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What makes a top hospital?

SAFETY

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THE top hospitals 11 PROGRAMME

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Editorial advisory group

CHKS has worked with healthcare organisations across the UK to inform and support improvement for almost 25 years. This is the second of five reports that highlight examples of best practice from the UK's top-performing hospitals, which we will share throughout the NHS. We would like to thank the expert panel that is advising us on each report:

- **Helen Bevan**, Director of Service Transformation, National Institute for Innovation and Improvement
- **Stephen Ramsden**, Transforming Health
- **Ian Dalton**, Managing Director of Provider Development, Department of Health
- **Maxine Power**, National Improvement Advisor, Quality, Innovation, Productivity and Prevention, Department of Health

Foreword

CHKS has judged the *HSJ* Acute Organisation of the Year since its inception. In addition, CHKS celebrates success with its annual Top Hospitals programme. As a result, we have seen many examples of excellence in the delivery of healthcare by acute sector organisations. The idea behind this series of five reports is simply to share these examples of success in the hope that other organisations can take something from each of them.

While there are many examples in the literature of high-performing healthcare providers, they are often drawn from international comparisons, where the environment is very different. These reports reflect excellence in healthcare that has been recognised within the past few years. Our aim is to share the energy and enthusiasm for providing high-quality care that we have found in the English NHS.

The reports are based on the collective view of the judges of the 2010 *HSJ* Acute Organisation of the Year award, who produced an overview of what they had seen across the successful trusts (see panel below). No single trust was excellent across the board but, together, they provided a set of themes from which we can share insight. These themes provide the focus for each of the five reports. While there may be little of surprise about the themes, it is important to recognise that they are based on current observation and, as such, this is not a definitive guide to good management.

Much of the focus and energy for NHS leadership has understandably centred on making improvements in those trusts where performance is below average. This often means the best organisations are left to get on and move their organisations forward as they see fit.

Being left to make your own way can lead to isolation. It is often difficult to find out what is going on in other high-performing organisations. This series is designed to help people get a better understanding of what is happening in other trusts by sharing case studies that highlight what organisations have already achieved.

What makes a top hospital: **the observed themes**

Quality and change
- Cost reduction through quality improvement
- Disciplined execution of change at scale
- Using data for improvement, not judgement

Safety
- "Getting to zero" — zero tolerance of harm
- Deliberate focus on reducing mortality/ other safety measures

Leadership
- Strong, stable leadership with continuity of chief executive
- Distributed leadership model with both empowered clinical leaders and a shift of power to patients and families
- Investment in development
- The totality of the approach

Organisational culture
- Profound sense of mission and direction
- A mobilised workforce with a passion to get things right for patients
- Defining and promoting values and living them every day

External influence
- Seeing the hospital as part of the wider community
- Corporate social responsibility
- Risk sharing with commissioners
- Learning from others healthcare providers and other industry sectors
- Comparison, not just with peers but worldwide

Executive summary

This report is the second in a series of five and highlights examples of hospital trusts that are making significant improvements in safety. The rationale for improving patient safety is now well understood but there are some organisations that still consider safety to be a tick-box exercise.

The organisations that are making strides in patient safety have a number of things in common. Although they may have different starting points in terms of performance against their peers, the uniting factor is that each one of these trusts has made patient safety a priority. This is not a glib commitment to safety in a glossy brochure, it is a real commitment whereby everyone in the trust, from the board and chief executive to clinical leaders, clinical staff and administrative staff, all recognise that safety is integral to the delivery of high-quality care.

Often a "safety culture" is mentioned as a success factor but culture can have a slightly different meaning from one organisation to another. The key is openness, transparency and a willingness to accept that improvements can be made.

This acceptance is often wrapped up with the term "zero tolerance" — which in the NHS means not standing for failures that have in the past been seen as "just something that happens".

The organisations that have seen success in improving safety have been prepared to reach out. Either they have sought guidance from organisations that are recognised leaders in a specific area of activity, or they have benefitted from being part of a national programme aimed at improving safety.

Measurement has also played an important part in their success. You have to know where you are starting from in order to make an improvement and the only way to gain this knowledge is to have accurate data. Whether it is pressure ulcers, falls or unexpected mortality, the numbers are crucial. It may take time to get accurate information but it is time well spent.

For some leading trusts, measurement goes one step further because they can add in a cost analysis. Discussion around the link between safety improvement and cost is complex but several trusts have shown that by having a detailed understanding of costs (using a service line approach) they can attribute cost savings to safety improvement initiatives. At a time when NHS organisations are being tasked with making significant savings, this evidence thrusts safety to the forefront. Saving lives can really be shown to save money.

Introduction

People are often at their most vulnerable when they are accessing healthcare. They put their trust in the hands of the clinical staff caring for them. But how do they know they will be safe?

The past decade has seen significant headway made in addressing the major problem of patient safety in health services across the UK. There has been great progress in some specific areas, for example reducing hospital-acquired infections. However, progress has been slower than might have been hoped — the evidence on levels of harm show we have not shifted the unacceptable fact that between one in five and one in ten people in hospital and primary care are harmed.* Levels of harm in healthcare are higher than for air, road and rail transport, and for high-risk occupations such as construction.

The patient safety movement has recognised that we need new approaches to ensure people will receive the same high standard of care and safety wherever and whenever they access healthcare services. In short, we need to make healthcare systems more reliable.

Those working to improve patient safety need to address the complexities of system issues and human factors. By taking a systems approach, healthcare staff can start to define which parts of a clinical care process might be compromising safe care. They need to look at all steps along the care pathway, finding potential risks to safety and identifying how improvements could be made. This means focusing on the clinical care of the patient, but also on the systems that support clinical care, such as supply of equipment, access to test results or transfer of clinical information.

They need to engage clinicians, build the necessary skills and leadership and allow enough time and resources. It cannot be assumed that pockets of excellence will translate into organisation-wide impact.

We also need to be much more effective at learning from each other and identifying and sharing good practice, which is why this second publication in the series *What makes a top hospital?* is so welcome.

*The Health Foundation (2011). *Levels of harm: a research scan*. Available from: www.health.org.uk/publications

Stephen Thornton
Chief executive,
Health Foundation

Why we should focus on patient safety

Anyone directly involved in patient safety initiatives in the acute sector will tell you a great deal has changed since the Bristol Royal Infirmary Inquiry in 2001. There are those who doubt this, believing a culture of secrecy and an unwillingness to learn from mistakes still exist and it would certainly be possible to find examples of this in 2011. Nonetheless, there are trusts leading the way on patient safety; in these trusts, the focus has shifted from regulation, risk management and compliance to being forward-thinking on safety.

There is a growing awareness that safety is integral to the delivery of healthcare. In other words, rather than being seen as a separate aspect of performance, it is incorporated into a trust's overall strategic priorities.

It was in December 2006 that *Safety First*[1] was published, making 14 recommendations for improving patient safety in the NHS in England. Described at the time as the first direct challenge to the NHS to take patient safety seriously, its objective was to put the issue at the top of everyone's agenda. In the progress report *Safety First:one year on*[2], then Chief Medical Officer Sir Liam Donaldson said: "At the end of the first year, I believe we have made sound progress. However, we cannot afford to rest here. We must learn from past errors and benefit from solutions that have been developed both in England and other countries."

Work on safety outside the NHS has been dominated by the US-based Institute for Healthcare Improvement (IHI), which has helped to drive awareness of the importance of the safety issue. Stephen Ramsden, of Transforming Health and former chief executive of Luton and Dunstable Hospital NHS Foundation Trust, believes the IHI has played a "massive" role and that its leadership in patient safety has been a motivating factor in changing trusts' focus.

UK-led initiatives such as: Patient Safety First[3]; the Health Foundation's Safer Patients Initiative[4]; campaigns like the 1,000 Lives and 1,000 Lives Plus[5]; and the National Patient Safety Congress[6] have all played their part.

The Safer Patients Initiative, which ran from 2004–2008, was set up to test practical ways of improving hospital safety and to demonstrate what could be achieved through an organisation-wide approach. Patient Safety First was designed in 2007, launched in June 2008 and ran until March 2010. Its aim was to focus on the safety culture in the NHS and to engage clinical staff as well as enable behavioural change, leading to better, safer healthcare.

"There is a growing awareness that safety is integral to the delivery of healthcare. In other words, rather than being seen as a separate aspect of performance, it is incorporated into overall strategic priorities

The Patient Safety First campaign was voluntary and initially focused on acute care trusts in England. It called for demonstrable commitment from participants to take action. Organisations that chose to sign up to the campaign were asked to issue a pledge to their staff, patients and their community, stating that patient safety was a top priority for their organisation.

They were then asked to implement the leadership intervention alongside one or more of four clinical interventions. These four interventions were: deterioration; critical care; perioperative care; and high-risk medicines. By the end of the campaign, 61 per cent of acute trusts had patient safety and quality as their first agenda item — an increase from 2009, when this figure was just 18 per cent.

Ramsden agrees there are still trusts that are not making safety the highest priority and who are still ticking boxes to meet external requirements. "These trusts can learn a lot from the safety pioneers. It's about ambition and taking personal responsibility," he says. "You have to capture hearts and minds and challenge staff to want to do better."

CASE STUDY 1

Safety at the heart of an organisation — Aintree University Hospitals NHS Foundation Trust

In 2008, Aintree University Hospitals NHS Foundation Trust committed to a quality and safety strategy that had the following targets:

- Reducing the number of avoidable deaths by 300 in three years
- Reducing avoidable harm by 20 per cent in three years
- Improving patient experience by 20 per cent in three years

According to Jill Byrne, director of nursing at the trust, these targets have already been met in the first 18 months and the trust is looking ahead to further safety improvements. Mrs Byrne puts the success down to a combination of factors. "There are several initiatives that we have been involved with which put safety at the heart of our organisation," she says.

A three-year development programme with The Johns Hopkins Hospital, Baltimore, (www.hopkinsmedicine.org) has seen 35 managers and senior clinicians learning about the "science of safety" from a world-class organisation. Teams from John Hopkins have visited Aintree and become involved in its safety work. The trust is also a member of NHS Quest[7] — an initiative designed to help foundation trusts aspire to a level of excellence in quality and safety beyond all current expectations. Aintree also has a lead clinician at the Institute for Healthcare Improvement in Boston, US, who will return to embed its learning at the trust.

However, Mrs Byrne believes that, although these initiatives help drive a culture of safety, the practical examples say just as much about the trust's commitment. For example, it has developed a system call Aintree Business Intelligence (ABI). This combines performance and safety indicators with staffing information. "You might see that a ward with a high rate of absenteeism or sickness among staff is also a ward with a high number of incidents," says Mrs Byrne. "ABI gives us the insight which combines many different dimensions of care."

The trust also sees education as an integral part of its commitment to safer care. It has been working with Edge Hill University, in north-west England, on several initiatives, including a patient safety tool. This will now be rolled out across the organisation and new members of staff will be expected to use it. The partnership is also about to launch one of the first-ever undergraduate degree courses in patient safety.

Other examples include:

- The appointment of patient safety officers on every ward. These individuals are given designated time to focus on patient safety, funded within existing ward resources
- A trust-wide Comprehensive Unit-based Safety Programme (CUSP wards), uniting managers and clinicians to answer the specific question: where and how will the next patient be harmed and what can be done to avoid it?
- One example is rescheduling of consultant rounds on the orthopaedic ward so they do not coincide. This means nurses are able to ensure correct follow-up with each patient, rather than having to assimilate information about patients at the same time
- The introduction of an emergency medical team, which responds within five minutes to patients who are deteriorating according to the medical emergency warning score. This has reduced cardiac arrests by 50 per cent

Mrs Byrne says there are always new initiatives to consider and the trust is currently focusing on medicines management. It now focuses proactively on low-harm incidents and near-misses, with staff encouraged to highlight examples to help ensure they can be avoided.

Zero tolerance – and what it really means

The phrase "zero tolerance" is heard with increasing frequency within the corridors of NHS trusts. The immediate interpretation is to link it with policing initiatives, where police forces take a hard line on antisocial behaviour or petty crime. Yet there are subtle differences in approaches to zero tolerance in the NHS.

David Dalton, chief executive of Salford Royal NHS Foundation Trust, argues that it is more about an attitude of mind — an ambition not to tolerate harm. "Often when people think of zero tolerance they think it means some sort of sanction. This can be appropriate but it is more about what we tolerate. So definition is an important place to start," he says. At Salford Royal, stopping patients deteriorating has been the biggest intervention in terms of reducing harm to zero (see case study 2).

Ann Farrar, chief operating officer at Northumbria Healthcare NHS Foundation Trust, says a trust cannot begin to think about zero tolerance unless it has a quality framework in place, such as the one developed by the Institute for Healthcare Improvement (see box, page 10). Ms Farrar, and many others, believe that zero tolerance is about culture and leadership: safety has to be rooted throughout the organisation. Their view is that discussions about variation cannot take place unless there is acceptance of the starting point, and that often means challenging some long-held beliefs.

Transforming Health's Stephen Ramdsen agrees and asserts that this challenge is the key part of a zero tolerance approach. "Simply to accept that some patients will have a cardiac arrest is a shocking indictment of the situation we are in," he says. "We need to do things differently in order to stop patients deteriorating."

It is a potent argument and goes to the core of every ward in every hospital where the prevailing attitude may be that harm is "just one of those things".

Ramsden points out, though, that many trusts have moved on. "You used to have the situation where a central line infection once or twice a month was considered acceptable. This has changed," he says. The mantra that is often used is "do it right first time".

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>
> **Stephen Ramsden, Transforming Health**

The Institute for Health Improvement's Model for Improvement[8]

The Model for Improvement is a tool for accelerating improvement. The model is not meant to replace change models that organisations may already be using, but rather to speed up their effect. This model has been used successfully by hundreds of healthcare organisations in many countries to improve many different healthcare processes and outcomes. The model has two parts:

- Three fundamental questions, which can be addressed in any order:

1) What are we trying to accomplish?
2) How will we know that a change is an improvement?
3) What changes can we make that will result in improvement?

- The Plan-Do-Study-Act (PDSA) cycle to test and implement changes in real workplace settings. The PDSA cycle guides the testing of a change to determine if that change is an improvement.

CASE STUDY 2

Reducing harm from deteriorating patients – leading by example: Salford Royal

Peter Murphy is divisional director of nursing at Salford Royal NHS Foundation Trust. The trust's aim, he says, is to provide "safe, clean and personal care". Reducing the rate of harm is a key objective and this means ensuring mortality rates are lower than expected.

The trust has a programme that covers four key areas of harm. These are: falls; urinary tract infections; pressure ulcers; and hospital-acquired venous thromboembolism. Mr Murphy says the aim is to challenge the perception that these are acceptable.

However, it is the trust's programme to reduce harm through deterioration that has attracted interest. Research shows that failure to rescue patients whose condition is rapidly deteriorating is an area of significant unintended harm. Mr Murphy says: "Our ultimate aim was to stop patients deteriorating, whether it was expected or unexpected. We took a non-traditional approach, using the IHI model for improvement. (See box above).

"We asked the IHI questions of frontline staff — those individuals involved in delivery. Our aim was to cut the number of unexpected cardiac arrests by 50 per cent over the course of a two-year programme."

One of the ideas has been the introduction of manual blood pressure readings. In wards teeming with technology this may seem odd, but it makes good sense, Mr Murphy says. "When you take BP manually, you also check the pulse, touch patients' skin and look at their face — all very important clinical observations. Having a nurse on hand to explain what's happening, especially if there is a problem, is a better experience for the patient."

Change, he explains, is decided at ward level and is a continuing opportunity for healthcare teams to redefine their roles and working practice. The programme is proving a success and Mr Murphy says the 50 per cent target has been exceeded. He believes one of the reasons for this has been the leadership by a consultant in respiratory medicine, who jointly directed the improvement programme. "The problem exists on all wards and departments so looking at it from a non-critical care perspective was important.

"One of the things we have also done is play back the patient's experience to staff. We have encouraged the families of those who have died to tell us about what happened through their eyes." Mr Murphy attributes success to the doctors and nurses at the trust. "They are the stars in all this," he says.

Getting the detail right

Although organisation-wide adherence to improving safety is the way many trusts tackle the issue, improvements can also be made by looking at specific areas. Examples of these areas are: pressure sores; central line infections; ventilator-acquired pneumonia; surgical site infections; and cardiac arrest in hospital.

Many trusts are now using a "care bundle" approach in these areas. A care bundle involves up to five interventions that, when executed together, result in better outcomes. Evidence shows that the use of care bundles can improve outcomes and lead to fewer adverse events if therapy is based on agreed, evidence-based guidelines.

Northumbria Healthcare NHS Foundation Trust is focusing on reducing pressure sores but it has also looked at the fractured neck of femur pathway (see case study 3). Western Health and Social Care Trust, winner of the CHKS patient safety award 2011, is encouraging clinicians to make continuous, stepped improvements in safety according to agreed priorities.

Dr Anne Kilgallen, medical director of the Western Trust, says the trust began its approach to improving quality and safety by identifying clinical champions and their priorities. "Our aim is to be responsive to what clinicians have identified as priorities for change. Essentially, our approach is owned by the organisation but driven by clinical staff," she says.

"We provided training in improvement methods and encouraged clinical teams to implement evidence-based care using the approach based on small steps and cycles of change. We had support in this from the newly established Northern Ireland Safety Forum, which provided learning collaboratives as well as training for some of the improvement initiatives," says Dr Kilgallen.

The original priorities included the prevention of healthcare-acquired infections (HCAI), reduction in hospital-acquired thrombosis (VTE), introduction of the WHO surgical checklist and improvement in risk assessment in mental health settings. The trust asked staff to review 20 charts on a monthly cycle at random and recorded compliance with the care bundle elements. The data was then reported in a graphical format to trust board.

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>
> **Dr Anne Kilgallen, medical director, Western Health and Social Care Trust**

"In the context of HCAI reduction, we reviewed our antibiotic prescribing policies and carried out a cycle of audit at ward level. We also developed an electronic solution to monitoring antibiotic usage at ward level, again to enable staff to have timely and visual feedback on performance." The trust is now in the top two among a peer group of trusts across England and Northern Ireland in terms of prevention of *Clostridium difficile* infection.

Reducing VTEs has required the same degree of focus. The starting point has been identifying small clinical teams, which establish the steps that are needed to improve clinical practice. The outcome is recorded with the use of a pre-printed risk assessment and prescribing form (Kardex), which is used by staff on wards.

The results have been striking. The aim was to ensure all patients assessed to be at risk of VTE were offered prophylaxis in accordance with NICE guidance. Dr Kilgallen says that the trust has improved from 80 per cent compliance to 98 per cent.

She believes attention to detail is an important part of nurturing a culture of safety improvement. "Initiatives like the board walkaround, which sees directors visiting wards and departments where safety initiatives are ongoing to find out about latest progress, is a good example of this," she says. Dr Kilgallen says the trust strives for openness, and senior managers will meet families who wish to express concern about care.

"In every service area we have a governance group that considers quality and safety priorities. We also have a doctor in the organisation who acts as our patient safety champion and who promotes the IHI's model for improvement. This year, we committed to bring all these initiatives together in a single strategy for quality and safety improvement."

The Leading Improvement in Patient Safety (LIPS)

This is a nine-month programme run by the NHS Institute for Innovation and Improvement. To date, there have been seven waves of the programme and more than 100 organisations — mainly acute trusts — have participated.

The website (www.institute.nhs.uk/LIPS) contains a wide range of resources, including films, papers, case studies and guides. Participants on the programme are also given access to the resource library. These resources reflect the benefits that participants have gained from the programme and their desire to increase capability and capacity for safety improvement within their organisations.

Communicating our aims and the results has been an important factor in our success. We make sure everyone in the trust knows what we have achieved

Andrew Chaplin, consultant, Northumbria Healthcare NHS Foundation Trust

CASE STUDY 3

Fractured neck of femur - how Northumbria is getting results

Hip fracture is common among the frail and elderly. The risk of dying from a hip fracture is around 10 per cent within 30 days, and around 30 per cent of patients die within a year.

The project to examine the hip fracture pathway at Northumbria Healthcare NHS Foundation Trust was initiated by the trust board in preparation for the planned opening of an emergency care centre in 2014. The board felt this relatively complex pathway should be a particular focus and a specific quality improvement programme for hip fracture care, HIP QIP, was created. A steering group set up to define the scope of the project concluded that HIP QIP should improve quality from admission to discharge. Within this time, efforts would also be made to improve prevention of further injuries.

Consultant Mike Reed has been instrumental in the project and says he was encouraged to take a strategic approach starting with the patient. "We asked everyone involved what the pathway should look like and what improvements were needed," he says.

The starting point was a baseline assessment of HIP services to establish how the trust was performing. "This covered mortality and infection rates and helped us get a better understanding of where we were starting from," says Mr Reed. "The project also coincided with a national focus on hip and fracture care, so it was timely in that respect."

Mr Reed believes recognition at board level has been important. "The board ensured we had the right information to support the change and the chief executive is a member of the steering group. This serves as a constant reminder that it is high on the trust's agenda."

Annie Laverty, director of patient experience, believes that the HIP QIP launch event, attended by multidisciplinary and multi-agency teams, gave the project a unique profile. The event atracted more than 140 interested clinicians, carers and patient representatives. One of the key themes in HIP QIP has been improving patient experience and, as a result, the King's Fund became involved. It formally included the project in its Point of Care: Hospital Pathways Programme.[9]

The steering group was assigned key projects, with the following themes running across the patient pathway:

- Patient experience
- Nutrition
- Training and education
- Best practice tariff

Best practice was led by consultant orthogeriatrician, Andrew Chaplin, who says that getting clinicians on board was not difficult because there was a strong desire to make improvements. "Communicating our aims and the results has been an important factor in our success. We make sure everyone in the trust knows what we have achieved. When it comes to best practice performance and nutrition, we make sure that real-time results are fed back to each ward every week."

"We have also introduced local anaesthetic hip blocks by publicising both the numbers of patients who receive blocks, and the dramatic reduction in pain that this brings."

The results:

- 79 per cent of patients get a very effective nerve block on admission to hospital
- 30 per cent drop in mortality within 30 days at Wansbeck Hospital
- 95 per cent of patients have surgery within 36 hours
- Over 95 per cent of patients who are medically fit are mobilised by day one following surgery
- "Excellent" patient experience consistently reported by patients and families
- 81 per cent of patients receive additional feeding each day, with the help of specifically appointed nutrition assistants

It is not just about an electronic system, it is about learning and understanding what it means when a patient deteriorates and what the response should be

Sarah Ingleby, lead nurse, acute care team, Central Manchester University Hospitals NHS Foundation Trust

CASE STUDY 4

Central Manchester harnesses technology to improve its early warning system

Sarah Ingleby is lead nurse in the acute care team at Central Manchester University Hospitals NHS Foundation Trust. Her experience with early warning protocols began more than 12 years ago, when the trust set out to implement early warning scores (EWS) across the site, with the aim of improving recognition, response and escalation for any deteriorating patient. The project involved significant training and education surrounding how to identify deteriorating patients and how to manage them. There was an improvement in terms of reducing the number of incidents of harm involving deteriorating patients.

However, as Mrs Ingleby points out, the EWS only went so far and when NICE guidance[10] came out in 2007, it was recognised that the trust could aim to make further improvements. "We felt that the right clinicians were not always getting to the bedside when a patient was deteriorating," she says.

Jane Eddleston, a consultant at the trust, began working with Professor Michael Buist, chief medical officer at Patientrack, on an automated bedside observation and clinical alert system that would increase compliance with the EWS protocol and ensure the correct personnel would be contacted to attend a patient whose condition was deteriorating.

After an initial trial led by Dr Steve Jones, consultant in emergency and intensive care medicine at the trust, followed by a tender process, the system is now installed in 21 wards and Mrs Ingleby says significant improvements have been seen. This has been borne out by a controlled study of bedside electronic capture of observations and automated clinical alerts. The primary outcome measure was hospital length of stay (LOS); secondary outcome measures were compliance with the EWS protocol, cardiac arrest incidence, critical care utilisation and hospital mortality.

The study found there was a reduction in hospital LOS between the baseline and alert phase, from 9.7 days to 6.9 days. EWS accuracy improved from 81 per cent to 100 per cent with electronic calculation. Clinical attendance to patients with EWS 3, 4 or 5 increased from 29 per cent at baseline to 78 per cent with automated alerts.

The project has two educators who "work flat out", training every ward nurse and educating doctors to make sure everyone knows what they are doing with the system and that acute care skills are up to scratch. Mrs Ingleby says: "It is not just about an electronic system, it is about learning and understanding what it means when a patient deteriorates and what the response should be."

The system has encouraged a shift in perspective to one of prevention, especially when it comes to cardiac arrest. Mrs Ingleby also believes the system has assisted in ensuring escalation occurs when it should, for example, by relieving junior doctors of the burden of deciding whether to escalate to their senior colleagues. At the same time, it has helped to identify areas where further development and training are needed.

"The nurses find the system very useful, feeling confident that the medical staff will attend the bedside of the patient when they are needed. It means we know the EWS is being followed, ensuring the right person attends the right patient at the right time," says Mrs Ingleby.

The use of mortality as a safety indicator

Mortality ratios have gained notoriety among healthcare professionals and managers alike. However, they do have a place in safety improvement initiatives, although the figures need to be handled with care.

Dr Gareth Goodier, chief executive at Cambridge University Hospitals NHS Foundation Trust, believes there are key messages in mortality measures that cannot be ignored "especially if you are at the top or bottom of the pile". He says: "They are a useful tool, particularly when you look at mortality rates for different conditions. The improvement we have seen in benchmarking information in recent years has been one of the real drivers in safety."

Ratios are used because a simple count of deaths alone does not take into consideration the difference in size between one hospital and another. Unadjusted mortality is reached by dividing the number of deaths by the number of patients treated in a hospital over a given period. It produces a percentage rate of patients who die in that hospital. This is perhaps the simplest way to judge hospital mortality performance.

The use of unadjusted mortality has a limited place when looking at deaths within hospital. Apart from the obvious differences in size between hospitals, measurement of mortality also depends on the seriousness of the condition that a patient is admitted with — commonly referred to as "case-mix". This has led to the development of a number of models that adjust for these factors to help understand an organisation's comparative position. Collectively, these models produce a statistic known as a hospital standardised mortality ratio (HSMR). The CHKS HSMR is known as the Risk-Adjusted Mortality Indicator (RAMI).

Standardised mortality ratios have been used for a long time in public health, often to examine regional variations in death from specific causes. They produce a figure by comparing the number of actual deaths — referred to as observed deaths — with the number of deaths that the statistical model would predict or expect, having adjusted for the population's characteristics, such as age and gender.

HSMRs adjust for a wider range of variables, which take into account the patient's condition, the type of admission — whether it was elective or emergency — and any co-morbidities (existing diseases or disorders).

Tackling avoidable mortality means getting basic care right all the time, for every patient. This improves the standard of care for all patients and will reduce complications, speed recovery and enable faster discharge

The calculation is expressed as a number, with 100 set as the national average. A number higher than 100 reflects a greater number of deaths than might be expected; a number lower than 100 reflects fewer deaths than expected. Any statistical interpretation also has to bear in mind the concepts of confidence limits and statistical significance. The question then is whether the variation from the average is just chance or not.

The NHS Institute for Innovation and Improvement believes the case for hospitals to reduce avoidable mortality is clear. It says a reduction benefits everyone. Tackling avoidable mortality means getting basic care right all the time, for every patient. This improves the standard of care for all patients and will reduce complications, speed recovery and enable faster discharge.

Patients can have greater confidence in their care and clinical outcomes but there are also benefits for staff at all levels, who can be assured of the reliability and safety of the care they give. For the trust board, there are potential efficiency gains and cost savings.

In 2007, the Institute published a report entitled *Reducing avoidable mortality*[11], one version for chief executives and one for medical directors. It said: "The quest to reduce avoidable hospital deaths should be a top priority for every chief executive." The publication highlighted work carried out by the Institute with 12 acute trusts to reduce mortality ratios, in which overall mortality improved by 10 per cent over the course of the programme.

Rebasing – what is it and why is it done?

Due to a number of changes that are seen over time (including improvements in clinical practice and clinical coding, and changes in population demographics) the average mortality ratio base of 100 will change. Over the past 10 to15 years in the NHS, the national average has decreased year on year, because of the types of changes that are outlined above.

It is considered good practice to rebase the statistical model of a mortality ratio at regular intervals in order to reset the average to 100.

This adjustment will inevitably change an organisation's ratio; the direction of this change will be influenced by a number of factors but the most common change is for the mortality ratio to increase.

Summary Hospital-level Mortality Indicator (SHMI)

CHKS was part of the steering group set up by the Department of Health for the national review of the hospital standardised mortality ratio. The outcome of the DH steering group was to agree to a new indicator becoming the national standard for England. It has been called the Summary Hospital-level Mortality Indicator (SHMI). The final detailed model is currently being completed by the NHS Information Centre. It is expected that there will then be a short introductory period for the indicator before it officially goes live and is published.

The SHMI is one of a number of indicators that can provide important information about a hospital and the quality of the care it offers. In some circumstances, it can help shine a light on areas of potential concern that might be in need of further analysis or investigation. As a high-level measure, it is a helpful addition to the portfolio of screening and surveillance indicators and may assist in flagging up potential problems in hospitals, but only when used in conjunction with, and corroborated by, other information.

> A high mortality ratio is a trigger to ask hard questions. Good hospitals monitor their mortality ratios actively and seek to understand where performance may be falling short, and action should not stop until the clinical leaders and the board at the hospital are satisfied that the issues have been effectively dealt with
>
> **Department of Health, 2010**

Common causes of a high mortality ratio

Inappropriate and/or untimely care	• Delays in the process of care, for example delays to theatre • Ineffective systems to identify and rescue the deteriorating patient • Delays in transferring patients to high-dependency unit
Inappropriate setting of care	• Problems accessing critical care • Medical outliers on surgical wards • Inappropriate admissions from nursing homes, for example, patients admitted to hospital for end-of-life care
Poor medicines management	• Antibiotic doses missed • Errors in establishing the medication history of patients on admission, leading to omission of pre-admission drugs • Complications from high-risk medications, for example, poor control of opiates and Warfarin
Hospital-acquired infections	• Surgical site infections • Central line-associated bacteraemia • Ventilator-associated pneumonia
Non-clinical issues	• Inaccurate coding

Source: NHS Institute for Innovation and Improvement

Safety and cost reduction

For some healthcare professionals, the link between safety and cost can become an uncomfortable discussion. They believe safety is integral to the delivery of healthcare and should be considered in isolation, or that cost savings are not as easy to realise.

Stephen Ramsden is of the view that you cannot consider improvement in isolation from cost but he agrees that realising cost savings can be difficult because you are only "nibbling away at one or two beds per ward".

Salford Royal's David Dalton, agrees and says the work that has been done at Salford in reducing harmful events by 50 per cent has saved around 78 beds overall. "The problem is that harm doesn't cluster around those 78 beds — it is evenly spread across wards and closing two beds does not liberate the savings."

The solution applied at Salford is to look at four wards together and ask clinicians to apply everything they know about harm reduction with the intended goal of closing four beds across these four wards.

For Cambridge's Dr Gareth Goodier, discussion around safety and cost is facilitated by the trust having an accurate idea of service-level costing. He describes a "hotel bill" approach, where the trust knows down to every penny how much each patient has cost. From there, it is a question of applying reason to safety initiatives.

"In my experience, there is a significant financial return for improving safety," Dr Goodier says. "This is easily shown with HCAIs such as MRSA and *C. difficile*. We know that patients who get these infections will stay in hospital an average of 20 days longer. We know that works out at £13,000 more per patient. You have to be brave enough to invest in safety."

In 2010, the Department of Health started to look more closely at the linkage between safety and productivity — a natural step when considering the scale of the cost savings that are being asked of NHS organisations. Maxine Power, national improvement advisor, Quality, Innovation, Productivity and Prevention, Department of Health is responsible for the QIPP

national workstream in this area. The aims are to work with NHS staff to achieve:

- 80 per cent reduction in hospital-acquired pressure ulcers (grades 3-4)
- 30 per cent reduction in community-acquired pressure ulcers (grades 3-4)
- 50 per cent reduction in catheter-acquired urinary tract infections
- 25 per cent reduction in falls in care

The reason these areas were chosen is because they are common, important to patients and expensive to treat. In addition, there are common elements involved in addressing them, such as medication and nutrition, and there is a balancing aspect to them. Ms Power says this balancing aspect is often overlooked in safety initiatives. "For instance, a trust might embark on an initiative to reduce the number of VTEs using embolic stockings but might then see an increase in the number of pressure ulcers on the back of heels. So the two are related and improving safety needs to be considered in tandem," she says.

Ms Power and her team have developed Safety Express, which is designed to be used across all care settings. It focuses on a targeted portfolio of changes, integrating with existing initiatives to support staff in a move away from concentrating on individual conditions to a wider view of harm-free care.

The view that improvements in safety will have a direct impact on cost and can bring significant savings is supported by Dr Mahmood Adil, national QIPP advisor, clinical and finance engagement (see case study 5).

Dr Adil's recent work on falls has demonstrated a clear link between safety and cost and the business case for safety, using falls as an example, is highlighted in *Stepwise: How to reduce harm (inpatient falls), improve quality and save costs*[12]. This work, done in collaboration with colleague Nicola Davey, senior associate programme manager, advanced improvement capability, won an *HSJ* Patient Safety award in 2011 and was featured in the plenary session at the Patient Safety Congress 2011.

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>
> **Dr Gareth Goodier, chief executive, Cambridge University Hospitals NHS Foundation Trust**

CASE STUDY 5

Reducing costs by cutting the number of preventable falls

Dr Mahmood Adil, national QIPP advisor, clinical and finance engagement, has been working with Wrightington, Wigan and Leigh NHS Foundation Trust (WWL) on a falls-prevention initiative, and he is able to show that it has made significant costs savings.

According to the National Patient Safety Agency, in an average 800-bed acute hospital trust, there will be around 24 falls each week and more than 1,260 falls each year. This makes falls the highest-volume patient safety incident reported in hospital trusts in England. The NHS inpatient fall rate average is six per 1,000 bed-days. However, there is considerable variation, ranging from three falls per 1,000 bed-days to 12. The figure for WWL was around 1,370 falls each year with a fall rate average of seven per 1,000 bed-days.

Dr Adil was familiar with the trust and its high levels of staff engagement convinced him that it would be a good candidate for a falls-prevention initiative. His work with WWL was supported by an extended fellowship with the NHS Institute for Innovation and Improvement. He started out by setting up a strategic as well as an operational team, consisting of nurses, pharmacists, physiotherapists, data analysts and a number of other healthcare professionals. Asking them what they understood by falls (based on his experience in the US) he was not surprised to find that there were various definitions within the trust's internal and external documents. So the definition of a fall was an important first step. "If you don't read from the same script, how can you achieve the right outcome?" he asks.

Dr Adil also met the board on a regular basis and helped them understand that falls prevention was not just another safety project but an initiative that could act as a trailblazer to improve patient care and also add to the trust's bottom line. Outcomes were agreed as follows:

- To decrease the number of falls by 50 per cent in two years
- To develop a business case for safety through innovative use of data

Dr Adil says the data was fundamental to the project and, by bringing clinicians and the finance team together, the hospital began to work on the real direct cost per patient of a fall. Falls were classified as either mild, moderate or severe and costs attributed to each.

"It was a very systematic exercise and it took us six months to build the database, working out what should be included and excluded. We looked at cost right down to dressings, although we didn't include wider societal costs beyond the trust's patient pathway," says Dr Adil. "It was only possible because we were able to establish common grounds and interdependency between the clinical and finance teams and help them to understand that they have the complementary skills to achieve this outcome together." Building the dataset involved:

- Analysis of three years' retrospective fall data, — 4800 falls
- A manual review of all patients' notes during a six-month pilot phase
- Mapping of all fall-related information (internal and external)
- Triangulation and revalidation of data

Once the dataset was created, work started on a root-cause analysis and a multifactorial fall-intervention checklist called TEAM RED was developed, which was used by all the relevant trust staff to achieve the desired outcomes. It was a systematic approach to reducing the number of falls that encouraged staff to become experts at falls prevention. Dr Adil says the results speak for themselves. The fall rate has fallen to 18 per cent within six months. "The best we have found in the published literature is an 18 per cent reduction in 18 months. A 50 per cent reduction will put us ahead of the rest and we are certainly proud of the achievement so far," he says.

However, as far as Dr Adil is concerned, the real achievement will come when this approach is adopted by other trusts. Therefore, all this work and accumulated knowledge has been developed into the *Stepwise* guide[12], aimed at helping other trusts to adopt a similar approach to achieve the same outcome. "We are keen that other NHS organisations should use the guide and link with the staff at WWL to learn more about the initiative," he says. "The NHS Institute is currently developing a consultation package to take this to the next level." The Patient Safety First campaign has also recently responded to demand from trusts by issuing *The 'How to' Guide for reducing harm from falls*[13].

As for WWL, the business case is straightforward. The cost of the intervention is running at an initial £15,000 investment plus £5,000 per year. With the cost of falls estimated at £200,000 per year the trust is looking to save £120,000 per year once it has achieved its target of a 50 per cent reduction in falls within two years. This is the avoidable cost incurred by the trust every year to deal with its high number of inpatient falls.

Future proofing

Safety improvement is not just about engineering appropriate initiatives. It also means creating a culture of safety improvement so that the organisation will remain safe in the future. All too often, a trust will embark on a safety initiative, make good progress and then, once the target has been achieved, there will be a vacuum until the next priority is identified.

One trust that is striving for excellence in safety is Cambridge University Hospitals NHS Foundation Trust. Chief executive Dr Gareth Goodier says this is not just about what happens today but what happens years down the line.

"This means making sure the culture and cultural leadership is consistent with safety improvement. We have a good, honest culture here and members of staff are high reporters of incidents but it is the continued focus on safety that is the key," he says.

Dr Goodier believes three initiatives are helping to set out the trust's stall on safety for the future. These are a patient safety executive, a patient safety council and an initiative entitled clinical areas safety assessment (CASA).

The patient safety executive consists of senior clinical leads who, as a team, are responsible for the trust's safety agenda — something that is given board-level priority. The executive has the authority to question data and test patient safety initiatives. It also carries out the CASA, which Dr Goodier describes as an "MOT" on each clinical department. The idea is to examine the working of each department to ensure certain standards are met. The department will then be either fully accredited or partially accredited. A full accreditation means the next CASA will be three years down the line; a partial accreditation means another visit the following year.

Objections to anything raised by the patient safety executive are referred to the patient safety council, a team of senior individuals who are experts in safety (including one from the department of engineering at the University of Cambridge, which is associated with the nuclear industry).

Dr Goodier also highlights the importance of creating a culture of measurement and comparison. "When I arrived at the trust, there were some concerns around MRSA and *C. difficile* and, when we looked into this further, we discovered that only internal trend analysis was being carried out. So we switched to a comparative analysis and started to pull apart how we performed in every area of activity compared with our peers. This was a vital first step."

Patient feedback is another factor that Dr Goodier believes will ensure the trust remains safe. "Customer feedback is absolutely critical and we do more patient surveys than any other trust — 3,000 every quarter on inpatients alone." Above all, there is the trust's approach to staying ahead, which Dr Goodier describes as a "looking and learning from the best" philosophy. When the trust establishes an area for improvement, it will seek out trusts that are leading in that field and find out how they make improvements. "We will then borrow as much as we can," he says.

What you can do to ensure your organisation stays safe

1. Build a safety culture
2. Lead and support your staff
3. Integrate your risk-management activity
4. Promote reporting
5. Involve and communicate with patients and the public
6. Learn and share safety lessons
7. Implement solutions to prevent harm

● **Source: National Patient Safety Agency**

Conclusion

Every trust highlighted in this report is one of many leading acute-sector organisations that are making significant improvements in safety. They each highlight different aspects of safety improvement, and the routes they have taken to achieve them vary considerably.

However, there are common themes, which we have sought to bring out. These are:

- Consistency. Everyone in the organisation understands the importance of safety improvement
- Transparency. Every member of staff has accepted that improvements need to be made and is prepared to be open about failure
- Leadership. The board and chief executive have acknowledged that safety is integral to the running of the organisation
- Support. The organisation supports staff in safety improvement, either through external national programmes or links with other organisations
- Measurement. Data is collected to help the organisation understand where it is starting from and by how much it has improved

Of all these themes, support is the one that appears most often. Throughout this report, we have mentioned national bodies and initiatives that have provided invaluable assistance and direction for NHS organisations. Each has offered a wealth of resources that can be freely accessed. We urge organisations seeking to make safety improvement to make the most of this guidance and to learn from the examples highlighted in this report. A list of contacts is provided below.

Trust	Contact	Email
Northumbria Healthcare NHS Trust	**Mike Reed** consultant	mike.reed@nhs.net
Salford Royal NHS Foundation Trust	**Peter Murphy** divisional director of nursing	peter.murphy@srft.nhs.uk
Central Manchester University Hospitals	**Sarah Ingleby** lead nurse, acute care team	sarah.ingleby@cmft.nhs.uk
Aintree University Hospitals NHS Foundation Trust	**Jill Byrne** director of nursing	Jill.byrne@aintree.nhs.uk
Wrightington, Wigan and Leigh NHS Foundation Trust	**Dr Mahood Adil** national QIPP advisor, clinical and finance engagement	mahmood.adil@institute.nhs.uk

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