regularly to stay familiar and confident with the system, they are clear that the benefits of being present for appointments have far outweighed any issues. The process of healthcare at the institution is now a very sleek one, not least when it comes to test requests.

"If the consultant wants any test, they can also ask us to do those and we can do them there and then rather than waiting for a letter to come through," Ms Boyle explains. "And we have ECG on the cloud. That will transmit ECGs straight down to Airedale

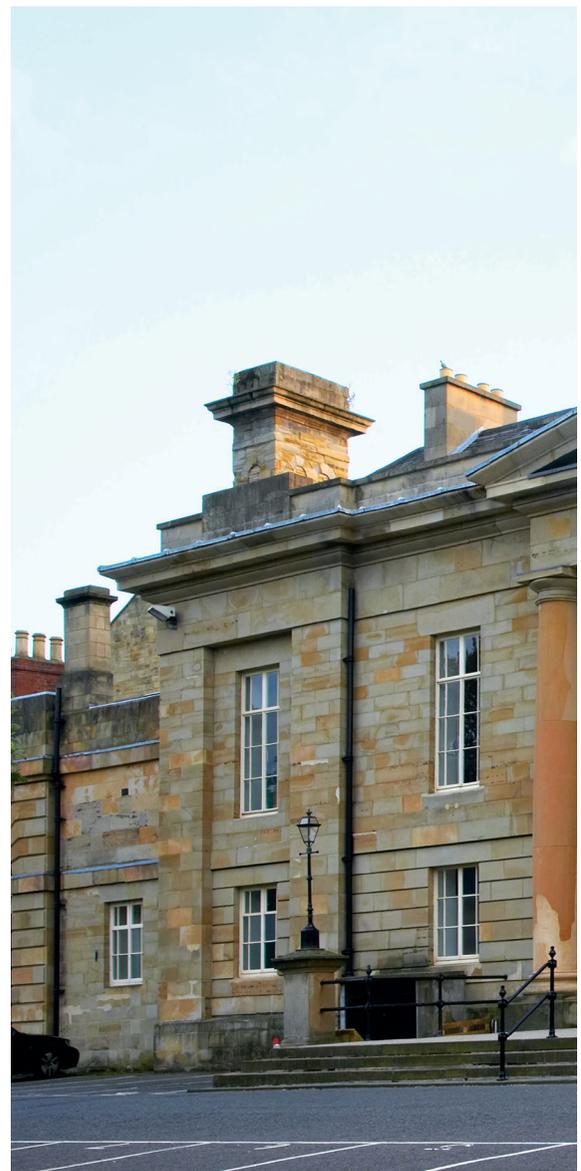
Hospital digitally through the computer and then that can be reported on within 24 hours by the cardiology department down there. I can view the ECG on the computer and print it off there and then once it's done so that our GP can view it even before it's been reported on.

"Telemedicine has just cut out so many steps in the [healthcare] process."

**HMP FRANKLAND**

In the past, if you happened to attend hospital on the same day a prisoner from HMP Frankland was receiving care it was not a particularly pleasant experience. The prison is category A, meaning that those within it are believed to be highly dangerous to the public.

"The fact is that you don't particularly want these guys to go out," explains Helen Parker, Care UK's healthcare manager for the prison. "Many of our patients are deemed as dangerous and a number are a security risk. That means that if they go to a hospital appointment, a number of prison officers may have to accompany them. For some of our higher risks prisoners, police back up is also needed. As you can imagine, this can be

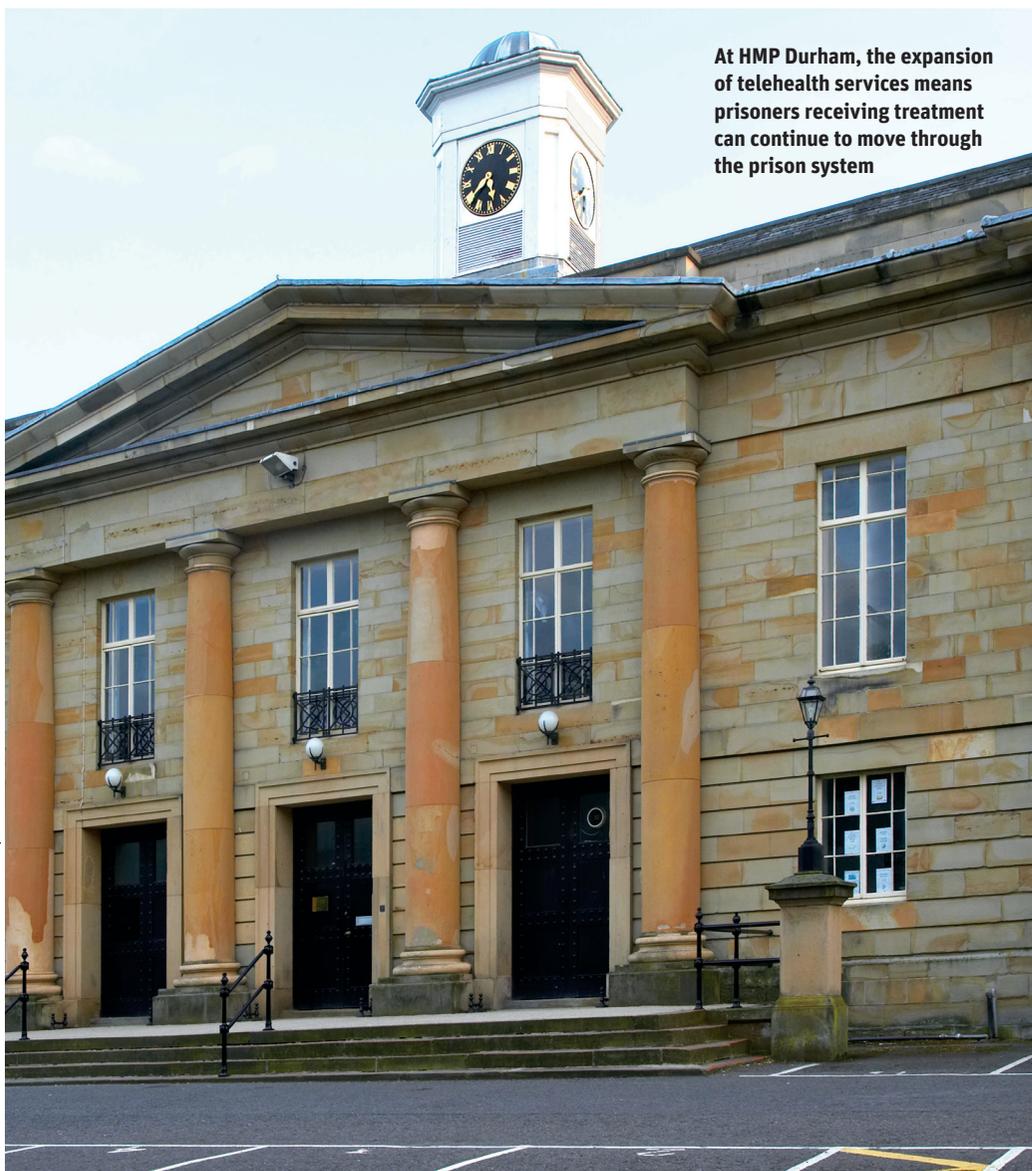


very intimidating for other patients waiting in an outpatient department and can also be distressing for our patient."

The challenge of escorting prisoners from a high security institution to a hospital explains why HMP Frankland is an enthusiastic user of telehealth. "It was a no brainer for us," Ms Parker says, and when she runs down the list of specialties that can now be covered by the system, it sounds very much like that offered by a local acute hospital: everything from A&E to cardiology to respiratory medicine.

"But it's inevitable that there's some instances where it's not really going to be appropriate to use telemedicine," she continues. "With something like an infectious disease, you'd go to the health protection agency and then the patient would go straight to an infectious disease unit so there would not be any value to using telemedicine. Similarly with chest pain, you may be wasting time if you use telemedicine."

That means that training in the uses of the



**At HMP Durham, the expansion of telehealth services means prisoners receiving treatment can continue to move through the prison system**

## **‘The fact is that you don’t particularly want these guys to go out. Many of our patients are deemed a security risk’**

system has been important. While the technology is easy to use and staff quickly became familiar with how to operate it, Ms Parker says it has been very important to educate in a wider sense; to explain the principles behind the system. “We do training on a month by month basis so that every single member of staff is trained on it,” she says. “What I said to staff is that they could be using the system at any time, day or night, so everybody needs to have the training to be able to use it, even if you just want a second opinion from a clinician.”

Ms Parker is unequivocal about the

challenges behind providing care for men who have been found guilty of the most serious of crimes.

“It is about maintaining safety while not compromising clinical care,” she says. “As a clinician working in any type of prison, there is always a slight blurring of boundaries in balancing those two. But I’m a nurse myself and these men are still patients at the end of the day – I’m trying to do my best for them within the constraints of the secure environment.” Telehealth is, it seems, one very valuable way of doing that.

### **HMP DURHAM**

For healthcare staff at HMP Durham, the increasing use of telehealth has led to one particularly important benefit: the ability to keep offenders moving through the prison service. Many of those in Durham are local men on remand, meaning they are in custody but awaiting trial or have been convicted of an offence but are awaiting sentencing. Until

recently, if a health issue arose the prisoner would not be able to move on to a different institution.

“When prisoners are referred for any type of outside treatment, they’re put on what we call a medical hold,” explains Rachel Tones, Care UK’s healthcare administration manager at HMP Durham.

“A medical hold, or any hold marker within the prison service, basically translates as you don’t want that prisoner to move on to another establishment.

“But because we are a remand prison and because the prisoners need to move on within their sentence, the medical holds had a bottleneck effect. If they had been referred to hospital, they wouldn’t go anywhere until that episode of care had been resolved.”

For the past year, however, the expansion of telehealth services in offender health across the region has removed such problems. In many instances, prisoners leaving Durham go on to the lower category HMP Northumberland or HMP Holme House – both of which, like Durham, have telehealth technology.

“So if they’re referred and the specialty is on telemedicine then it can be referred to the telemedicine service at the other prisons,” explains Ms Tones. “It wouldn’t prevent a prisoner from moving through the system.”

She says the importance of this cannot be overestimated. While healthcare staff feel a strong duty of care to prisoners with health issues, they fully appreciate that they are not the only players involved in the process.

“We have to look at the wider multi-disciplinary approach,” Ms Tones emphasises. “We are not the only department involved – we might want to keep a patient but they might really need to go somewhere else.”

Telehealth may have already made big improvements in the delivery of healthcare at the prison but staff are continuing to look for ways to increase its impact and improve its use. Ms Tones says that the prison has always had strong links with its local hospital, University Hospital of North Durham (UHND), such that staff know which specific consultant to refer to for which problems. Since the telemedicine consultants are from Airedale General Hospital there is an important “getting to know” you process.

“If we’re referring to orthopaedics at UHND then you know that if it’s a shoulder problem that you refer to a certain consultant and if it’s a hand problem you refer to a different one,” explains Ms Tones. “Now I want to replicate that with Airedale – rather than just doing a blanket referral to a specialty, I would like to be able to direct to a specific consultant.

“But it’s like any new system: nothing is perfect at first and it’s a process of continuous improvement. Telemedicine is no different.” ●

## BERNIE CUTHEL ON THE IMPORTANCE OF PARTNERSHIPS



“ In June 2011, a Department of Health reference panel outlined three key principles that are fundamental to managing long-term conditions. Sir John Oldham, the DH long-term conditions clinical lead, confirmed that all care models for patients with chronic disease should include risk stratification, neighbourhood working and shared decision making and self-care. Most importantly, he argued that these principles needed to be implemented together. His words gave Liverpool Community Health the reassurance we needed that our integrated care model was the right way to care for local patients with chronic conditions.

The central part of this model is partnerships. We work with social enterprise PSS, which provides health trainers, and have used telehealth technology from Philips. Shared decision making with these organisations has been crucial and beneficial. We firmly believe in a multi-agency, holistic approach, putting the needs of the patient first then wrapping technology around those patient needs to fit within the service delivery model.

### **‘We firmly believe in a multi-agency, holistic approach’**

We also believe in multidisciplinary teams which bring together all relevant healthcare professionals. Our MDT meetings unite community matrons, GPs, health trainers, pharmacists, occupational therapists, physiotherapists and specialist nursing teams who work together to develop care plans which address the needs of the patient. The involvement from PSS means this includes social and practical needs.

Our overall aim? To promote independent living, improve quality of life, mental wellbeing and to tackle health inequalities. By using this approach and employing telehealth, we have enabled individuals, households and families to “take ownership” and control of their own health and wellbeing. We support them to live independently, for longer, and with privacy and dignity. The result is happier, more satisfied patients who have the motivation and knowledge to manage their wellbeing and health conditions, and significantly lower hospital admissions.

Quite simply, this holistic approach and the partnerships between Liverpool Community Health, PSS and Philips have transformed how we are caring for patients with long-term conditions. This is why we and our partners now have plans to roll out this care model on a large scale, along with the technology that monitors patients, helps them manage their conditions and promotes healthier living. We firmly believe that the benefits will continue for patients, families and for us as a care provider. *Bernie Cuthel is chief executive of Liverpool Community Health*

IN ASSOCIATION WITH LIVERPOOL COMMUNITY HEALTH, PHILIPS & PSS

Liverpool Community Health   
NHS Trust

PHILIPS

  
person shaped support

## CARE IN THE COMMUNITY

# SHARING AND CARING

Forging partnerships has been crucial to the success of telehealth trials in Liverpool, reports Claire Read

Liverpool Community Health has a variety of videos on its YouTube channel. Arguably the most powerful, however, is an interview with a sufferer of chronic obstructive pulmonary disease. For 10 minutes, this local patient talks about how his life has been improved by changes in his care, and the particular difference made by the introduction of telehealth. He talks about how the knowledge that his condition was being regularly monitored helped both him and his family come to terms with and manage his disease.

It is a video that very effectively sums up the approach the trust is now taking to caring for patients with long-term conditions. “Our emphasis has always been on quality care,” explains Lisa Hammond, clinical lead for tailored care at the organisation. “For patients with chronic conditions, we think that is about moving away from a dependency on clinical staff; we want to promote more independence through self-care. And technology has always been at the top of our agenda as a possible way to do that.”

It is why the trust was a keen member of an academic telehealth trial in 2008, and why it ran a proof of concept pilot, that concluded earlier this year.

But it is not to say that the organisation believes introducing telehealth is necessarily a straightforward proposition. Both pilots brought with them valuable lessons, and one of the most important was the need for strong partnerships. At the basic level, that has involved forging collaborative relationships with the technology provider (Philips in the case of both LCH trials). Ms Hammond emphasises that sharing knowledge with the company has been crucial to making the system work – and staff at Philips share her belief in a collaborative approach.

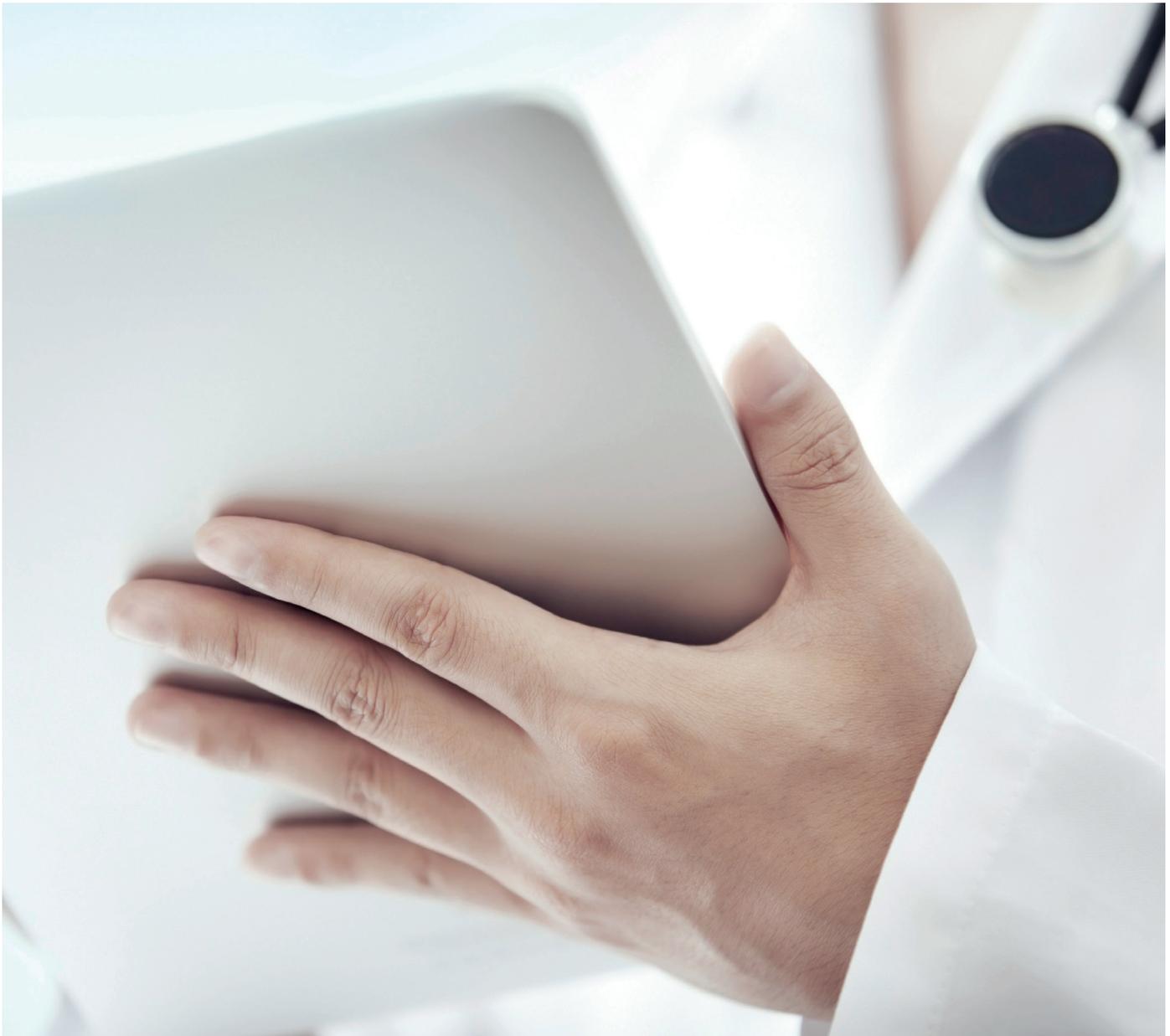
“We’re very much a partnership company and we honestly believe we don’t have all the answers,” says Sharon Donald, the company’s business development manager

for telehealth in the UK and Ireland. “We’ve got some pieces of the puzzle but not all of them. Since 2009, we’ve been listening to Liverpool Community Health, we’ve been sharing, we’ve been helping them through. And you have to remember that, ultimately, it’s not really about the technology. It’s about changing the way you deliver care and that has a number of impacts, not only on patients but also on staff.”

For Liverpool, that change has once again involved forging partnerships. During the proof of concept, the telehealth trial was swiftly combined with the pilot of a new multidisciplinary care model. Dubbed integrated care, the idea is to bring together a range of professionals to address all of a patient’s health and social needs at once, without the need for multiple referrals. The model is aimed at reaching chronic disease patients earlier in the process of their condition and offering health education to help them self-care. It was education that staff quickly realised could be effectively delivered by the telehealth technology being piloted.

### **‘It’s about changing the way you deliver care and that has a number of impacts, not only on patients but also on staff’**

Within two weeks of bringing together the new care model with the technology trial, 36 people had been recruited for the telehealth pilot. They received the Philips Motiva system, a small set-top box that plugs into the patient’s existing television. As well as transmitting vital signs data – as taken by the patient, using pulse oximetry meters, blood pressure monitors and the like – the box delivers health education information through surveys and videos.



According to Ms Donald, the impact of that education often extends to loved ones.

“The patient in the LCH YouTube video told us that by having the system his family learned about his disease. So if he walked upstairs and got slightly breathless, they knew that if he sat down for a couple of minutes he’d be absolutely fine. Previously they would start to panic, the patient would look at them and think ‘I must be ill’, so he would panic, that would make matters worse and the end result was an ambulance,” she says.

“The proof of concept has all been about giving patients more confidence,” says Ms Hammond. “If they check their vital signs first thing in the morning then it enables them to be able to get up and out because they know they’re fine, and that improves their quality of life.”

That quality of life improvement once

again ties back into the integrated care model, which emphasises social care as much as healthcare. To that end, staff from a local social enterprise are closely involved. PSS’ health trainers work one on one with patients to bring about behaviour change – weight loss, smoking cessation and the like – and to address other issues that could be affecting a patient’s wellbeing. They also played an important role in supporting telehealth.

“The health trainers were almost like advocates,” explains Julia Purvis, health and wellbeing manager at PSS. “If someone has come in to your house and spent half an hour installing telehealth equipment and they ask if you understand it, you’ll likely say: ‘Oh, yes, I understand perfectly,’ even if you don’t. But they’re more likely to open up to the health trainers because they are a real mix of Liverpool people who speak their

language – we’ve got ex-bar maids, ex-labourers, carers and so on.

“So the health trainer can maybe tease out a little bit more of the truth and can then go back and say, actually, this person doesn’t understand what you’ve installed or is not using it because they don’t see the point of it.”

It is yet another example of how partnerships have made telehealth work in Liverpool. Ms Hammond also stresses that it shows that the care model has to come before the technology – not the other way around.

“We got the service right first and then wrapped the technology round it,” she says. “The technology has to fit in to a care plan, fit in to what we’re trying to do with a patient. But my message is that this type of model and way of working has definitely got a future.” ●

CASE STUDIES

# MODEL OF SUCCESS

The use of telehealth technology has enabled Liverpool Community Health to introduce a new care model that is making a significant difference to patients' daily lives

THE BENEFITS

Ask community matrons in Liverpool to name one of the biggest challenges of caring for those with long-term conditions and a theme quickly emerges. "The traditional way community matrons work you can have 50 chronic disease patients really dependent on you," says Michelle McGuinness, a community matron at Everton Road Health Centre. "Sometimes people get used to being spoon fed, really," agrees Rhianon Morgan of Dovecot Health Centre.

It is why such staff welcomed the introduction of a new care model with an explicit focus on supporting patients to become experts in their own conditions.

"The new model means the community matron orchestrates the clinical care," explains Lisa Hammond, clinical lead for tailored care at Liverpool Community Health. "That means they have a fluid caseload."

Telehealth has also helped. Two trials have run in the Liverpool Community Health area – the first combining vital signs monitoring with telecare such as movement sensors; the second focusing on remote monitoring and health education.

"It allowed you to be able to make some more proactive visits because you could maybe start to see some trends developing with the patient before they were starting to experience the symptoms themselves," says Susan Kelly of Edge Hill Health Centre.

In some instances, serious problems were picked up far more quickly than they would have been otherwise.

"One particular patient never wanted to bother us," recalls Ms Morgan. "On our virtual ward system I was able to pick up that there had been no movements at all on Saturday and Sunday – she seemed to spend all her time in the kitchen area. It turned out that she really had a very bad problem; her blood pressure was low. I rung a family member and they went round there and we

actually had to arrange a planned admission and she had surgery the next day. So it actually stopped a bad situation getting worse. We were able to control it."

The matrons admit the introduction of the technology was occasionally tricky, with both patients and staff slightly anxious about using the new system. But such worries were quickly overcome when the benefits became clear – patients with renewed confidence, families happy that their relatives were being monitored, and community matrons able to better manage their workload.

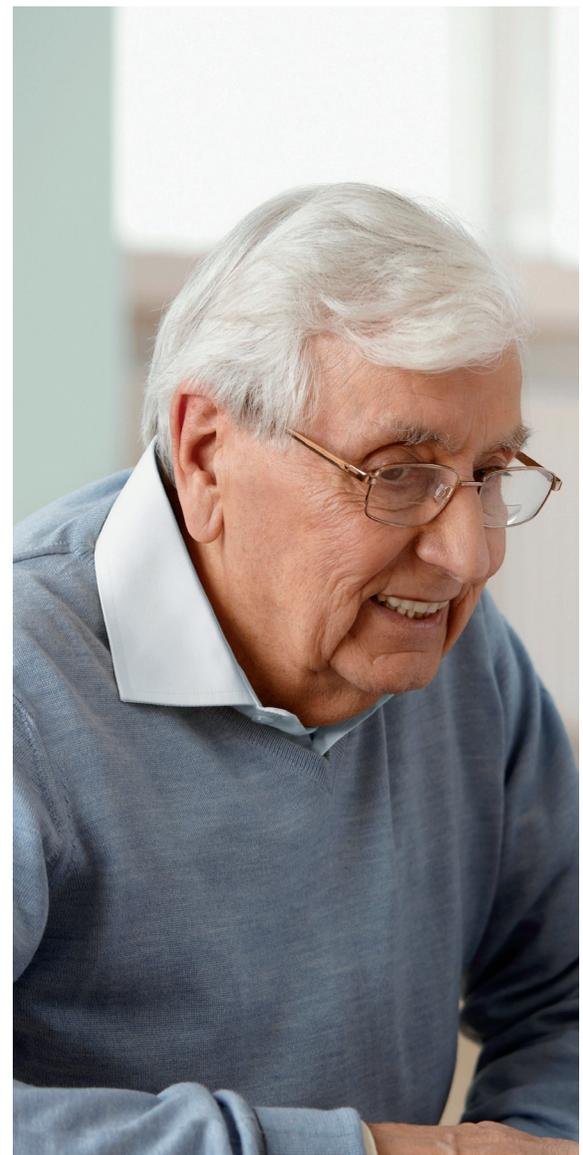
"Telehealth allowed us as community matrons to prioritise our visits," says Ms McGuinness. "We could become more of a reactive service and plan our day-to-day caseload. It would give you a clinical picture of how patients were doing on a weekly basis and whether they were deteriorating, and so we were able to say: 'This patient needs a visit, while this patient is coping really well and is quite stable at the moment.' Using integrated care and telehealth completely changed the way we worked. It became more of a proactive service."

But Ms McGuinness emphasises that telehealth does not remove the need for expert clinicians.

"The clinical integrity provided by the community matron role has got to remain however telehealth is rolled out," she argues. "The person looking at the data has to be someone who has got the clinical expertise to make sound decisions based on it. I don't think it would work with a basic staff nurse."

DEVELOPING A CARE MODEL

Speak to Ann Nolan, one of two tailored care clinical leads at Liverpool Community Health, and her belief in the value of telehealth in supporting those with long-term conditions is obvious. But so too is her conviction that technology is not the be all



and end all: to truly make a difference, it must be just one part of a care model. "We were always clear that we would get the model right and then look at the various enablers," she explains. "Telehealth was one of our enablers, and that's always how we viewed it."

In Liverpool, this care model was developed in partnership with a then local GP, Tuan Nguyen. Dr Nguyen recognised that he was primarily delivering care through a medical model. But he identified that many of his patients had complex social needs affecting their healthcare, and therefore strongly felt the two issues needed to be considered together.

The GP approached clinicians from LCH, who recognised the possibilities of such an approach. "It was quite revolutionary," says Ms Nolan. "He had developed a medical/social care model which included using risk stratified data to identify patients at risk of hospital admission. He knew that by stratifying the population we could start working with patients and carers to



**Introducing patients to telehealth technology requires behavioural change on their part**

of which telehealth has been an important part. Health trainers from PSS – who are trained staffed but non-clinical – work with patients to support behaviour change, to address social needs and often to reinforce and rephrase information they have received elsewhere. According to PSS health and wellbeing manager Julia Purvis, the last of those was particularly useful when it came to telehealth.

“A woman who’s 65 is maybe not engaged with technology and then you’re suddenly telling her: here’s this piece of equipment, it can help. And what we’ve found is it can actually make them feel sicker. It’s making people fully understand why they’re having it; that it’s there to support, not take over, your life; that it doesn’t mean you’re sick in the way you’re thinking. So there’s a lot of explanation and sometimes a health trainer can explain it better.”

**‘It’s making people fully understand why they’re having it; that it’s there to support, not take over, your life’**

Ms McGuinness agrees: “The health trainers really encouraged people to become expert patients. And them acting as the patient’s advocate worked brilliantly. We had one gentleman who was an amputee following a stroke and his living conditions were horrendous: he couldn’t use his wheelchair appropriately because his house was so small. So the health trainer liaised with the housing association and just by her intervening, he was rehoused within a couple of weeks. If you were a matron you could do that but you couldn’t put all your time and focus on it.”

Ms Purvis admits that there were challenges in bringing together a social enterprise and a health provider in this way. Healthcare staff sometimes feared that, as , the health trainers weren’t in a position to provide effective support.

“But once we started working together, and particularly once the community matrons saw the benefits, I would say so many got on board,” she continues.

She is optimistic that will continue. “Social enterprises and the NHS might not have worked so effectively together in the past but I do see there’s a future,” she says. “We are fortunate that PSS’ leadership team and LCH’s leadership team have seen that potential. It’s quite easy to view this as a one off, but they have realised there’s this mutual support we can offer and we now have to ask what else we can do. And I’m seizing that opportunity with both hands.” ●

address health and social care needs much earlier in the disease process. It was an approach which resonated with our commitment, as a public health organisation, to deliver care which supports commissioners in reducing health inequalities and improving health.”

The model focuses on self-care, supported by a multi-agency team comprised of clinicians, social care practitioners and social enterprises. The idea is to give patients the ability to manage their own illness, with telehealth used where appropriate.

According to Ms Nolan, the model and technology have made a significant difference to patients. “For instance, we had a 56-year-old gentleman with chronic obstructive pulmonary disease and heart failure who had been admitted to hospital 16 times in one year because of his conditions,” she recalls.

“We assessed him and he agreed to have telehealth technology installed at home. Since he knew we were monitoring his

symptoms, he felt reassured and it helped him with his day-to-day life. He and his wife could also watch educational videos via the technology, which helped increase their knowledge about his conditions and reduce their worries. It made a real difference to their lives.”

### **WORKING TOGETHER**

When Susan Kelly was told she was going to start working with staff from a local social enterprise, she admits she didn’t really know what to expect. “I knew the name PSS,” says the community matron from Edge Hill Health Centre. “But to be honest I didn’t really know that much about them. They were a revelation. To work with people who are non-clinical but have so much local knowledge for the patient has been fantastic.”

This innovative pairing with a social enterprise is the result of Liverpool Community Health’s integrated care model,

