Report

Patient safety in surgery – the urgent need for reform

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Contents

Acknowledgements

This report has been written by Proximie, with support from leading surgeons, patient advocates, economists, and NHS leaders:

- Professor Peter Brennan, Consultant Oral and Maxillofacial Surgeon, Portsmouth Hospitals NHS Trust and Council Member, the Royal College of Surgeons of England
- Professor Martin Elliott, Provost of Gresham College and Emeritus Professor of Paediatric Cardiothoracic Surgery at University College London
- Helen Hughes, Chief Executive, Patient Safety Learning
- Tanya Claridge, Acting Group Director of Clinical Governance, Group Patient Safety Specialist, Manchester University NHS Foundation Trust
- Jacque Mallender, Economics By Design
- ZPB Associates: Healthcare Communications Specialists
- Dr Nadine Hachach-Haram, Founder and CEO, Proximie and Consultant Plastic Surgeon

Proximie

Proximie is a technology platform that allows clinicians to virtually ‘scrub in’ to any operating room or cath lab and record procedures, from anywhere in the world. Proximie enables surgical teams to improve performance in several ways; from efficient training, to improving service productivity, to helping surgical teams deliver safer treatment to the patients in their care.

Foreword

Every day across the UK, on average at least one patient experiences a Never Event during surgery, a potentially life-changing incident that, by definition, should never happen if appropriate systems and processes are in place. In addition to Never Events, many more patients will also suffer a safety incident that could lead to harm.

Responsibility for patient safety belongs to everyone involved in delivering treatment and care and must be central to the mission of a high-quality health service; however significant change is required to implement an effective culture of safety. As a healthcare system we must purposefully design patient safety opportunities into care pathways, from first and pre-encounters, all the way through the continuum of care - including the surgical procedure in the operating room and post-op recovery.

In order to design these opportunities, we need to understand the multifaceted reasons why compromises to patient safety occur.

Error is sometimes unavoidable, and therefore mistakes might occur in the context of a surgeon's career. As outlined in this report, some of these issues could be preventable by understanding various human factors in clinical practice. For example, these could include ensuring effective and unambiguous communication especially during safety critical times, maintaining situational awareness, managing workload, recognising the potentially adverse effects of distraction, and how performance can deteriorate over time.

We also know that surgeons across the UK are currently working under intense pressure, and this is likely a contributing factor to safety issues. Following the COVID-19 pandemic, we have almost seven million patients waiting for elective treatment, alongside huge demand for emergency treatment and care too. There is a lot of pressure in the system and there is an expectation to increase efficiency. Managers might try to put an extra patient or two on operating lists, in some cases leading to surgery teams struggling to meet demand and potentially compromising patient care.

The purpose of this report is to bring to light the significant issue of patient safety in surgery and encourage readers to reflect on the cultural changes that could begin to be made in their organisations.

Making these changes requires commitment and resources to be fully implemented. This report aims to bring together the hard data and statistics, and encompass all aspects of patient safety in surgery to create a starting point for conversations and discussions about how safety can be improved, as well as enhancing team working and morale across the surgical workforce.

Professor Peter Brennan,
Consultant Oral and Maxillofacial Surgeon, Portsmouth Hospitals University Trust and Human Factors Lead for Royal College of Surgeons of England

Executive summary

Not cutting it: the state of surgery today

New analysis of national and international data related to surgical procedures and new research with 1,500 patients has revealed a worrying picture of **declining patient safety standards in surgery in NHS hospitals.**

There has been an increased number of patient safety incidents, a lack of real progress to reduce the number of Never Events, and an increasing number of surgical departments that the Care Quality Commission rate as 'requiring improvement'.

With input from surgeons and further data analysis, this report highlights several key factors that are driving this declining situation:

- **Funding**
- **Workforce and capacity**
- **The elective backlog**
- **Human factors**

The report also highlights the outcomes and cost of patient safety incidents to patients and services. This includes a significant cost per patient safety incident to the UK economy, compounded by the financial cost of litigation to the NHS. Tragically, this report also highlights an increasing number of patient deaths caused as a result of surgery per year.

Our report also estimates the number of patients that will suffer harm - and the associated costs of poor patient safety - if standards do not improve.

76%
of surgery patients surveyed had concerns about their safety

426
people sadly died in 2021/2022 as result of a patient safety incident during treatment or a procedure

£5.6bn
Estimated costs to the UK economy of poor patient safety in surgery

407
Never Events in 2021/2022, more than one a day

30%
increase of safety incidents per surgery since 2015

In writing this report, we sought the input of patients, by surveying 1,500 people that have had surgery in the last five years. Our new insight shows that the majority of patients across elective and emergency surgery have safety concerns, which can have a significant negative impact on their wellbeing. Our research also shows that a significant number of these patient concerns are driven by factors that the NHS is able to control – for example poor relaying of information, disorganised surgical departments and overworked surgical teams.

As the report sets out, there are many barriers to reform that we must unlock to make the significant changes required. This includes:

- **Appreciation of the safety crisis**
- **Speed of digital adoption and culture**
- **Learning from both disaster and from best practice**

To make the significant improvements that patients so desperately need, our report sets out a series of recommendations to the NHS:

- **Set the safety bar higher**
- **Improve the standard of data available**
- **Create a culture of continuous learning**
- **Learn from when things go well to improve patient safety and help prevent Never Events**
- **Engage with patients**
- **Improve culture within the multi-disciplinary team**
- **Increase funding for innovation**

Finally, the report concludes with an overview of how digital technology can transform the operating room.

The declining situation

Patient safety standards in NHS operating rooms have been getting worse for many years, and we are now at a critical moment.

While most NHS services experienced some detrimental impact caused by COVID-19, the pandemic is largely over, and **standards should now be improving.**

The latest data from NHS England and NHS Digital shows us that in 2021/2022 **7.5% of surgeries which took place across the UK involved a patient safety incident[i].** This means that more than one in twenty procedures, across emergency and elective care, resulted in an unintended or unexpected incident which could have, or did, lead to injury, harm, or death for the patient.

While there was a small decrease in patient safety incidents per surgery following the COVID-19 pandemic, from 9.2% in 2020/21 to 7.5% in 2021/22, this was still significantly higher than in previous years. Only 5.8% of surgeries in 2015/16 involved a patient safety incident, which means **the latest figures represent a 30% increase in the number of safety incidents per surgery since pre-pandemic**.[1]

While there are likely to be many reasons for this, a recent review by the World Health Organisation on the implications of the COVID-19 pandemic for patient safety[ii] cited the restructuring of surgical care protocols during the pandemic as a potential driver of this increase.

To build a clear picture of patient safety standards in surgery, we must also consider Never Events, which are serious, largely preventable incidents that occur during surgery, such as wrong site surgery and retained foreign objects.

By definition, Never Events should never occur, but **in 2021/2022 there were 407 Never Events[iii] across the 2,577,999 surgeries that took place in the UK – that's more than one a day across the year.** Additionally, there has been an increase in the proportion of Never Events per surgery compared to data from 2017/2018.

As figures 1 and 2 show, **there has been a consistent increase in the number of patient safety incidents and the proportion of safety incidents per surgery since 2015. Figure 3 highlights that the number of Never Events per surgery has shown no significant improvement over the same time.**

At the time of writing (November 2022), data for Never Events in 2022/2023 is not available, however provisional data shows 168 have already occurred between April and August 2022[iv], strongly suggesting that any imminent significant improvement in performance is unlikely[v].

This is worrying because it tells us that **any new or existing patient safety initiatives, including NATSSIPs, work from the Royal Colleges, and Healthcare Safety Investigations Branch (HSIB) investigations are not currently having enough effect in successfully reducing patient safety incidents.**

Looking internationally, the World Health Organisation estimates that 1 in 10 patients in high income countries are harmed while receiving treatment in hospital, 50% of these accidents are preventable, and 1 in 300 patients die because of them[vi].

[1] It is also worth considering the method for recording patient safety incidents. Operation notes are written by the surgeon, usually from memory. Safety incidents may be omitted or considered to be the province of others in the operating room. A commitment to reporting and reliance on other staff in the operating room is both necessary and sadly variable. A 2018 study in the Future Healthcare Journal found that, in a survey of 267 members of the MDT (consultants, mid-grade and foundation doctors, nurses, and allied health professionals) 41% of staff missed opportunities to report adverse incidents due to a poor response to their previous reports. Just 23% of staff surveyed feel that they understand the adverse incident reporting system and 60% of staff noticed a repetition of the same incident that they submitted an adverse event report on. (Error Reporting and Disclosure – Patient Safety and Quality: An Evidence-Based Handbook for Nurses) While most of these reports will be accurate, our insight tells us that some incidents could go unreported, meaning the rates of safety incidents could actually be higher.

Figure 1: Percentage of hospital treatments or procedures involving a patient safety incident[vii]

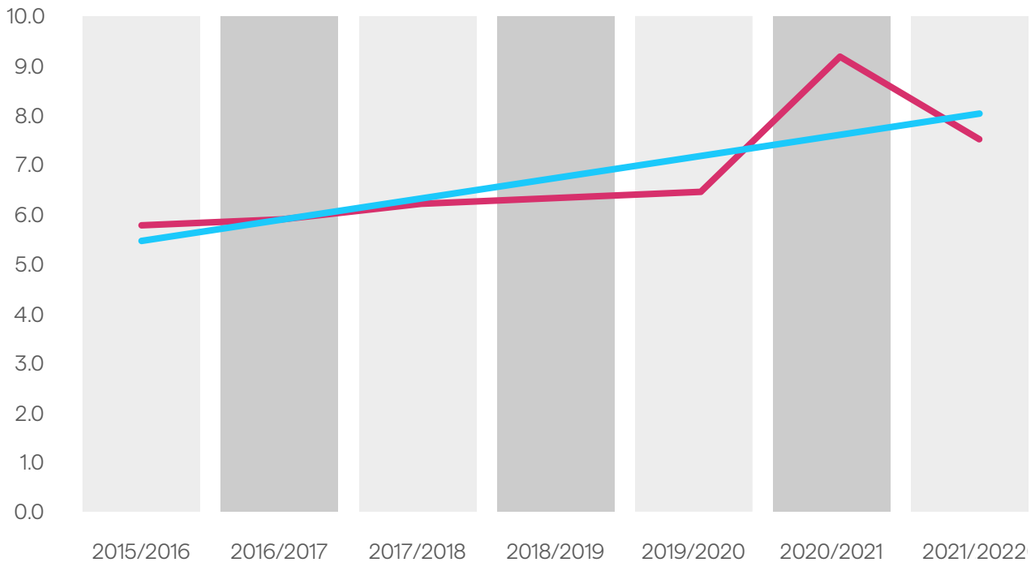


Figure 2: The number of patient safety incidents that occurred during a treatment or procedure[viii]

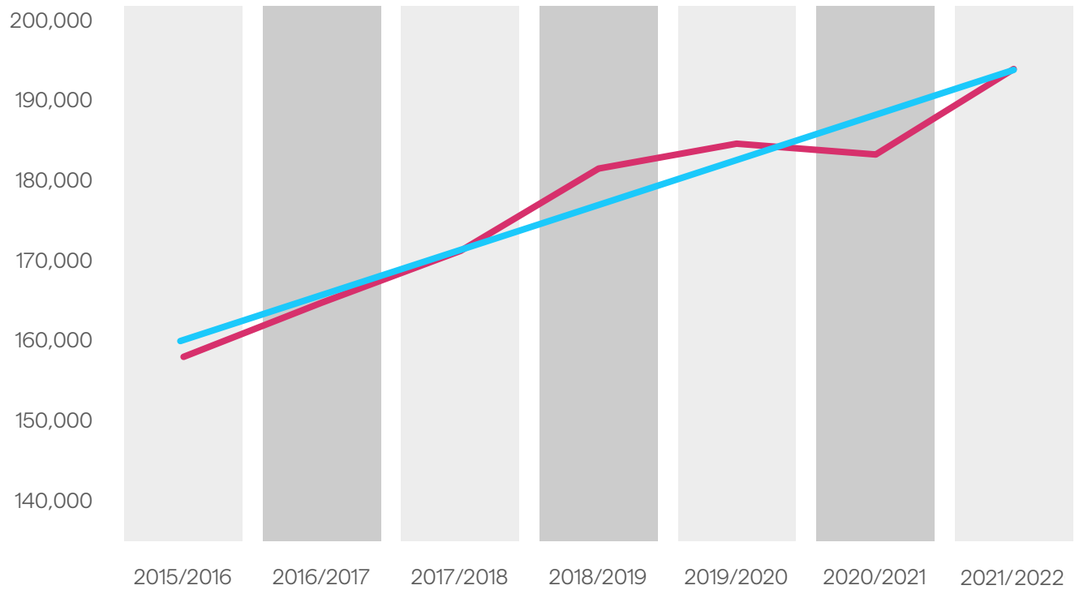
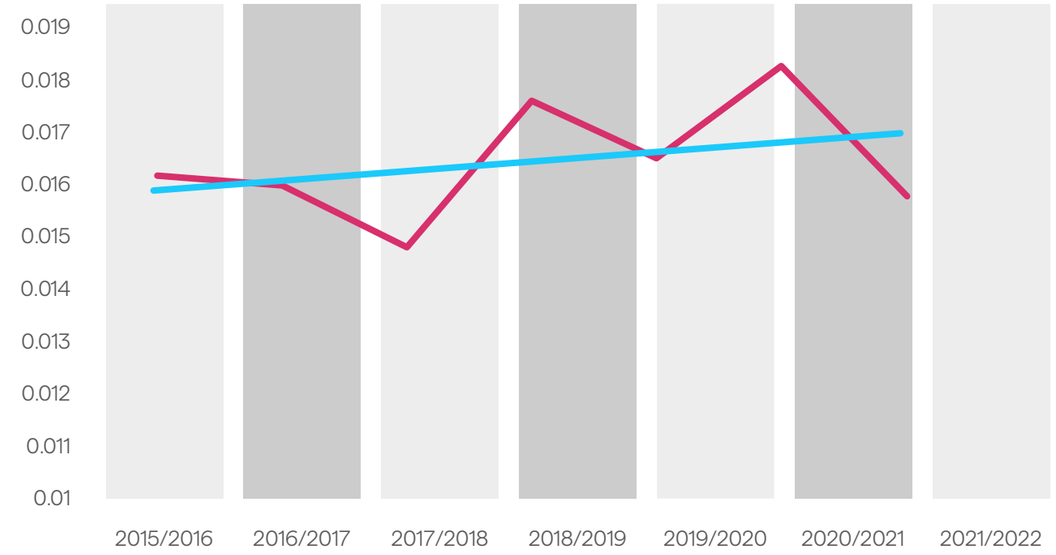


Figure 3: Percentage of surgeries with a Never Event[ix]



Beyond the hard numbers, to understand the situation in surgeries and the challenges faced by surgical teams we must also look at external regulation.

The Care Quality Commission's (CQC) 2022 State of Care Report painted a worrying picture with **almost a quarter (23%) of surgeries now rated either 'requires improvement' or 'inadequate'. This figure represents a drop in standards from 2021's report**[xi]**, with 10% more surgeries now requiring improvement.**

Safety is the first key metric from which these ratings are derived. The regulator examines arrangements for reviewing and investigating safety incidents and how well an organisation learns from these. They also look at workforce capacities, if staff have completed mandatory training, and other factors such as infection control and safeguarding. The fact that more surgical services require improvement suggests growing safety concerns from the regulator.

Examples of safety concerns seen in surgical services rated as 'inadequate' or 'requires improvement' by the CQC:

- Managers did not always share learning about Never Events with their staff
- Not all staff within the surgery division were aware of the Never Events that had taken place and could not inform the CQC of improvements that had been made as a result of learning
- Staff did not always use equipment and control measures correctly to protect patients, themselves and others from infection
- High proportions of staff had not completed mandatory training
- The service did not always have enough nursing and support staff to keep patients safe from preventable harm and to provide the right care and treatment
- Staff did not always keep detailed records of patients' care and treatment

Experience of patients

> Patients expect healthcare organisations to put safety at the heart of everything that they do.

Helen Hughes,
– CEO, Patient Safety Learning

While the national data shows a clear increase in patient safety incidents, it is important that we consider how patients feel about safety during the surgical experience.

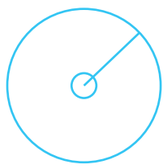
If patients do not have confidence in their surgical team, or the place they are being treated in, this can have a negative impact on their wellbeing and even mental health[xii]. Studies show that patients with more preoperative confidence have significantly better postoperative functional outcomes than less confident patients. Studies have found that increased anxiety prior to surgery (known as preoperative anxiety) is associated with adverse outcomes both during and after surgery. Anxiety can alter the anaesthetic requirement of patients and cause delayed awakening. After surgery, preoperative anxiety is linked to a longer length of hospital stay, reduced patient recovery and increased pain after surgery.

To understand the views of patients, in October 2022 **we conducted a survey of 1,500 people from the UK who have undergone either elective or emergency surgery in the last five years[xiii].** Of this number **more than three quarters (76%) of respondents told us they had safety concerns during the surgery process.**

The safety concerns that patients are experiencing are also having a significant impact on their wellbeing:

21%
of respondents that reported concerns said that they were reduced to tears

18%
said that their worries stopped them from sleeping



11%
said that they were so worried about their safety that they became ill

These concerns are also having an impact on system efficiency. **Of those reporting safety worries, 14% made a complaint or asked to change hospital.**

The natural assumption would be that these concerns would be driven by the general anxiety of requiring surgery, but this survey shows that the information patients are provided with is also a significant driver of these concerns and fears.

Of those who were worried about their safety:

17%
said that their concerns were caused because they were not given the opportunity to ask questions

15%
said their fears were caused by the inconsistent information that they were given by the medical professionals they spoke to

20%
said this was because they were not given a full debrief about how the surgery went

The standards of the surgical departments themselves are significant drivers of patient's concerns and anxieties. **Of those respondents who had concerns about their safety, 14% said these worries were caused by an old fashioned, messy, rundown, or dirty surgical department.**

The workload and capacity issues (articulated on page 14 of this report) are also contributing to patients' safety worries. **12% of survey respondents with concerns, reported that these were driven by their surgical team seeming disorganised, rushed, or tired.**

Clearly safety concerns are having a significant impact on the wellbeing of patients.

The human impact

Looking beyond the number of safety incidents that occur in surgery, it is important to recognise that each incident represents a personal experience of care.

As shown in our public perception survey[i], surgery can be a worrying time for patients and their families with over three quarters of respondents stating that they had safety concerns during the surgery process. Perhaps most emotive are Never Events, which can cause further stress and upset to the individuals concerned, as they have been affected by errors which should never occur in the first place. Some recent experiences highlighted in the national media describe the impact on the lives and wellbeing of patients.

One recent story revealed that six-inch forceps were left in a patient following a complex seven-hour abdominal operation[ii]. The instrument was an arterial clamp and remained inside the patient overnight as they could not be removed on the same day. The forceps were removed the following day before the patient was returned to intensive care.

Another recent patient who received surgery for a bladder tumour was left with a 6.5cm swab inside his body[iii]. The swab was first identified by a radiologist following a three month follow up scan, but the issue was not addressed. The patient attended A&E nine months later with abdominal pain which led to emergency surgery to find and remove the swab.

Another recent Never Event occurred in an ophthalmology department where a distraction led to the patient receiving two injections in the wrong eye[iv]. The patient ultimately came to no harm but was at significant risk. The ophthalmology department was required to provide an action plan to the Royal College of Ophthalmology to prevent a repeat incident.

Understanding the impact of poor safety on people's lives is critical to understanding and preventing patient safety incidents.

[i] Source: Proximie survey of 1507 respondents who have had surgery over the last 5 years (under local or general anaesthetic) conducted via Censuswide (2022)
[ii] Forceps left in patient following Alexandra Hospital operation - BBC News
[iii] O'Brien urology inquiry: Swab 'left inside patient for months' - BBC News
[iv] Blackpool patient given two injections in wrong eye - BBC News

The drivers of decline

> Following the COVID-19 pandemic, there are millions of patients now on the elective surgery waiting list. There is a lot of pressure in the system and there is an expectation to increase efficiency. Managers sometimes try to put an extra patient or two on your operating lists.

Professor Peter Brennan – Consultant Oral and Maxillofacial Surgeon, Portsmouth Hospitals NHS Trust and Council Member, the Royal College of Surgeons of England

Funding cuts

Cuts of £330m to the NHS budget were announced by the UK government in April 2022. While additional funding for the NHS was announced in 2022's Autumn Budget, challenges over the next few years are set to increase due to the cost-of-living crisis and inflation.

At the NHS Confed Expo 2022 Conference, Amanda Pritchard confirmed the NHS has already had to find £1.5 billion this year to match rising costs of energy and fuel, as well as wider inflation.

While NHS funding is likely to be an increasing issue over the coming months, more money is urgently needed to cover depleted resources, ensure the NHS can meet demand and to improve patient safety standards.

Elective backlog

Tackling the elective backlog is one of the top priorities for NHS bosses. With so much conversation about delays and waiting lists, there is no doubt that surgical staff will be feeling the strain and pressure to deliver procedures with the greatest efficiency possible.

Looking at elective figures, in August 2022, there were a total number of 1,273,474 incomplete surgical patient pathways, meaning that there are at least one million patients yet to complete treatment - 18% of the total NHS elective backlog. Of this number 94,164 (7.4%) patients have been waiting 52 weeks or longer, and 14,498 (1.1%) patients have been waiting 78 weeks or longer.

With an average of 2,651,000 surgeries currently conducted per year, it would take six months to clear the existing surgical backlog alone, without any new treatment pathways beginning. This ever-growing list of patients waiting for surgery means surgical staff are needing to complete surgeries as efficiently as possible.

With such huge pressure on the system, it is easy to see how the intense focus on efficiency from the system could lead to the surgical department pushing through as many patients as possible to reduce waiting times and waiting lists. Where this happens, there is a significant risk that it could lead to more mistakes being made, and an 'all hands on deck' approach to staffing may mean that less-experienced staff are required to lead surgeries.

Workforce and capacity

Workforce is one of the NHS' biggest challenges. The number of acute staff vacancies (this includes all staff working within an acute hospital setting) is rising dramatically, and in Q1 of 2022/23, there were 90,967 acute staff vacancies. This is a 29% increase on the same quarter last year where there were 70,639 acute vacancies. Looking further back, figure 4 (below) shows a 20% increase in vacant posts since 2017/2018.

With more staff leaving the NHS every day, this will no doubt have an impact on the availability of staffing to scrub in and deliver safe surgery, as well as the availability of staff who can provide perioperative care. Limited staffing will add further pressures to the elective backlog, with surgeries being cancelled or postponed due to insufficient numbers of staff who are able to conduct the surgery safely. Where surgeries do go ahead without the full number of expected staff in the operating room, patient safety could be compromised.

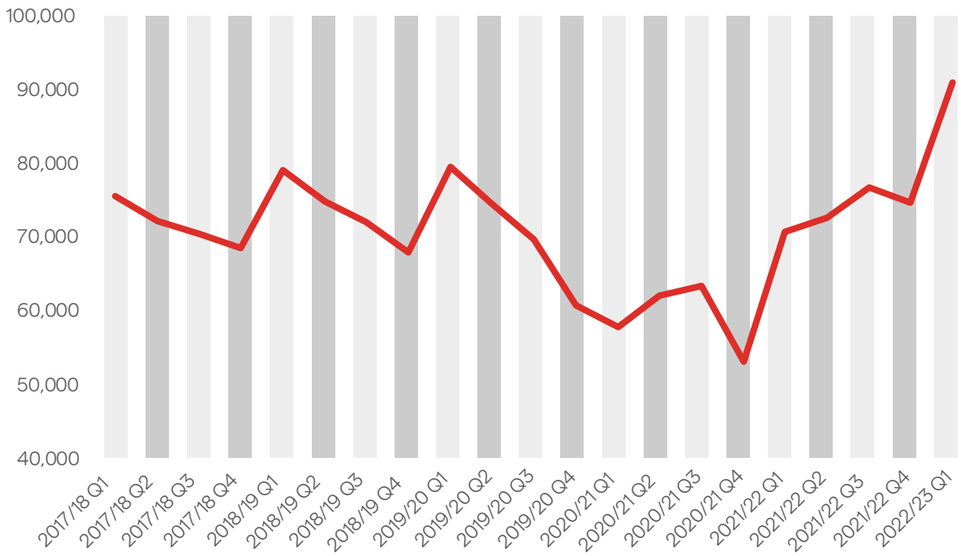
We also know that in a lot of cases surgeries will be conducted by two consultants, either because of case complexity or because of a lack of experience in certain procedures. Having more than one senior surgeon present for a surgery procedure clearly adds to the workforce challenges, as we are able to do less with the resource that we have.

Across the NHS, widespread shortages are taking their toll on over stretched staff who are working under increasing pressure. The NHS has found the last two years particularly challenging, and staff are continuing to work flat out.

However, many of the problems the system is facing existed long before the pandemic, and therefore will not be resolved overnight. It is no surprise staff morale has declined, and **the 2021 NHS Staff Survey revealed staff morale has fallen to a lower level than 2017, after it had been improving steadily between 2017 and 2020**[xix].

Staff burnout could also lead to more professionals leaving the NHS or having to take time off due to stress, worsening the workforce crisis. The NHS Staff Survey revealed that 31% of NHS staff thought about leaving the organisation, an increase since 2018[xx]. Staff working under pressure will also affect the time spent with and focus on patients, which could exacerbate patient safety issues and Never Events. There also is strong evidence that fatigue and burnout can impair performance in health care. A recent systematic review and meta-analysis of 27,248 surgeons found that burnout is associated with a significantly higher risk of a medical error occurring[xx].

Figure 4: Acute staff vacancies[iv]



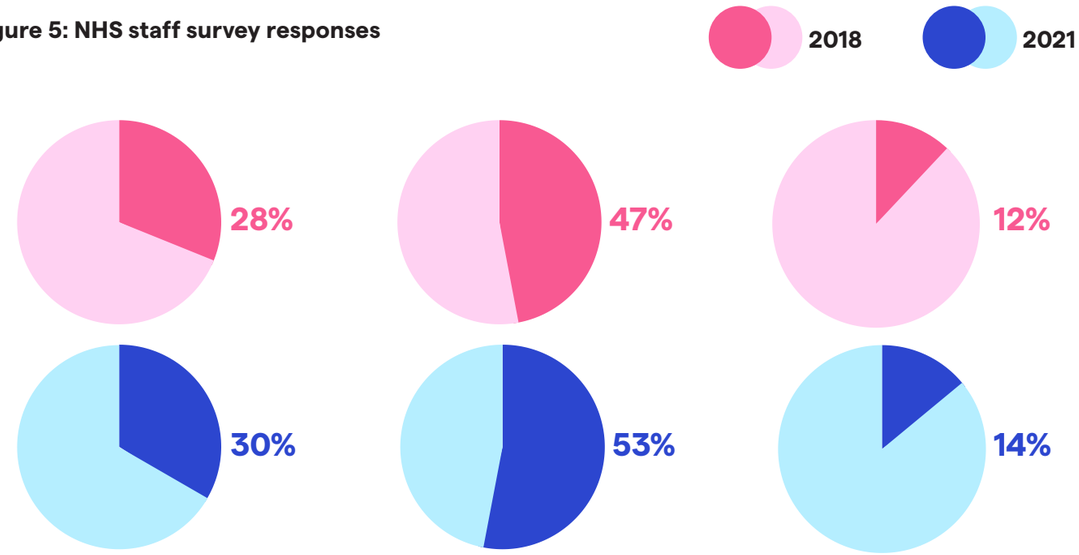
As well as the number of current vacancies, we must also consider the mood on the ground and how the lack of staff is impacting on the rest of the workforce's ability to do their job. Data from the NHS staff survey gives an indication of how NHS staff are feeling in relation to patient safety[xxi].

In 2018, 31.4% of acute hospital staff agreed that there are enough staff at their organisation to do their work properly, but in 2021, just 26.5% of acute staff agreed, which is a 15.6% reduction. This suggests that staff share these concerns about increased vacancies compromising their work and subsequently patient care.

Worryingly, **more acute staff in 2021 disagreed that they can make improvements happen in their area of work compared to in 2018, and staff now feel less confident that their organisation would address concerns related to patient safety in 2021 than in 2018.**

These differences indicate that a cultural change is occurring where staff feel less confident that their voices are being heard when wanting to make change happen in their hospitals, which will no doubt be contributing to the lack of progress in improving patient safety.

Figure 5: NHS staff survey responses



% of staff who disagree with the statement "I am able to make improvements happen in my area of work."

% of staff who disagree with the statement "There are enough staff at this organisation for me to do my job properly."

% of staff who disagree with the statement "I am confident that my organisation would address my concern about unsafe clinical practice."

"Surgery is a practical skill. Yet newly appointed consultants these days have less practical experience than their predecessors at a similar stage. We must never forget the 'craft' nature of surgery. The more you do the better you get."

Professor Martin Elliott – Provost of Gresham College and Emeritus Professor of Paediatric Cardiothoracic Surgery at University College London

Human factors

Human factors is a discipline that incorporates theory, data and methods to enhance the way humans interact with systems to make a system better compatible with individual needs, limitations and abilities[xxii]. A system is a broad term which in this context refers to a number of elements working together to achieve a common goal. Regarding the issue of surgical safety – the system is the operating room and the way in which staff interact with their environment, their equipment and tools, and each other.

'Human factors and ergonomics for health systems resilience' is one of the 35 specific strategies cited in the World Health Organisation's Global Patient Safety Action Plan[xxiii]. A lack of expertise in human factors is also cited as an example of one of the proponents of preventable harm in health care. The report recommends that human factors expertise is incorporated into the design of all tasks and procedures to improve safety and performance.

> Outside of system design and ergonomics, such as how we interact with technology and equipment, the most important human factors principles that apply to surgery and surgical safety include setting the right tone in the team briefing, enhancing situational awareness of individuals and the team, effective communication, managing distractions and self-awareness.

Professor Peter Brennan – Consultant Oral and Maxillofacial Surgeon, Portsmouth Hospitals NHS Trust and Council Member, the Royal College of Surgeons of England

A successful surgery relies heavily on effective interaction and teamwork between everyone in the operating room. Human factors experts have said that the team briefing at the beginning of the day defines the surgery. The briefing should set an open, inclusive, and friendly tone where everyone feels supported and as if they can contribute effectively.

It is also important to minimise distractions during the most important moments of an operation. However, this approach also needs to be managed skilfully to ensure that people still feel as if they can speak if something urgent were to arise.

We must cultivate self-awareness so that members of the team are aware of their personal needs and limits. Even things that may be thought of as basic needs such as taking regular breaks or hydrating can be overlooked and lead to impaired performance. A team that is highly self-aware and empowered means that staff feel able to take breaks when needed and perform better as a result.

Research has shown that overlooking the basic human factors principles contributes to Never Events[xxiv].

[2] It is worth noting that between 2018 and 2021, 5.2% fewer staff agreed that they are able to make improvements happen in their line of work, 14% fewer staff agreed that there are enough staff at their organisation to do their job properly and 2% fewer staff agreed that they are confident that their organisation would address concerns about unsafe practice.

The economic impact

When it comes to safety in surgery, the health and wellbeing of patients is of course paramount, but **patient safety also comes with a significant economic cost**.[3]

To further understand the impact of surgical safety on the economy, it is helpful to consider Quality of Life Years (QALYs) – a well-established metric for measuring the health of a population.

Estimations from the OECD suggest an average of **1.4 QALYs are lost for every patient safety incident resulting in an adverse event.** In simple terms, every patient who experiences a patient safety incident during surgery could lose on average almost a year and a half of good health over the remainder of their life. H.M. Treasury Green Book estimates the economic value of each QALY is £70,000. If we consider that every QALY lost costs the UK economy £70,000 then crude multiplication suggests that **each safety incident resulting in harm has a cost to the economy of £98,000.**

With an average of **57,382** harmful patient safety incidents in surgery a year, the estimated cost of poor patient safety in surgery to the UK economy is **£5.6bn** a year[xxvi].

We can also look at the cost to the NHS from litigation. The total number of clinical negligence claims and reported incidents received by NHS Resolution in 2021/22 was 15,078. 12% of all claims reported were related to orthopaedic surgery and 7% were related to general surgery. NHS Resolution's annual report and accounts for 2021/22 state that payments for settled claims amounted to £2.5 billion, and that the overall cost of harm was £13.3 billion in relation to the clinical negligence scheme for trusts.

[3] A recent OECD report on the economics of patient safety found that in developed countries, the direct cost of treating patients who have been preventably harmed during their care amounts to 8.7% of the total health expenditure. To put it into context - that is $606 billion every year. The report likens the global burden of unsafe care to have the same effect on disability and quality of life as HIV and AIDS.

The urgent need for reform

Declining surgical safety has had a significant impact on patients over the last few years, with **914,633** safety incidents in surgery across the last five years and **2,154** Never Events over the same period.

This harrowing number represents a **15% increase in patient safety incidents** during treatment or a procedure resulting in death since 2015. Evidence also shows that for every patient safety incident that results in death, a further three will result in disability and another ten will result in further treatment.

Tragically, NHS data show that **426** people sadly died in 2021/2022 as a result of a patient safety incident during treatment or a procedure – more than **one a day**.

Based on the current trajectory and standards, we can expect more than **1 million patient safety incidents** to occur in surgery over the next five years and more than **2,000 surgeries** to result in people tragically dying.

We must act now, to prevent more tragic loss of life or harm befalling patients.

Barriers to reform

Speed of adoption and culture

Despite numerous government commitments to digitising the NHS, across the NHS and social care the adoption of new technology is a slow and uncertain process. Most recent estimations[xxxiiii] say that it takes **10 years for a new piece of technology to be routinely adopted by the NHS**[4], and this duration is driven by several factors.

Firstly, most digital innovators sell place to place, for example a digital surgical tool will be sold to a single NHS Trust. This process can be tricky, with a business case led by consultants and pitched to the hospital leadership team[5].

To get to the stage where consultants will want to put forward a business case, providers of new digital technologies must show evidence through pilot schemes, however there is little or hard to reach funding in place that will allow NHS Trusts to do this. Finding an NHS Trust to work with and funding to facilitate new technologies is a complicated and lengthy process which can stall innovation.

When it comes to the adoption of digital technology, there are also significant cultural barriers that exist and need to be overcome. Patients can be reluctant to accept transformative solutions, for example public reluctance to use digital triage tools, leading to many unnecessary patients self-reporting to A&E.

There are also cultural challenges with staff – including those working in surgery – who can be reluctant to do things differently, or who are simply too busy to invest the time into understanding a new digital tool.

Appreciation of the safety crisis

Standing in the way of reform, is a lack of appreciation of the urgent patient safety crisis in surgery from healthcare leaders from a variety of NHS Trusts.

When writing this report, we spoke to several healthcare leaders from NHS Trusts, and most of them are prioritising tackling other challenges in their area. Understandable perhaps, due to the multitude of issues facing the NHS, but as this report sets out, **improving patient safety in surgery must be a priority.**

[4] This rate of adoption is faster than the accepted average of 17 years: Morris, Wooding and Grant, 2011, The answer is 17 years, what is the question: understanding time lags in translational research

[5] The team involved in this process will often differ, but usually involves the Chief Executive, the Medical Director and the Chief Finance Officer.

At a national level, NHS England isn't showing enough appreciation of the crisis either. While new safety guidance is expected in 2023, **it has been many years since a significant national effort to tackle patient safety has been undertaken. In addition to this, efforts to implement real change require staff capacity, organisational leadership, sufficient resources and real commitment. Factors that are all currently in short supply.**

Learning from disaster and from best practice

To improve standards, surgical teams and healthcare leaders need to learn from what has gone well and what hasn't gone well.

Thousands of surgeries are taking place across the UK each day, and while individual surgeons are learning from the work they and their direct colleagues do, **there is so much missed opportunity to learn – both within hospital teams and on a national scale.**

In their 2018 report 'Opening the door', the CQC said of hospital boards, **"There is no clear system for staff to learn from each other at a national level. Local reporting systems are often poor quality and do not support staff well. There are lessons that can be learned from other industries with simpler and more transparent reporting systems, backed up by a culture that drives good reporting. Patient safety collaboratives are uniquely placed to support organisations to improve patient safety outcomes."**

In other safety critical industries, for example the airline industry, there is a huge amount of work done to analyse and report on the causes for a crash or safety incident, but in healthcare this is not the case. Unlike the airline industry, there is no concrete evidence of what has happened inside the operating room which makes learning from mistakes difficult – we need a 'black box' of the operating room and moving from analogue to digital recordkeeping will facilitate this. In aviation, safety management systems are an accepted and critical part of the industry used to monitor and learn from safety incidents. Keith Conradi, former Chief Investigator at HSIB, when he joined the healthcare industry from aviation said **"It opened my eyes to the fact that there was no structure in place at any particular level that was part of a foundation for a safety system."**[xxxv]

For a Never Event to occur, there are often many solvable mistakes that occur, and we owe it to patients to learn from each and every one.

Actions and recommendations

1. Set the safety bar higher
2. Improve the standard of data available
3. Create a culture of continuous learning
4. Learn from when things go well to improve patient safety and help prevent Never Events
5. Engage with patients
6. Improve culture within the multi-disciplinary team (MDT)
7. Increase funding for innovation

1. Set the safety bar higher

In 2015, the NHS set out the National Safety Standards for Invasive Procedures (NatSSIPs), standards developed to set out the key steps necessary to deliver safe care for patients undergoing invasive procedures. These standards sought to make clear the processes that underpin patient safety organisations delivering NHS-funded care and included 18 defined policies across a range of subjects including safety briefings, scheduling and list management, and governance.

In 2018, the NatSSIPs were updated, and we expect a further update in 2023. There is evidence that when the NatSSIPs are applied, patient safety has been positively impacted. However, in the context of a busy OR, these standards are not always met.

In 2019, the NHS released its Patient Safety Strategy, which set out the NHS's ambition to improve safety across the health service and specifically mentioned Never Events as an area to address.

Seven years since the launch of NatSSIPs, and three since the Patient Safety Strategy, patient safety is not improving at the scale or the pace that is needed to make a tangible difference, and these current standards of safety are far too low.

We cannot expect to achieve the significant improvements that patients need if we continue to operate in the same way that we always have done. We need to significantly alter trajectory, with clearer regulatory, legal and national body expectations which raise safety standards to an acceptable level and transform the way in which safe surgery is delivered.

2. Improve the standard of data available

To better understand patient safety in surgery, we need better access to high-quality data, giving us a clearer picture of what is happening in surgeries across the country.

The data presented in this report paints a picture of the current patient safety situation, but the evidence available from the NHS is very high-level. Additionally, much of the data will be recorded via pen and paper, including the WHO safety checklist and the post-operation note. The operation note will also usually be completed from memory, which raises questions about accuracy.

Through digital technologies, the operation note could be replaced by a recording of the surgery, improving accuracy, and reducing ambiguity. Data collected from operations in real time would also provide greater levels of insight, facilitating evaluation and learning.

We know that patients would be open to these innovations. In the survey of patients referenced on page 10 of this report, **79% of respondents said that they would feel reassured if a recording of their operation was attached to their patient record for future reference.**

> "I think what we can do now is take a much more refreshing review on patient safety incidents. A lot of our learning is actually when things have gone well, there's much more data about when things go well."

Tanya Claridge
– Acting Group Director of Clinical Governance, Group Patient Safety Specialist, Manchester University NHS Foundation Trust

3. Create a culture of continuous learning

Surgery safety standards, and policies for the surgeons themselves are also unhelpful, with surgeons of all levels having limited opportunity to evaluate performance, which hinders improvement. **When compiling this report, we spoke to several esteemed surgeons who told us that a cultural change towards continuous learning is urgently needed.**

Surgeons need better access to high-quality data and training tools, such as examples of best practice. **Surgeons we spoke to told us they would welcome the opportunity to evaluate their performance and understand what they could do better – this is true at all stages of their surgical career.**

Additionally, if training and 'rehearsal' could be provided in a different form, such as through digital tools, it could provide surgeons with deeper understanding of where technical improvement is needed without having to learn through patient safety issues or Never Events. Giving trainees the opportunity to virtually scrub in to skilled surgical cases would be an invaluable asset, and help future-proof against issues such as the COVID-19 pandemic, where surgical training was negatively impacted by restrictions and social distancing.

Using digital tools also enables trainees to have access to the best training possible and not be constrained by geographical or opportunistic barriers. For example, through virtually scrubbing in to complex or rare surgeries, learning from world leading surgeons and getting room at the OR table that is sorely lacking due to the impact of COVID-19.

Research has shown that the cancellation of elective surgeries during the pandemic vastly reduced training opportunities. There was a 50% reduction in operations with trainees as the primary operating surgeon and 71% of surgical trainees felt less confidence in their surgical abilities during the pandemic.

4. Prevent Never Events and learn from when things go well

Never Events should never happen, but not enough is being done to learn from them. We must drastically re-evaluate how we treat Never Events ensuring that surgeons of all levels are taught about how these incidents have occurred and can be prevented in the future.

When an airplane crashes, airlines invest significant time and resource into understanding what happened and how future incidents can be prevented. They are able to do this because all flights are recorded making high quality performance data readily available.

The NHS's Patient Safety Strategy calls out the need to "Develop new technical solutions to Never Events and support the safety innovation pipeline more widely." We must look to technology to level the playing field. **By digitising the OR we would have access to the same level of high-quality data, facilitating investigation and learning from when things go well and when they don't.**

5. Engage with patients

As this report outlines, many surgery patients have significant safety concerns. While a level of anxiety is to be expected, **by improving the information that patients receive and giving them a platform to ask questions and engage in appropriate shared decision making, then we can improve patient experiences.**

We must improve the ways in which we engage with patients before and after surgery, ensuring that advocacy groups are engaged with improvements in care, and that the voice of patients is heard in future changes to patient safety standards in surgery.

6. Improve culture within the multi-disciplinary team

While the consultant must retain overall responsibility for a patient's care, **we need to improve the culture that exists in operating theatres across the UK.**

Currently the multi-disciplinary team (MDT) in surgery is, in most cases, tiered and hierarchical. While leadership is important, this must not come at the expense of an environment where other members of the multi-disciplinary team are engaged, and can challenge decisions, where appropriate to do so.

7. Increase funding for innovation

As this report sets out, **we urgently need to innovate to improve patient safety standards.** The government has made many commitments to accelerate uptake of digital technology, but in the context of the funding cuts set out in this document, **promises to digitise the NHS are not being kept.**

To get new ideas off the ground, **we also need funding in place to facilitate trials and pilots.** Often new technologies that can make substantive difference come with necessary costs, and it is not right to expect innovators to cover the bill.

To improve the national patient safety picture, we also need to facilitate the scaling of successful innovations. Currently, most new technologies are sold place to place, but new funding frameworks could allow proven technologies to be adopted across the UK.

The digitised OR

If we are to deliver the kind of modern health service that we need, then digital transformation is key, offering new ways to improve outcomes for patients and help staff to work at the top of their skill set.

A digitised OR, like that provided by Proximie, would enable us to tackle many of the issues set out in this document. By recording all surgical procedures, we would have access to high-quality data and a reliable record of what happened, allowing surgeons of all levels to learn from procedures that have gone well and those that have not. On a national level, this would also allow us to understand safety in surgery at a much deeper level, develop strategies to tackle issues, and raise standards across the UK.

Proximie's technology allows surgeons to 'scrub in' to any operating room or cath lab, from anywhere in the world, and record all cases. This allows consultants to monitor surgical procedures in other hospitals in real-time, improving patient safety through instant feedback and second opinion when required. It also allows surgeons and trainees to revisit previous cases to collaboratively review them, or prepare for a future similar case.

By tapping in to the Hawthorne effect[xi], **the real-time monitoring of procedures also helps surgeons to deliver a safer surgery, encouraging greater compliance with checklists and a higher level of performance.**

In addition to supporting current surgeons to work at the top of their skill set, **Proximie's technology also supports the training and development of the next generation of surgeons,** giving them access to a huge resource of information and best-practice examples.

Accelerating the uptake of innovative technology can support surgeons across the UK to work at the top of their skill set, with benefits seen across safety, training, efficiency and experience.

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