## DIGITAL HORIZONS

Summer 2021

### The future of healthcare



Arden and Greater East Midlands Commissioning Support Unit

## Contents

Welcome 02

Digital health post pandemic: turning quick 03 fixes into long term improvements

- 05 Can virtual experiences help improve our mood? How technology helped people get 'Lost in Song' during the coronavirus pandemic
- Putting data at the heart of integrated 07 care systems
- Navigating the big smoke helping 09 patients avoid poor air quality

**Digital strategy and ICSs** 

What potential does drone technology offer healthcare?

# Welcome...

Welcome to the new edition of Digital Horizons - our technology newsletter to keep you informed of the latest digital developments in healthcare.

As the COVID-19 recovery continues, and healthcare leaders are able to reflect on the challenges and learning of the past year, we take a look at what this means for the rapid digital solutions implemented since March 2020 and how we continue to harness this new-found agility.

Another key learning to come out of the pandemic is just how prevalent health inequalities are across our communities. In this issue we consider how we can use data to better understand where inequalities exist and how we can use digital health to help tackle these issues.

We also take a look at some of the innovative and creative applications of technology that have helped unlock opportunities. From the use of immersive technology to improve mood and reduce feelings of social isolation to the use of drone technology to deliver medical kit and connect care facilities.

Remote monitoring solutions and long-term condition management have been regular

topics in previous editions of Digital Horizons and in this issue we'll be hearing from a partnership project which is adding air quality data to existing platforms for managing long-term conditions to help patients make informed decisions about their outdoor activities.

Finally, I'll be looking at the importance of digital transformation and data in ICS plans for their future shape and design, and the necessity of digital delivery when building new pathways.

As an NHS organisation, we are always keen to share our thinking and understand your ambitions, so whatever your digital healthcare challenges, we'd love to engage in an exploratory discussion with you.



### Digital health post pandemic: turning quick fixes into long term improvements

While COVID-19 has necessitated accelerating digital solutions for healthcare, Wendy Lane, consultancy services director at NHS Arden & GEM, argues that digitising what we already do isn't always the answer but, at the same time, we should harness our newfound sense of innovation.

Digital healthcare took a huge leap forward during the COVID-19 pandemic - but the potential for change existed long before then. Emergency circumstances removed some traditional barriers and temporarily changed clinical acceptability thresholds. But rapid solutions are not always the right solutions long term and some quick fixes will need to be reviewed. In doing so, how do we harness our new-found agility and lock-in progress?

### **Breaking down barriers**

Three main changes propelled digital healthcare forward during the pandemic:

- Practical changes to Information Governance allowed data sharing to identify at risk patients, enable shared care records and set up virtual wards. This compromise will hopefully set the tone for a more pragmatic approach going forward, balancing protecting patient data with enabling much-needed innovation.
- Huge improvements in core NHS IT infrastructure means many healthcare workers are benefitting from updated computers and access to shared systems and video conferencing.
- Many people have become more accustomed to digital interaction, both professionally and personally, as getting together has largely been replaced by video calls. However, we must be mindful not to exclude those for whom connectivity and affordability barriers continue to prevent access to technology.

### A dose of realism

The NHS is not new to digital innovations that improve efficiency and free up resources. Examples include capsule endoscopy, which was successfully piloted in Scotland prepandemic, home testing kits that aim to pick up early signs of chronic kidney disease, and remote monitoring systems designed to help people manage long term conditions at home.

But in some cases, progress pre-pandemic was painfully slow, with new pilots often overly bureaucratic to set up. In its recent whitepaper, Integration and innovation: working together to improve health and social care for all, the Government has recognised the need to strip back needless bureaucracy and capitalise on the creative and innovative approaches a dopted during the past year. But that doesn't mean it's all systems go on digitalisation. Stay agile – yes. Innovate with confidence and be prepared to fail – absolutely. But let's not mistake rapid 'sticking plaster' solutions for long term change. The digital pendulum may have swung right across during COVID-19, but to deliver holistic, accessible and sustainable care, we need it to rest somewhere between the pre- and peak-pandemic approach to change.

### **Patient-centred progress**

Experience tells us that personalised care is more cost efficient and results in a better quality experience for patients. For some, email, phone or video consultations will have worked brilliantly and they may not want to go back to sitting in waiting rooms or circling hospital car parks searching for a space. But for others, the digital service hasn't measured up – research by the Health Foundation shows that 42% of members of the public interviewed said technology-enabled approaches made for worse quality of care than traditional models.

As a necessary consequence of the pandemic, we've lost the opportunity to co-design care – instead, we've largely transferred traditional methods online. Yet one of the success stories of this pandemic has been the coming together

3 Digital Horizons

of health and social care staff and community volunteers. The public have become part of our extended workforce, so why not invite them to contribute to our next steps in more modern, flexible ways? Crowdsourcing ideas and expertise from our communities will help pick up on crucial aspects of care that could inadvertently be lost in a digital design, such as the supportive conversation a nurse may have with a newly diagnosed cancer patient as they walk them out of the clinic, which may identify the need for additional support.

In our enthusiasm for innovation, we must be careful not to design out the most human elements of our care. Understanding and proving what technology is capable of doing and maximising that functionality is vital, but must be balanced with a recognition of what makes for a quality conversation – the soft skills and compassionate behaviours which are an integral part of care delivery. We shouldn't be trying to make every patient interaction a video call just because we can.

Evaluation will continue to be key in moving digital healthcare forward – but that too could be more agile. Drawing on the learning from the Global Digital Exemplar programme, let's look at evaluating new pilots as they go along; tweaking, improving or removing them with learning shared across the NHS. Place-based integrated working lends itself to trialling small-scale innovations, with Integrated Care Systems taking the lead in sharing best practice to accelerate progress across regions.

There are no simple answers here, but if we try too hard to find the perfect solution, we will be back to where we were pre-2020. Let's have the confidence to innovate, but recognise that we will need to do more than simply digitise what we currently do, and that input from our patients and our communities is key to our future success.

This blog was originally written for NHS Confederation and you can access the full version <u>here</u>.

# Can virtual experiences help improve our mood?

How technology helped people get 'Lost in Song' during the coronavirus pandemic

In this article, Anne O'Leary, Consultant Development Manager at NHS Arden & GEM CSU shares how her personal experience of a cycling accident and recovery helped inspire a project to evaluate the power of virtual choral experiences to lift mood and reduce feelings of isolation.

Lost in Song is a web-based application developed to lift spirits and provide people with an opportunity to experience the joys of choral singing from the comfort and safety of their own home.

A collaboration between Limina Immersive and Arden & GEM, Lost in Song enables participants to sing along with Ex Cathedra – an international choral choir based in Birmingham - while enjoying 360-degree footage of natural landscapes from around the UK.

As part of a new pilot, launched in 2020, participants were asked to complete a mood checker before and after experiencing the songs and a short survey to help evaluate the mood-boosting potential of immersive technology.

### The power of 'lived experience'

Lost in Song demonstrates the power of ideas that come from lived experience. This project came about as a result of my lived experience of being 'shielded' from doing the things I enjoyed following a cycling accident in August 2019 that resulted in serious injuries.

While in recovery, I focused on what helped me to live in the moment and not panic about my future. I found that listening to live choral and classical music with other people in a serene environment helped to calm my mind and I would get 'lost in song' for 20 to 30 minutes at a time. While not particularly religious, I found that the peaceful setting of a church or cathedral allowed me to rest my eyes in the candlelight and be mindful. When lockdown happened two weeks after I returned to work in March 2020, it occurred to me that virtual reality could help to recreate that feeling of peaceful calm and connection that I had experienced, in spite of the need to shield from others. That was when I found an Innovate UK funding opportunity and contacted my friend Helga Henry, a consultant specialising in the arts.

The choral music that I listened to, and found so helpful, included Ex Cathedra and so Helga introduced me to Peter Trethewey, their General Manager. Mindful of the ethical issues associated with Artificial Intelligence (AI) and Virtual Reality (VR), and given that this project was working with potentially vulnerable people, we contacted Catherine Allen at Limina Immersive for support.

Catherine, Peter and I met virtually, and it turned out that Catherine had created Lost in Song four years earlier and was waiting for a suitable opportunity to launch it. Helping to lift people's mood through music and nature during a pandemic seemed the ideal moment. Next thing we know, the three of us had submitted a bid to Innovate UK and, out of 8,600 applications, we secured £50k to develop, test and evaluate the concept.

Towards lifting the spirit of the nation

Lost in Song uses accessible, virtual reality technology to scale the potential benefits of group singing. Using a laptop, tablet or computer, familiar songs are accompanied by 360-degree videos of UK nature scenes to create an immersive experience. Users can control which part of the scene they are viewing, via their mouse or keyboard, as the song lyrics appear on the screen. The app aims to creates a fun, joyful, virtual singing experience.

As part of the pilot, participants were invited to register with the app from September 2020, with a new song released each week. 312 participants were recruited to the pilot by the project partners, primarily through email, word of mouth and social media. This recruitment process meant that more than half of participants had experience of singing at public events or were part of a choir.

A participant survey was conducted to see if the app could impact positively on mood by reducing feelings of isolation, with 102 respondents completing a set of detailed questions about Lost in Song. The gender profile of the sample was predominantly female (73%) while the most common age group participating was the 45-64 year olds (46%).

Of those who completed the survey, a majority found navigation easy and experienced a positive impact on their mood in the short term.

**90%** of respondents found that navigating the immersive experience was easy or relatively easy

81% of respondents reported that Lost in Song had a positive impact on their mood in the short term

### Future improvements to the app and pilots

The pilot evaluation identified a number of potential app improvements such as extending the number and style of sound and video recordings available as well as using notifications to alert participants as new songs became available.

The content is still freely available on a dedicated website and increased participation is being sought by:

- working with local communities, NHS provider organisations and social prescribing leads
- targeting specific user groups e.g. people with depression and/or feelings of isolation, those with respiratory related conditions, where breathing exercises could be beneficial.

Future pilots are currently being planned with trusts in the West Midlands to explore the potential benefits of Lost in Song for patients on mental health wards and healthcare staff.

To find out more about the project, visit <u>www.lostinsong.com</u> or contact anne.o'leary@nhs.net

### Putting data at the heart of integrated care systems

The Government's legislative proposals for a Health and Care Bill will see the creation of statutory Integrated Care Systems (ICSs) covering the whole of England. Our Chief Data Officer, David O'Callaghan, argues that with the right infrastructure and skills, these organisations will be ideally placed to commission and deliver care, using data to drive local priorities.

To achieve this, modern building blocks need to be in place to underpin a data-rich, preventative health system. But how can ICSs move away from traditional, activity-based commissioning towards more proactive, personalised care?

There is no 'quick fix' or 'one size fits all' solution, but as ICS leaders embark on this journey with their teams, there are three key aspects that will help these new organisations respond to the needs of their communities, tackle health inequalities and improve outcomes.

1. Board level leadership and accountability for data

The COVID-19 pandemic has clearly demonstrated how patient data supports decisionmaking – and the public has become familiar with the use of data to inform health decisions. Alongside this, temporary block purchasing brought in during the pandemic has freed up BI resources to devote more time and energy into population health data analysis, rather than contract management – a change which could help propel us towards the more personalised, proactive care originally envisaged in the Five Year Forward View. But ICSs will need the data expertise to lead this ongoing transformation and manage the value and risks associated with it.

Taking the opportunity to embed dedicated data expertise and accountability within the leadership team will strengthen the ability of ICSs to build the right processes, systems and skills to lead decisions around digital and data development plans, and the confidence to recalibrate analytics teams to focus more on population health.

### 2. Getting the business foundations right

Forming standardised business processes to look after an ICS's data assets will enable productive, efficient integrated working across system partners. This includes robust infrastructure, data collection and analysis processes to establish and maintain a 'single version of the truth', as well as the skills to analyse and interpret information.

What the data says about local patient populations will help to determine the most appropriate set-up in each case. For example, some ICSs will have huge variations in patient need across its geography. As such, a 'hub and spoke' approach to data analytics is likely to work much more effectively than a region-wide approach, with place-based analysts at Primary Care Network (PCN) level providing the local insight needed to inform priorities. By contrast, smaller, more homogenous geographies may benefit more from disease group-led analysis.

As data controllers for their locality, ICSs will also need clear information governance in place to cover how data will be housed and how internal access will be managed.

### 3. Using data to improve patient outcomes

This begins with having the right tools such as dashboards and population health data to monitor and manage services. But where an ICS comes into its own is where it can use locally focused, place-based intelligence to support transformation and drive preventative interventions that improve patient care.

BI plays a pivotal role in the quality and cost efficiency of care when risk models are used to stratify patients and plan interventions, provided the right resources are available to act on the data. An ICS hub and spoke model would enable place-based analytics teams to interrogate data about patients at risk of an unplanned hospital admission, for example, and work with the relevant PCN to bring in a multidisciplinary team to intervene, putting patients on disease registers to proactively monitor their care and reduce their risk of admission.

Understandably, there is pressure to set up new ICSs quickly, but in that rush to get up and running, let's not lose sight of an opportunity to structure our new landscape to give the NHS the best chance of tackling the issues that matter most to the people we serve or, to quote former Chief Medical Officer Sally Davies, becoming an "exporter of health".



Navigating the big smoke -helping patients avoid poor air quality

Managing patients at home has become essential during the COVID-19 pandemic, with remote monitoring systems connecting patients with clinicians like never before.

Jane Van Aken, Director of Product **Development at Spirit Digital explains** how adding air quality data to existing platforms for managing long-term conditions can help patients make informed decisions about their outdoor activities.

In this pilot project led by Earth Sense, the Satellite Applications Catapult, NHS Arden & GEM CSU and Spirit Digital, 1,200 Chronic Obstructive Pulmonary (COPD) patients were given the opportunity to access air quality data for their local area which resulted in high levels of service satisfaction and improved confidence in condition management.

### Keeping patients in contact and out of A&E

CliniTouch Vie is an interactive platform - developed by Spirit Digital - to help patients with long-term conditions manage their condition at home, while being supported by their clinical team. Clinicians have access to a combination of vital signs and qualitative data, allowing them to spot trends, monitor signs of deterioration and intervene whenever necessary. These interventions could be a video chat, a supportive message, or the allocation of an educational resource, depending on the patient's need.

CliniTouch Vie has helped to improve quality of life for patients by reassuring them that their health is being monitored by a clinician and appropriate interventions are being managed. Prior to the coronavirus pandemic, CliniTouch Vie had been shown to reduce A&E admissions by 67%<sup>1</sup>.

### Piloting the use of air quality data

Following receipt of a grant award from the European Space Agency (ESA), a partnership between Earth Sense, the Satellite Applications Catapult, NHS Arden & GEM CSU and Spirit Digital initiated a pilot project to integrate MappAir® Quality forecasting data into the CliniTouch Vie platform for use by 1,200 COPD patients.

### Supporting daily routines and decision making

The project has given patients access to air quality data for their local area, with updates supplied hourly from EarthSense. Working with a designer focused on the needs of the user, new features were defined and implemented to help patients understand the data and derive value specific to their condition. For example, the ability for patients to see their health trend at a glance and displaying educational resources alongside air quality data.

Access to this information is helping patients to make informed decisions about their outdoor activity, based around the quality of their local environment over the next three days, with 36% of patients in the pilot reporting taking action - such as choosing a different route for a walk – after viewing the information.

Following the pilot, patient and clinician guestionnaires showed that:

**92%** of patients were satisfied or extremely satisfied with the service, including the air quality information

> 86% of patients reported feeling more confident in self-management.

You can find out more about the project here.

1 Ghosh & O'Kelly et al. British Journal of Health Care Management March 2016https://doi.org/10.12968/bjhc.2016.22.3.123



# Digital care at the heart of ICS transition



As health leaders focus on the move towards system working, our Head of Digital Transformation, Adrian Smith considers the importance of digital care delivery when shaping and designing the collaborative future.

In November 2020, NHS England published the key document <u>'Integrating care - Next</u> steps to building strong and effective integrated care systems across England'. This document sets out the need for all parts of the health and care system to formalise collaborative arrangements, agree place-based partnerships and develop strategic commissioning with a focus on population health outcomes.

Alongside these three priority areas there was just one more: "The use of digital and data to drive system working, connect health and care providers, improve outcomes and put the citizen at the heart of their own care".

### Digital and data at the heart of ICSs

For those of us who have long been committed to digital transformation, it is encouraging that digital and data sit right at the heart of the strategic intent for ICS working. Many developing ICSs are focused on the organisational design and development of what are undoubtedly complex, multi-faceted groups of organisations. While this is important, understandable and necessary all of the organisational development activities must also take account of the digital transformation and data elements every step of the way.

### Why is this?

It's because if we design joined-up, collaborative organisations, put in place new governance regimes and gear our leaders up for a collaborative future, but all based on today's delivery models, we miss a chance to make step changes in delivery and patient outcomes just when they are needed.

COVID has simply served to emphasise what we already knew - that digital care delivery is the only affordable, scalable solution for most future care delivery.

So that's why, when working with ICSs to shape their future design, we always have a clear eye on digital delivery. It's why we have worked with partners to build a <u>Healthy Living Lab</u> approach and model to provide a place and mechanism to identify where technology best fits in the new collaborative ICS world and to build new pathways that put digital delivery where its most needed rather than finding a home for an innovative idea.

If you think this way too, talk to us soon about where and how we can help. Email me at adrian.smith11@nhs.net

### What potential does drone technology offer healthcare?

Drones are already in use across the UK to provide an effective solution to a range of logistical challenges.

In this article, Amy Hollis, from technological innovation firm, Neuron, shares how this technology is also being applied within healthcare as part of an efficient, safe, contact-free delivery method.

Drones (or Unmanned Aerial Vehicles - UAVs) are changing the way healthcare and businesses operate across the world. Drones can be built to carry a payload or deliver packages to their designated location, and their contents can be anything from medical supplies to telediagnostics that support remote healthcare delivery.

With congested transport networks, rural communities where fast access to emergency medicine, diagnostics and regular medical deliveries can be a challenge, and with a desire to decrease carbon emissions globally, drones provide an effective solution to logistics planning within healthcare. They offer a real option for organisations who want to increase efficiency and provide consistent, faster results for their clients.

Here in the UK, proof-of-concept trials are already underway to show how healthcare logistics can be streamlined using these automated flights.



### **Connecting care facilities**

Through its <u>MediDrone</u> project, Neuron is working with a number of healthcare organisations and infrastructure suppliers to trial drone-based solutions. In an effort to battle the growing challenge around antimicrobial resistance, we have been working with NHS trusts to enable fast and accurate diagnosis of Urinary Tract Infections in rural communities, where testing facilities may be hundreds of miles away from the local GP surgery.

In some hospital trusts we are working on intra-hospital deliveries to increase efficiency and productivity. Where trusts are based over multiple sites, logistical challenges can exist which mean that getting samples to testing, delivering results or sending prescriptions can take time. This can increase the amount of time that patients remain in hospital, slow down diagnoses and increase bed occupancy. By utilising automated drone deliveries within hospital buildings, we can free up capacity for staff, speed up the process of medical diagnostics and improve the care pathway.

Another key use is connecting pharmacies to explore the possibilities of prescription drop-off with local care homes. During COVID-19 the need for a contact-free mechanism for medication delivery has become increasingly apparent. This doesn't only apply to pandemics, but equally during winter, when reducing contact can save the lives of those susceptible to the variety of illnesses that present themselves at this time.

### How Neuron's technology makes this possible

Currently the law in the UK means that, aside from special circumstances, a drone can only be flown when the pilot can see it, meaning the drone couldn't travel over long distances.

However, Neuron is providing a solution to this problem, by offering software which enables airspace users to safely avoid each other. We are actively seeking funding opportunities to develop these trial sites while gathering case studies on the medical applications of this drone technology. Building in the infrastructure to support this safer airspace is crucial to it's long-term success and with Neuron's technology we will be able to utilise the skies to improve healthcare worldwide.

### Delivering COVID-19 test kits to ships

Utilising trial flights, MediDrone has demonstrated the delivery of COVID-19 test kits from shore-to-ship in Montrose. Montrose is a coastal town in the Angus region of Scotland, with a busy free port. Each day pilot boats perform visual inspections of the coastline and, if a vessel off the coast needs emergency assistance, these will be deployed to deliver supplies. This exercise can be extremely dangerous and detracts from the pre-planned activities taking place on a port. During a pandemic, there is an increased need to be able to respond to shipping requirements while minimising contact.

This trial successfully demonstrated how drones can revolutionise shipping and offshore activities, and can be invaluable during a healthcare crisis, but crucially showed how keeping the skies safe is essential to enabling these types of new innovation.Drones provide a quick, safe, contact-free delivery mechanism and while the COVID-19 pandemic has given additional focus to the possibilities where drone deliveries are concerned, their application in medical logistics goes far beyond a crisis situation.

Working with the Medical Devices division of NIHR - we have a <u>survey</u> that we would encourage every reader to complete, which will help build a wider understanding of how drones could fit into the healthcare infrastructure.



For details about our full range of services, please contact us:

website: www.ardengemcsu.nhs.uk twitter: @ardengem email: contact.ardengem@nhs.net

