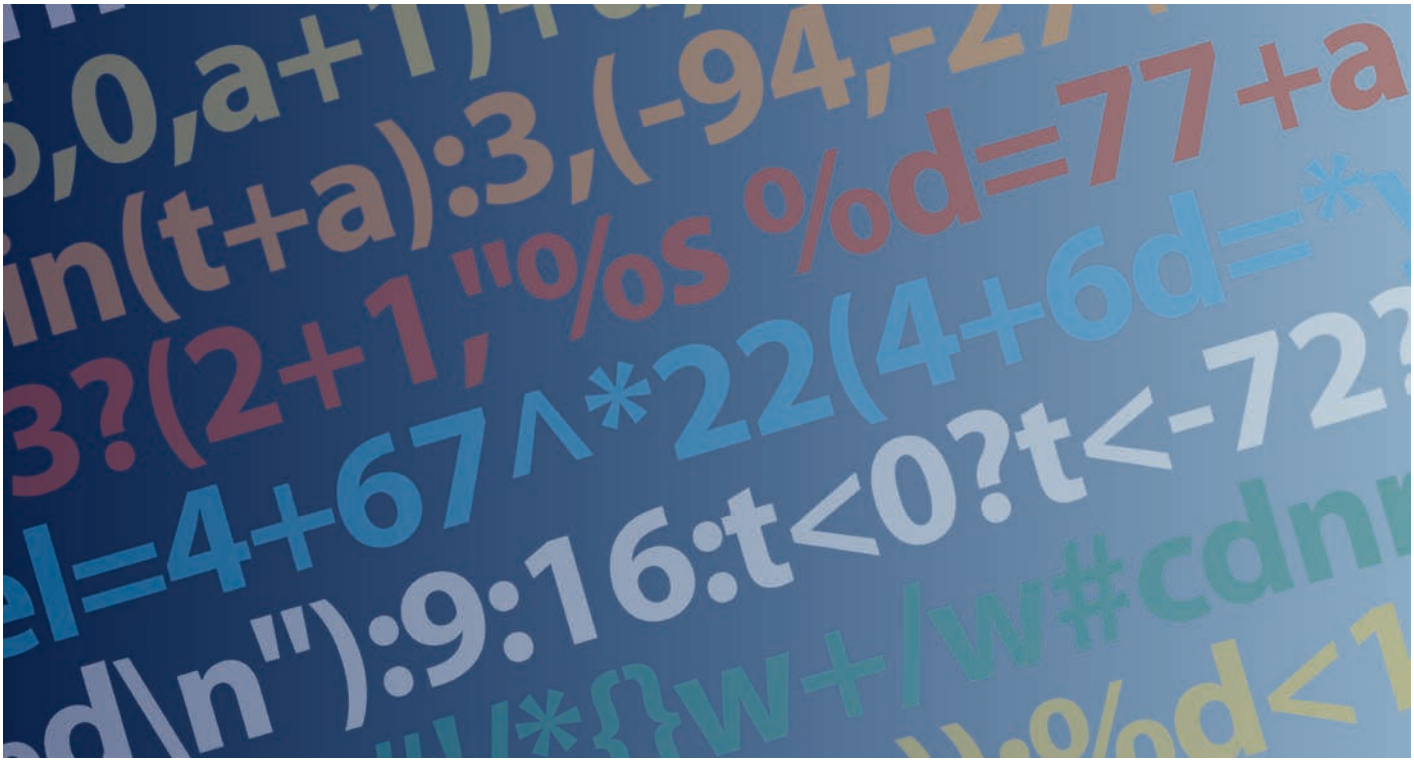
NHS Providers

NHS CONFEDERATION

NEW CARE MODELS:
HARNESSING TECHNOLOGY



Local Government Association

NHS Clinical Commissioners
The independent collective voice of clinical commissioning groups

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The NHS Confederation, NHS Providers, NHS Clinical Commissioners and the Local Government Association are working together, with the support of NHS England, to help spread the learning from the new care models programme across the health and care sector. Together, we aim to create greater understanding, involvement and ownership of the vanguard vision, showcasing new ways that health and care economies can help establish a sustainable health service now and in the future.

Information and data in this report has been provided by vanguard project teams and has not been independently assessed by the report authors. If you would like further information about any of the case studies in this report please see the contact information on the back cover.

FOREWORD

The world is changing; what has been described as 'the fourth industrial revolution' is upon us. Bringing together physical, digital and biological science, this technological transformation is developing at an exponential pace, industries across the board are being disrupted and transformed and the health and care system is no exception.

There is potential for digital technology to significantly impact on the NHS *Five year forward view* (*Forward view*)[1] 'triple aim' of better health, better care, and better value. Digital technologies can also drive, and underpin, care that is truly integrated around the needs of people - breaking down the barriers that have historically existed between primary, secondary and social care services, and support people to stay independent and well in their own homes and communities.

Digital technology is only a means to an end, not the end in itself, but can be a powerful hook and catalyst for change. Health and care services need to be rigorous in ensuring the technologies they are adopting are making a positive difference, including watching out for unintended consequences and avoiding developing an overly crowded marketplace.

At the same time, the barriers to unleashing this potential for the benefit of service users and citizens, as well as the system itself, should not be underestimated.

This report showcases some examples of how local champions and partners have come together to test out using a whole range of technological solutions to achieve the triple aim. These early adopters have carefully tested a range of useful technologies which enable more efficient, targeted, person-centred services from delivering remote consultations to using tracking devices.

The teams involved should be applauded for their creativity and tenacity in overcoming tough barriers, ranging from money flow, safeguarding, privacy, staff capacity and capability and governance. The report also highlights some key lessons for enabling the adoption of digital technology across the system.

While it is vital to ensure that lives are never put at risk and valuable scarce resources are not wasted, healthcare can be culturally risk averse and slow to adopt innovation. Attempts to integrate services can often become bogged down by governance and bureaucracy. There is an inherent sustainability

challenge in that digital technology across our connected world is developing rapidly. You may still find antiquated fax machines in some dark corners of the system in comparison with a digital industry which has developed technology which can read people's thoughts, created driverless cars, produced 3D printed prosthetic limbs and invented contact lenses that measure blood sugars! Health and care cannot afford to be left behind.

It is always really important to remember that all forms of care are about humanity. It is delivered, governed and commissioned by people. The system provides care for people when they are at their most vulnerable. Understanding how to build relationships of shared trust, purpose and responsibility should always be at the heart of any new developments and changes. One of the golden rules of a quality improvement approach is to ensure common ownership of the issue and solutions from the beginning, rather than the uphill struggle of encouraging buy in later on down the line. This means bringing all the stakeholders 'into the room' from the onset including clinicians, politicians, citizens, managers and other partners; creating safe spaces for open and productive dialogue. Linked to this is the need to support all staff and service users and citizens to grow their digital confidence. This is how strong foundations for the best possible solutions can be built, where the real cultural change can begin to take place and where the people become inspired to champion the innovation across their peers.

This report highlights that it is possible to overcome the many challenges to adopting digital technology in health and care, and use it to enable more efficient, integrated, precise and personalised care.

These vanguards have forged ahead. There is a pressing need for the rest of the system to catch up! As William Gibson says: "The future is already here. It's just not evenly distributed!"

Roz Davies, MBA
Health Service Journal Patient Leader
Managing Director, Sheffield Flourish
(UK Digital Charity Leader 2017)
Non-Executive Director, Care Opinion

"It is possible to overcome the many challenges to adopting digital technology in health and care, and use it to enable more efficient, integrated, precise and personalised care."

KEY POINTS

- Rising demand for services, constrained funding and a multitude of workforce challenges require us to think differently about the way we deliver health and care services to meet people's needs and expectations. This publication explores how digital tools are a key part of the answer to this set of challenges, and demonstrates how technology has the potential to revolutionise the way health and care is delivered.

- The **Forward view**, published in October 2014, set out a vision for the future of the health and care services based on new models of care. In 2015, 50 local health and social care systems, or 'vanguards', were selected to take the lead on the development of these new care models. A number of vanguards are focused on implementing digital solutions at the heart of a new approach to care. This publication looks at how five of the vanguards are harnessing technology.

- Technology has the potential to fundamentally change the way people interact with health and care services and improve quality of care. New approaches to service delivery through the introduction of technology should be co-produced with people who use services and clinicians to ensure that the solutions are anchored in their needs and experiences.

- The vanguards show the potential for technology to enhance, rather than replace, existing services. This requires teams to think through how the solutions will support existing systems, processes and ways of working. Central to this is engaging staff in the development process, understanding how they work and want to work in future, and providing ongoing support and training.

- When it comes to harnessing technology, local areas should 'steal with pride' and make use of learning and evidence from other areas. The national health and care bodies have a key role to play in the dissemination of good practice.

- However, new technological solutions need to be considered within the context of local needs, and anchored to wider change programmes across organisations and whole health and care systems. In isolation, small-scale technology projects will not bring about the fundamental shift envisioned in the *Forward view*. Teams should consider how they can make use of local place-based approaches that encourage collaboration across public services and capitalise on existing strengths and resources in the community.

INTRODUCTION: HARNESSING TECHNOLOGY TO REVOLUTIONISE HEALTH AND CARE

Rising demand for services, constrained funding and a multitude of workforce challenges require us to think differently about the way we deliver health and care services to meet people's needs and expectations. This publication explores how digital tools are a key part of the answer to this set of challenges, and demonstrates how technology has the potential to revolutionise the way health and care is delivered.

In light of the national policy emphasis on enabling supported self-care and the shift towards out of hospital service provision, it is more important than ever before for health and care services to provide tools and information to support people and communities to have greater control over their own health and wellbeing. At the same time, technological opportunities can enable the health and care workforce to work differently, and in ways that are better for patients.

As the case studies in this publication demonstrate, the opportunities to make use of technology in health and care services are wide and varied: from the use of apps, devices and telemedicine, to integrating IT systems across multiple organisations.

In particular, the developments in smart phone technology offer an unprecedented opportunity to provide immediate information and support to people, wherever and whenever they need it. As a result, the market for medical and health care apps is rapidly expanding. A 2015 review[2] found there were over 165,000 health care apps available through the two main operating systems for mobile devices. Devices and 'wearables' are also becoming increasingly common, collecting sensory information, such as heart rate, blood pressure and steps taken, on a real-time basis. Similarly, advances in telemedicine and telehealth are facilitating major changes in the delivery of care, including the provision of remote consultations and enhancing communication between clinicians.

A 2017 evidence review of technology-enabled care services[3] identified a wide range of potential benefits across a number of conditions, including:

- telemonitoring can help lower blood pressure for people living with hypertension, while in the care of COPD patients it can support a reduction in the use of healthcare services
- text message interventions can have beneficial effects on HbA1C and glycaemic control in diabetes care, and can increase the reach of, and access to, substance misuse interventions
- the use of video consultations for short term support and counselling can be effective in treating mental illness.

The *Forward view* published in October 2014, and supported by *The personalised health and care 2020 strategy*[4], outlined ambitious plans to deliver a step-change in how health and care services use technology. This was followed by a report from the National Advisory Group on Health Information Technology in England[5] which argued that the NHS would be unable to reach its goals without digitising effectively, and put forward principles for delivering a fully digitised NHS.

These ambitions recognise that the national health and care bodies play an important role in supporting technological innovation, particularly in ensuring interoperability - the ability of IT systems

and software applications used in health and care services to communicate, exchange and interpret data, and work together. As the health and care system increasingly moves towards planning and delivering services at whole systems level, this will be ever more important. The *Forward view* committed to a national focus on the key systems that provide the 'electronic glue' which enables different parts of the health care system to work together to harness new technologies. Meanwhile, other systems are for local NHS organisations to decide upon and procure, provided they meet nationally specified interoperability and data standards.

As technological advances in healthcare gather pace it is important to consider the potential consequences of these changes. Some members of the public have legitimate concerns about data privacy and how their personal information will be stored, used and shared. They also want to be confident that they are receiving trustworthy and reliable information and advice. The NHS Digital apps library has been developed in recognition of the need to signpost people to products that have been built on a solid evidence base.

In isolation, small-scale technology projects will not bring about the fundamental shift envisioned in the *Forward view*. But combining technologies with new ways of working has the potential to transform the way services are delivered. The main focus of this report is technology-enabled care solutions, but the examples also highlight how health and care services can make use of data to understand and predict the health needs and health care utilisation of whole populations, and improve quality and efficiency.

THE VANGUARDS AND HARNESSING TECHNOLOGY

As part of the new care models programme, a number of vanguards are focused on implementing digital solutions at the heart of a new approach to care. This publication looks at how five of the vanguards are harnessing technology. They are:

- East and North Hertfordshire
- Better Care Together Morecambe Bay
- Salford Together
- Better Together Mid Nottinghamshire
- East Midlands Radiology Consortium (EMRAD)

These five examples represent a small selection of digital projects from the vanguards and are not representative of the variety of work taking place across the country. However, the emerging evidence from these vanguards suggests that technology can support people to take greater control over their own health and care, and enable the more efficient and effective delivery of services. Their experiences demonstrate that the key to the successful introduction of technology is to start from the perspective of the patients and clinicians who will be using it. The examples in this report shine a spotlight on how collaborative approaches, which bring together people who use services, clinicians, and organisations that commission and deliver services, can lead to the development of creative models of care and solutions to challenges.

We hope these case studies will be a valuable resource for others who are working with partners in their local areas to harness technology to deliver transformational and lasting change.

EAST AND NORTH HERTFORDSHIRE

NEW CARE MODEL:

Enhancing health in care homes

Project partners: East and North Hertfordshire Clinical Commissioning Group (CCG), Hertfordshire County Council and Hertfordshire Care Home Providers Association (HCPA), which acts as an impartial body for all adult social care providers within Hertfordshire.

PROJECT AIMS

The vanguard's main aim is to help health and social care providers work together to provide greater levels of support for care home residents and avoid unnecessary trips to hospital.

HOW ARE THEY HARNESSING TECHNOLOGY?

The HCPA has been delivering chair-based exercises in residential care homes since 2014 to help residents build their strength and reduce their risk of falls. The exercise classes are led by a specialist health and wellbeing team who have historically carried out falls risk assessments by hand. They were interested to find out if there was a way to use technology to carry out this assessment.

HCPA made contact with an Irish technology start-up and, after initial testing, purchased two Quantitative Timed Up and Go (QTUG) devices to use in residential homes. The first pilot of the QTUG device began in 2015. HCPA ran a weekly class (involving a maximum of 10 residents) at 19 homes over six months. The classes always start off in week one with a TUG walking assessment; on assessment days, two class tutors are present.

The QTUG package is made up of a Samsung tablet installed with QTUG software and attached to two medical-grade sensors (about the size of iPod nanos) which are strapped just below the knees during a walking assessment. The sensors measure criteria such as gait and stride length in order to calculate a person's falls risk. With the sensors strapped around their legs, the care home resident starts off in a seated position, stands up, walks three metres, turns around, walks back, and sits back down again.

Data collected from the sensors is transmitted via Bluetooth to the tablet. It is compared to similar data in the general population of the same height and weight to calculate falls risk. The data can be saved to a unique client ID number to keep track of an individual's results and can be transferred to other computers via USB cable or wifi. The results can be saved as a PDF and automatically backed up to the cloud, allowing them to be accessed from any computer with the appropriate log-in details.

HCPA ran a second pilot across 10 residential homes in 2016 to address some of the issues encountered in the first pilot. For example, they had found that a significant number of residents had been unable to do the chair based exercises because they were unable to do a walking assessment. HCPA decided to tackle this by using additional technology such as Fitbits looking at what they could monitor instead, such as changes in heart rate during the period of the class.

In addition to these devices, HCPA is using other measures to analyse a resident's risk of falling. For example, they are asking people how likely they think they are to fall whilte getting dressed. This allows the care home staff to build a more rounded picture of each person and their specific needs.

Alongside the pilots, the vanguard team have been working to get the NHS.net email, diary and directory system into all the elderly residential homes in North Hertfordshire. The aims are to ensure that information is sent securely, rather than relying on paper and fax machines, and enable more efficient communication between services, helping residents receive the most appropriate care more quickly.

IMPACT

Data from the project suggests that the use of the QTUG device has resulted in a reduction in falls risk in 15 of the 19 nursing homes for residents who attended more than 50% of exercise classes. There was no change for those who attended less than 50%, demonstrating the importance of regular exercise, supported by professionals.

There have also been unexpected mental health benefits for residents. Their confidence and wellbeing levels, measured using self-reported scales, increased over the course of the pilot, with residents reporting feeling happier as a result of social interaction at exercise classes. The class tutors also report increased levels of satisfaction from being able to spend more time focusing on the exercise classes and the residents doing them, rather than carrying out the risk assessment.

WHERE NEXT?

As care home residents are likely to be unable to attend regular exercise classes, HCPA intend to upskill existing staff so that they can provide one-to-one exercise support to care home residents and reduce their reliance on bringing in external trainers. HCPA are also working to ensure that the most appropriate residents are identified for the classes by clearly defining the eligibility criteria.

HCPA doesn't currently have an electronic system to capture qualitative comments from residents, which can offer a different degree of understanding about a person's fall risk. They have been using a basic online form builder which is downloaded onto spreadsheets and analysed but plan to explore opportunities to develop an app or software that can capture this type of information so that it can more easily be used in tandem with the QTUG generated data.

The Hertfordshire partnership has identified the potential the technology also offers to community-based prevention work. Thanks to the success of the care home pilot, and additional funding from NHS England, the team have been able to roll out the technology and exercise classes into community settings. They have been running the classes in the community with Support at Home providers who have had flexicare sites since April 2017. This programme will run until March 2018, by when the team hope that 100 people will have completed the 20-week exercise programme. So far, the impact in the community is mirroring that in residential homes, with falls risk decreasing for class participants.

FURTHER INFORMATION

For further information, please visit
www.enhertsvanguard.uk
or **@ENHertsCCG**

BETTER TOGETHER MID NOTTINGHAMSHIRE

NEW CARE MODEL:

Integrated Primary and Acute Care System

PROJECT AIMS

The drivers for the Better Together Mid Nottinghamshire telehealth project are familiar across the health and care sector. More than 15 million people in England live with at least one long-term health condition, accounting for 70% of NHS spending and representing 55% of GP appointments and 77% of inpatient bed days. The project was adopted in response to widespread interest from clinicians in tackling these issues. The Florence telehealth tool was chosen, in part, on the basis of previous successful projects.

HOW ARE THEY HARNESSING TECHNOLOGY?

Florence (or Flo) is an automated telehealth tool that uses SMS text messages to help people manage their own health conditions at home. The tool works with a patient's own mobile or landline telephone together with biometric devices such as blood pressure monitors. The system sends text messages to prompt patients to stick to tasks that they have agreed with their clinician, such as sending in vital sign readings. Flo sends timely and appropriate reminders such as medication prompts. Patients reply to Flo via text message and the Flo system responds in accordance with protocols agreed by the clinical team.

'Florence' and 'Flo' are registered trademarks of NHS Stoke-on-Trent CCG. Once an NHS organisation licences the system, all clinicians in that organisation can use the tool, which consists of system access and a text message bundle. Clinicians have also been able to access a clinical community of NHS colleagues to share learning, best practice knowledge, evidence and training. This is led by Shared Healthcare Ltd, a not-for-profit social enterprise operating under an NHS Simple Telehealth licence.

IMPACT

The Nottingham Assistive Technology Team, which sits in the Health and Wellbeing Hub, had already started to make great strides with the roll-out of Flo in 2012, beginning with the heart failure services. This project resulted in a 35-48% reduction in nurse visits. It was also clear that hospital admissions were being avoided thanks to detecting signs of deterioration earlier.

An evaluation by the University of Strathclyde showed that in 2013/14:

- for the heart failure nurse team, home visits halved
- ADHD clinic appointment reminders reduced non-attendance at clinics from 55% to 0% among patients using Flo
- use of Flo with pre-operative patients reduced the costs of cancelled surgery. Pre-operative patients found to have high blood pressure used Flo to send in twice daily blood pressure readings for a week. Eight patients (73%) had high blood pressure. A cancelled surgical procedure costs £232 meaning there was a £1,856 cost avoidance for these patients.

Findings for the 12 months before and after adoption of Flo show a significant reduction in the number of GP consultations for patients with high blood pressure and lung disease. For every patient group at least 80% of respondents reported less frequent usage of GP services after they started using Flo. As a vanguard, Mid Nottinghamshire has built on these successes to accelerate the pace of the programme.

WHAT HAVE THEY LEARNED?

The involvement of patients in the work has been essential to ensure end user satisfaction. Interestingly, patient feedback from 98 patients at Sherwood Forest Hospitals NHS Foundation Trust orthopaedic service showed that 86.7% of 32-90 year olds using Flo strongly agreed or agreed that it is easy to use, suggesting that this type of technology can be accepted and used by people of all ages.

Parallel to this, the introduction of telehealth technology has required a culture change among staff. A COPD nurse in the Newark and Sherwood team has pointed out: "there is a culture change that clinicians need to go through. We have to stop unnecessary visits to patients and allow Flo to support patients on their behalf". Key to driving the implementation of the technology forward has been to engage a clinical champion who can advocate the use of Flo among their peers.

The team have also learned that there is a need to align any improvement to national standards, targets and local area agreements.

WHERE NEXT?

The Connected Nottinghamshire programme was set up in 2013 to create and deliver the local digital roadmap for Nottinghamshire. They have been working with the vanguard and CCGs in Nottinghamshire to make sure that everyone is connected and work isn't duplicated. The programme's strong and robust partnership, shared vision and shared strategy, have contributed to the success of Flo across Nottinghamshire, as well as the development of a local digital roadmap to support the STP.

Since the heart failure trial, Flo has been deployed across a range of areas, including diabetes, hypertension and blood test reminders. Flo is continuing to be rolled out across Nottinghamshire and across even more types of health conditions including pain management and a project looking at cancer pathways and use of telehealth cognitive behaviour therapy.

FURTHER INFORMATION

For further information, please visit
www.bettertogethermidnotts.org.uk/vanguard/
or **@bettermidnotts**

BETTER CARE TOGETHER MORECAMBE BAY

NEW CARE MODEL:

Integrated Primary and Acute Care Systems

Project partners: University Hospitals of Morecambe Bay NHS Foundation Trust; Cumbria Partnership NHS Foundation Trust; Blackpool Teaching Hospitals NHS Foundation Trust; Lancashire Care NHS Foundation Trust; North West Ambulance Service NHS Trust; NHS Morecambe Bay CCG; Lancashire County Council; Cumbria County Council; North Lancashire Medical Group (GP federation); South Cumbria Primary Care Collaborative (GP federation).

PROJECT AIMS

The Better Care Together telemedicine project seeks to reduce unnecessary journeys taken by the public and ambulances between the South West Cumbrian town of Millom and Furness General Hospital, which takes approximately one hour on a rural road. Millom has a population of just 8,500 and generates over 22,900 journeys to the hospital each year, which is over 1,000,000 miles travelled.

The project team believe telemedicine has the potential to help services overcome the challenge of providing health and care in a rural part of the country, where the population is spread over 1,000 square miles, as well as staff shortages in some specialties.

The intention is for telemedicine to account for 20% of outpatient activity at University Hospitals of Morecambe Bay (UHMB) Foundation Trust within 2-3 years, with patients receiving the same level of care but in more convenient locations.

HOW ARE THEY HARNESSING TECHNOLOGY?

One of the Better Care Together projects has been to set up a video link between a GP surgery in Millom and Furness General Hospital Emergency Department. The project involves an integrated approach by various health providers. If a patient seen in Millom is not in an immediately life threatening condition, clinicians at the emergency department can carry out a triage remotely via video link. If travel to the hospital is required, this is immediately arranged.

Virtual out of hours appointments are also now being offered by video link between Millom Community Hospital and GPs at Cumbria Health on Call (CHOC) based in Carlisle. Patients who call NHS 111 on Saturdays between 9am and 1.30pm and require clinical attention will be offered the option of a consultation with a GP via video link. The out of hours GP can virtually assess the patient and agree the best course of action, which may include a prescription being sent electronically to a local pharmacy. This initiative is helping some patients avoid travelling to attend face-to-face appointments at Furness General Hospital.

A telehealth link between the Category C prison and Furness General Hospital is also allowing prisoners to be assessed with this technology, similarly avoiding the need for travel in suitable cases.

Further applications have included a single gastroenterology pilot clinic, rheumatology clinics, psychiatry clinics, and linking three maternity labour wards so senior midwives can support junior

midwives and women 'at distance'. There is potential for links to tertiary service clinical advice further afield, such as between the primary care assessment service at Westmorland General Hospital and renal and neurology services based in Preston.

Cisco was selected as the supplier for the telemedicine project; a decision that was strongly influenced by UHMB's existing Cisco network equipment. Telemedicine simply sits on top of the existing infrastructure. Around 20 video consultation units have been installed as part of the project. Otoscopes (ear, nose and throat) and Dermatoscopes (examining the skin) are attached to the patient-facing units and provide very high resolution images. The team are also using thermal imaging cameras help to diagnose conditions such as Raynaud's disease.

The telemedicine solution is integrated with an advice and guidance tool, a software platform developed in-house that allows GPs to pose questions to clinical specialties. Cisco presence technologies will enable real-time video conversations between GPs and consultants in the future.

IMPACT

The team have concentrated their return on investment thinking on wider socio-economic benefits and workforce utilisation, rather than looking only at income from the tariff. This is an important consideration as the evidence from the project is contributing to sustainability and transformation partnership (STP) planning about how Lancashire and South Cumbria network might use the technology to deliver efficiencies.

Reduced cost of transport, and reduced travel time for patients and staff are clear aims for the telemedicine project. A dashboard now shows mileage saved per patient based on outpatient appointments. The team are also looking at tracking mileage and travel time reductions for clinical staff who no longer have to travel as frequently as they did previously from their base location to a remote clinic.

The project team recognised that patient and clinician involvement in the project was crucial to its success. Each organisation sent questionnaires to their members, supplemented with surveys in outpatient departments. The team then held a patient focus group comprising people for, and against, the project. This allowed the project team to get under the skin of the project and explain its potential value. Two patients from the focus group have continued to work with the team to trial a new, virtual waiting room project, which will allow video consultations with health care professionals to take place from patients' homes.

WHAT HAVE THEY LEARNED?

A key feature of the Better Care Together programme is that telemedicine takes place within existing clinical settings, where the technology is controlled and staff are on hand. This has meant the barriers to adoption by patients and clinicians are reduced. Telemedicine has also delivered an additional role for the local community hospital.

Negotiating connection to each others' networks and the ability to use equipment owned by another organisation is starting to become less problematic now installs are live and working, though the team say that they underestimated how much time this aspect of the roll out would take.

The thorniest challenge has been navigating the contractual arrangements in commissioning models for telemedicine activity. "We're trying to find the right internal market in which this can fit," says Paul Charnley, chief information officer at University Hospitals Morecambe Bay, "else you have a very perverse incentive to drag people to an outpatient appointment just because we get paid for seeing them face to face, and might not if we see them on camera."

The project team recognises that they are still in the early stages of technology and acceptance by clinicians. Their approach has been to work with natural early adopters, such as the chief clinical information officer, who was the first to trial a clinic using telemedicine. Three initial remote clinician pilots in gastroenterology, rheumatology and mental health got clinicians engaged in the idea and generated interested in the potential for telemedicine.

WHERE NEXT?

In January 2017 Cisco Jabber Guest was installed at UHMB, which will enable video consultations over the internet and is allowing the UHMB team to roll out a virtual waiting room. Deployed in outpatient clinics, care homes and GP surgeries, patients receive a unique, time-bound link via email. On clicking the link, a web browser displays a simple call button that connects the patient to the receptionist who checks quality the quality of the connection and explains the process. Films and information can be displayed to the patient prior to meeting the clinician, and during the consultation the clinician can share images such as x-rays and self-care information.

The project team hopes to extend telemedicine to neighbouring areas and also believe that organisations could make use of telemedicine for webinars and staff supervision.

FURTHER INFORMATION

For further information, please visit
www.bettertogether.co.uk
or **@EBCTMorecambeBay**

EAST MIDLANDS RADIOLOGY CONSORTIUM (EMRAD)

NEW CARE MODEL:

Acute Care Collaboration

Project partners: EMRAD covers over six million patients and eight trusts: Nottingham University Hospitals NHS Trust, Kettering General Hospital NHS Foundation Trust, Chesterfield Royal Hospital NHS Foundation Trust, Northampton General Hospital NHS Trust, University Hospitals of Leicester NHS Trust, United Lincolnshire Hospitals NHS Trust, Sherwood Forest Hospitals NHS Foundation Trust and Burton Hospitals NHS Foundation Trust.

PROJECT AIMS

The East Midlands Radiology Consortium (EMRAD) aims to deliver timely and expert radiology services to patients across the East Midlands, regardless of where they are being treated. Radiology services include imaging tests like x-rays and scans.

The UK has one of the lowest numbers of radiologists in Europe, and the East Midlands has the lowest number of radiologists per 100,000 people out of all the regions in the UK. While the number of consultant radiologists grew by 5% between 2012 and 2015, in the same period the number of CT scans rose by nearly 30%. The shortage of radiologists has negative consequences for both patients and the NHS: patients aren't getting scan results as quickly as they could, leading to delays in diagnosis, while NHS trusts are paying large amounts to outsource radiology reporting to private companies. In 2015 outsourcing costs were over £88m. The EMRAD vanguard has harnessed technology to develop creative solutions to these problems.

HOW ARE THEY HARNESSING TECHNOLOGY?

EMRAD have worked with the healthcare technology supplier GE Healthcare to create a radiology IT system capable of handling of millions of patient events. This cloud-based, shared system allows clinicians to access the complete radiology imaging record for all patients across the East Midlands, including scans, reports and clinical opinions, regardless of where they are based.

The first EMRAD pilot involved six neuro-radiologists at Nottingham University Hospitals. The neuro-radiologists volunteered to have workstations, consisting of a vanguard-funded laptop and large monitor, set up in their own homes for three months, allowing them to look at images while working from home in non-core hours. They could view images at these workstations by downloading them from the server via a secure VPN connection to the NHS network. After signing contracts (confirming adherence to policies and procedures) they were able to work on single and multi-area CT, single and multi-area MRI and x-ray images.

The radiologists reported their activity to the EMRAD support team who worked out how many images had been read and the NHS tariff. Throughout the pilot, outputs from the radiologists were continually analysed. The team took performance metrics based on productivity before and during the pilot during core hours, which reassured them that the reward working wasn't impacting adversely on the day job. The radiologists were subsequently paid through normal payroll methods.

Based on the success of the first pilot, the system was piloted at Northampton General Hospital and

Sherwood Forest Hospitals. Both pilots were in the plain time x-ray specialism, and demonstrated that the successful adoption of the technology is not unique to one particular specialty. Pilots with radiographers are also underway. Nottingham University Hospitals and Sherwood Forest Hospital have now implemented the IT system as a sustained live service (business as usual), proving there is the appetite, and capability, to make use of the technology across large teaching hospitals and smaller general hospitals.

IMPACT

The new system has brought about greater flexibility in the use of the radiologist workforce, resulting in additional capacity. For example, one member of staff (whole time equivalent) was generated by six staff working in this way. Over the first pilot the six neuro-radiologists looked through 1,160 images and helped 939 patients, and were able to significantly reduce the backlog of radiology images in a few weeks. Initial evidence suggests that the reporting done for EMRAD is being done at a more efficient rate than the Royal College of Radiologists benchmark rates.

By working together on the joint procurement of a new shared radiology record, the trusts have saved £3m each year, and expect to save £30m over the lifetime of the 10-year contract. Savings have also been made thanks to NHS staff undertaking work that would previously have been carried out outside the NHS. Trust income from commissioners during the pilot period was £23,753 compared to outsourcing costs estimated to be £33,504 for the same volume of work. The radiologists involved in the pilot have reported benefits too. They have valued the flexibility that being able to assess images from home has afforded them.

WHAT HAVE THEY LEARNED?

As with most major IT deployments the vanguard team have experienced teething problems, particularly with the stability and robustness of the system when rolled out to a live production environment.

Another big challenge was getting agreement on an NHS tariff rate for the new diagnostic model as there was not one already in place. The private outsourcing companies currently charge NHS trusts different tariffs. Standardising tariffs, and ensuring that the tariffs for insourcing are attractive to both the trusts and the radiologists, is a key part of the EMRAD vision.

The consortium has been able to overcome these challenges thanks in large part to the strong, collaborative relationships between the trusts involved. The management boards are attended by senior responsible officers from each trust, and the consortium partners recognise that each subsequent roll-out of the new system has become easier as lessons are learned and problems are solved collectively. EMRAD also has a very strong information governance lead who has attended all meetings and advised on all information governance issues relating to clinical safety, patient safety and data sharing. The project team have also put in considerable effort to engage colleagues in the move to the new way of working. As part of their communications and stakeholder engagement plan radiologists are communicated with at least once a week via email and a patient champion has been involved in the project to ensure that any issues around patient engagement are addressed.

WHERE NEXT?

The IT system will be rolled out to Chesterfield Royal Hospital in the near future. The team are also running a cross-trust reporting pilot, with images from paediatrics being shared between Nottingham University Hospitals and United Lincoln Hospitals, which has already proved the robustness and resilience of the system when sharing images both between and within trusts.

The team are also nearing completion of work in partnership with GE Healthcare to develop a brokerage system. Once all seven trusts are live they will be able to take part in this system, which will manage demand across the consortium by identifying where there is capacity across the seven trusts and allocate work accordingly, making use of a radiologist eligibility dashboard and a financial dashboard.

Ultimately, EMRAD hope to create a technology tool and new care model in radiology diagnostic services that can that can be implemented across the wider NHS. They have also received considerable interest from healthcare teams around the world, suggesting that the potential application is even wider.

FURTHER INFORMATION

For further information, please visit
www.emrad.org
or **@emradNHS**

SALFORD TOGETHER

NEW CARE MODEL:

Integrated Primary and Acute Care System

Salford Together is a partnership between Salford City Council, NHS Salford Clinical Commissioning Group, Salford Royal NHS Foundation Trust, Salford Primary Care Together and Greater Manchester Mental Health NHS Foundation Trust.

PROJECT AIMS

Salford Together vanguard aims to help those who are well and healthy to stay active and busy, so they stay healthier for longer, and support those who have care needs to improve their quality of life and independence. The programme is also anticipated to deliver around £27m of recurrent savings by 2021 through reducing hospital admissions and eliminating duplications across the health and social care system.

HOW ARE THEY HARNESSING TECHNOLOGY?

Salford Together vanguard are pursuing plans to become an Integrated Care Organisation (ICO), an ambition which grew from much smaller integrated care programme for older people in Swinton and Eccles. The ICO brings together the contributions of GPs, district nurses, social workers, mental health professionals, care homes, voluntary organisations and local hospitals into a more aligned system.

The ICO, which is delivered by Salford Royal in the role of prime provider for all adult health and social care services, also commissions mental health services and has responsibility for domiciliary and nursing home care.

A key factor in bringing many organisations and disciplines together is ensuring that there is a workable IT system and the right technology in place. So too is the development of a shared care record system across many diverse systems – from GP, hospital and social care records. This has required a significant programme to plan the interoperability and integration solutions.

Some of this work has been considerably challenging, for example, when 450 adult social care staff transferred across from the Salford City Council to the health team under Salford Royal to create a new team of health and adult social care workers working together.

Social care staff still needed to access the council's CareFirst record system, plus a number of other sub-systems, and the document management system that feeds into that. They also had their own internal communication system allowing them to track who was in the office, or out on visits, and real-time messaging to get quick answers from colleagues to help speed up ways of working.

"All of these systems were business critical to the way social care staff did their jobs. The difficulty of integrating council colleagues onto the trust's IT system while still retaining access to their core systems, mustn't be underestimated" says Phil Bell, Salford Royal's information management and technology deputy chief information officer.

In March 2016, Salford Royal selected Allscripts CareInMotion population health management platform to supersede their existing shared integrated record system to help make the transition to Salford Together's new model of integrated care. The platform helps healthcare organisations share data across disparate systems within clinicians' workflows. It also offers a framework that enables healthcare organisations to address their specific population health priorities through, for example, predictive analytics, care coordination and patient engagement.

Salford Royal also uses the Allscripts Sunrise Clinical Manager, an electronic health record solution.

This includes areas such as A&E and critical care, departments which previously relied on paper. This has enabled staff to electronically record and track decisions about patient care, which has been integral to the trust's strategy to be the safest organisation in the NHS.

Initially, the electronic health record solution will connect Salford's acute doctors and GPs (INPS and EMIS Health GP systems), providing them with a comprehensive view of patient information to enable fully informed care decisions. Eventually, the trust's existing integrated Electronic Health Record (EHR) will be connected to the broader community.

WHAT HAVE THEY LEARNED?

Bringing such large organisations together meant tackling some big barriers. For instance, the council and trust had very different approaches to IT and worked within different environments. A lot of work was undertaken to coordinate and get networks together. Seemingly simple things took longer than expected, such as enabling trust wifi in the council buildings and vice versa.

There was also the challenge of social care staff being given new email addresses whilte retaining log ins to the council system. Staff were using council hardware on council networks and logging on to the Acute Electronic Patient Record remotely. The project team had to tie in council networks, making sure that software versions weren't conflicting, while ironing out some of the initial wrinkles of remote sessions dropping out.

It was important for the information management and technology (IM&T) team to understand how the newly formed ICO would work and what people required to do their job. To help staff understand the 'art of the possible' and build the vision in partnership with IM&T, the team held an open day where staff could find out about what the shared integrated record could do and deliver. IM&T also held workshops so that they understood systems and processes used by staff, and how staff wanted to work in the future.

WHERE NEXT?

The team is keeping an eye on the broader landscape, particularly the other technologies and innovations such as GM Connect, which is looking at wider data sharing across Greater Manchester, to ensure they are not doing anything that overlaps with or contradicts the Greater Manchester strategy.

Phase two of the project will look to create single logins from anywhere staff are working to ease frustrations with logging into remote systems. To enable this, Salford Royal is looking to take over the management of the hardware because the core systems, such as the electronic patient record, are managed by the trust.

Salford Royal has also signed a contract with a US data platform supplier to help plug into data from wearables used by patients, such as fitness and sleep data. As part of its pilot testing, patients' sleep, heart rate and exercise data is integrated into their EHR so that clinicians can assess their metabolism and modify medication accordingly. If successful, the system could be expanded to include a wide range of clinical, biometric, lab and lifestyle data. It could also be aggregated into databases to be used by researchers at a population level.

FURTHER INFORMATION

For further information, please visit
www.salfordtogether.com
or **@SalfordTogether**

INCREASING OUR ABILITY TO HARNESS TECHNOLOGY: BUILDING ON THE LEARNING

While each of these vanguards has taken a different approach, across the projects there are a number of core principles that underpin the successful harnessing of new technology.

The starting point for any project should be the perspective of the end users. Both the technological solutions and wider projects should be co-produced with people who use services and clinicians to ensure that the solutions are anchored in their needs and experiences, as well as business requirements. Positive user experience is absolutely essential: this means thinking through every aspect of the technology, from the digital literacy levels of users to log on requirements for clinicians. Project teams should plan for the ongoing training and support needs of users – these do not stop when the project goes live.

This report shows the scale of the challenge to integrate data across health and social care systems. But integration is essential if we are to ensure that people experience joined up services in which they only have to tell their story once and feel confident that up-to-date information is being safely shared between teams involved in their care. The case studies demonstrate that while information governance requirements can be complex to navigate, they do not need to become an obstacle to change. Teams need to consider privacy and be clear on the purpose of data sharing from the outset, and involve the right people to advise them on all aspects of information governance.

Harnessing technology requires the health and care system to model return on investment and payment systems differently. We need to also consider, for example, the value of more timely treatments and greater integration between services, while the tariff needs to have mechanisms in place to incentivise remote consultations. To do this, providers and commissioners need to work together on creative solutions. We also need to recognise the pace of technological change and ensure that the standard operating systems that services rely on are advanced enough to support innovative technologies.

The vanguards show the potential for technology to enhance, rather than replace, existing services. This requires teams to think through how the solutions will interact with and support existing systems, processes and ways of working. It is possible to use off-the-shelf solutions – rather than develop completely new, bespoke solutions – if you ensure the enabling infrastructure is right. Similarly, solutions don't necessarily have to be fully integrated, but they do have to be interoperable with existing systems.

To build on the considerable amount of work already undertaken across the new care models programme, the national bodies must continue to support the dissemination of good practice and other areas should feel confident to 'steal with pride'. However, they also need to consider their local needs and context. For technology to support the fundamental shift envisioned in the Forward view teams should make use of local place-based approaches that encourage collaboration across public services and capitalise on existing strengths and resources in the community.

REFERENCES

1 Care Quality Commission, Health Education England, Monitor, NHS England, Public Health England, Trust Development Authority (2014), Five Year Forward View.

2 IMS (2015), *Availability and profile of consumer mHealth apps.*

3 Health Innovation Network South London (April 2017), *NHS England TECS evidence base review.*

4 National Information Board and Department of Health (2014), *Personalised health and care 2020: a framework for action.*

5 National Advisory Group on Health Information Technology in England (2016), *Making IT work: harnessing the power of health information technology to improve care in England.*

The NHS Confederation, NHS Providers, NHS Clinical Commissioners and the Local Government Association are working together to help spread the learning from the new care models programme across the health and care sector.

Together, we aim to create greater understanding, involvement and ownership of the vanguard vision, showcasing new ways that health and care economies can help establish a sustainable health service now and in the future.

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