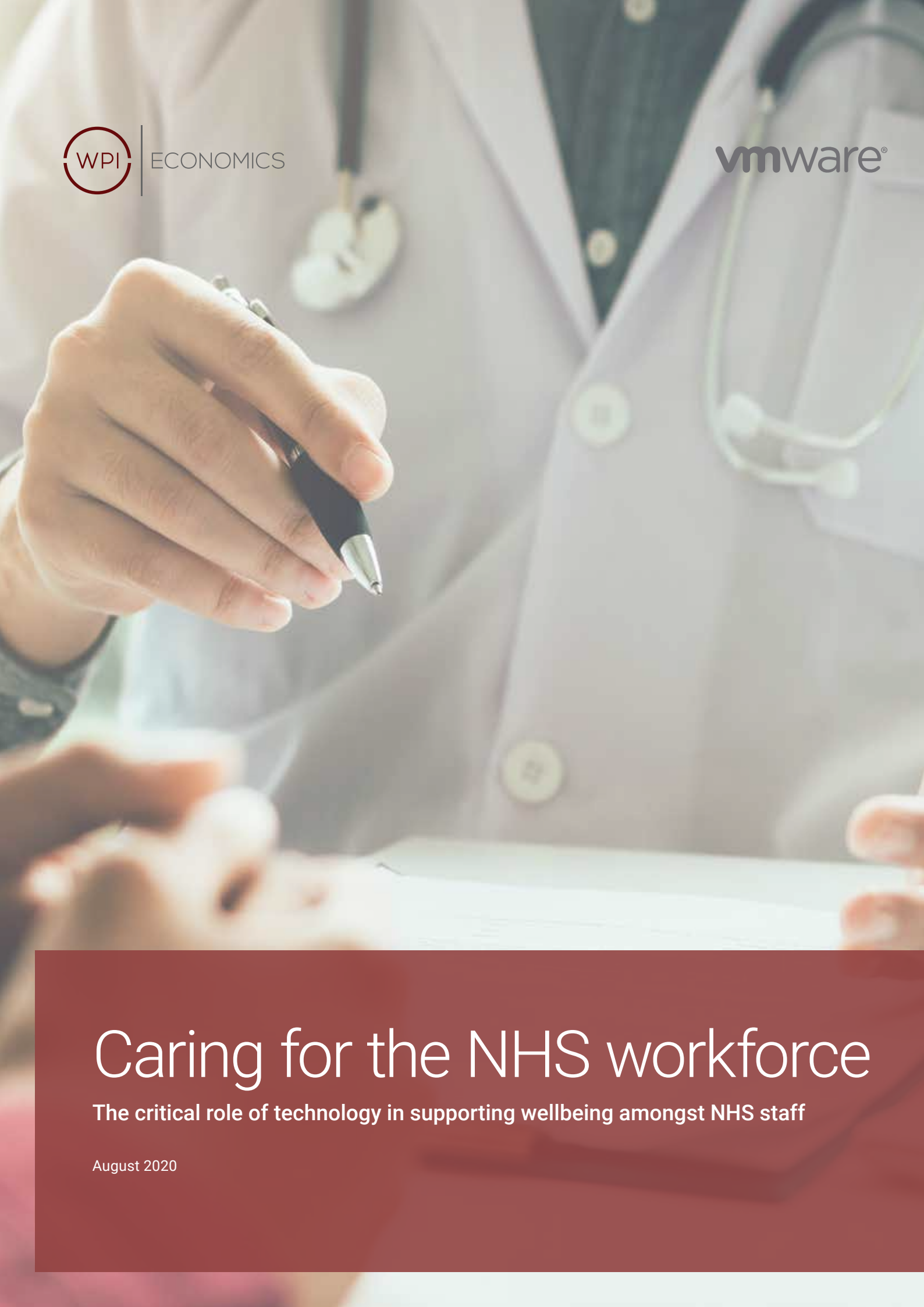

Caring for the NHS workforce

The critical role of technology in supporting wellbeing amongst NHS staff

August 2020

Contents

About this report

This report provides original analysis and modelling of the scale and impact of mental ill health amongst the NHS workforce and discusses how technology can be part of an effective overall strategy to tackle it. It is based on data and research drawn from a range of sources, including NHS Digital, individual NHS Trusts and existing literature. The authors are also grateful to ten senior leaders working at the front line of delivering digital transformation within the NHS (both NHS employees and external suppliers / consultants), who participated in semi-structured interviews. Their views and insight have been invaluable to informing this work. As always, conclusions and views within this report are solely those of the author, and not of any individual or organisation that participated in this research.

Our findings and Covid-19

The research and modelling for this report was undertaken between Autumn 2019 and Spring 2020 and reflects the evidence on the mental wellbeing challenges facing the NHS workforce and their potential impacts, which were available at the time.

Since then, the Covid-19 pandemic has impacted every part of our lives. Whilst the impacts of this, on individuals, society and the economy are yet to be fully understood, what is clear is that the NHS and its workforce have been at the epicentre of this crisis. However, given the uncertainty of these impacts, and the desperate need for clinicians and the full range of staff, organisations and suppliers who support them, to focus on tackling the pandemic, we have chosen not to update the research and analysis in this report.

These findings act as a benchmark for what we had already identified as a mental wellbeing crisis within the NHS workforce. Our assumption is that the current crisis can only act to make the challenge greater: through increased workload pressures, even more significant emotional trauma and the constant risk of putting their own lives at risk in order to try to save others, the factors that lead to poor mental health amongst NHS staff will have been amplified by the Covid-19 pandemic.

This makes the findings in this report even more important. Ultimately, if the NHS workforce is to continue to carry out the vital role they are playing both through this pandemic and beyond, their mental (and indeed physical) health must be at the centre of action to support them. Our report identifies clear ways in which, as a part of a broad-ranging strategy, technology can be used to ease the pressures which contribute to poor mental health for staff across the NHS. Positively, we should recognise that many Trusts are already moving at pace in response to Covid-19; pushing forward with the digitisation needed to continue to provide vital healthcare and protect their workforce at a time of crisis.

More broadly, as the pandemic continues to evolve, the strong digital foundations that we urge are created will be central to ensuring that the NHS can continue to meet the needs of the public. For those Trusts already heading in this direction, positive steps need to be cemented and built upon. For others, support will be needed to ensure that they can catch up quickly with their more digitally advanced peers.

For all Trusts, the potential gains of creating these strong digital foundations are clear; facilitating more remote access to health care services, opening up opportunities for more flexible working within some parts of the NHS, advancing services and patient care with technology and all the time doing so within an environment that provides the right tools to the workforce and the best possible level of security for personal data.

About the author

Matthew Oakley

Matthew Oakley is Director of WPI Economics. A respected economist and policy analyst, he has spent over fifteen years working in and around policy making in Westminster. Before founding WPI Economics, Matthew held a number of roles including Chief Economist and Head of Financial Services Policy at the consumer champion Which?, and Head of Economics and Social Policy at the think tank Policy Exchange. Matthew also led the Independent Review of Jobseeker's Allowance sanctions that reported to Parliament in 2014, and previously spent eight years as an economist at HM Treasury.

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Foreword

By Duncan Greenwood, Vice President & General Manager NEMEA, VMware

Key workers in the NHS have been risking their lives every day fighting coronavirus. They face a challenge unparalleled in modern times. Not just doctors and nurses but care workers, receptionists, cleaners and office staff. They are the centre around which our country has rallied in its time of crisis.

But the effort will have undoubtedly taken a mental toll. In April this year the NHS set up a dedicated mental health hotline for staff struggling during the outbreak. Within three weeks it had received nearly 60,000 calls. In a work environment already causing stress and burnout, there are clear concerns that the crisis could have lasting mental health effects.

Mental ill health can creep up on all of us at any point. The impact of this hidden disease can have long lasting impacts - for the individual, their family and wider society. When it impacts those who care for us, it impacts all of us.

That is why it is so concerning that according to research we are publishing today, last year more than 10 million working days were lost to mental ill health in the NHS across the UK. Put another way, this is the equivalent to half of all NHS staff – 700,000 people – being quarantined for 14 days, or every worker taking on average 7 days off work a year.

Unfortunately, given the emotional strain and increased workload caused by the pandemic, we can reasonably expect 2020's figures to be even more significant. Poor mental health is an invisible illness right at the heart of our health service, and it is clear that policymakers must do everything possible to tackle this menace.

I am not qualified to talk about remuneration levels, workforce numbers, training programmes or a host of other big ticket questions that healthcare professionals and policymakers are grappling with. However, as someone who works for a world leading software company, I can talk about the positive role that technology can play in helping Hospital Trusts relieve some of the strain and stress that impacts those working in the NHS.

If every hospital in the UK had strong digital foundations, this could play a role in improving the mental wellbeing of the NHS workforce. Take log-on times as an example. At the moment, in a typical hospital, staff need to log in to as many as 15 different systems when tending to a patient. As well as the sheer amount of time this takes, the numerous log-ins require staff to remember multiple, complex passwords or they may be more likely to compromise security by reusing the same one in every system. A single sign-on system could reduce time spent logging into systems radically. According to the Department of Health and Social Care, a single sign-on process introduced at Alder Hey Hospital in Liverpool saved more than 130 valuable hours a day.

This wouldn't just reduce stress in what has recently been an uncertain and demanding hospital environment, it would also allow clinicians more flexibility and allow the NHS workforce to focus on treating and caring for patients. If this was true before the coronavirus outbreak, it is even more the case now.

Encouragingly, many Trusts are already moving at pace in response to Covid-19; pushing forward with the digitisation needed to continue to provide vital healthcare and protect their workforce at a time of crisis. For those Trusts already heading in this direction, positive steps need to be cemented and built upon. For others, support will be needed to ensure that they can catch up quickly with their more digitally advanced peers. We therefore propose a three-pronged approach to this much-needed digital transformation: expertise, money and accountability.

Firstly, expertise. Too often NHS Trust Boards lack the detailed understanding of technology needed to create and drive forward a digital vision. Ensuring that every board has a CIO (Chief Information Officer, or equivalently experienced individual) in place in the next four years must be a crucial first step.

Secondly, money. The Government should ringfence part of its increased NHS investment, and bring together other existing funds focussed on investment in digital transformation, to develop a single Smart Care Fund. This should be used

to ensure that investment is available to all Trusts to both achieve the required digital maturity standards and ensure they develop a future-proofed and flexible digital foundation.

Thirdly, accountability. We need a system which holds Trusts to account for failing to achieve the right level of digital maturity. It is encouraging that the Secretary of State has committed to giving all providers clear standards that the CQC can assess them against. Given its importance, it is vital that this work takes place rapidly.

This three-pronged approach sets out a framework for how we can transform the health service to better serve its staff. Tens of thousands of us will owe our lives to the NHS after this crisis is over, and more will be wondering how to give back. Providing strong and flexible digital foundations can play a critical role in supporting the mental wellbeing of our NHS staff. This will be a great start in providing more support for those who have risked everything to care for us in our hour of need.

Executive summary

There are approximately 1.4 million people employed throughout the NHS. Each individual plays a vital role in improving the health of the nation which has been more important than ever over the past months. But if those who care for us are to continue to carry out their jobs effectively, as a society we need to consider their health more carefully. A healthy NHS workforce is fundamental to the Government's health and social care strategy, and it is encouraging that the Secretary of State has identified the workforce as his top priority.

This report aims to contribute to this debate. The findings identify a crisis in mental health amongst the NHS workforce and the impacts that stress, anxiety and burnout have on healthcare workers, patients and the overall costs of the NHS.

Improving the mental health of NHS workers will require a wide-ranging strategy which includes improved workforce management practices and support, and action to prevent mental ill-health occurring in the first place. This report focusses on one important element of that strategy; technology. It highlights that, across the NHS, a weak digital foundation and outdated technology in use by the NHS workforce are contributing to work-related stress and impacting patient outcomes and the ability of the NHS to operate as efficiently as possible.

The government has vowed to move the health and care system into the 21st century. Across the country there are trailblazing hospitals which, as a result of their expertise and investment, are able to ensure both that their technology works for their staff and their digital foundation is ready for the required evolution that will be asked of them while also allowing future innovations to be tested and implemented at scale. Yet there are many hospitals which are still lagging behind. This report highlights the need for NHSX , a new unit tasked with speeding up the digital transformation required within the NHS, to be closely involved in the NHS's People Plan to ensure that the importance of digital transformation in helping to tackle mental ill-health amongst the NHS workforce is recognised and operationalised. It then outlines the need to create the right digital foundation across the NHS; providing a cloud environment to meet Trusts' needs, with adaptable networking and security provided where and how needed by the NHS workforce. In practical terms this would support the adoption of technologies that can improve both workforce wellbeing and clinical outcomes and reduce costs, both now and in the future.

Across the NHS, a weak digital foundation and outdated technology are contributing to work-related stress.

The scale of the mental ill-health crisis in the NHS

A wide range of evidence shows that mental ill-health is a significant issue across the professions within the NHS workforce. A related and equally significant issue is burnout.[1]

Using data from NHS Trusts and the Health and Safety Executive (HSE), this report estimates that more than 10 million working days were lost to mental ill-health in the NHS across the UK in 2019. This equates to around 38,500 full-time staff permanently absent from work, needing to be covered by other staff or temporarily replaced by agency staff. Put another way, this level of mental ill-health related sickness absence amounts, on average, to more than seven days off work a year for each employee.

The impact of mental health on the NHS workforce

However, as already highlighted, investment on its own is not enough. This report explores key themes taken from semi-structured interviews and roundtables with business leaders to show that, across the country, there is broad agreement on what needs to happen. There are three major problems:

1. Worsened clinical outcomes. A range of evidence demonstrates a clear link between mental ill-health amongst the NHS workforce and poorer clinical outcomes.
2. The associated costs of mental ill-health related sickness absence and presenteeism to the NHS as an employer, which we estimate amounted to around £3 billion in 2019.
3. Personal impacts. The human costs are significant; both for individuals experiencing mental ill-health and their friends, families and colleagues.

Reducing and managing workloads

This is not the first report to highlight these issues and NHS reviews have also focussed on them.[2] [3] So, the question is what can be done? The first thing is to recognise that the drivers of mental ill-health in the NHS are not just about the often-unavoidable nature of working in healthcare; a range of organisational factors are also significant drivers. Addressing these should play an important part of a strategy to tackle the issue. Key areas highlighted by other reviews include:

- Reducing and managing workloads;
- Helping the NHS workforce to navigate the growing intensity and complexity of work; and
- Increasing control and support and providing more opportunities to work flexibly.

Delivering on each of these areas could fundamentally change the experience of the NHS workforce. There is no single way to do this, and a multi-faceted strategy is clearly needed. As shown below, one vital part of that strategy is technology.

Technology as part of the solution

It is well documented that technological inadequacies in the NHS are linked with increased workload, challenges in managing complexity of work, poor control over work, work-life balance and a lack of flexible working. As such, there are clear routes through which poor technology can impact on the mental health of the NHS workforce. A recent survey of BMA members indicated the scale of some of the issues; with four in ten respondents (37 per cent) reporting that their stress levels are affected significantly by inefficient IT and data sharing systems.

At the heart of these issues are hardware and software which are no longer fit for purpose and legacy IT systems that hinder attempts of digital transformation. A recent survey of NHS healthcare professionals found that six in ten thought that NHS IT was not fit for purpose, with many complaining of 10-minute log on times for tasks that need to be done several times a day.[4]

Six out of ten NHS healthcare professionals believe that NHS IT is not fit for purpose.

Wider concerns include a lack of interoperability that means that different systems across the health and social care system and even within different departments of the same care setting, do not integrate or communicate effectively with each other. One example of the impact of this is that patients have to provide their medical histories repeatedly and clinicians may have to enter the same information several times.

This situation also comes with broader concerns. For example, interviewees for this report highlighted that medical staff are currently forced to create work-arounds to save time: for instance leaving computers logged on, or even sharing patient records over personal e-mail or WhatsApp to get an opinion from a colleague without the requisite access tools. Whilst not malicious like the recent WannaCry attack on the NHS, the impacts of such actions on security are clear; a third of NHS IT leaders identify NHS staff as a significant risk to cyber security.[5]

"Our clinicians waste valuable time with their patients logging on to multiple systems on aged devices with clinical systems that are not designed to complement how they treat and care for our patients."

Whilst these are significant issues, there are clear routes through which they can be tackled, technology improved and the NHS digitised, whilst ensuring that cyber security is at the heart of that transformation so that patient and staff information is safeguarded. One such example of this is the idea that clinicians should have the right information on a patient in front of them, on any device that they are using and at any time, with the security you would expect when accessing personal medical records. It is a simple principle, but one that demonstrates how the right technology would fundamentally change the experience of many clinicians today: saving time, easing workloads, improving patient care and, as a result, reducing workforce stress. As one CIO interviewed as part of this research commented: "…anything that can save a clinician an extra click, or extra log-on is something that provides time for them to spend more time with the patient."

Innovation and the future of healthcare

Looking to the future, it is also clear that new forms of working, improved treatments and a wide range of future NHS innovations are part of the answer. Often referred to as the "mega trends" in healthcare[6] these are typically driven by big data, technology and connectivity and include: AI, genomics, telemedicine, the medical Internet of Things and virtual and augmented reality.

Together these trends would change the shape and nature of healthcare in the UK; moving much more to a predictive, preventative and personalised approach.[7] They could also do this in a way that improves the working environment of the NHS workforce. For example, it has been estimated that:

- Speech recognition could improve the speed at which clinical documentation is completed, potentially freeing up 400,000 hours of A&E consultant time, one million hours of outpatient clinic time and 5.7 million hours of GP consultation time;
- Automated image interpretation could reduce the time radiologists require to review images by around 20 per cent. This would free up close to 900,000 hours of radiologist time.[8]

Whilst many of these technologies are in their infancy, the potential for the future is clear and, alongside action to get the basics right would radically improve working conditions, workload pressures and ways of working within the NHS.

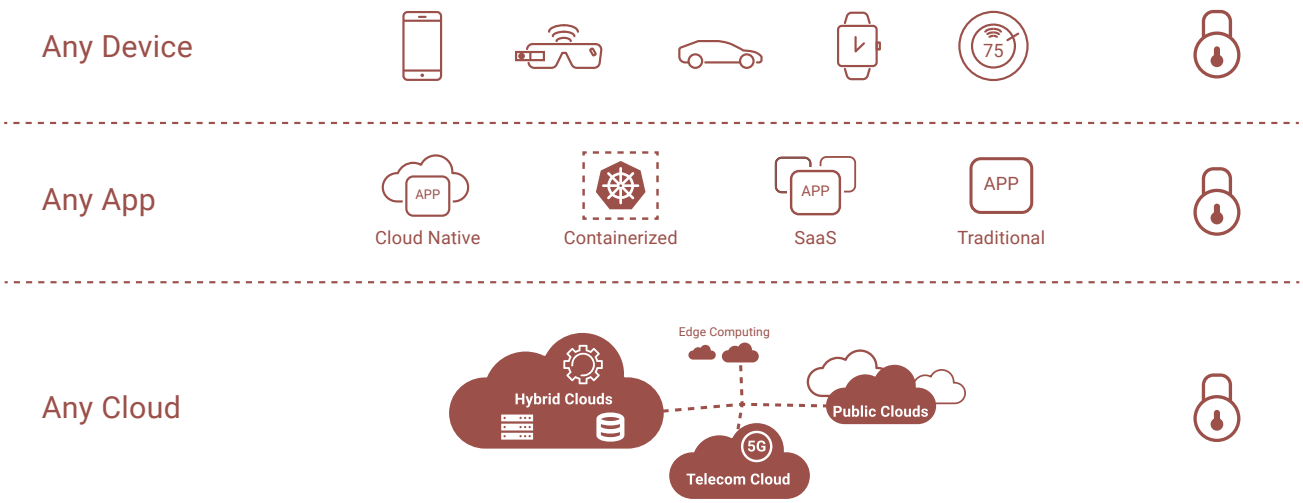
Delivering this requires the right digital foundation

This demonstrates just a few of the potential areas where improved technology, digital transformation and innovation could ease pressures on the NHS workforce and improve patient outcomes. But despite previous commitments to ensure that all NHS providers have at least a core level of digitisation by 2024,[9] a large proportion of Trusts are currently a very long way from this level, and, without significant change, are unlikely to reach the required level in time.[10] So, the question is then, what is getting in the way of change and preventing the investment and continued digital transformation that could deliver a step change in outcomes for clinicians and patients across the NHS?

People interviewed as part of this research, including clinicians, senior managers and technology professionals working within and outside of the NHS, identified a range of barriers, which are also echoed in the existing literature around digital transformation in the NHS.

An overarching theme from these interviews was that there is currently an insufficient focus on ensuring that the NHS has a strong digital foundation. This was raised in a number of ways. For example, a number of interviewees highlighted that a focus on new and innovative technologies and applications for those on the front line was taking attention away from the fact that, without the right digital foundation, it would be near impossible to make the most of these opportunities. It was also highlighted that a failure to deliver this would likely result in a situation where similar issues with legacy IT were being faced in ten years or so.

Ultimately, interviewees argued that delivering improvements will rest on the NHS's digital foundation. This is what underpins the ability to modernise applications today and in the future, to adapt to, test and adopt new innovations without disrupting business operation and all the time doing this in a way that protects patient data. In practical terms, the goal for users was typically described as a foundation that enables any app, on any cloud, delivered to any device. For example, the BMA highlights that "Clinicians should be able to see patients' records, observations, results and background notes from any location, ideally in real-time".



The digital foundation must empower and support that goal in a way that allows Trusts to respond flexibly to future needs, opportunities and threats and adopt innovation, and all in a way that minimises risk and disruption and maintains security.

Box 1: The elements of a strong digital foundation

A strong digital foundation is central to delivering the technology that the NHS workforce need today and to ensuring that digital transformation can continue into the future. There are three core elements to a strong digital foundation.

A cloud environment to meet Trusts' needs: As Trusts' applications become more complex, more diverse and increasingly demanding, there are new requirements for the infrastructure that delivers the power, efficiency and interoperability to support them. Delivering this in the right way is central to reducing costs, increasing flexibility and scalability, improving efficiency and speeding up the access time to innovative services that are central to digital transformation within the NHS.

Most importantly, a strong digital foundation lets Trusts choose whichever cloud environment best meets their needs, for any application, without sacrificing visibility, operational consistency, security or control.

With adaptable networking and security: Intrinsic security is key to ensure that Trusts build-in and unify security to protect its apps and data. This means interoperability across bare metal servers and containers, as well as on-premises, public cloud, IoT edge devices, or cloud-based services. Given the sensitive nature of data and applications within use in the NHS, securing this across the cloud environment is a core requirement.

Provided where needed by the NHS workforce: Across the NHS workforce, employees want to do the work they need to do, with easy and highly available access to the tools and apps they want to use. In practice, this must be flexible to the range of devices (from mobile, desktop and tablet to IoT devices) in use across the workforce, and the range of environments (whether that is in a primary, second or secondary settings, on the move or at home) and in a way that does not sacrifice security or control.

A range of other areas, which link with this theme, were also raised. These are summarised below.

- **Money**. Almost universal across interviewees for this report and a wide range of similar work by others was the fact that digital transformation across the NHS is severely constrained by affordability. Interviewees argued that this problem with funding for digital transformation was particularly focussed amongst Trusts that were already less digitally mature, where there is also a growing maturity gap compared to more digitally mature Trusts.
- **Legacy systems**. Legacy technology systems within the NHS are not just ineffective, inflexible and a contributor to mental ill-health amongst staff. They are also expensive to service and maintain and create a range of other barriers identified by interviewees, including making leaders risk averse to change and taking up the mental capacity needed to set a clear vision and strategy for the future.
- **Intangibility of benefits and other priorities**. This was particularly true for the development of a robust digital foundation, rather than applications and hardware used directly by those on the front line. Some also said that, within constrained budgets, it was easier to invest in "visible" equipment like MRI scanners or fire alarm systems, than cloud solutions, app development or improvements to cyber security. This was exacerbated by a lack of technological expertise on NHS Trust Boards.
- **Change management**. Here, it was argued that even where transformation has begun and new technologies are being rolled out, a lack of focus on training and supporting staff to use this technology was presenting a number of challenges.

Laying the foundations for digital transformation

The five missions of NHSX chime very well with themes in this report.[11] However, tackling the issues identified above, and pushing forward digital transformation at the pace required, will not be straightforward. It is also clear that, too often, digital transformation and workforce wellbeing are viewed in isolation. What this report has shown is that delivering on digital transformation is not just about improving and deploying technology: it could also be part of a strategy to tackle work-related stress and reduce the prevalence of mental ill-health and burnout amongst the NHS workforce.

As such our **headline recommendation is that using digital transformation to improve the wellbeing of the NHS workforce should be a core part of the NHS People Plan**. The interim plan has already made positive steps, including the creation of the Releasing Time to Care programme. The final plan should build on this foundation, provide clear routes through which NHSX can be at the heart of future plans in this area and identify investment streams that can support digital transformation.

Recommendation 1) Digital Transformation and the NHS People Plan: To reflect the important role of digital transformation in supporting the NHS workforce, it should be a core part of the NHS People Plan. The plan should also clearlyset out how NHSX will be involved in future work in this area and, given the importance to the workforce, identify investment streams that can support digital transformation.

Once this focus has been established, tangible actions need to be taken forward. A range of reports highlight steps that clinical and technology staff within the NHS have highlighted as essential. We will not rehearse these here, but the recent BMA report provides a comprehensive outline.[12]

What is clear, however, is that the journey of transformation will be unique to every organisation and complex for all. Disruptive technologies emerge faster than most organisations can absorb, which leads to increasingly complex technology environments that are hard to maintain and even harder to secure. And the pace of this change will only increase. This report has shown that this presents a real challenge of ensuring that the right steps are taken across the NHS and in a way that does not create the legacy IT of the future. In the short term, failure to do so risks the continuation of poor mental health outcomes in many trusts across the NHS and could mean that in ten or twenty years' time, technology is similarly out-dated and difficult to upgrade and transform.

What is needed is a framework within which NHSX, Trusts and the digital sector can work together to deliver the digital foundation that can facilitate the adoption of technology that supports staff both now and in the future; getting the basics right first before allowing innovation to deliver the digital NHS of the future. The recommendations below support the delivery of a strategy to achieve the core elements of a strong digital foundation identified in box 1, above.

Recommendation 2) Digital by default: the Government's manifesto confirmed a pledge to build and fund 40 new hospitals over the next ten years. It is essential that these are built and the investment is made to delivering the right digital foundation from the outset, ensuring that they can reach the highest levels of digital maturity and that technology can support staff, improve clinical outcomes and reduce costs now and in the future. To do this, and building on recent announcements from NHSX,[13] all new planned hospitals should appoint advisors from NHSX and from one or more of the Global Digital Exemplars. These advisors should report directly to the CEO of NHSX and the Secretary of State for Health and Social Care, meaning that any concerns around future digital maturity of these new hospitals can then be raised quickly to the highest level.

Recommendation 3) Change comes from the top: digital transformation is one of the major challenges facing the NHS today. However, we heard that too often NHS Trust Boards lacked the detailed understanding of technology needed to create and drive forward a digital-first strategy. Supporting this view, the NHS Long Term Plan and, more recently, the Secretary of State have highlighted that every NHS Trust Board should have a "digital and tech leader".[14] However, progress has been slow, with just 25 per cent of Trusts in England having met this ambition.[15] To tackle this, the CEO of NHSX and Secretary of State should write jointly and publicly to Chairs of all NHS Trust Boards currently failing to meet

this standard, confirming their expectation that a CIO or Chief Clinical Information Officer (or equivalently experienced individual with operational responsibility for digital transformation) should be on their Board and setting out a firm timeline by which this should happen.

Recommendation 4) Building the foundations for digital maturity: based on current progress and funding, we believe that one of the major challenges for NHSX over the next five years will be supporting all Trusts to reach the necessary level of digital maturity by 2024. This will be particularly challenging for the Trusts with lowest current level of maturity, where we have already seen that the maturity gap is growing. Another challenge will be to support all Trusts to develop the digital foundation that will ensure they are future-proofed and can harness new technology as quickly and as often as it evolves, without disrupting business operation.

NHSX, NHS England and NHS Improvement are already working with providers to develop maturity standards and understand the potential investment required by Trusts to meet these. Once the required standards and funding has been determined, the Government should ringfence part of its increased NHS investment, and bring together other existing funds focussed on investment in digital transformation, to develop a single Smart Care Fund. This should be used to ensure that investment is available to all Trusts to both achieve the required digital maturity standards and ensure they develop a future-proofed and flexible digital foundation.

Recommendation 5) Monitor performance, tackle failure: the need for change is clear and, with the right funding and support available, there is no excuse for Trusts to fail to achieve the required level of digital maturity. As such, it is encouraging the Secretary of State has committed to providing all providers with clear standards that the CQC can assess them against. Given its importance, it is vital that this work takes place rapidly and the transformation it should prompt be delivered to a fixed timescale. As such:

- We urge the Government to recommit to their expectation that all Trusts meet minimum standards by 2024;
- Progress against these standards should be reported publicly annually; and
- As recommended by the Hatcher Review, on the basis of the CQC's assessment, Trusts that fail to meet the required level of digital maturity in 2024 (or, in earlier years, are projected to do so) should be judged to be out of compliance on quality and safety grounds.

Taking forward these proposals, improving technology and focussing on the role it can play in improving mental health amongst the NHS workforce, will play a vital role in delivering the NHS of the future. Ultimately, we cannot expect the NHS to provide the care that people across the UK need, unless we care for the NHS workforce too, and improved technology is central to ensuring this happens.

Introduction

> **"Of my top 3 priorities – tech, prevention, workforce – workforce is the most important."**
>
> Matthew Hancock, Speech to Royal College of Nursing, October 2018

This report is about the mental health of NHS staff and the role that digital transformation can play as part of a multi-faceted strategy to tackle mental ill-health amongst the NHS workforce. The need to understand these issues is clear and more important than ever. The NHS continues to be under real pressure to deliver a world class service in the face of an ageing population, record levels of demand and budget constraints, and these challenges are not going to go away.

The Government has an ambitious agenda to meet these challenges head on. Recent announcements have included significant injections of funding, promises of new hospitals and more nurses and new approaches to tackle the crisis in mental health that has been documented across the UK.[16] In each of these areas, it is clear that the 1.4 million people employed by the NHS across the UK will be central to delivering these ambitions and ensuring that the NHS can provide the care and patient outcomes that are needed.

However, with one in eleven NHS posts left vacant, high rates of turnover, burnout and problems with recruitment, recent research has begun to uncover a picture of crisis amongst the very workforce that we need to provide care for the population. Perhaps most concerningly, sickness absence and levels of presenteeism are at critically high levels. For example, sickness absence rates of 4.21 per cent across NHS staff in England in 2018/19 are more than twice that of the average for the private sector and mean that close to 18 million days were lost to sickness absence across NHS staff in England in 2018/19.

Given these stark figures, and the centrality of NHS staff to delivering the health service the UK needs and wants, it is no surprise that the Secretary of State has highlighted the workforce as his top priority. Recent NHS reviews, including the NHS Staff and Learners' Mental Wellbeing Commission, the Topol Review and the NHS's Interim People Plan all highlight a range of issues and put forward recommendations on how to better support and improve the wellbeing of those working in the NHS. The five priorities of NHSX, a unit tasked with speeding up the digital transformation required within the NHS, also focus heavily on reducing burdens on staff so they can focus on delivering care, and improving working conditions by giving them the technology that they need.

This report contributes to this ongoing debate by focusing on the emerging crisis of mental ill-health across the NHS workforce and the contribution that inadequate technology advances make to this. It then highlights the importance of a digital foundation in enabling transformation today and in the future, as part of a multi-faceted strategy to tackle mental ill-health and burnout in the NHS, both by supporting healthcare professionals on the front line and driving innovations that can fundamentally improve healthcare in the UK.

CHAPTER 1

Stress, mental health and burnout amongst the NHS workforce

The full scale, severity and impacts of mental ill-health in the UK population have only really begun to be uncovered over the last decade. In response, there have been the first steps to ensure that the NHS adapts to meet the challenges that mental ill-health presents. For example, the Five Year Forward View for Mental Health outlined a boost to funding and an ambition to transform services,[17] and the recently published Implementation Plan builds on that with ambitious next steps.[18]

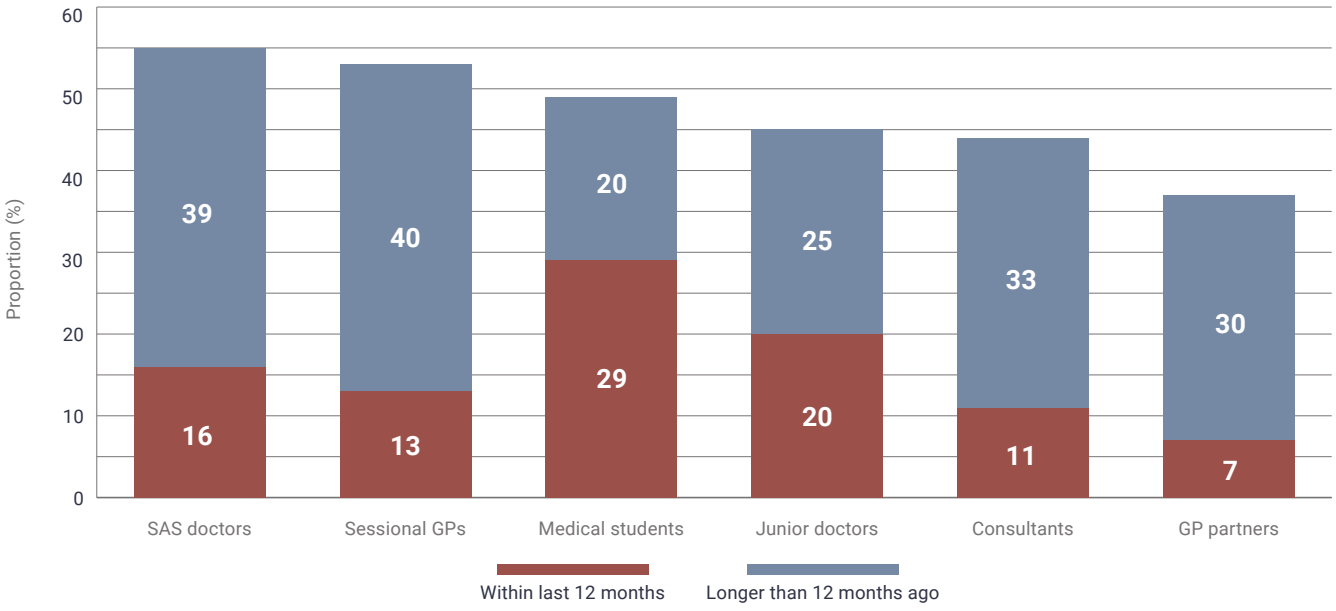
However, this adaptation is not just needed in the services and approaches to treatment and prevention provided by the NHS. It must also be focussed on the NHS workforce that is itself not immune from the crisis in mental health presenting across the UK.

Mental ill-health amongst the NHS workforce

In fact, existing evidence shows the significant scale of mental ill-health amongst healthcare workers. For example, comparative studies have shown that doctors have high rates of anxiety and depression when compared to the general population. Other research shows that this problem is particularly acute within the population of young female doctors.[19] At the most extreme, we see that doctors are overrepresented in suicide deaths, with female doctors being up to 4.5 times more likely to commit suicide than the general population and male doctors 3.8 times more likely.[20]

More broadly, recent research with 4,300 doctors demonstrates the scale of the problem just within this part of the NHS workforce. Figure [1] summarises results from this work which show that more than half of all SAS doctors and sessional GPs surveyed have, at some point in time, had a formal diagnosis of a mental health condition.

Figure 1: Rates of formal diagnosis of mental health conditions, by branch of practice



Source: WPI, BMA[21]

Notes: SAS doctors include speciality doctors and associate specialists, staff grades and a number of other career grades

Evidence on formal diagnoses of mental-health conditions for the NHS workforce outside of physicians is sparser, but the NHS staff survey demonstrates that the challenge is likely to be as great.

Table 1: NHS workforce who have felt unwell as a result of work-related stress

	During the last 12 months have you felt unwell as a result of work related stress?	
	Yes (%)	No (%)
ALL STAFF	40	60
Registered Nurses and Midwives	42	58
Public Health / Health Improvement	39	61
Nursing or Healthcare Assistants	38	62
Commissioning managers / support staff	38	62
Allied Health Professionals, Healthcare Scientists and Scientific & Technical staff	38	62
General managers	38	62
Ambulance staff (operational)	37	63
Social care staff	37	63
Wider Healthcare Team	36	64
Medical / Dental staff	35	65

Source: NHS Staff Survey, 2018

Burnout

A related but separate issue is burnout, which has recently been included in the WHO's International Classification of Diseases as an occupational phenomenon.[22] Burnout is characterised by mental, physical and emotional exhaustion, increased detachment from and cynicism towards work, and reduced professional efficacy.

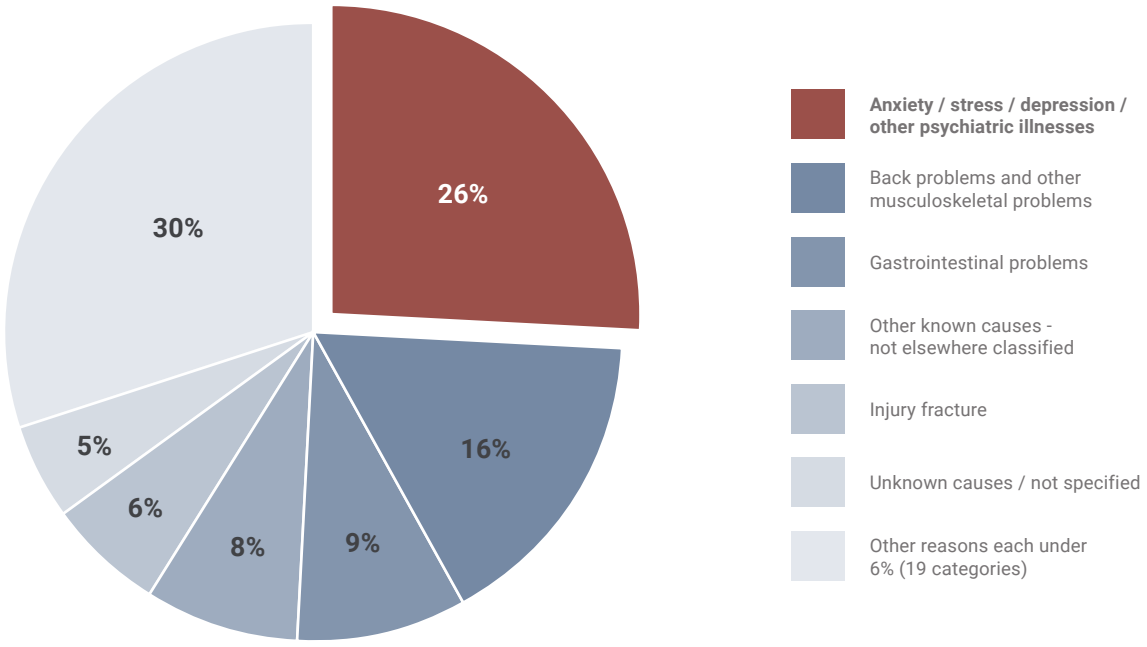
Estimates of the prevalence and scale of burnout amongst the NHS workforce vary, both between professions and clinical settings and based on the methodology used. However, the overwhelming conclusion is that burnout is a significant and increasingly important issue affecting the wellbeing of the UK's NHS workforce.

For example, a systematic review of UK studies between 1993 and 2013 found the prevalence of emotional exhaustion of between 30 per cent and 55 per cent and the prevalence of depersonalisation between 17 per cent and 45 per cent. More recent studies report much higher rates, with one study of 232 practicing GPs finding that more than seven in ten (73 per cent) were suffering from severe exhaustion. The same study found that nearly half of respondents (49 per cent) had severe disengagement. A further four in ten respondents (38 per cent) had mild disengagement.[23] A larger scale study of 4,300 doctors focussed on the risk of burnout and had equally concerning findings, showing that 80 per cent of respondents were at high / very high risk of burnout.

Mental ill-health and sickness absence

Mental ill-health is the largest reported reason for sickness absence within the NHS in England. Figure [2] shows that more than one in four of all Full Time Equivalent (FTE) days lost to sickness absence in the NHS in England are due to anxiety / stress / depression / other psychiatric illnesses.

Figure 2: NHS sickness absence by reason for absence, % of Full Time Equivalent days lost to sickness absence, April - June 2019, England



Source: WPI Economics, NHS Digital

This means that, between April and July 2019, an average of 365,500 days a month were lost to mental health related sickness absence in the NHS in England alone. The UK figure will be even higher. Whilst data is not currently available to form accurate assessments of what this means across the most recent year, extrapolating these figures suggests that close to 4.5 million working days could have been lost to mental ill-health amongst NHS staff in England in 2019.

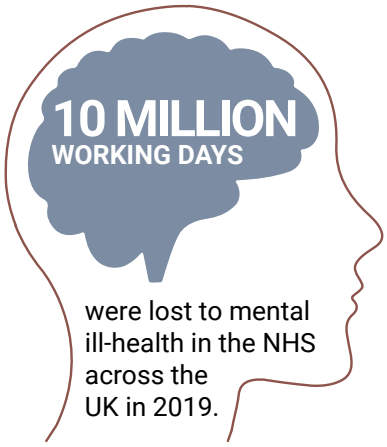
There are also good reasons to suppose that this is an underestimate of the full scale of mental ill-health within the NHS workforce. One reason is that, often due to the perceived and actual discrimination they face as a result of mental ill-health,[24] employees may report that an absence is due to other reasons, despite the cause being mental ill-health. The scale of this under-reporting could be significant. For example, a survey in 2017 found that 38 per cent of British workers would not talk openly about a mental health issue for fear of impact on their career, and 45 per cent would be likely to give a different reason (such as back pain, stomach ache) when needing time off for mental ill-health.[25]

Evidence on sickness absence collected by anonymised surveys also show higher proportions of sick days accounted for by mental ill-health. For example, recent research from the Health and Safety Executive (HSE) estimated that 57 per cent of all working days lost to ill-health were due to stress, depression or anxiety. They also found that mental ill-health was more prevalent in public service industries like health and social care.[26]

Figures suggest that more than 10 million working days were lost to mental ill-health in the NHS in 2019

Applying these figures suggests that more than 10 million working days were lost to mental ill-health in the NHS across the UK in 2019. Together these absences equate to around 38,500 full-time staff permanently absent from work, needing to be covered by other staff or temporarily replaced by agency staff. Put another way, this level of mental-health related sickness absence amounts, on average, to more than seven days off work a year for each employee.

Using data from NHS Trusts and the HSE, this report estimates that more than



were lost to mental ill-health in the NHS across the UK in 2019.

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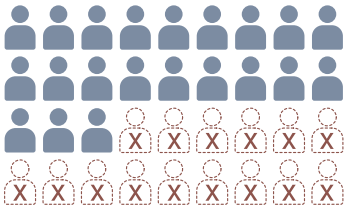
38,500

full-time staff permanently absent from work...



Put another way, this level of mental ill-health related sickness absence amounts, on average, to **more than seven days off work** a year for each employee.

Mental ill-health and presenteeism

Not all instances of mental ill-health result in time off work. In fact, presenteeism (attending work when experiencing poor mental health) is a significant problem within the NHS. For example, the most recent NHS staff survey shows that, over the three months prior to completing the questionnaire, more than half (56 per cent) of respondents have come to work despite not feeling well enough to perform their duties.

Not just a UK problem

The UK is not alone in struggling with the mental health of those expected to support the rest of the nation. In fact, a wide range of international studies have demonstrated similar results in other countries.

For example, a recent cross-country report found 44 per cent of US physicians and 51 per cent of German physicians to be experiencing burnout or depression, compared to the UK figure of 36 per cent.[27] Another report suggests that between 66 per cent and 88 per cent of Chinese doctors are suffering from burnout.[28]

Research in Ireland suggests that three in ten hospital doctors (30 per cent) are suffering from burnout and, in New Zealand, evidence suggests that up to two thirds of female doctors and half of male doctors suffer from burnout.[29] [30] The most recent report from the US highlights findings that between 35 per cent and 54 per cent of nurses and physicians in the US have substantial symptoms of burnout. For medical students and residents, the range was higher still at between

45 per cent and 60 per cent.[31] The issue is becoming so significant in the US that recent polling found that 74 per cent of the public classed burnout amongst healthcare professionals as a major concern.[32]

It is, of course, reassuring that this is not just a problem facing the UK. However, the sheer scale of the challenge in the UK identified above demonstrates the need to understand both its causes and the costs associated with it and develop strategies to deal with it.

Prevalence of physician burnout and depression, by country 2019:

UK: **36%** US: **44%** France: **48%** Germany: **44%** Portugal: **51%** Spain: **43%**

CHAPTER 2

The costs of poor mental health amongst clinicians

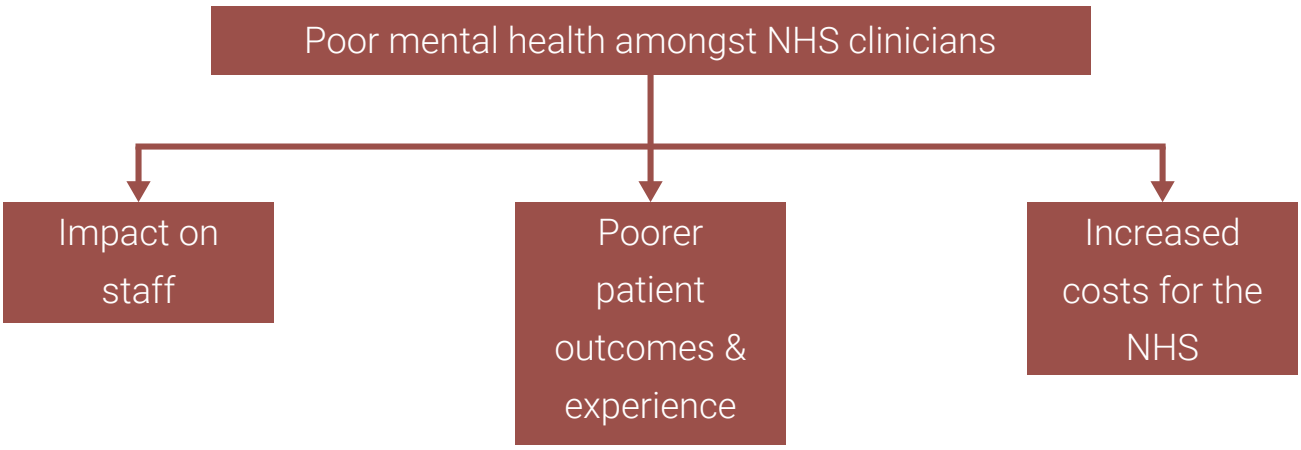
Mental ill-health clearly impacts most on those who experience it; with the combination of poor mental health and the associations with poor physical health that it can lead to, causing significant detrimental impacts to individual's wellbeing and the wellbeing of their friends and family. However, the impacts of poor mental health amongst clinicians in the NHS goes much wider than this. This section draws on previous work from WPI Economics to create a framework for understanding the costs of poor mental health amongst clinicians in the NHS and estimating the scale and nature of these costs.

Figure [3] demonstrates three routes through which we believe poor mental health amongst NHS clinicians might create negative impacts. These are:

- The direct impacts on those experiencing it and their friends and families;
- Impacts on patient outcomes and experience; and
- Impacts on the NHS as an employer. This includes the direct costs of sickness absence and presenteeism that the NHS faces as an employer as well as the costs associated with treatment that clinicians with poor mental health might need themselves.

Examples of each of these, and the potential scale of the impacts are presented below.

Figure 3: Potential costs of mental ill-health amongst NHS staff



Impacts on individuals

The most apparent impact of poor mental health is on individuals themselves and their friends and family. In their most extreme, the impacts of poor mental health can be catastrophic. For example, the section above demonstrated the relatively high rates of suicide amongst a range of healthcare professionals, including doctors, paramedics, general practitioners and psychiatrists.[33]

More generally, it is clear that mental ill-health impacts on quality of life and a range of health, economic and social outcomes. Evidence from across the population of people experiencing mental ill-health shows that these impacts can be both direct and indirect.

Impacts on finances: Those with consistently poor mental health are more than twice as likely to lose their job than those without a mental health condition.[34] This means that there are close links between mental ill-health and earning capacity, the experience of poverty and ability to make ends meet. These can lead to a negative cycle given that poverty and job insecurity have been shown to lead to psychological distress.[35] People with poor mental health are also three and a half times more like to be in problem debt, than people without mental health problems.[36]

Impacts on physical health: Mental ill-health can also impact on physical health. For example, a range of studies have found links between poor mental health and sleep, substance misuse (40 per cent of people with psychosis misuse substances during their life, more than double the rate amongst the general population)[37] and poor diet. More specifically, studies have found poor psychological distress to be linked with higher rates of cancer mortality and coronary heart disease.[38] [39]

Impacts on family: There are also impacts on family and friends. For example, research has shown that those with responsibility for caring for loved ones suffering from mental ill-health are themselves at greater risk of developing psychological or social problems.[40] Evidence has also demonstrated a range of detrimental impacts of children growing up in households where parents or carers experience mental health problems.[41]

Given the range of these impacts, developing estimates of the costs associated with them is difficult. However, existing evidence suggests that they are likely to be significant. This suggests that tackling poor mental health outcomes amongst

even a small proportion of NHS staff would lead to very large wellbeing gains.

Poorer patient outcomes and experiences

Mental ill-health amongst the NHS workforce can also impact on patient satisfaction and safety and overall clinical outcomes. This is true both for patients under the care of staff with poor mental health and more broadly, as the impact of mental ill-health is felt in increased pressures across the NHS.

Sickness absence, continuity of care and understaffing

Time off is often crucial during periods of mental ill-health, however, there are clearly also implications for continuity of care for patients (being seen by the same staff throughout treatment) and staffing levels and, by implication, clinical outcomes.

Continuity of care: A recent systematic review of the evidence found that continuity of care is associated with lower mortality rates,[42] other studies confirm that this is the case across a range of settings, including general practice, specialist physicians,[43],[44] psychiatrists[45] and surgeons.[46]

Under-staffing: In the context of an already strained workforce, there are a range of potential impacts here. For example, it is not always possible to substitute absent staff members through agency or locum staff, since highly specialist procedures may only be performed by a limited number of expert surgeons and staffing levels in nursing require a particular mix of senior and junior staff. When this is the case, treatment, clinics, consultations and elective surgeries may be cancelled (for which patients may have already waited a considerable time). Under-staffing also puts strains on an already overworked workforce. A survey conducted by the Royal College of Nursing in 2017 found that over a third of respondents reported having to miss out necessary patient care on their last shift due to time constraints and more than half stated that patient care had been compromised.[47]

Presenteeism

The scale of mental ill-health amongst the NHS workforce means that many will continue to attend work, despite their condition. Research with 4,300 doctors demonstrated that four in ten respondents were currently suffering from depression, anxiety, stress, emotional distress and / or another mental health condition that is impacting on their work / training / study.

The impacts of this could be significant for patient outcomes. At a general level, research with employees across sectors experiencing poor mental health has shown that:

- Seven in ten (69.8 per cent) say they find it hard to concentrate; and
- Four in ten (39.1 per cent) say that they sometimes have difficulty in making decisions.[48]

It is clear to see the particularly detrimental impacts that impaired decision-making and lapses in concentration could have in a healthcare setting. For example, recent research with doctors with a confirmed mental health diagnosis suggests that combined with time pressures, their condition made them both more likely to make mistakes, including misdiagnoses and less able to care for and feel compassion for the patients.[49]

Research with doctors and nurses suffering from burnout also suggests that they are more likely to rate their organisations' patient safety lower and to admit to having made mistakes or delivered substandard care at work.[50] This is also supported by other recent analysis which found that GP burnout was associated with a doubling of both the risk of a patient safety incident and the likelihood of low patient-reported satisfaction.[51] [52] [53]

Increased costs for the NHS as an employer

The costs of mental ill-health to employers is an area of research that has developed significantly in recent years. For example, using detailed analysis from Deloitte, the Stevenson / Farmer review highlighted that the overall costs of mental ill-health to UK employers were between £33 and £42 billion in 2017.

Looking at the costs in the health sector in particular, the review put the per-employee costs at between £1,794 and £2,174 in 2017. As with other sectors, these come from costs attributed to three key sources:

1. ***Absence cost*** that arises from employees taking time off sick because of poor mental health;
2. ***Presenteeism costs*** that arise when NHS staff with poor mental health continue to come in to work. Alongside the

risks to patient outcomes, costs here are driven by reduced productivity. For example, recent research has shown that of employees experiencing poor mental health, four in ten say they take longer to do tasks (42.9 per cent) [54]

3. ***Turnover costs*** when employees with poor mental health leave the organisation. These come both from the need to find and pay temporary staff, the costs of attracting and recruiting new permanent staff as well as from the need to invest in and train new employees to bring them up to speed.

This report updates the Stevenson/Farmer estimates and combines this with NHS Digital data on the NHS workforce to estimate the total costs of mental ill-health to the NHS as an employer. We also split this down by country and Health Education regions within England. Overall, we find that mental ill-health amongst NHS staff across the UK is likely to have cost the NHS around £3billion in 2019.

Table 2: Estimated employer costs of mental ill-health in the NHS workforce, 2019

Region	£ (m)
Health Education East Midlands	£190
Health Education East of England	£220
Health Education Kent, Surrey and Sussex	£180
Health Education North Central and East London	£160
Health Education North East	£140
Health Education North West	£380
Health Education North West London	£120
Health Education South London	£140
Health Education South West	£190
Health Education Thames Valley	£80
Health Education Wessex	£110
Health Education West Midlands	£250
Health Education Yorkshire and the Humber	£250
Scotland	£310
Wales (2018)	£170
Northern Ireland	£130

Source: WPI Economics, NHS Digital, Stevenson/Farmer

CHAPTER 3

Technology as a cause and part of the solution

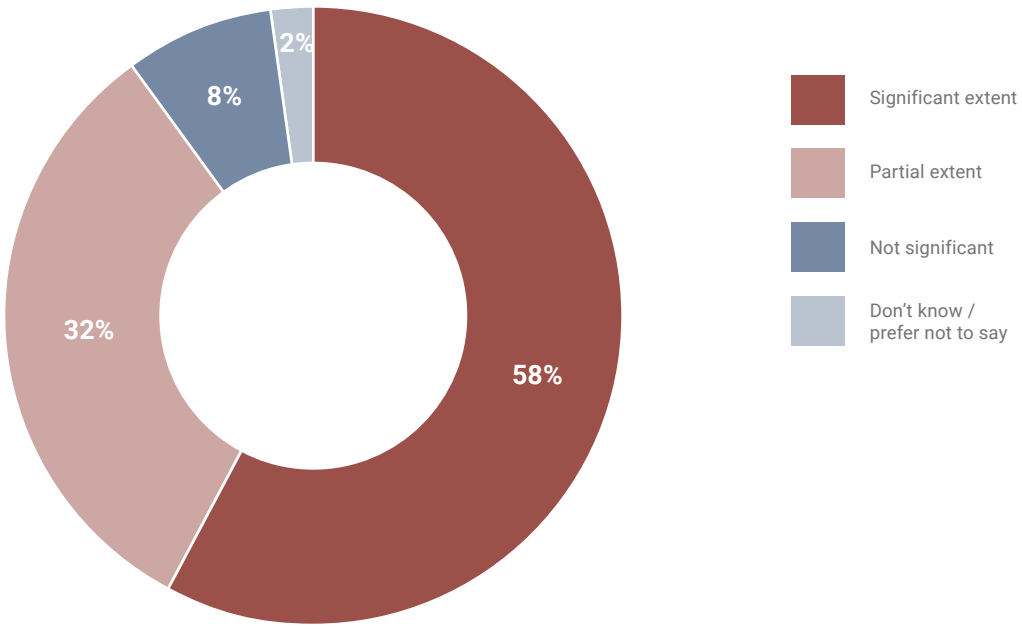
What is causing the mental health crisis in the NHS?

This is not the first report to have highlighted that the NHS workforce is under considerable strain, subject to high levels of work-related stress and, as a consequence, suffers from significant levels of mental ill-health. In fact, this was acknowledged in the NHS's recently published interim People Plan and the findings from the NHS Staff and Learners' Mental Wellbeing Commission.[55] An earlier Department of Health report from more than a decade ago focussed on mental ill-health amongst doctors,[56] and all NHS organisations are already required to have a policy on managing work-related stress.[57]

With such significant personal, familial, societal and economic costs associated with poor mental health amongst NHS staff, the question is then why earlier attempts to tackle this issue have not proven successful. Part of the challenge is that, as with mental ill-health generally, there is neither a single cause, nor a single solution. Instead, mental ill-health can present itself in a range of ways and be caused by and associated with a wide range of factors and drivers.

However, whilst there is no single driver, the most recent evidence from the 2018 NHS Staff Survey demonstrates that a very significant driver of poor mental health is work-related stress. In other research, nine in ten doctors (90 per cent) who reported to have some form of mental ill-health said that their current working, training or studying environment had contributed to their condition.

Figure 4: For doctors with a mental health condition, the extent of contribution of current work / training / studying environment on that condition



Source: BMA

Overall, this demonstrates that, for many NHS employees, it is work itself that is one of the key drivers of mental ill-health. In many respects, it is easy to imagine why. People across the NHS workforce are faced with life and death decisions every day. They have to deal with significant emotional trauma and support patients and their families through incredibly difficult times. Even away from the front line, the pressure that this presents is bound to impact on the workforce.

However, the drivers of mental ill-health in the NHS are not just about the often unavoidably challenging nature of working in healthcare. In fact, a large number of reports have found a range of organisational factors that amplify workplace stress and lead to mental ill-health. For example, a recent report highlights some of the key factors in driving mental ill-health in the NHS workforce.[58] It suggests that key elements of reducing the onset of mental ill-health amongst the NHS workforce would include:

- Reducing and helping the workforce to manage workloads;
- Helping the NHS workforce to navigate the growing intensity and complexity of work; and
- Increasing control and support and providing more opportunities to work flexibly.

Delivering on each of these areas could fundamentally change the experience of the NHS workforce as well as improving patient outcomes. Of course, there is no single way of doing this, and a multi-faceted strategy will be needed.

This section focuses on one element of that strategy: technology. It shows how existing technological deficiencies within the NHS currently contribute to mental ill-health and provides examples of how digital transformation could improve the situation.

NHS technology deficiencies result in additional workload, stress and compromised patient safety

Reducing and managing workloads

It is well documented that technological inadequacies in the NHS are linked with increased workload, challenges in managing complexity of work, poor control over work and work-life balance and a lack of flexible working.

This is also a view shared by the British Medical Association, who recently commented that deficiencies in NHS technology "…result in additional workload, stress and compromised patient safety". A recent survey of BMA members indicated the scale of some of the issues. In particular, it found that:

- More than half of respondents (56 per cent) believe that current IT infrastructure significantly increases their day-to-day workload; and
- Four in ten respondents (37 per cent) reported that their stress levels are affected significantly because of inefficient IT and data sharing systems.

At the heart of these issues are hardware, software and broader infrastructure which one interviewee for this report kindly described as "heritage", but might as easily be described as out-dated and no longer fit for purpose. Examples include the fact that, despite Microsoft support for Windows 7 ending in 2020, the Department of Health and Social Care recently estimated that around three-quarters of NHS computers are still using the operating system.[59]

The impacts of this on the frontline are clear; a recent survey of NHS healthcare professionals found that six in ten thought that NHS IT was not fit for purpose, with many complaining of 10-minute log on times, for tasks that need to be done several times a day.[60] With this in mind, it is encouraging that the Secretary of State has recently announced a cash injection of £40 million to reduce staff log-in times.

It is vital this money is used well. Every second and minute wasted on such processes is time that is both contributing to work-related stress and could be better spent with patients. This is particularly important because a lack of time to spend with patients is another stressor for the NHS workforce. For example, a survey of 1,500 family doctors found that six in ten (60 per cent) felt that they did not have adequate time to treat patients.[61]

Box 2: Frustrations with basic digital infrastructure

Our clinicians waste valuable time with their patients logging on to multiple systems on aged devices with clinical systems that are not designed to complement how they treat and care for our patients. In turn, our patients tell us they have to repeat information multiple times and are not engaged in managing their conditions or given support to improve their care outside hospital. Correspondence can be late, incorrect or repetitive.

Norfolk & Norwich University Hospitals NHS Foundation Trust, Digital Health Strategy 2018-2023

Another technological challenge for the NHS is lack of interoperability. This means that different systems across the health and social care system and even within different departments of the same care setting, do not integrate or communicate effectively. As a result, patients have to provide their medical histories repeatedly and clinicians may have to enter the same information several times. Box 3 provides an example of a frank assessment of current digital performance from one NHS Trust.[62]

Box 3: Current experience of poor digital infrastructure

"…we fundamentally need to get the basics right. There are over 110 clinical IT systems in use across the Trust. Many of these are unsuitable because they are either out of date, unsupported or lack key functionality. Many of these systems are silos of information and many systems will carry similar information. Inconsistencies in these sources of data could pose safety risks at worst and a significant administrative burden on staff at best…A recent assessment of our digital maturity against the global HIMSS (Healthcare Information and Management Systems Society) scale showed the size of the challenge ahead of us. On a scale of 0 to 7 our Trust received a rating of 0."

Digital Strategy, Portsmouth Hospitals NHS Trust 2019 - 2024

The scale of the impacts of this are illustrated by the results of a recent BMA member survey that suggested that more than a quarter of respondents lost over four hours a week because of inefficient hardware / systems. The BMA argue that if this were the case for one in four doctors across the NHS, this would amount to over eight million medical hours lost a year. If this were replicated across the 1.4 million staff in the NHS, this would amount to wasted time equivalent to 35,000 full-time staff, with clear implications for workload and work-related stress.

Interviewees for this report also raised broader concerns about this lack of connectivity between different systems. For example, they highlighted that medical staff are forced to create work-arounds to save time and navigate different systems: for instance leaving computers logged on, reverting to paper records, or even sharing patient records over personal e-mail or WhatsApp to get an opinion from a colleague without the requisite access tools. Whilst not malicious like the recent WannaCry attack on the NHS, the impacts of such actions on security are clear; a third of NHS IT leaders identify NHS staff as a significant risk to cyber security.[63]

Whilst all of these issues currently place real pressure on the time and workload of the NHS workforce, there are clear routes through which they can be tackled by improved technology.

One such example is highlighted in box 4. It demonstrates a simple principle that clinicians should have the right information on the patient in front of them, on any device that they are using and at any time, with the security you would expect to surround personal medical records. It is a simple principle, but one that would fundamentally change the experience of many clinicians today: saving time, easing workloads, reducing stress and improving patient care.

Box 4: The Right Device, for the Right Task, at the Right Time

Using a single identity across workstations, tablets, and smartphones enables clinicians to review charts, x-rays, and care plans from anywhere on any device, spending more time with patients.

VMware unifies user, desktop, and mobile management to enable a Digital Clinical Workspace™ —powered by VMware Workspace ONE™— that moves with care providers throughout their day, making it easy for end users to securely access their digital workspace on any device, anytime, anywhere. That means from the out-of-hours call to the bedside consult, the solution delivers always-on, secure, simple access to patient information. With the single platform, IT can manage apps and devices, across ownership models—hospital-owned or bring your own device—with complete user privacy and security provisions to ensure that patient data is safe.

More broadly, a number of reports have highlighted the role that technology can play in the automation of day-to-day tasks. For example, a report from the think tank Reform highlighted that the use of technology in day-to-day tasks could lead to savings to the NHS of more than £4.5 billion a year. Put another way, automation of administrative tasks could reduce stress by helping staff to manage workloads more effectively. It would free up large amounts of money to invest in front line services, but this is not possible without the right building blocks being in place.

Another area where improvements could be made is in the extent to which the NHS workforce are supported to work flexibly. The most recent NHS staff survey shows that only around half (54 per cent) of the workforce are satisfied with existing opportunities for flexible working patterns.[64] Here, improved technology could facilitate more NHS staff to work from home, thereby improving work-life balance and potentially improving mental health. At the same time, this example shows how increased technology-driven improvements in flexible working could reduce patient waiting times, ease workloads and save money.

Future ways of working, better outcomes, more staff time

As well as making the day-to-day work of NHS staff less stressful and more productive, technology can also play a key role in reducing workplace stress by opening up new forms of working, improved treatments and a wide range of future NHS innovations. These are typically driven by "big data", technology and connectivity and include:

- ***AI / machine learning***, which has a wide range of potential applications within healthcare. For example, predictive analytics and risk modelling can be used in diagnosis or to identify people with particular risks of adverse health outcomes and personalised care plans based on the results of these. Recent media coverage has included the possibility of AI-powered blood tests to identify brain tumours missed by GPs.[65]
- ***Genomics***, which has the potential to revolutionise the understanding, prediction, diagnosis and treatment of diseases. For example, improved understanding of someone's genetic predisposition towards certain conditions could be used to target preventative interventions. Genetic diagnostics could also be used to tailor care plans, including drug dosing and to minimise the likelihood of the patient experiencing side effects.
- ***The Medical Internet of Things (IoT)***, where connected devices support approaches like remote monitoring. Benefits include the potential to increase both the speed at which patients might be discharged from hospital and the likelihood that long-term care can be delivered in the home, rather than as an in-patient.
- ***Virtual and augmented reality*** can be used in training of clinical staff. It can also be on the front line to deliver care. For example, surgeons could use head-mounted displays that provide them with a range of information they need, including vital signs and medical images, without having to turn away from the procedure.

Together these trends would fundamentally change the shape and nature of healthcare in the UK; moving much more towards a predictive, preventative and personalised approach.[66] They could also do this in a way that improves the working environment of the NHS workforce and, in doing so, ease pressures on mental health. For example, it has been estimated that:

- Remote monitoring could prevent around 40 per cent of ambulance conveyances, A&E attendances and hospital admissions. By doing so, it could free up clinical time equivalent to over 3,000 nurses;
- Speech recognition could improve the speed at which clinical documentation is completed. Even if this saved just a minute of time per patient consultation, annually it would free up 400,000 hours of A&E consultant time, one million hours of outpatient clinic time and 5.7 million hours of GP consultation time;
- Automated image interpretation could reduce the time radiologists require to review images by around 20 per cent. This would free up close to 900,000 hours of radiologist time.[67]

If delivered effectively, these innovations could be transformational in terms of how the NHS functions, the working environment of the NHS workforce and clinical outcomes for patients. In turn, they could play a significant role in ensuring that the mental health crisis that currently exists within the NHS workforce is not seen in the future. With this in mind, it is no surprise that a range of these approaches have featured in recent speeches from the Secretary of State for Health and Social Care and reports from think tanks, industry bodies and consultancies.[68]

CHAPTER 4

What is getting in the way of digital transformation?

The last section highlighted the current deficiencies in technology in the NHS and the role that improvements, both now and in the future, could play in easing pressure on the NHS workforce and supporting them to focus more time on delivering care. In turn, these improvements could play a significant role to improve mental health amongst the NHS workforce.

Encouragingly, the need for digital transformation has already been recognised in previous reports from the NHS, from academia and from think tanks. Most recently, the Secretary of State, those at the head of NHSX and the NHS Long Term Plan have outlined the expectation that all providers should have at least a core level of digitisation by 2024, that covers:

> *"…clinical and operational processes across all settings, locations and departments and be based on robust, modern IT infrastructure services for hosting, storage, networks and cyber security."*[69]

The Secretary of State has also recently committed to providing clear standards that the CQC can judge all healthcare providers against.[70]

The five missions of NHSX also chime very well with themes in this report. They have committed to:

- Reducing the burden on clinicians and staff, so they can focus on patients;
- Giving people the tools to access information and services directly;
- Ensuring clinical information can be safely accessed, wherever it is needed;
- Improving patient safety across the NHS; and
- Improving NHS productivity with digital technology.[71]

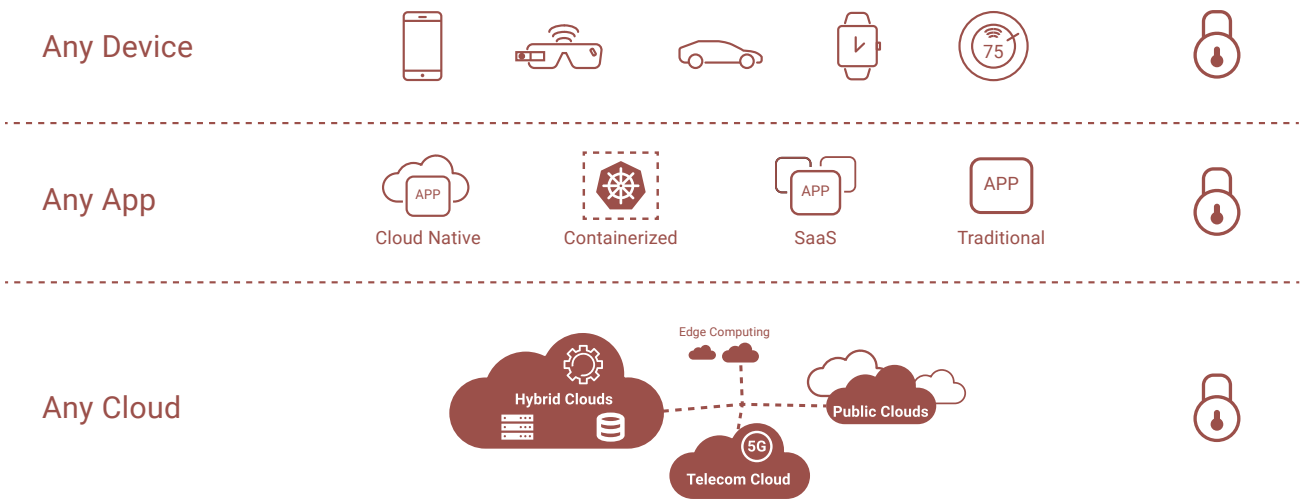
However, this is not the first time that aspirations for digital transformation within the NHS have been put forward and, to date, progress has been slow. So as NHSX approaches these missions, it must clearly identify the existing barriers that are getting in the way of change and preventing the investment and digital transformation that could deliver a step change in outcomes for clinicians and patients across the NHS.

People we interviewed as part of this research, including clinicians, senior managers and technology professionals working within and outside of the NHS, identified a range of barriers, which are also echoed in the existing literature around digital transformation in the NHS. These are summarised below.

The importance of the NHS's digital foundation

An overarching theme from these interviews was that there is currently an insufficient focus on ensuring that the NHS has a strong digital foundation. This was raised in a number of ways. For example, a number of interviewees highlighted that a focus on new and innovative technologies and applications for those on the front line was taking attention away from the fact that, without the right digital foundation, it would be near impossible to make the most of these opportunities. It was also highlighted that a failure to deliver the right digital foundation would likely result in a situation where similar issues with legacy IT were being faced in ten years or so.

Ultimately, interviewees argued that delivering improvements will rest on the NHS's digital foundation. This foundation is what underpins the ability to modernise applications today and in future, adapt to, test and adopt new innovations without disrupting business operations and all the time doing this in a way that protects patient data. In practical terms, the goal for users was typically described as a foundation that enables any app, on any cloud, delivered to any device. For example, the BMA highlights that "Clinicians should be able to see patients' records, observations, results and background notes from any location, ideally in real-time". The digital foundation needs to empower and support that goal in a way that allows Trusts to respond flexibly to future needs, opportunities and threats and adopt innovation, and all in a way that minimises risk and disruption whilst maintaining security.



Box 5: The elements of a strong digital foundation

A strong digital foundation is central to delivering the technology that the NHS workforce need today and to ensuring that digital transformation can continue into the future. There are three core elements to a strong digital foundation.

A cloud environment to meet Trusts' needs

As Trusts' applications become more complex, more diverse and increasingly demanding, there are new requirements for the infrastructure that delivers the power, efficiency and interoperability to support them. Delivering this in the right way is central to reducing costs, increasing flexibility and scalability, improving efficiency and speeding up the access time to innovative services that are central to digital transformation within the NHS.

Most importantly, a strong digital foundation lets Trusts choose whichever cloud environment best meets their needs, for any application, without sacrificing visibility, operational consistency, security or control.

With adaptable networking and security

Intrinsic security is key to ensure that Trusts build-in and unify security to protect its apps and data. This means interoperability across bare metal servers and containers, as well as on-premises, public cloud, IoT edge devices, or cloud-based services. Given the sensitive nature of data and applications within use in the NHS, securing this across the cloud environment is a core requirement.

Provided where needed by the NHS workforce

Across the NHS workforce, employees want to do the work they need to do, with easy and highly available access to the tools and apps they want to use. In practice, this must be flexible to the range of devices (from mobile, desktop and tablet to IoT devices) in use across the workforce, and the range of environments (whether that is in a primary, second or secondary settings, on the move or at home) and in a way that does not sacrifice security or control.

Money

Almost universal across interviewees for this report and a wide range of similar work by others was the fact that digital transformation across the NHS is severely constrained by affordability. In one recent survey of 1,500 clinicians more than half (55.7 per cent) said that the cost of technology was the biggest challenge they faced in implementing digital technologies.[72] Another report from the BMA found that nearly three quarters of respondents to a pan-professional survey identified a lack of funding as the main barrier to good IT in healthcare.[73]

Interviewees argued that this problem with funding for digital transformation was particularly focussed amongst Trusts that were already less digitally mature, as more digitally mature Trusts had already been identified for enhanced funding through their status as Global Digital Exemplars, Fast Follower or Local Health and Care Record Exemplars. Recent research has suggested that this divergence in funding has been associated with a growing digital maturity gap between those Trusts that were already more digitally mature and the rest.[74]

However, while funding is clearly a significant challenge, the problem of perceived or actual affordability is worsened by two other issues: the impact of legacy systems; and the intangibility of the benefits of digital transformation.

Legacy systems

Legacy technology systems within the NHS are not just ineffective, inflexible and a cause of frustration and contributor to mental ill-health amongst staff. They are also expensive to service and maintain and create a range of other barriers identified by interviewees. These include:

- ***Perceived risk of change***. It was highlighted that no-one wanted to be in charge of a failed transformation project and, with servers and applications developed in a piecemeal fashion often over several decades, any significant transformation comes with a high perceived risk of failure. In this sense, it might be more attractive to stick with a system that crawls along, than risk turning off a 20-year-old server without a 100 per cent clear understanding of what might happen. This caution towards change has also been amplified by NHS leaders' experience of previous failed IT projects.[75]
- ***Draining mental capacity***. The complexity, cost and challenges taken up by dealing with legacy systems leave little space to either develop a clear vision and strategy for digital transformation or implement that strategy.

Bringing together all of these themes, recent qualitative research with senior leaders across the public sector highlighted the views of an NHS Non-Executive:[76]

> *"The NHS is on its knees but the problem with putting more money in is that it gets dissipated into keeping the lights on and doing things the same way they've always been done."*

However, recent experience shows that this does not need to be the case. Box 6 demonstrates one example of a successful migration from legacy systems.

Box 6: Case study on multi-cloud

Multi Cloud has an important role to play in delivering digital transformation. The solution allows elements of infrastructure and applications to be hosted in multiple locations, on different types of box, cable, storage and network type and all in a way that allows them to work in harmony.

It also provides the opportunity and tools needed to tackle, modernise and decommission ageing infrastructure. The ability to migrate workloads between private and public cloud vendors and use micro-segmentation to isolate legacy systems from the rest of the network makes this a reality. The cost savings from no-longer needed support licenses and physical data centre costs can be significant.

Wider benefits include flexibility and adaptability, with the possibility of deploying a virtual data centre in around 90 minutes and extending capacity on demand in as little as 15 minutes.

Intangibility of benefits and other priorities

Another factor that presents a challenge to the perceived affordability of technology within the NHS is the intangibility of the benefits that digital transformation might provide. It was argued that this was particularly true for the development of infrastructure, rather than applications and hardware used directly by those on the front line. It was also argued that, within constrained budgets, it was easier to invest in "visible" equipment like MRI scanners or fire alarm systems, than cloud solutions or improvements to cyber security.

Several interviewees argued that this situation was made worse by a lack of technological capability at senior levels, and particularly at Board level, through which digital transformation could be embraced and taken forward. Other research within the NHS highlights culture, leadership and Board-level buy-in as both a current barrier to change and also a key requirement for successful transformation in the future.[77]

A gap between rhetoric and reality

One of the key challenges is what interviewees and other reports have described as a gulf between an acceptance of the problem, the political rhetoric and experience of change on the ground. Part of the challenge highlighted by the majority of interviewees was a focus on "shiny" new innovations, rather than getting the basics right.

In particular, whilst it was recognised that the need to modernise and move to a paperless NHS, including the digitisation of all patient records is a clear focus of existing plans, some interviewees felt that the focus on future mega trends, AI, genomics and the huge potential for IoT, undermined attempts to get the basics right.

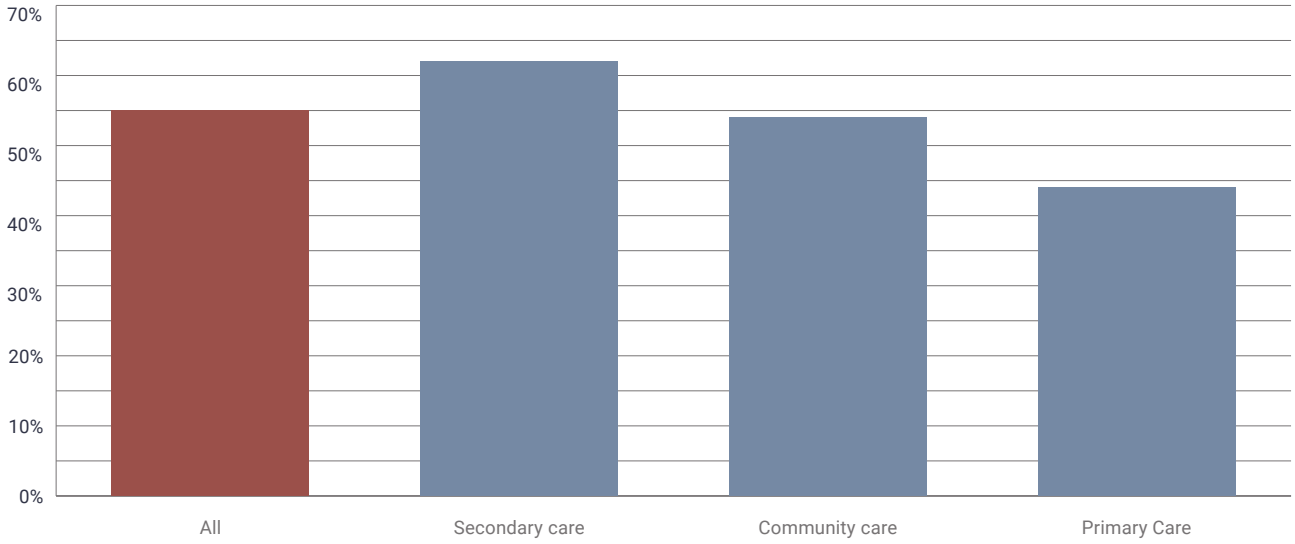
Change management

The final overarching barrier was that of change management. Here, it was argued that even where transformation has begun and new technologies are being rolled out, a lack of focus on training and supporting staff to use this technology was presenting a number of challenges. The first of these was that it meant that the potential savings in time and money, and improvements in patient care and working conditions might not be delivered. The second was that this could lead both staff reverting to previous approaches, moving back to paper-based processes and becoming more averse to future changes.

Recent research with hospital nurses and doctors demonstrates the scale of the issue. For example, only around half of all doctors (52 per cent) and nurses (47 per cent) feel that their organisation is very well or reasonably well prepared to use the necessary technology to make their work easier.[78] Other research shows that only just over half of NHS staff (55 per cent) feel that they are at least adequately equipped / trained to use new digital technologies in their daily work.[79]

These statistics highlight the importance of preparing and supporting staff to take on and utilise new technologies so that they aid, rather than hinder their work, which the Topol Review also focussed on.[80] The risks of failing to do so can be seen with reference to the experience of the US. Here, it has been argued that there had been real challenges with digitisation, which had exacerbated concerns over mental ill-health and burn-out, rather than improving the situation. One recent report highlights that "…despite its many positive benefits, [health information technology] can also disrupt clinical workflows and patient interactions." This demonstrates the clear need for careful implementation, change management, training and support alongside the process of digital transformation and digitisation.

Figure 5: Proportion of staff that feel at least adequately equipped / trained to use new digital / advanced technologies in their daily work



Source: Deloitte

CHAPTER 5

Laying the foundations for digital transformation

This report has shown that if delivered in the right way, digital transformation and the missions of NHSX could be a strong part of a strategy to tackle work-related stress and reduce the prevalence of mental ill-health and burnout amongst the NHS workforce. However, if this is to happen and if NHSX is to deliver on its missions, the barriers to digital transformation identified in the last section will need to be tackled. This section outlines five recommendations that could support NHSX and the Secretary of State as they continue to strive to push digital transformation forward in the NHS.

The first thing to note is that digital transformation and the role that this might play in tackling mental ill-health in the NHS workforce is not just the responsibility of NHSX. Too often, digital transformation and workforce wellbeing are viewed in isolation. This means that the positive impacts on the NHS workforce are often overlooked.

As such our **headline recommendation is that using digital transformation to improve the wellbeing of the NHS workforce should be a core part of the NHS People Plan**. The interim plan has already made positive steps, including the creation of the Releasing Time to Care programme. The final plan should build on this foundation and both provide clear routes through which NHSX can be at the heart of future plans in this area and identify investment streams that can support digital transformation.

Recommendation 1) Digital Transformation and the NHS People Plan: To reflect the important role of digital transformation in supporting the NHS workforce, it should be a core part of the NHS People Plan. The plan should also clearlyset out how NHSX will be involved in future work in this area and, given the importance to the workforce, identify investment streams that can support digital transformation.

Once this focus has been established, tangible actions need to be taken forward. A range of reports highlight steps that clinical and technology staff within the NHS have highlighted as essential. We will not rehearse these here, but the recent BMA report provides a comprehensive outline.[81]

What is clear, however, is that the journey of transformation will be unique to every organisation and complex for all. Disruptive technologies emerge faster than most organisations can absorb, which leads to increasingly complex technology environments that are hard to maintain and even harder to secure. And the pace of this change will only increase. This report has shown that this presents a real challenge of ensuring that the right steps are taken across the NHS and in a way that does not create the legacy IT of the future. In the short term, failure to do so risks thecontinuation of poor mental health outcomes in many trusts across the NHS and could mean that in ten or twenty years' time, technology is similarly out-dated and difficult to upgrade and transform.

What is needed is a framework within which NHSX, Trusts and the digital sector can work together to deliver the digital foundation that can facilitate the adoption of technology that supports staff both now and in the future; getting the basics right first before allowing innovation to deliver the digital NHS of future. Box 1 outlines the key elements of that foundation, and the recommendations below support the delivery of a strategy to achieve them.

Recommendation 2) Digital by default: the Government's manifesto confirmed a pledge to build and fund 40 new hospitals over the next ten years. It is essential that these are built and the investment is made to delivering the right digital foundation from the outset, ensuring that they can reach the highest levels of digital maturity and that technology can support staff, improve clinical outcomes and reduce costs now and in the future. To do this, and building on recent announcements from NHSX,[82] all new planned hospitals should appoint advisors from NHSX and from one or more of the Global Digital Exemplars. These advisors should report directly to the CEO of NHSX and the Secretary of State for Health and Social Care, meaning that any concerns around future digital maturity of these new hospitals can then be raised quickly to the highest level.

Recommendation 3) Change comes from the top: digital transformation is one of the major challenges facing the NHS today. However, we heard that too often NHS Trust Boards lacked the detailed understanding of technology needed to create and drive forward a digital-first strategy. Supporting this view, the NHS Long Term Plan and, more recently, the Secretary of State have highlighted that every NHS Trust Board should have a "digital and tech leader".[83] However, progress has been slow, with just 25 per cent of Trusts in England having met this ambition.[84] To tackle this, the CEO of NHSX and Secretary of State should write jointly and publicly to Chairs of all NHS Trust Boards currently failing to meet this standard, confirming their expectation that a CIO or CCIO (or equivalently experienced individual with operational responsibility for digital transformation) should be on their Board and setting out a firm timeline by which this should happen.

Recommendation 4) Building the foundations for digital maturity: based on current progress and funding, we believe that one of the major challenges for NHSX over the next five years will be supporting all Trusts to reach the necessary level of digital maturity by 2024. This will be particularly challenging for the Trusts with lowest current level of maturity, where we have already seen that the maturity gap is growing. Another challenge will be to support all Trusts to develop the digital foundation that will ensure they are future-proofed and can harness new technology as quickly and as often as it evolves, without disrupting business operation.

NHSX, NHS England and NHS Improvement are already working with providers to develop maturity standards and understand the potential investment required by Trusts to meet these. Once the required standards and funding has been determined, the Government should ringfence part of its increased NHS investment, and bring together other existing funds focussed on investment in digital transformation, to develop a single Smart Care Fund. This should be used to ensure that investment is available to all Trusts to both achieve the required digital maturity standards and ensure they develop a future-proofed and flexible digital foundation.

Recommendation 5) Monitor performance, tackle failure: the need for change is clear and, with the right funding and support available, there is no excuse for Trusts to fail to achieve the required level of digital maturity. As such, it is encouraging the Secretary of State has committed to providing all providers with clear standards that the CQC can assess them against. Given its importance, it is vital that this work takes place rapidly and the transformation it should prompt be delivered to a fixed timescale. As such:

- We urge the Government to recommit to their expectation that all Trusts meet minimum standards by 2024;
- Progress against these standards should be reported publicly annually; and
- As recommended by the Hatcher Review, on the basis of the CQC's assessment, Trusts that fail to meet the required level of digital maturity in 2024 (or, in earlier years, are projected to do so) should be judged to be out of compliance on quality and safety grounds.

Conclusion

This report has highlighted the crisis of mental ill-health that exists within the NHS workforce. Dealing day-to-day with life and death decisions, the care of sick people and concerned and emotional family and friends is always going to be stressful and emotionally draining. However, the problems within the NHS workforce go far beyond this and the impacts on individuals, friends and family, clinical outcomes and the NHS as an employer are significant.

Tackling this will take a wide-ranging strategy. Part of this will need to focus on support for those who do experience mental ill-health and a range of workforce management improvements that other reports have highlighted. It will also require a significant transformation across the work environment, in order to prevent problems arising in the first place. A key factor in this preventative strategy is technology. This report has shown the frustrations, stress and challenges that are being driven by weak digital foundations and technology for the NHS workforce that is not fit for purpose along with improvements that could be made now and in the future.

Delivering this digital transformation rests on tackling the barriers identified by people interviewed for this report and focussing on delivering the right digital foundation. We have identified five recommendations for how NHSX can work with others across the NHS to deliver the change needed. Taking forward these proposals, improving technology and focussing on the role it can play in improving mental health amongst the NHS workforce will play a vital role in delivering the NHS of the future. Ultimately, we cannot expect the NHS to provide the care that people across the UK need, unless we care for the NHS workforce too and improved technology is central to ensuring this happens.

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