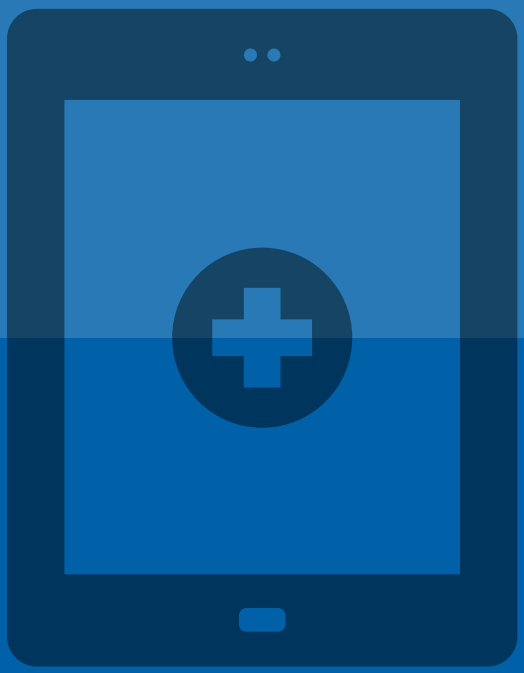


Upwardly mobile:

The rise of mobile working in healthcare – exploring the benefits, the barriers and the opportunities

A Digital Health Intelligence white paper supported by Samsung

digitalhealth intelligence

SAMSUNG

1. Forewords

From Jon Hoeksma, chief executive and editor, Digital Health

At Digital Health, we provide unparalleled insight into the world of NHS IT. It is little wonder that, in recent years, an increasing amount of our work has centred on the use of mobile technology in healthcare. As smartphones and tablets have revolutionised our day-to-day lives, so too do they seem to hold the promise of improving our healthcare.

This white paper represents a key piece of research into the potential benefits of mobile working in healthcare, and considers the obstacles that will have to be surmounted along the way. Given our research was conducted in the aftermath of last May's WannaCry attack, it will come as little surprise that security is a key theme.

The paper draws on the results of a survey of 116 people with insight into healthcare IT – some clinicians, some managers – as well as in-depth interviews with nine of the most senior leaders in this area.

What follows is actionable insight on the current state of play with mobile working in the NHS. There is also insight into how some of the challenges surrounding mobile adoption might be overcome.

I hope you find the paper interesting and useful.

From Gregg Hardie, head of public sector, Samsung

Samsung is proud to support this important and insightful new white paper from Digital Health. In supporting this research, we were keen to understand how we can help the NHS and other healthcare organisations deliver the transformational change that's required to ensure they can provide high-quality care for future generations.

This white paper identifies the real issues that CIOs and CCIOs face as they strive to navigate their organisations through their transformation journey.

The research shows that mobile working is a real benefit to healthcare professionals, helping them to work more flexibly, access information more easily and deliver better patient outcomes.

Whether it's integrating new smartphones to replace paper and make it easier for clinicians to track and record information, or working with a software partner to develop a new patient monitoring solution, we can help.

However, we also understand that there are issues and barriers to contend with during any big transformational change.

Security is a serious issue, especially in light of recent high profile cyber attacks on large private and public organisations. We were particularly

From Gregg Hardie,
head of public sector, Samsung (cont.)

concerned to see the impact of the WannaCry attack, which hit a large proportion of NHS bodies last year. Data protection is about to become even more important too, with the General Data Protection Regulation (GDPR) coming into effect and posing potentially devastating fines on organisations if they fail to comply.

In an area where pen and paper have been the staple way of working and communicating, it's perhaps not too surprising that staff can be sceptical and concerned about the introduction of more mobiles in their workplace. We understand that this can represent a big culture change, and that can be a challenge for particular staff groups.

But this white paper gives reason for optimism – these issues can be overcome, and many of these interviewees explain how. Plus, we've already achieved some great outcomes supporting healthcare organisations with an array of issues.

This white paper offers examples of mobile working best practice in healthcare. Our digital technology supports medical staff, community carers and chief clinical information officers, so they can deliver the best patient experience and health outcomes.

We hope you enjoy reading this white paper and uncovering how mobile technology can enhance your healthcare services.

Gregg Hardie, January 2018

2. Introduction

Mobile technology is becoming increasingly commonplace across society. For many, banking, booking flights and even paying tax are tasks which are carried out on smartphones and tablets. Ofcom's 2017 Communications Market Report reveals that three quarters of UK adults now own a smartphone, and that almost 60% have a tablet computer.

Within recent years, such technology has also become increasingly prevalent within the healthcare sphere. As The Nuffield Trust reported last year, 75% of the UK population go online for health information and more than 165,000 health-related apps are on the market.

Meanwhile, those working in healthcare are increasingly exploring the benefits of mobile technology. More mobile working is presented by many as a way of increasing productivity, creating space for cost savings, and helping to improve patient outcomes.

However, there are concerns about possible barriers, most notably – in light of the WannaCry ransomeware attack that hit many NHS organisations in May – security.

Digital Health Intelligence has therefore undertaken a significant piece of research to understand the benefits, barriers, and solutions around mobile working within the NHS. The result is this white paper, which has been supported by Samsung.

This research draws on Digital Health Intelligence's strong connections with the most senior members of the healthcare IT community, clinical and non-clinical alike.

These are connections which are driven by the Health Chief Information Officer (CIO), Chief Clinical Information Officer (CCIO) and Chief Nursing Information Officer (CNIO) networks. Each of these Digital Health networks constitutes not only a best practice community for senior NHS IT professionals, but also a key source of intelligence.

To inform this paper, we surveyed 116 people with insight into NHS healthcare IT. We also conducted in-depth interviews with nine CCIOs and CIOs working at healthcare organisations across the UK.

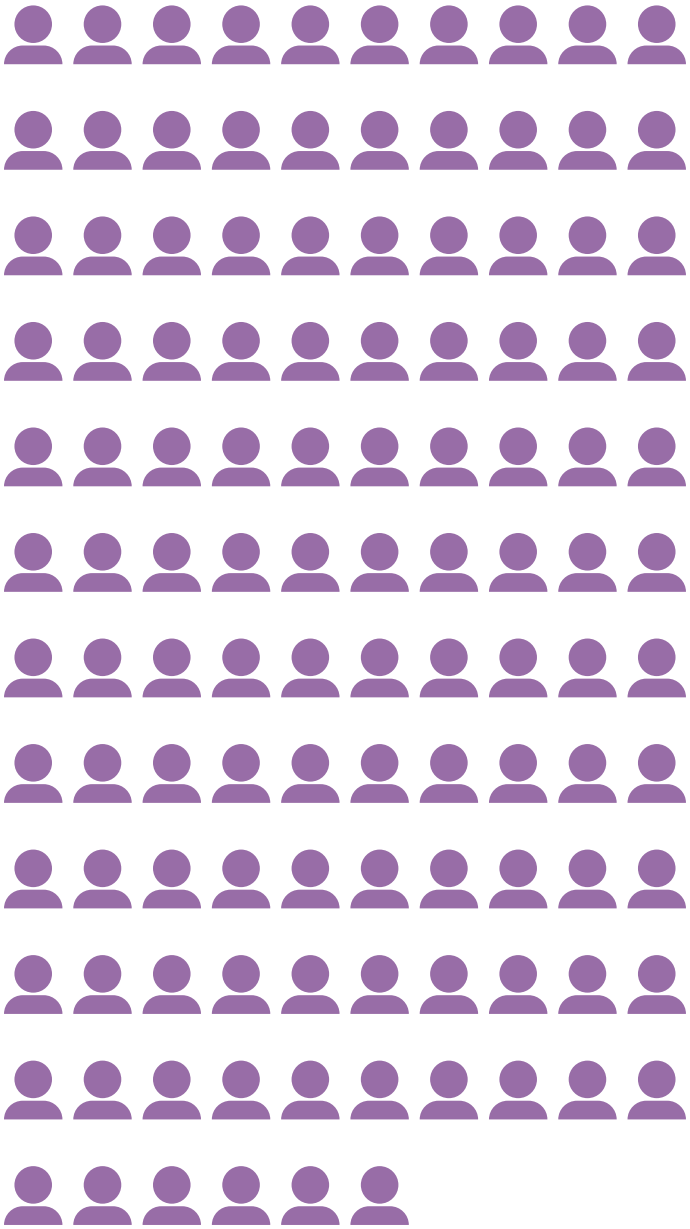
This white paper details the findings of the survey, and shares valuable insights from the interviews.

In so doing, it provides a roadmap to realising the benefits mobile working in healthcare may offer, and offers actionable insight which will help overcome any barriers to so doing.

3. Summary of our findings

Our research is based on:

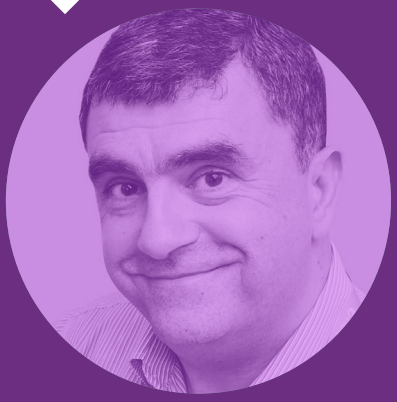
A survey of 116 healthcare IT leaders, from across health and social care



Among them were:

- 26 chief clinical information officers (CCIOs)
- 26 chief information officers (CIOs)
- Six chief nursing information officers (CNIOs) or allied health professionals
- 64 worked in an acute hospital trust
- 22 were from a mental health trust
- 21 worked in a community trust
- 15 worked in commissioning, either at a clinical commissioning group (CCG) or a commissioning support unit (CSU)
- Seven came from general practice
- Two worked in social care
- The remaining 19 came from other organisations, including central bodies

Interviews with nine senior healthcare IT leaders from across the UK:



Dr Afzal Chaudhry, CCIO, Cambridge University Hospitals NHS Foundation Trust

Paul Duffy, co-director of IT and telecommunications, Belfast Health and Social Care Trust

Lisa Emery, CIO, West Hertfordshire Hospitals NHS Trust

Professor Joe McDonald, CCIO, Northumberland, Tyne and Wear NHS Foundation Trust and chair, CCIO Network

Darren McKenna, director of informatics, Northumberland, Tyne and Wear NHS Foundation Trust

Mark Reynolds, chief informatics officer, Sandwell and West Birmingham Hospitals NHS Trust

Joanna Smith, CIO, Royal Brompton & Harefield NHS Foundation Trust

Stephen Stewart, assistant director technology and telecommunications, South Eastern Health and Social Care Trust

David Walliker, CIO, Royal Liverpool and Broadgreen University Hospitals NHS Trust and Liverpool Women's NHS Foundation Trust

The key benefits of mobile working in healthcare, as identified by our research and detailed in this report are:

Increased productivity and greater efficiency

Decreased need for staff to travel, and resulting cost savings

Better engagement with patients, more patient-centric care, and patients able to more easily offer feedback

Increased patient safety

Better understanding of capacity within hospitals

Less disruption to staff on call

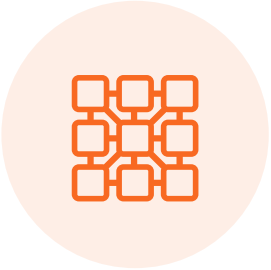
Barriers to increasing mobile working as highlighted by our survey respondents:

Money

Lack of organisational support

Poor connectivity or infrastructure issues

Security concerns



Technical or interoperability barriers

Cultural issues

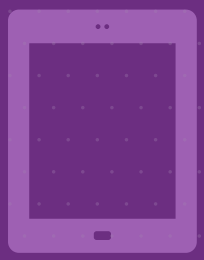
Non-fixed assets

96% of our survey respondents saw increased benefits in working remotely

> I don't always have to get out of bed when I get a call at night now. I can access patient records from my bed and very often remove the need to go out. And that's a massive plus.

Professor Joe McDonald, CCIO, Northumberland, Tyne and Wear NHS Foundation Trust and chair, CCIO Network

Mobile on the up



90% said they use their mobile device at work

91% said they used it when working remotely

93% said they had wi-fi access at work

but

30% rated the quality of it as average, poor or very poor

39% did not feel their organisation's wifi or communications infrastructure was strong enough to accommodate the increasing use of mobile devices. 18% were unsure.

Feeling secure

WannaCry in May 2017 affected almost 35% of English NHS trusts and caused significant disruption.

Despite this, over half of survey respondents said they weren't worried about mobile security, or that they weren't sure whether they were worried about it.

Build it and they will come

Our research found that mobile working in healthcare was being limited by a lack of dedicated mobile software

What clinical applications and services can you currently access through your mobile devices?

53% Clinical knowledge resources

33% Patient vital signs recording

32% Care activity recording

34% Team clinical communication

42% PAS/EPR

17% Electronic prescribing

26% Order communications

33% Clinical portal

38% Departmental systems

28% Bed management

28% Clinical noting

13% None

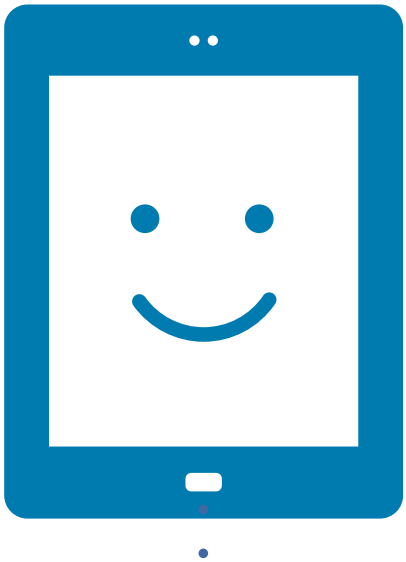
32% Other

50% said their organisation had built its own mobile apps to address the needs of its staff

> Until we start seeing good apps coming out, I don't think we'll really see the rise of tablets [in care settings] to a massive extent

Darren McKenna, director of informatics, Northumberland, Tyne and Wear NHS Foundation Trust

4. The benefits of mobile working



Our survey results leave little doubt that mobile working is seen as an important part of life in the NHS – some 90% of respondents said they used their mobile at work, and 91% reported using it when working remotely.

There is also little doubt that they see benefits from so doing. Almost 96% of those surveyed said they see "increased benefits" from working remotely. While remote working and mobile working are not necessarily synonymous, this gives a flavour of the appetite for flexible working away from a fixed network of computers within one set of premises.

When asked about the benefits they had seen from the increased enablement of mobile working, our survey respondents – who were drawn from across both the health and social care systems – highlighted a variety of key themes.

As one chief clinical information officer put it in our survey: "[The benefits are] flexibility, efficiency. Less travelling to and from a place of work unnecessarily." It was a point echoed by many of our respondents, and which emerged also in our in-depth interviews with CIOs and CCIOs.

A clinical eHealth lead told us that pharmacists were able to do their work while attending ward rounds – essentially multitasking – and so benefiting the teams with which they are working.

This respondent added another point made by several others, that mobile devices gave staff working in the community the ability to check patient records without having to go 'back to base'. One of the CCIOs who completed our survey pointed out this represented a significant time saving.

The increased efficiency of clinical time was also cited as a key benefit by a deputy CCIO from an acute hospital trust. This individual also spoke of improved clinical outcomes at the trust's satellite sites, thanks to the ability to record observations via mobile.

Others pointed to the positive impact that mobile working has had on staff morale. The CIO of an acute and community trust spoke of the "enjoyment in using IT" and the ability to reduce the need for staff to carry pagers because messages can be shared by other mobile means.

OUR SURVEY RESPONDENTS ON...

benefits from the increased enablement of mobile working

+ More information at point of care
Senior project manager, community trust

+ Better access to records when doing nursing home visits, or patient home visits
CCIO, general practice

+ [Better use of] staff time, [improved] record keeping and outcome monitoring
CNIO/allied health professional, health board

+ At-fingertips information, improved patient safety and quality of care, reduced errors
CCIO, commissioning organisation and general practice

+ Work/life balance, increased efficiency, reduced cost of mileage, less parking pressure, improving collaboration
CIO, acute trust

+ Ability to handle many issues when not on ward or even in hospital
CCIO, acute trust

+ Better support for junior doctors out of hours, improved radiology reporting, shared services with neighbouring trusts
Associate director, acute trust

+ Efficiency but also the ability to empower local teams to run their own areas with more freedom to innovate, yet managers can still monitor remotely
Lead pharmacist ICT, acute trust

Benefit 1:
Increased productivity and greater efficiency

> We reckon the use of that mobile app trust-wide saves us somewhere between 35 and 40 whole time nursing equivalents a year, in terms of time that they used to waste either charting information or looking for pieces of information, because it's now either available to hand or they can enter it in real time.
>
> **Dr Afzal Chaudhry, CCIO at Cambridge University Hospitals NHS Foundation Trust**

When our interviewees and survey respondents spoke about the benefits of mobile working in healthcare, among the most important and frequently discussed came under the broad category of increased productivity and efficiency.

Dr Afzal Chaudhry, CCIO at Cambridge University Hospitals NHS Foundation Trust, reported that ward use of mobile devices with an app linked to an electronic patient record (EPR) had significantly increased efficiency at the trust.

He said: "On that app [nurses] can do things like record observations that get uploaded in real time. They can administer medication, administer blood – they see a work list of what they need to do for that patient and for all of their patients.

"We reckon that the use of that mobile app trust-wide saves us somewhere between 35 and 40 whole time nursing equivalents a year, in terms of time that they used to waste either charting information or looking for pieces of information, because it's now either available to hand or they can enter it in real time."

Mark Reynolds, chief informatics officer at Sandwell and West Birmingham Hospitals NHS Trust, spoke of how the efficiency benefits meant staff quickly 'folded' mobile working into their practice.

"When we give staff a device that provides the information they need, the first thing that doctors and nurses say is: 'Oh, that's very nice.' And after that you realise that very quickly they just fold it into their clinical practice.

"Rather than having to go and find something, they know the test results, they know the medication and just build it into their [work]."

SURVEY SPOTLIGHT ON... efficiency and productivity

In our survey, more than a quarter of answers to the question about benefits which have been seen by increased enablement of mobile working featured the word "efficiency" or "productivity".

Benefit 2:

Decreased need for staff to travel, and resulting cost savings

> We currently pay out for five million miles a year in travel expenses, at 50 pence a mile. So that's £2.5 million worth of travel every year. I hope that some of that travel will end up costing less, with [increased mobile working]. I'm pretty sure it will. I'm fairly sure we'll see those numbers go down as people are more able to work from home and from [other premises].

Professor Joe McDonald, chair of Digital Health's CCIO Network and CCIO at Northumberland, Tyne and Wear NHS Foundation Trust

One efficiency benefit from mobile comes in the reduced need for staff to travel, whether between sites in an acute trust or more widely in organisations operating in community settings.

This was a point emphasised by Professor Joe McDonald, chair of Digital Health's CCIO Network and CCIO at Northumberland, Tyne and Wear NHS Foundation Trust. Like every specialist NHS mental health provider, the trust – which is one of the NHS's global digital exemplars – spends millions each year reimbursing the travel expenses of care staff.

"We currently pay out for five million miles a year in travel expenses, at 50 pence a mile. So that's £2.5 million worth of travel every year," McDonald explained.

"I hope that some of that travel will end up costing less, with [increased mobile working]. I'm pretty sure it will. I'm fairly sure we'll see those numbers go down as people are more able to work from home and from [other premises]."

Added Darren McKenna, the trust's director of informatics: "That's really a virtuous circle that you want to get into [with mobile working] – where people are saying: 'That's actually making my life easier, I don't have to go back to the office for unnecessary trips. I can do more work from home.' That sells itself."

At Sandwell and West Birmingham, chief informatics officer Mark Reynolds told us of similar benefits. "We've certainly seen less unneeded travel. What we will find is an incremental improvement in better quality safe care. Now as an IT person – and as an executive – that's exactly what we expected to get from our investment in digital."

SURVEY SPOTLIGHT ON... reducing the need for travel

At least 12 of those who responded to the survey question: 'What benefits have you seen from the increased enablement of mobile working?' listed a reduction in travel time and associated costs as a key advantage. This includes a mental health and community trust's registration authority manager, who said: "Less time spent on travelling when really not required, subsequently resulting in less mileage claims."

> *That's really a virtuous circle that you want to get into [with mobile working] – where people are saying: 'That's actually making my life easier, I don't have to go back to the office for unnecessary trips. I can do more work from home.' That sells itself.*

Darren McKenna, director of informatics, Northumberland, Tyne and Wear NHS Foundation Trust

Benefit 3:

Better engagement with patients, more patient-centric care, and patients able to more easily offer feedback

> It's just doing what every other industry has done really. In every other industry in the world you've got to have a username and a password and you've got to communicate by email. All those 'radical' ideas that we've ignored in the NHS. We're still communicating with the customer in the way that we did 150 years ago. Those changes need to come.

Professor Joe McDonald, chair of Digital Health's CCIO Network and CCIO at Northumberland, Tyne and Wear NHS Foundation Trust

Our interviewees and survey respondents said the benefits of increased mobile working don't just flow to clinicians and healthcare managers. Patients can expect their care to improve by virtue of greater use of mobile technology.

At Northumberland, Tyne and Wear NHS Foundation Trust, that will include making services more easily accessible. The trust plans to use some of its global digital exemplar funding to fundamentally change the way it communicates with patients.

Professor Joe McDonald, the trust CCIO, explained: "It's just doing what every other industry has done really. In every other industry in the world you've got to have a username and a password and you've got to communicate by email. All those 'radical' ideas that we've ignored in the NHS.

"We're still communicating with the customer in the way that we did 150 years ago. Those changes need to come. Over the next three years hopefully the GDE money will allow us to deliver some of that functionality."

The increased use of mobile devices could also make it easier for patients to give feedback on the quality of service they've received – and for trusts to speedily analyse and act on it.

West Hertfordshire Hospitals NHS Trust CIO Lisa Emery said this was an area her organisation is exploring. "In areas like A&E it's very hard to ask patients there and then to collect information [for the Friends and Family Test, a standard survey which asks patients for feedback on their care they've received].

"They want to be in and seen within their four hours and then they want to get home. So, for some of the challenges there we are looking at things like calling or texting patients as well [after an episode of care]."

SURVEY SPOTLIGHT ON... mobile for the Friends and Family Test

In the comments on our survey question about whether organisations encouraged patients to use particular apps, 14 respondents mentioned the use of mobile to fill in the Friends and Family Test. An acute and community service trust CIO also reported patients have been given the ability to interact with their treatment plan through the increased use of mobile devices within care settings.

Case Study:
Patients as partners through mobile

Haughton Thornley Medical Centres in Greater Manchester was hit by a power outage last year that knocked out the practice's entire computer system for approximately four hours.

Faced with a busy surgery, but without access to his patient record system, Dr Amir Hannan hit on the idea of viewing each patient's care notes on their own smartphones.

The Tameside practice uses an EPR system which can be accessed on mobile devices with a passcode.

Hannan said: "When the power went out, I asked staff to tell everyone who phoned for an appointment to bring their records access passwords in. I brought my [tablet] into work, so patients could use their mobile phone or put their password into my [tablet].

"Messages were posted on Facebook, Twitter and on the practice website. Between us, we managed a number of consultations via mobile technology. The patients were surprised, but they loved being able to share the information to make consultations safer for them and for us.

"Being able to see the whole electronic record makes it safer, easier to check details, and also provides continuity of care. Patients can point to salient information, and share their knowledge of their health. We can do consultations together, with patients as productive, equal partners."

Benefit 4:
Increased patient safety

> Every year in the NHS we kill several people by prescribing them things that they're allergic to, and that's a risk that's now reduced by the fact that I've got all the information I need at my fingertips.

Professor Joe McDonald, chair of Digital Health's CCIO Network and CCIO at Northumberland, Tyne and Wear NHS Foundation Trust

Professor Joe McDonald – chair of Digital Health's CCIO Network and CCIO of Northumberland, Tyne and Wear NHS Foundation Trust – reported significant boosts to patient safety courtesy of mobile access to GP records. The trust has a "medical interoperability" gateway, meaning that McDonald can access primary care records as well as records made in his own organisation.

"So I can check things like what medication the patient is on, what other conditions they've got," he said.

"In the past I would have been blind to all that information in the GP record but now I get a view direct from our [EPR] system. It's just a couple of clicks in the GP record as well.

"So that's a massive gain in terms of patient safety – I'm not going to prescribe you something that you're allergic to. Every year in the NHS we kill several people by prescribing them things that they're allergic to, and that's a risk that's now reduced by the fact that I've got all the information I need at my fingertips."

Case Study:
Stopping sepsis

Annually in the UK, sepsis claims more lives than prostate cancer, breast cancer and bowel cancer put together. If treatment is administered early enough, then patients can make a full recovery. But if the condition is missed, the result can be serious death or harm.

Part of the reason the death toll is so high is that sepsis – previously known as septicaemia or blood poisoning – isn't easy to spot. It's a completely indiscriminate condition, and identifying it involves careful monitoring of a wide range of information about a patient's condition.

At Royal Liverpool and Broadgreen University Hospitals NHS Trust, technology is offering a solution to the problem. Nurses enter observations data at the bedside via mobile devices, and an algorithm analyses whether the data is indicative of sepsis.

According to David Walliker, the trust's chief information officer: "With the algorithm that we use for electronic sepsis reporting, we estimate that 200 lives a year will be saved by identifying the sepsis indicators quicker."

A similar setup is in place at Chelsea and Westminster NHS Foundation Trust, and similar benefits have been seen. The organisation developed an app called Think Vitals, on which clinicians record vital signs observations rather than using traditional paper charts. The software then runs algorithms to judge whether or not a patient's condition is deteriorating, or if their data indicates reason for concern – such as possible sepsis. The clinical director of acute services at the organisation anticipates that just on one of its hospital sites, 50–60 lives a year should be saved through better identification of sepsis.

Benefit 5:

Better understanding of capacity within hospitals

> Our bed management teams have access to mobile devices. Previously, they would have been on the phone with different wards quite a bit. There's probably not as much phone calling now because our people have got access to that patient flow information in a mobile way.

Stephen Stewart, assistant director for technology and telecommunications at South Eastern Health and Social Care Trust in Northern Ireland

Stephen Stewart, assistant director for technology and telecommunications at South Eastern Health and Social Care Trust in Northern Ireland, discussed how mobile working had improved bed management processes.

"We've done a lot to try and get to a point where our bed stay is accurately reflected and the movement of patients between beds is accurately reflected.

"Our bed management teams have access to mobile devices that allow them to see that. Previously, they would have been on the phone with different wards quite a bit.

"There's probably not as much phone calling now because our people have got access to that patient flow information in a mobile way."

The result is a better, more up-to-date, understanding of the hospital's capacity.

Benefit 6:

Less disruption to staff on call

> I don't always have to get out of bed when I get a call at night now. I can access patient records from my bed and very often remove the need to go out. And that's a massive plus.

Professor Joe McDonald, chair of Digital Health's CCIO Network and CCIO at Northumberland, Tyne and Wear NHS Foundation Trust

When assessing the benefits of mobile working, Joe McDonald told us he uses the 'bed test'. The CCIO at Northumberland, Tyne and Wear NHS Foundation Trust explained: "I don't always have to get out of bed when I get a call at night now. I can access patient records from my bed and very often remove the need to go out. And that's a massive plus.

"So, when your clinicians might have been complaining about their technology or how hard they have to work at putting data into the electronic patient record, attitudes change very quickly when you actually keep them at bed at night. That's what I call the bed test."

SURVEY SPOTLIGHT ON... increased flexibility

A number of survey respondents who spoke of the benefits they had seen through increased mobile working used the word "flexibility". As one project manager at an acute trust put it: "No travel time, great work/life balance, motivated staff, positive impact on retention, less disruptions, happier staff = productive staff."

5. The barriers to mobile working

While clear on the potential benefits of mobile working in healthcare, it is equally clear from Digital Health Intelligence's research that barriers remain to its widespread adoption.

The most ubiquitous roadblock cited by our survey respondents was – perhaps unsurprisingly – a lack of money.

But it was far from the only consideration at play. Security, staff buy-in, dated perceptions of working remotely, connectivity, and availability of useful apps were all mentioned.

All will be explored in this section of the white paper.

SURVEY SPOTLIGHT ON... issue

In an era of continuing financial constraint on the NHS – coupled with increased demand for services – it will come as little surprise that many of those who responded to our survey question on barriers to mobile working cited lack of money.

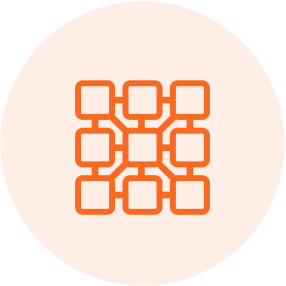
Barriers to increasing mobile working as highlighted by our survey respondents

Money

Lack of organisational support

Poor connectivity or infrastructure issues

Security concerns



Technical or interoperability barriers

Cultural issues

Expert Comment: Gregg Hardie

head of public sector, Samsung

"We all know the funding challenges facing the NHS, and clearly they will not be far from minds when looking at investment in mobile working. I think healthcare organisations might valuably consider leasing and managed services in this context. It can take away some of the perceived risk in mobile working, namely the need to invest resources in device management and maintenance, as these will be handled by the vendor. It can also be a really helpful way of future proofing, since the supplier will update technology and software as appropriate."

Barrier 1:

"Big brother"

> From a system perspective, [increased mobility is] the right thing to do. But it's important we're honest with people about how we use information, because there are many people out there concerned about the next set of changes and they might not be so happy about what is being instigated.

Paul Duffy, co-director of IT and telecommunications at Belfast Health and Social Care Trust

For some healthcare workers, conducting more work via mobile brings with it an anxiety that their activities and performance will be subject to greater surveillance.

David Walliker, CIO across two NHS provider trusts in Merseyside, suggested staff can worry mobile devices will be used to monitor how effectively they are responding to patient needs.

"We can see in real time who needs a particular type of assessment. I think there is a sociological piece that you need to [solve] in that [as a member of staff using trust mobile apps] big brother is effectively watching you all the time."

Paul Duffy, co-director of IT and telecommunications at Belfast Health and Social Care Trust, also observed this 'big brother' anxiety when speaking to staff in acute care settings.

"They will say: 'Now people can track me and they [know] things about me'. Staff are concerned that more information will be gathered about their device use and that will have an impact. That is a cultural change."

He added: "From a system perspective, [increased mobility is] the right thing to do. But it's important we're honest with people about how we use information, because there are many people out there concerned about the next set of changes and they might not be so happy about what is being instigated."

> *I think there is a sociological piece that you need to [solve] in that [as a member of staff using trust mobile apps] big brother is effectively watching you all the time.*

David Walliker, CIO, Royal Liverpool and Broadgreen University Hospitals NHS Trust and Liverpool Women's NHS Foundation Trust

Barrier 2:

Patient and staff perception of mobile

> Some of our nurses don't even like the idea of using mobile devices to put information into clinical systems. They just want to be interacting with the patient. They're not interested in carrying stuff about. Of course, that can be overcome. We can help them understand how they're reducing risk for the patient, [and how] they're going to catch issues quicker.
>
> **Joanna Smith, CIO at Royal Brompton & Harefield NHS Foundation Trust**

Joanna Smith, CIO at Royal Brompton & Harefield NHS Foundation Trust, explained that while the organisation's junior doctors are proficient with mobile devices and "want everything to be on their smartphones", it can be a different story when it comes to senior nurses.

"The specialist nature of our organisation [the trust is a world renowned provider of cardiothoracic care] means that all of our nurses are quite experienced and highly skilled. When I talk to our nurses and ask: 'How can we help you?', most of them actually do not want to be carrying a mobile device," she explained.

"I also hear from some of the nurse educators that they actually do not allow nurses to be using their mobile phone when on the wards because they are there to care for patients. They do not want patients to think the nurses are more interested in social media. So that was a big surprise to me."

She added: "Some of our nurses don't even like the idea of using mobile devices to put information into clinical systems. They just want to be interacting with the patient. They're not interested in carrying stuff about.

"Of course, that can be overcome. We can help them understand how they're reducing risk for the patient, [and how] they're going to catch issues quicker."

OUR SURVEY RESPONDENTS ON...

the cultural issue

> *"[There is a] perception that remote working equals being lazy or not actually working. [We are trying to change] the 'old school' NHS perception that you have to be on site in order to work."*
>
> **A mental health and community services trust manager with responsibilities for offender health**

Barrier 3:
Security concerns for IT/senior managers

> Security for mobile or otherwise is a concern. Disruption of services by malicious actors is a clear and present danger.
>
> **Respondent to Digital Health Intelligence survey on mobile working in healthcare**

In light of the WannaCry cyber attack in May 2017, it might be expected that security would be the most commonly cited barrier to greater mobile working in healthcare. Yet when asked the broad question 'Are you worried about mobile security?', strikingly only 51 of our survey respondents (45%) answered yes. A slightly larger cohort of 53 said no while a further 10 were unsure.

Those who did say they were concerned cited a multitude of factors contributing to their worries. One respondent, from a Scottish health board, emphasised the human risk factor: "New ways of communicating make it easy for people to be careless. [For example] losing mobile devices, using camera phones, and accidentally using patient identifiers in non-secure messaging [services].

Another leader said: "Security for mobile or otherwise is a concern. Disruption of services by malicious actors is a clear and present danger."

Case Study:
The WhatsApp issue

Joanna Smith, CIO at Royal Brompton & Harefield NHS Foundation Trust, knows that WhatsApp is commonly used by clinical staff within her organisation.

She told us: "WhatsApp is widely used – particularly by our junior doctors – and clearly that should not be around patient identifiable data.

"I clearly need to provide them with a better way of working collaboratively in a mobile way. We intend to address that through the introduction of our Voiceover IP [softphone] "I've got no issue at all with them using WhatsApp to communicate with each other, there's nothing wrong with that.

"But, although we've clearly got policy around what [staff] can and can't do, the concern is that they may find themselves in a situation where sharing data is just the right thing for the patient, even though we know that's not a secure platform.

"We've got no controls around it. We're not managing their devices, so therefore we can't control what would happen if it were to be used for patient sensitive information."

According to Gregg Hardie, head of public sector at Samsung, technology suppliers are trying to find ways to make communication more secure and auditable.

He cited the example of Samsung SDS's Mobile Voice Recording Solution. This allows for secure recording of calls, messaging and telemetry data that is encrypted on the mobile device and sent to a data centre via a secure VPN.

OUR SURVEY RESPONDENTS ON...

whether they are worried about mobile security

+ I believe there are good options available. I'm concerned that I have not seen any good tools that work well in primary care where we have a lot of BYOD [Bring Your Own Device].
CCIO, commissioning organisation

+ This is always a concern but we believe we have mitigated the risks as much as we can
CIO, community and mental health trust

+ We are constantly working to improve it. I don't worry about it – it's part of digital operating.
CIO, acute hospital trust

+ Our security is adequate but can be vulnerable to highly skilled attacks, like most
CCIO, mental health trust

+ Worried about security full stop, not just mobile
CIO, community trust

+ I know our IT department are on it
Clinical informatics programme lead, acute trust

+ We put great effort into this area
Lead pharmacist ICT, acute trust

+ I think we have it covered, but it is always a concern
Head of IT, acute hospital trust

Barrier 4:

Clinicians' concerns around data security

> [Staff ask]: 'How can I be sure that my information is going to be safe?' Accessing patient data on a properly managed mobile device is certainly safer than using the paper documents stored improperly.
>
> **Paul Duffy, co-director of IT and telecommunications at Belfast Health and Social Care Trust**

One survey respondent – a national programme manager across health and social care – said that while they were not personally worried about taking technology to remote workplaces, it was a concern among frontline staff.

But Paul Duffy, co-director of IT and telecommunications at Belfast Health and Social Care Trust, suggested concerns over security can sometimes be a disguise for broader anxieties about change.

"All change is going to meet a level of resistance. If you don't want the change you might reach for other arguments [against it]. It used to be that the network was the first bastion of the scoundrel. Now it's security concerns."

He continued: "[Staff ask]: 'How can I be sure that my information is going to be safe?' Accessing patient data on a mobile device is certainly safer than using the paper documents stored improperly."

Barrier 5:

Resistance to a change in traditional work patterns

> Basically, people don't like change – even if it's good, even if they know the existing processes are flawed. The trouble is moving from the known to the unknown – and we're going to have to respect that.
>
> **Paul Duffy, co-director of IT and telecommunications at Belfast Health and Social Care Trust**

One of the key ideas around greater use of mobile technology in healthcare is that it will fundamentally change working patterns. But Paul Duffy explained that care practitioners aren't always keen on such a break with tradition. He reported conversations he'd had with domiciliary staff on the subject.

"They say: 'Part of this mobility is predicated on the fact that I'm now not supposed to come into the office [as much]. I like the cup of coffee in the morning with my colleagues and I may not have that now. And I'm not too sure about planning my day from home before I go to work,'" he explained.

"Basically, people don't like change – even if it's good, even if they know the existing processes are flawed. The trouble is moving from the known to the unknown – and we're going to have to respect that."

It is a quote that underscores the extent to which supporting staff with cultural change is crucial to successful implementation of mobile working. That could include training – for leaders as well as for frontline staff – and will almost certainly necessitate co-production of any solutions. This is a point we consider in-depth later in this report.

Barrier 6:

Lacking apps, particularly mobile apps for EPR

> Until we start seeing good apps coming out, I don't think we'll really see the rise of tablets [in care settings] to a massive extent.
>
> **Darren McKenna at Northumberland, Tyne and Wear NHS Foundation Trust**

The comparative paucity of good clinical and healthcare administration apps for mobile and tablet was a key theme to emerge in our research.

"Until we start seeing good apps coming out, I don't think we'll really see the rise of tablets [in care settings] to a massive extent," argued Darren McKenna at Northumberland, Tyne and Wear NHS Foundation Trust.

Mark Reynolds, his CIO counterpart at Sandwell and West Birmingham Hospitals NHS Trust, offered a similar view. "I haven't quite hit on any [particular apps] that really sparkle yet. I'm sure they will come up and then we'll deploy them out," he said.

"There hasn't been anything specifically where clinicians are saying 'if we could just have this...' There is perhaps a demand for a clinical version of WhatsApp. Medical records tend to be quite information-rich and it's tying that into the size of the screen."

SURVEY SPOTLIGHT ON...
lack of dedicated EPR mobile apps

Many of our survey respondents raised a specific issue with lack of dedicated mobile apps for electronic patient records. "A lot of staff are typing up continuation notes into an NHSmail email on their personal device and then copying and pasting it into the electronic record when back at base. They are doing this [as] no mobile devices are compatible with the electronic record system at present," reported one respondent from an acute trust.

One community trust CIO explained the organisation currently provides staff with a laptop and a 4G card. "We would like our EPR to be available on tablets and then we would introduce [them]."

An associate medical director for clinical informatics and transformation at an acute trust made a similar point. "Currently most mobile access is via laptop. Would prefer [it] to be via smartphone or tablet, and so for those would like EPR, PACS, order communications, [and] noting."

One CIO put it very simply when asked to which new work-related applications they would like to have access via mobile: "Clinical systems to run on iOS/Android."

Expert Comment: Gregg Hardie

head of public sector, Samsung

"I think we're at an interesting point with laptops, tablets and mobiles. Realistically, not all of them are going to be able to do all of the same things with the same level of user-friendliness for all applications. If a clinician is trying to look at a patient's observations over the course of seven days, it may be that it makes more sense to use a larger screen, rather the smartphone they would use to check a detail in the patient's record.

"That said, it's also the case that having to carry around a tablet, a mobile and a laptop isn't really in keeping with the ideal of mobile working and it is very expensive. I think what we'll increasingly see in the market is device manufacturers trying to offer opportunities to make devices more multipurpose.

"At Samsung, for instance, we've got a solution called DeX which allows you to connect your smartphone to a monitor, keyboard and mouse, and create a setup which looks and feels like using a desktop computer. This enables someone to potentially only need one device that they can use for both mobile and desktop applications. It's all about understanding what the clinician really needs and then finding ways to make devices work in the way clinicians need them to work – and that usually means flexibly."

Barrier 7:

Proving value/building a persuasive business case

A crucial finding from our survey came when we asked respondents from provider trusts if they had been able to calculate the amount of staff time which had been saved through the use of mobile devices. A striking 70% said no.

This is perhaps understandable, as it's rarely the case that there are no other variables to which benefits from mobile working could be attributed. There is also the challenge of proving a negative, and establishing a control group.

Yet without these clear measures of benefit – and in a time of severe financial constraint – it can be difficult to construct a persuasive business case for introduction or expansion of mobile working.

Stephen Stewart, assistant director for technology and telecommunications at South Eastern Health and Social Care Trust in County Down, also spoke candidly of some of the more political challenges involved.

"The bottom line is I need more people, I need more IT staff to support more devices and to support more people using more devices," he said.

"If there's ever a decision to use cost savings from, for example, the nursing budget to employ IT staff, it's a very hard [decision] to 'sell'.

"If you give 10 nurses a mobile device each and you find you could do the same with nine nurses, with the extra body going into IT to support the nine nurses instead of the 10, it's still a very hard equation to solve.

"I'm yet to see anybody give up on one side of the equation and add it up on the other. You still have to find the money from somewhere to support it all. It's not going to come from savings."

Gregg Hardie, head of public service at Samsung, said concerns about a perceived increase in workload for IT departments through mobile working are common. "It's understandable, but I think there are ways around it," he argued. "For a start, I'd argue healthcare organisations need to work with their vendors – understand the level of support you're going to get both during an implementation but also once that deployment is complete."

He reported most vendors will offer varying levels of assistance to clients, depending on exactly what they need. "At Samsung, for instance, we offer a broad portfolio. At one end is fully managed services – so we manage the rollout, as well as managing all the devices, dealing with any technical problems as, when and if they emerge."

Barrier 8:
Poor infrastructure and connectivity

Lisa Emery, chief information officer of West Hertfordshire Hospitals NHS Trust, highlighted how the ageing infrastructure of the NHS can present a barrier to greater mobile working.

"To give you a good example, one of our key clinical buildings houses our A&E and ambulatory care unit and they are quite [impenetrable] buildings in terms of phone signal. So, something that's been really difficult for us is the use of mobile phones in those areas.

"West Herts is currently in the midst of a major upgrade of its communications infrastructure, which should help to at least ameliorate some of the problems associated with ageing buildings", she explained.

The problem of mobile connectivity becomes especially relevant in rural areas, our survey suggested. An acute trust CIO in the South West of England said: "Very patchy coverage in Cornwall – so [we] need off-line mobile copy as well as connected."

The CIO of an acute and community services provider echoed the theme: "[We have] very poor 3G/4G coverage in rural areas. [We're] currently piloting multiple Sim cards to enable wider phone coverage."

SURVEY SPOTLIGHT ON... wifi access

While the overwhelming majority of those who took our survey (93%) told us that they have wifi access at their place of work, only 30% described its quality as "very good". The same percentage characterised it as average, poor, or very poor. Meanwhile, 43% of respondents did not feel their organisation's wifi and communications infrastructure was strong enough to accommodate the increasing use of mobile services.

Expert Comment:

Gregg Hardie

head of public sector, Samsung

"Many healthcare organisations across the country will be grappling with the consequences on connectivity of legacy buildings and infrastructure.

"However, for many care staff who work outside of a hospital or clinic environment – particularly within frontline community nursing – we have found that many staff simply aren't equipped with the appropriate hardware. Handset performance with outside networks is key.

"The combination of outdated comms infrastructure and devices that aren't fit for purpose will undoubtedly hinder efforts to move forward with mobile."

OUR SURVEY RESPONDENTS ON...
the quality of their organisation's wifi

+ We have many known 'black spot' areas

CCIO, national body and integrated care trust

+ We still have some black spots

Clinical ehealth lead, health board

+ In our hospital, we have a limited number of users who can access the wifi at one time. Unfortunately too many staff have their personal devices connecting to the network, so we can't get access with our work devices.

CNIO/allied health professional, acute trust

Expert Comment: Gregg Hardie

head of public sector, Samsung

"It is unfortunate that too many of those working in healthcare organisations are having to operate with sub-standard connectivity.

"NHS Digital's plans to put full wifi in place across primary care by the end of this year, and in secondary care by the end of next, are extremely welcome.

"In some instances, existing wifi provision may be made less reliable because too many staff are using it for personal means. Providing corporate devices which allow personal use but not on the corporate network could be a valuable solution here."

6. Overcoming the barriers

Our in-depth interviews and the data from our survey revealed multiple ways in which healthcare managers and clinicians are making mobile technology work, and overcoming the potential barriers.

This intelligence represents lessons and actionable insight that will be helpful to others considering how to make mobile part of the working lives of those within their local care economy. This section highlights the ways in which intelligent leadership can expedite both the introduction of mobile working in healthcare, and the realisation of its benefits.

Solution 1:

Staff engagement, co-design, and leadership

> You have got to co-design the improvement you're trying to make with the people who have to use that device. You have got to get to that co-design piece right from the outset with the people that use the technology.

Dr Afzal Chaudhry, CCIO at Cambridge University Hospitals NHS Foundation Trust

For David Walliker – CIO at Royal Liverpool and Broadgreen University Hospital NHS Trust and Liverpool Women's NHS Foundation Trust – it is crucial that any mobile solution is crafted with the person who is going to be using it.

"You have got to co-design the improvement you're trying to make with the people who have to use that device. You have got to get to that co-design piece right from the outset with the people that use the technology."

His belief is that the technology needs to become a seamless part of clinicians' lives. "At the Royal, your mobile device is part of your clinical kit. It's like the nurse's watch. The A&E nurses have all the things they need, like hand sanitisers, plus their tablet on a strap over their shoulder."

One important way in which clinical engagement can be driven is via the appointment of a chief clinical information officer (CCIO) and/or a chief nursing information officer (CNIO). These healthcare professionals sit at the intersection between clinical practice and IT, and provide an important bridge.

Lisa Emery told us West Hertfordshire Hospitals NHS Trust has recently established the role of chief nursing information officer, which she sees as an important part of understanding the IT needs of frontline clinicians.

She explained: "Now we've got our chief nursing information officer in place we're really starting to come together with the clinical teams to [better] understand how they want to interact with patients and how technology can enable that.

"The key thing about adopting mobile is getting this to be clinically-led and listening to the people who are actually using this technology," she added.

"There's a bit of a tendency – particularly in a more old-school IT fashion – to think you can throw out a bunch of shiny new devices and that's the answer. I think you have to turn it on its head and understand what it is that clinicians need.

"We're here to enable them to work. Not to tell them how to work. I think it's really important that people hang on to that."

Mark Reynolds from Sandwell and West Birmingham Hospitals told us: "I think that the key to success [with mobile working] is to understand that this is a tool for the doctor or the nurse as much as a stethoscope, the weighing scales, or their own judgement.

"Therefore they should have a tool that fits their needs. So, start with what their needs are and then ensure you deliver that to them."

> *The key thing about adopting mobile is getting this to be clinically-led and listening to the people who are actually using this technology.*

Lisa Emery, chief information officer, West Hertfordshire Hospitals NHS Trust

Solution 2:
Do it yourself apps

> We have a couple of apps that are now in use for collecting data from patients as part of clinical trials. [Another] piece of work is around better smart monitoring of patients, where data is uploaded in real time to the system.
>
> **Dr Afzal Chaudhry, CCIO at Cambridge University Hospitals NHS Foundation Trust**

Faced with a lack of appropriate apps for mobile working in healthcare, many of those we contacted for our research said they were simply building their own. A striking 50% of those who responded to our survey question asking if their organisation had built its own apps responded in the affirmative.

The apps built in our survey respondents' organisations fell into four broad categories:

Reference tools. Respondents cited a therapeutics handbook, clinical guidelines, a nurse handbook, board paper checker, formulary, and a 'trust values' internal communications offering.

Clinical and performance information. This included bed boards, consultant-to-consultant referrals, waiting time information, reporting dashboards, and therapy outcome measures.

Diagnosis and patient monitoring aids. Including assessments for venous thromboembolism (VTE), an aid for GPs to diagnose common and serious eye problems, and an app for entering vital signs in adults.

Patient tools. This included mental health self-care apps, supports for parents and teachers of children with ADHD (attention deficit hyperactivity disorder), and an app which allows hospital patients to order meals.

At Royal Brompton & Harefield NHS Foundation Trust, trust CIO Joanna Smith has helped support the development of a wound care app. "One of our nurses has got a very strong passion for this area. She then decided to get a little bit of grant money from somewhere and have something built. We supported her by providing some levels of integration."

She emphasised: "I don't believe that we should be trying to be software developers [ourselves]. Our role is supporting her, making sure she is not getting ripped off, making sure they have thought through all the angles, and saying: 'Hang on a minute, this isn't going to be limited to one platform only, is it?' That's where we will provide support, rather than being the builders of the solution."

At Cambridge University Hospitals NHS Foundation Trust, a number of apps have been developed internally – including one enabling teams at Addenbrooke's Hospital to ensure resuscitation trolleys are checked on a regular basis.

Dr Afzal Chaudhry, the trust's CCIO, explained further progress in locally developed apps: "We have a couple of apps that are now in use for collecting data from patients as part of clinical trials. So, instead of trial participants keeping paper diaries, they are able to record that information into an app that then gets uploaded in real time.

"[Another] piece of work is around better smart monitoring of patients, where data is uploaded in real time to the system. We have those who are less sick on the general wards, where nurses are taking their blood pressure and typing it in by hand and it's uploaded. But there is a group in between who are the intermediate sick.

"There are a lot of companies now starting to produce 'all in one' sensors that can do heart rate/temperature/respiratory rate measurements that could then be uploaded into the central system directly or routed out to, say, a critical care outreach team over an app.

"This could tell them if a patient is deteriorating, and allow them to triage which patients to see sooner. We are looking at all of those options."

Expert Comment:
Gregg Hardie
head of public sector, Samsung

"That 50% of respondents to the Digital Health survey said their organisation had developed its own apps is, for me, one of the most interesting themes to emerge from this research. It shows two things. One, that the main developers of clinical apps may be behind the curve when it comes to dedicated mobile offerings for their software. Second, that there is currently value in providing the environments in which NHS organisations can easily develop apps which meet their needs. That could include software as a service setups, but also more broadly means having vendors who are open to supporting app development. At Samsung, we have an approach called Open Economy – it sums up our view of how mobile working will open up new opportunities, but also characterises our approach to supporting developers. We want to give them the flexibility they need to develop the software our modern workforce needs."

Solution 3:
Evolving infrastructure

> We're currently in the midst of a transformation programme around our basic IT infrastructure. So we're replacing some of our ageing networks. We're rolling out new end user devices and generally upgrading across the board including our telephony, which is also quite old. What we have done as part of that is that we've deployed to-date about 600 smartphones, and we're rolling out about 50 or so tablets to different areas of the organisation.

Lisa Emery, CIO, West Hertfordshire Hospitals NHS Trust

A significant minority of survey respondents said they were overcoming the barrier of poor infrastructure in a simple way: by investing in improvements.

Lisa Emery, CIO at West Hertfordshire Hospitals NHS Trust, reported her own organisation had plans to make improvements here. "We had a significant challenge in terms of upgrading our basic infrastructure.

"So we're not terribly mobile at this point in time, although we've got some things on the go and we've got very strong ambitions around it.

"We're currently in the midst of a transformation programme around our basic IT infrastructure. So we're replacing some of our ageing networks. We're rolling out new end user devices and generally upgrading across the board including our telephony, which is also quite old.

"What we have done as part of that is that we've deployed to-date about 600 smartphones, and we're rolling out about 50 or so tablets to different areas of the organisation."

While a full review of trusts' infrastructure investments was beyond the scope of this project, it seems likely that funding will be a constraint for many. The financial issues currently facing the NHS have been well rehearsed – the collective deficit of the English provider sector was £736 million for the first three months of 2016/17 alone, £30m worse than planned.

Expert Comment:

Gregg Hardie

head of public sector, Samsung

"The resourcing issue will continue to be an obstacle that will need to be worked around for the foreseeable future.

"Despite the constraints presented by funding pressures, it is still possible to leverage a provider organisation's resources to fashion a tailored, suitable mobile working solution.

"In my experience, a great deal of the time healthcare bodies miss out on opportunities to get the best out of mobile because they do not work in collaboration with suppliers, solution partners and mobile operators.

"This silo approach means that it can be difficult for end users to get the help they need if they encounter hardware or software problems.

"One option is to create 'virtual' partner teams to provide an end-to-end solution that works to support scale transformation in mobile working. If an organisation is under financial pressure such that upfront capital investment for new devices is difficult, they can look at leasing kit.

Leasing can support organisations' upgrade plans in a more sustainable and future proof way."

Solution 4:

Careful mitigation of security risks/staff training

> You've got to remember this in terms of the days of paper case notes. Staff would effectively have case notes in the boot of their car. Now things are considerably safer than that. There are risks however you choose to [organise] services. There is a different set of risks, and the staff have to undoubtedly play a huge part in any security policy.

Darren McKenna, CIO, Northumberland, Tyne and Wear NHS Foundation Trust

When considering the issue of mobile security, Northumberland, Tyne and Wear NHS Foundation Trust's CIO Darren McKenna puts it succinctly: "You've got to remember this in terms of the days of paper case notes.

"Staff would effectively have case notes in the boot of their car. Now things are considerably safer than that. There are risks however you choose to [organise] services.

"There is a different set of risks, and the staff have to undoubtedly play a huge part in any security policy."

SURVEY SPOTLIGHT ON... data security training

When asked what steps they had taken in the last two years to ensure data on mobile devices is secure, several survey respondents spoke of staff training to provide a clear understanding of how to keep information safe.

Expert Comment:

Gregg Hardie

head of public sector, Samsung

"The issue of keeping patient data safe isn't a new one. But it becomes a slightly different challenge as mobile technology becomes more widely used. You've got a situation where devices are moving around with the people using them, and you need to share information safely with many users over a wider geography.

"I do think there are solutions here, though. I think it's about having confidence that any device that's going to be used has a baseline of good security and can have its settings easily customised so to work in any different healthcare environment. Customers also need to understand the risk they are exposing: what data is available to the device when it is mobile, how many records can be seen at once and taken and what systems or services does the device access? Then aspects like how often does a password have to be entered, is there an automatic lock after a period of time, can the device be remotely locked and wiped come into play to mitigate or balance the risk.

"As always, though, it's not just about the technical processes. It's also about the people. If someone doesn't know they be wary of suspicious-looking e-mails, then of course the risk is going to be higher than if they've been fully educated about security. For me, it's about staff having training opportunities which make them comfortable with digital, and that includes security. We also need to understand that may not be a one off exercise – continuing support throughout a deployment, and during any change in systems or devices, will always be valuable."

Bring Your Own Device:
Solution or problem?

BYOD – these four letters elicit a variety of responses from IT leaders responsible for mobile working across all areas of care.

For some organisations, encouraging employees to use their own smartphones and tablets at work is a sensible way of saving on the costs of buying and maintaining corporate devices.

Some of IT leaders we interviewed and survey said they were relaxed about the approach. However others – particularly those overseeing activity in acute hospitals – had concerns about the security implications of BYOD.

David Walliker reported a zero tolerance approach to bring your own device at Royal Liverpool and Broadgreen University Hospitals NHS Trust. "We don't offer that functionality at all. You have to be on a corporately approved device with a mobile device management profile with the sufficient security [settings]. We do however allow email to be accessed on personal smartphones."

He continued: "I don't like BYOD in a corporate environment. I didn't like it before WannaCry and I certainly wouldn't have it after WannaCry."

His concern is that another management system and level would be needed to know whether staff have downloaded the appropriate security updates for their devices and for the software running on them.

Mark Reynolds offered a similar view. The CIO at Sandwell and West Birmingham Hospitals NHS Trust explained: "Only devices issued by the trust can be used for care. We don't do BYOD. The ratio is for every 10 staff, we have eight devices.

"We're not short of devices and for community staff it will probably be a one-to-one ratio. They are all standard build – same security and managed from the centre, which gives me significant reassurance about security."

Lisa Emery at West Hertfordshire Hospitals NHS Trust offered a more flexible approach, arguing the need to strike a balance between security and capitalising on opportunities for mobile working.

"It's that balance between creating a channel for people to communicate, but at the same time having policies and standards of behaviour ensuring that people are behaving in the way they would if it were verbal communication, email or anything else.

"It is probably more about standards of behaviour and what you're communicating, rather than the channel you are using. There's a danger of becoming too restrictive if you're not careful."

SURVEY SPOTLIGHT ON...
using own devices at work

Of the respondents to our survey, only 19% said staff at their organisation used their own devices to carry out work tasks

Expert Comment: Gregg Hardie

head of public sector, Samsung

"I think BYOD can be a viable solution to the problem of increasing mobile tech use in healthcare without needing to invest in a whole load of new devices. It also gets round the problem of staff having to carry two mobiles with them at all times, and keep them both charged – which some people do find is a hassle.

"Security solutions that offer dual persona setups can be really valuable here. This basically means personal and work applications on a smartphone or tablet are entirely separated. That sort of setup can be a way to make bring your own device a more manageable prospect in healthcare.

"Another option can be issuing devices to staff which are corporately owned, but which they are allowed to use as a personal device as well as a work one. That serves as a benefit to your employees, means they only need to carry one phone, but also means you can be confident the latest security patches have been installed and so on. Dual persona solutions are again helpful here."

Solution 5:

Virtual desktops as a way of mitigating some security issues

> Our user base now runs in a virtualised environment. So, all of the data is secured within a data centre, the profiles are all secured within the data centre but the people can access that from wherever they need to work.
>
> **Stephen Stewart, assistant director for technology and communications at South Eastern Health and Social Care Trust**

At Liverpool Women's Hospital, CIO David Walliker is using virtualisation to address some of the potential security issues with the use of mobile devices. Staff can connect to a virtual desktop environment via their device, with all the clinical systems available. He reported that staff only accessing data in this way works well from a mobile device management perspective.

"That's because if a member of staff did lose their tablet somewhere, there's no patient data on it.

"Investment in MDM solutions for me really is that additional assurance that you're going to be able to wipe it if they have left it somewhere."

Stephen Stewart, assistant director for technology and communications at South Eastern Health and Social Care Trust in Northern Ireland, reported a similar approach.

"Our user base now runs in a virtualised environment. So, all of the data is secured within a data centre, the profiles are all secured within the data centre but the people can access that from wherever they need to work.

"We've got secure remote access so that basically all you need is a token which generates a one-time only password [VDI software].

"So you could go and install that [VDI software] on any device and as long as you know how to log into our network and you've got a secure token authenticating you and generating a password, you could log in if you were an employee of our trust."

SURVEY SPOTLIGHT ON...
working with suppliers

When asked what steps they had taken in the past two years to ensure data on mobile devices is secure, a chief information officer at an acute trust replied: "Ongoing focus on working with suppliers."

"Certainly at Samsung we're keen to work with healthcare organisations to understand their needs, and explore how we can help meet them," commented Gregg Hardie, the company's head of public sector. "We can certainly lend support on security, but I think it goes beyond that. If you look at our managed services offering, for instance, we can really take away the day-to-day challenge of deploying, managing and maintaining large numbers of devices across an organisation. This requires us to work even much more closely with our customers and to understand them even better. I would always encourage CCIOs and CIOs to create partnerships with their IT suppliers and vendors rather than transactional relationships and I don't think mobility is an exception."

SURVEY SPOTLIGHT ON...
establishing a baseline

As our research has shown, it has been difficult for many IT leaders – especially those on the provider side – to calculate the amount of staff time saved through the use of mobile devices. Considering how to establish a baseline of performance prior to the introduction of any mobile working can be crucial to the success of a project – and to securing investment for its continued rollout.

"We have not had a coherent mobile working approach, so there has been no benefits assessment. Individual efficiencies and safety benefits, but it is not clear how widespread these benefits are felt or realised."

CCIO, national body and integrated care trust

Conclusion:

Looking at the results and responses from healthcare professionals and senior managers, it's clear that almost all of them see the benefits of mobile working and mobile technology in healthcare.

In fact, 96% said they see the benefits of working remotely, whether that means being able to check patient records without having to travel back to base, therefore saving vast amounts of time, or being able to work on tasks while completing ward rounds. Ultimately putting information at the fingertips of clinicians and healthcare managers, wherever they happen to be, means they can make more informed decisions. Patient safety is being bolstered which ultimately will save lives.

Communication with patients is better. Implementing digital communications such as email, apps, and websites where customers can provide feedback on the service they've received is a massive step forward.

Mobile technology is helping healthcare professionals to work more productively and efficiently, but it's also improving the overall service they can offer. With mobile tech, clinicians have information at their fingertips, so they're better equipped to deal with each patient's specific needs. By putting patient information directly into clinicians' hands, they're able to make faster, more informed decisions, which is helping to save lives. Being able to effectively track information and spot trends is vital in helping to spot potentially fatal conditions.

However despite all the positives that mobile working brings to healthcare, we understand that there are some barriers and further work that needs to be done to make it easy to integrate new mobile technology and solutions. While only 45% of respondents cited mobile security as a concern, it's still clearly a big issue, especially after the WannaCry cyber attack that recently hit the headlines and played havoc with the NHS's IT systems.

Cyber attacks and the accessibility of patient data are two key concerns. Careful selection of products and suppliers can help address these risks. Experts at Samsung, for instance, told us how their Knox security is best-in-class defence-grade security, trusted by governments across the world to lock down data and keep it out of reach from hackers. Multi-layered security is built in to both the hardware and the software to protect businesses from potential attacks in real-time. Their devices now feature biometric security, such as fingerprint scanning and facial recognition, to further secure devices from unauthorised access.

The other big barrier is cost. The initial outlay for new technology, especially in hospitals, can often be too high. Industry experts again told of ways in

Conclusion (cont.):

which they can help surmount this obstacle. Gregg Hardie, head of public sector at Samsung, told us of his company's managed service which can help organisations to invest in the latest technology without the initial outlay. Instead, it works on the basis of a monthly fee, with NHS organisations able to cherry pick the additional services and solutions they want on top. The service also gives support services – whether a repair service, device deployment, or training.

Our research also showed how initiatives like the creation of clinical informatics posts provide a strengthened conduit between staff on the frontline and those in charge of decision-making around investment and policy around device use.

Importantly, all nine of the IT leaders who were interviewed for this Digital Health Intelligence white paper named the same key success factor in using mobile: namely, trust staff have to understand the benefits that these new working methods can provide. Co-producing mobile working solutions with staff is vital.

The NHS is working hand-in-hand with Samsung to drive cultural change and perception within the organisation, and as more and more useful applications become available and the internal technology infrastructures improve, mobile technology will become even more essential to creating a world-class healthcare service.