Human Factors in Healthcare

A Concordat from the National Quality Board

Patient Stories

A patient was given an unnecessary knee operation[1]

Two patients with the same name were set up with one set of medical notes and hence the same hospital number. They had different medical conditions that required hospital appointments in different departments, however, they both just happened to have knee pain at the same time. The wrong patient arrived and had the procedure intended for the other.

How did this happen?
- *Four different hospital numbers were recorded in the patient's medical notes, along with more than one GP and several different addresses.*
- *The hospital used patient identifier labels so one mistaken patient detail could be replicated many times.*
- *An independent translator wasn't always available when either patient turned up for the treatment of their different conditions.*
- *Neither the consent form nor the pre-operation assessment form were properly completed.*

A child with a known penicillin allergy was prescribed and administered an intravenous dose of an antibiotic of the penicillin class[2]

A child was due to have a pacemaker fitted. On pre-admission an allergy to penicillin was recorded. This was noted on both the nursing admission assessment form and the anaesthetic record chart. Prior to operation, the allergy was discussed with the specialist paediatric cardiology registrar, the consultant paediatric anaesthetist, anaesthetic specialist registrar and the cardiology consultant. However, following the procedure the patient's plan included intravenous and oral penicillin.

How did this happen?
- *Intravenous penicillin is the usual antibiotic used following a pacemaker being fitted. There was no up-to-date protocol on what other antibiotics should be used if a paediatric cardiac patient has a penicillin allergy, which initially caused confusion;*
- *There was no clear record of the allergy in the medical notes when the Consultant Cardiologist advised treatment;*
- *No system was in place to prevent penicillin prescription when a known allergy was recorded.*
- *A number of appropriate checks were not followed prior to administration of the antibiotics.*
- *During independent checks, neither nurse checked allergy status, and both were under pressure to complete tasks. The patient's allergy band was on the same side as their identity band, both of which were covered with a bandage for an intravenous drip.*

Human Factors in Healthcare

What are Human Factors in healthcare?

"Enhancing clinical performance through an understanding of the effects of teamwork, tasks, equipment, workspace, culture and organisation on human behaviour and abilities and application of that knowledge in clinical settings".[3]

The primary purpose of the NHS is to deliver high quality care to all, free at the point of need. High quality care encompasses care that is safe, clinically effective, and results in as positive an experience for patients as possible.

However, delivering healthcare can place individuals, teams and organisations under pressure. Staff have to make difficult decisions in dynamic, often unpredictable circumstances. In such intense situations, decision making can be compromised, impacting on the quality of care, clinical outcomes, and potentially causing harm to the patient; poor performance also increases costs. A series of case studies demonstrating what can happen when things go wrong are included at **Annex A**.

The NHS needs to create the conditions where the safety of those accessing NHS-funded health services is the primary concern.

The value of Human Factors for the NHS

Human Factors, often referred to as ergonomics, is an established scientific discipline used in many other safety critical industries. Human Factors approaches underpin current patient safety and quality improvement science, offering an integrated, evidenced and coherent approach to patient safety, quality improvement and clinical excellence.

The principles and practices of Human Factors focus on optimising human performance through better understanding the behaviour of individuals, their interactions with each other and with their environment. By acknowledging human limitations, Human Factors offers ways to minimise and mitigate human frailties, so reducing medical error and its consequences. The system-wide adoption of these concepts offers a unique opportunity to support cultural change and empower the NHS to put patient safety and clinical excellence at its heart.

Human Factors principles can be applied in the identification, assessment and management of patient safety risks, and in the analysis of incidents to identify learning and corrective actions.

More broadly, Human Factors understanding and techniques can be used to inform quality improvement in teams and services, support change management, and help to emphasise the importance of the design of equipment, processes and procedures.

The NHS has already started to harness Human Factors approaches through the successful adoption of patient safety and quality improvement science, and in the ergonomic design of medical devices and workplaces.

There is, however, further learning that can be adopted and adapted from best practice to minimise risk to patients and so optimise human performance in healthcare. The NHS must learn where it can from other high reliability industries where safety of employees and customers is paramount such as nuclear, petro-chemical, military operations, rail, maritime, civil aviation and emergency services.

This means acknowledging that Human Factors is not a separate agenda or programme, but a way of thinking that should be incorporated as part of the design of processes, jobs and training.

A series of case studies at **Annex B** demonstrate how Human Factors principles and practices are being applied to the benefit of patients in the NHS.

The Concordat

We, the undersigned, believe that a wider understanding of Human Factors principles and practices will contribute significantly to improving the quality (effectiveness, experience and safety) of care for patients.

We commit to supporting the National Health Service to optimise its leadership, systems and processes, design, education and training, regulation and quality assurance, to build a high performing, resilient and efficient healthcare system which protects patients by minimising human errors in healthcare delivery and is constantly aspiring for excellence through quality improvement. ***So, supporting the NHS to do the right thing first time, every time.***

Our principles

We acknowledge that much of the activity to embed Human Factors in healthcare sits with frontline providers; although commissioners, regulators and other organisations have key enabling roles.

In supporting the NHS to understand and adopt Human Factors principles and practices, we commit to:
- raising awareness and promoting Human Factors principles and practices in healthcare;
- understanding, identifying and addressing current capability, barriers to adoption, future requirements and best practice in Human Factors in healthcare;
- creating the appropriate conditions, through commissioning, quality assurance and regulation, that support the NHS in embedding Human Factors at a local level.

Our Commitment

The National Quality Board – which brings together different national organisations with responsibility for quality in the NHS, alongside patient representatives and experts - will provide leadership and oversight for embedding Human Factors principles and practices, bringing together all levels of the system to support:

- strong **leadership and understanding** for Human Factors in the NHS;

- inclusion of Human Factors principles and practices in core **education and training** curricula for health professionals and managers and to support on-going professional development;

- the development of a **just, open and positive organisational culture** that optimises human performance, supports strong, respectful and accountable working relationships; acknowledges the potential for human error at all levels; and, ensures a systematic approach to best practice through proactive identification of risk, effective debriefing, learning from feedback and complaints, and dissemination of learning;

- **alignment of the system** to embed an understanding of Human Factors principles and practices, including a commitment to developing genuine 'Learning Organisations' which focus on delivering high quality care;

- **standardisation** of clinical care, where evidenced through guidelines, care pathways and protocols; and,

- supporting **commissioning and procurement** that embeds Human Factors principles and practices.

Action we are taking

- **NHS England** is harnessing Professor Don Berwick's call[4] for the NHS to nurture and embrace a culture of learning and continual improvement by supporting a nationwide programme of safety improvement collaboratives. These collaborative groups will be supported nationally to harness improvement science and other techniques to deliver locally owned and led programmes that deliver safer care. Existing examples already successfully utilise Human Factors approaches and NHS England will ensure the use of Human Factors science is applied, where appropriate, through the safety collaborative programme.

- **Health Education England (HEE)** is exploring how Human Factors practices and principles can be included in the curricula and training frameworks for health professionals.

- The **Care Quality Commission (CQC)** is radically changing its assessment of quality in NHS organisations, and in doing so is embedding Human Factors principles within its assessment of how safe, effective, caring, responsive and well-led organisations are; with a particular focus on developing just and open cultures, that encourage learning from mistakes and consider how alert staff are to emerging risk.

- To improve recommendations on patient safety, the **National Institute for Health and Care Excellence (NICE)** is considering how evidence on Human Factors can be taken into account in the development of clinical guidelines.

- Human Factors are of undoubted importance in public health work, for instance around the management of outbreaks of communicable diseases and in the management of serious incidents. **Public Health England (PHE)** is working with partners to identify how Human Factors principles can support the delivery of high quality, safe public and population health services that contribute to improving and protecting the public's health.

- The **NHS Trust Development Authority (NHS TDA)** is considering how it can best reflect Human Factors principles as part of its oversight, support and development of NHS trusts.

- The **General Medical Council** has reflected the importance of recognising Human Factors in the development of generic professional capabilities for post graduate medical curricula. The context for this is the GMC's core guidance for all doctors, *Good medical practice*, which sets out what is expected of doctors, including communication and partnership working with patients.

- The **Nursing and Midwifery Council (NMC)** is interested in the impact of Human Factors on the practice of nurses and midwives. Human Factors will inform the review of their code of conduct and practice for nurses and midwives in 2014 and education standards in due course.

- **NHS Employers** will use its extensive communication and engagement channels with NHS employer organisations to ensure that the evidence base for Human Factors and its practical application is made readily available. Through its work with employers on organisational

development, cultural change and supporting values driven behaviour, it will ensure that this evidence base is incorporated into our programmes and resources.

- The **Parliamentary and Health Service Ombudsman (PHSO)** is developing expertise in Human Factors science and root cause analysis to help providers learn from complaints through better understanding of why mistakes happen.

- The **NHS Leadership Academy** is working to promote, educate and share the Human Factors principles throughout its professional leadership programmes and health system development work. In particular, it is ensuring Human Factors approaches are embedded in all of its programmes, are integral to its online materials and included in conversations with partners, participants and patients.

- The **NHS Litigation Authority (NHS LA)** is developing a Safety and Learning Service for the NHS to help learning from claims. In particular, the service is providing, through a Safety and Learning Library, resources on all aspects of safety including that of Human Factors so that organisations can truly get to the heart of why claims occur and what can be done to prevent them in the future.

Our approach moving forward

We initiated the work that has led to this Concordat following the Mid Staffordshire NHS Foundation Trust Inquiry 2010[5]. The report of the Mid Staffordshire NHS Foundation Trust Public Inquiry 2013[6] further emphasised the critical importance of NHS organisations working in partnership to avoid, isolate and/or mitigate risk to high quality patient care and ensure such widespread systemic failure does not happen again. The intentions of and work to deliver our Concordat seek to respond to this and to the conclusions of the National Patient Safety Advisory Group led by Professor Don Berwick[7].

However, this Concordat is only the starting point. For our ambitions to become a reality, Human Factors principles and practices will need to inform all aspects of the healthcare system.

This will require multiple actions at multiple levels across the system: from ensuring the workforce is aware of the application of Human Factors in everyday clinical practice, to embedding an understanding of human limitations and how to mitigate against their impact in the development and design of healthcare systems and processes. It will require every NHS organisation to commit to embedding an understanding of Human Factors in their business as usual activities and also when things go wrong and need investigation.

If we are serious about this commitment, we need to work with NHS organisations, clinicians and NHS staff to understand their current capabilities, establish their requirements and develop a work programme of tailored support that enables NHS organisations to maximise the potential that Human Factors principles and practices can offer in relation to patient safety, efficiency and effectiveness.

Health Education England, through its education commissioning and strategic leadership will support the development of curricula, training frameworks and continuing professional development frameworks that ensure that the current and future workforce has the right skills, values and behaviours in relation to Human Factors principles and practices.

NHS England, on behalf of the commissioning system and through the patient safety collaborative programmes will work to support the NHS in taking forward this agenda as part of the wider patient safety and quality improvement agenda.

Together, and with other signatories to this Concordat, they will take forward the following steps:

- **Step 1:** Communicate with commissioners and providers to increase their awareness and understanding of the concept of Human Factors, highlighting how the approach can be used to drive improvement in quality and safety

- **Step 2:** Scope current capacity and capability in Human Factors and identify what support and development the NHS requires to fully harness the benefits of Human Factors approaches throughout the system.

- **Step 3:** Develop programmes of work, based on Step 2, to be taken forward by organisations nationally, regionally and locally to enable the NHS to embed Human Factors principles and practices in its culture, systems and processes.

Signed by:

Care Quality Commission
Department of Health
Health Education England
The Parliamentary & Health Service Ombudsman for England
NHS Employers
NHS England
NHS Trust Development Authority
Monitor
National Institute for Health and Care Excellence
General Medical Council
HealthWatch England
Nursing and Midwifery Council
Public Health England
Social Care Institute for Excellence
NHS Leadership Academy
NHS Litigation Authority

Further information:

Websites:

- Clinical Human Factors Group (CHFG): http://chfg.org/

- Designing Out Medical Error (DOME): http://www.domeproject.org.uk/

- The Health Foundation: http://www.health.org.uk/

- Institute for Ergonomics and Human Factors: http://iehf.org/

- Patient Safety First: http://www.patientsafetyfirst.nhs.uk/

Publications:

- Department of Health Clinical Human Factors Reference Group Interim Report:
  http://www.england.nhs.uk/wp-content/uploads/2013/11/DH-rep.pdf

- Never? (Appendix 2, Department of Health Reference Group Interim Report):
  http://www.england.nhs.uk/wp-content/uploads/2013/11/DH-2.pdf

- Implementing Human Factors in Healthcare: How to guide (volume 2):
  http://www.institute.nhs.uk/images/documents/SaferCare/Human-Factors-How-to-Guide-v1.2.pdf

- Getting to grips with Human Factors – a learning resource for Boards:
  http://chfg.org/articles-films-guides/guidance-documents/a-new-human-factors-resource-for-boards-from-the-chfg

Case studies

A. What happens when things go wrong
B. How Human Factors can help

What happens when things go wrong

Case studies 1-4 are taken from 'Never?', appendix to the Department of Health's Clinical Human Factors Reference Group's Interim Report[8], which summarises the key points and lessons from a series of very different 'never events'. Case study 5 was provided by SaIL[9] at King's Health Partners. Awareness and application of Human Factors principles and practices could potentially mitigate the occurrence of such incidents. These examples focus on cases within a surgical setting on the whole. However, Human Factors is relevant in all aspects of healthcare, and in all sectors. The case studies in Annex B demonstrate this.

Case 1	**The wrong knee was investigated via arthroscopy[10]**
Issue:	A patient was scheduled for a right knee arthroscopy, seen by the consultant and the consent form filled in correctly, the right leg was marked but the procedure was carried out on the left knee until the theatre assistant noticed and spoke up. The procedure was stopped and the right knee investigated as required.
What happened?	- The person operating was not the same as the person taking consent and marking the site. - The site marking was not prominent or undertaken in accordance with policy. - The WHO Surgical Safety Checklist wasn't used in this theatre and there was no time out or verbal check of the site for surgery or position of the table before the procedure started. - The scrub nurse rotated the table for the left knee which caused confusion and set everyone up to think it was the left knee to be operated on. - The nurse then left theatre and didn't return until the procedure was underway. - Additional theatre staff joined the team during the procedure but weren't briefed.
Case 2	**The wrong lymph node was removed and the patient had to undergo a further procedure[11]**
Issue:	A patient with skin cancer noticed a swelling in their right groin. The referral letter described this to the surgeons and went on to say that an ultrasound scan had shown an enlarged external iliac chain lymph node which had been confirmed as metastatic melanoma by another test. The surgical consultant circled the words 'right groin' on the letter and this term was used thereafter. The wrong site was operated on but on the correct side.
What happened?	- The term groin was interpreted differently by the oncologists and the surgeons.

- The patient didn't have a detailed clinical assessment in the surgical clinic, the original referral letter and report of the ultrasound were not checked.
- The ultrasound scan correctly identified the lymph node group but the cytology form incorrectly described it as being from the right groin.
- The letter from the surgical team was sent to the patient's GP and not copied to the referring oncology team.
- The skin multi-disciplinary team never discussed imaging so the scan was not reviewed at the meeting.
- The scan results were not displayed at the time of the operation and it was recorded on the WHO Surgical Safety Checklist that imaging was not applicable.

Case 3	**A patient had decompressive lumbar disc surgery on the wrongside[12]**
Issue:	A patient had right sided symptoms of sciatica consistent with recurrent disc disease. The patient was admitted and consented for a right far lateral Level 3/4 microdiscectomy and foraminotomy (a medical procedure used to reduce pressure on compressed nerves) by the Neurosurgical Specialist Registrar who marked the side for the surgery with a non-permanent board marker and not a surgical marker pen. The consultant was late to theatre having been at several management meetings from early morning. The consultant missed the final checking and started the operation without the Specialist Registrar present. In preparing the skin the marks washed off and the surgeon put in a new line and proceeded to operate on the wrong side. When the error was noted the patient was still in the recovery area so, with their agreement, they were taken back to theatre and the correct procedure was performed.

What happened?
- The patient was seen by the anaesthetist and the Specialist Registrar and they completed a local checklist and the first part of the WHO Checklist.
- The patient was transferred to a different theatre from the one normally used which had a different layout and different positioning of the imaging screens.
- The correct level of the Level 3/4 disc was confirmed using a needle and image intensifier but the imaging machine was in demand and had to be moved to another theatre once the level had been identified.
- The consultant neurosurgeon arrived in theatre as the needle was being placed and both surgeons confirmed that it was placed on the left.
- The Checklist was commenced while both surgeons were scrubbing for the procedure. The Specialist Registrar who had previously consented and marked the patient went and completed this while the Consultant continued to scrub, he couldn't hear what was being said.
- As the Specialist Registrar left the timeout to finish scrubbing the Consultant neurosurgeon went into theatre to start the procedure.
- The consultant effectively removed all signs of the markings with the skin prep fluid. A new midline mark was applied with an indelible marker relative to the needle used to check the level-the needle did not indicate the side for the procedure.

-   The Specialist Registrar joined the surgery as the consultant made a midline incision and proceeded to perform the procedure on the wrong side, assisted by the Specialist Registrar.

Case 4   **An abdominal spacer for use in radiotherapy was inserted into a cancer patient on the wrong side[13]**

Issue: A young man was diagnosed with metastatic cancer arising in the left ileum (a section of the small intestine) which had spread to his lungs and bones. After chemotherapy treatment, radiotherapy was planned to the left ileum. A temporary abdominal spacer had to be inserted to position the patient's bowel away from the radiotherapy field to reduce radiation toxicity and to minimise any side effects. The spacer was inserted on the wrong side by mistake.

What happened?
-   When booking the patient into theatre, the Senior House Officer used the wrong code that suggested excision of the ileum. The medical notes were not available for the surgical planning meeting.
-   The patient refused to sign the consent form as he knew he wasn't having his ileum removed. The Specialist Registrar was called out of theatre to review the patient and agree with them the correct procedure. This was a busy day in theatre and the Specialist Registrar was rushed.
-   The patient signed the consent form for the correct procedure but on the right side by mistake.
-   The Specialist Registrar returned to theatre without marking the site. The side was marked after the patient was anaesthetised so couldn't correct this. The trust did not have a policy for marking surgical sites.
-   Confusion was caused by different uses of the abbreviation 'RT' which is used by the oncology team to refer to radiotherapy and by the surgeons to refer to the right side. Ileum RT meant very different things to the different medical teams.
-   Two MDT cancer meetings referred to different sides in the notes and two important letters which would have determined the correct side were yet to be filed in the patient's notes since they had deliberately been kept out for the surgeon to see.

Case 5   **A patient underwent surgery on the wrong wrist[14]**

Issue: A Foundation Year 2 doctor noted that she thought the consultant surgeon was preparing the wrong hand for surgery, however, all staff were progressing as if this was the correct wrist. The Foundation Year 2 doctor made an attempt to raise the concern with the registrar, but this was not registered and the Foundation Year 2 doctor was asked quite bluntly to remain quiet. The surgical incision was made and the operation started. After 10 minutes it was noted that the injury for which the child was undergoing the operation was not present. The operation was then undertaken on the correct side. The child suffered some pain, discomfort and scarring on the wrongly operated side, but made a good recovery.

What happened?
- The Foundation Year 2 doctor was very fearful of raising a concern due to the hierachical nature of the organisation and as she had been reprimanded before for a failure to get a patient investigated promptly.
- The Foundation Year 2 doctor was unsure how to raise concerns and challenge authority, and felt a significant amount of guilt about her inability to raise this concern.

How Human Factors can help

The case studies below have been provided by the Health Foundation[15], the Helen Hamlyn Centre for Design[16], NICE[17] and Patient Safety First[18]. The studies demonstrate the varied and widespread application of Human Factors principles and approaches in healthcare and the potential for further application in the NHS.

Case 6	**The Health Foundation's Safer Clinical Systems improvement programme: Patient information flows - NHS Lothian[19]**
Project aim:	To create safe and reliable systems for managing the flow of information about patients.
Why this project?	Problems had been identified with duplicate registrations and many patients having multiple sets of case notes on file. This contributed to a lack of clinical information at clinics, negatively impacting on patient safety.
Approach:	Using a systems approach, various techniques including Human Factors analysis were used to diagnose the problems. The team developed a core data set and reduced duplicate entries to an acceptable level, whilst also introducing a monitoring system to minimise further duplication.
Outcome:	Registration errors fell significantly from the start of the programme, with duplicate registrations subsequently at their lowest level. Correct registrations rose from a baseline of 74% in April 2008, to a consistent 95% since May 2010.
Case 7	**The Health Foundation's Safer Clinical Systems improvement programme: Reliable handover for patients with end stage renal failure - Southmead Hospital, North Bristol NHS Trust[20]**
Project aim:	This project aimed to generate a positive working environment, in which healthcare teams could proactively identify and eliminate potential safety breaches and build a better system of care.
Why this project?	Patients with end stage renal failure have diverse clinical needs, relating to dialysis, electrolyte and fluid management and appropriate prescribing. As a result they have a complex care pathway. The current system requires multiple handovers at various stages of patient care and there are numerous human factors that can compromise a patient's safety. This renal care microsystem provides an excellent opportunity for teams to develop robust pathways and improve the experience of care for patients with end stage renal failure.
Approach:	The team aimed to understand and improve the complex care pathway for patients with end stage renal failure. It hoped to improve communication

and handover processes between all members of the multi-professional team but particularly between senior surgical, medical and anaesthetic doctors. The project team also aimed to improve patient experience, team working and organisational efficiency.

Outcomes to date: Safer Clinical Systems is seen as key to new ways of working in the new hospital; publicity outside the trust includes the presentation of 'Safer Clinical Systems' project at a National Patient Safety Conference. More information and data will be available around spring 2014 when final reports are produced and evaluation completed.

Case 8   **Helen Hamlyn Centre for Design and NHS London - Redesigning the Emergency Ambulance[21]**

Project aim: In 2009/10 there were a total of 7.87 million ambulance 999 calls[22]. Approximately 40% did not require treatment in an A&E department, so over three million patients were transported unnecessarily to hospitals in the UK due to a lack of alternative methods and / or pathways for treatment. This project aimed to significantly increase the proportion of healthcare treatments delivered in the community rather than in hospital, with the subsequent aim to improve the quality and effectiveness of care, while delivering considerable cost savings – and reducing the pressure on emergency services in the NHS.

Project: A multidisciplinary approach to ambulance redesign working with ambulance crews, healthcare providers and patient representatives.

Why this project? There are many problems with the design of existing ambulances that impact negatively on patients and paramedics alike. Some of the most pressing issues concern the treatment space in the back of the emergency ambulance. This environment is difficult to keep clean given the frequency of use and the resultant lack of opportunity to scrub the vehicle down can lead to hygiene and infection control problems. Ambulance crews also suffer from poorly thought-out ergonomics, badly laid out equipment and difficult-to-access storage spaces, all of which can affect performance in critical, life-threatening situations.

Approach: In order to understand the complexity of the ambulance service, research began with an immersive study that involved joining ambulance crews on several 12-hour shifts, riding in the vehicle on callouts and observing and documenting everything that happened. This gave the opportunity to interview ambulance crews, healthcare providers and patients in situ and observe issues firsthand. Through these experiences and by working closely with an Emergency Care Practitioner who was seconded to the research team, key insights were gathered and translated into sketch designs. A full-scale rig simulating the existing treatment space was then created to mock-up ideas. Groups of paramedics were invited to engage and evaluate the different proposals, focusing on opportunities for development.

Outcome to-date:	This body of design work aims to result in a redesigned ambulance that will support a system of pre-hospital care and replace existing models as they become obsolete.

Case 9	**Designing out medical error (DOME) – project to inform the design of equipment and products that reduce instances of medical error[23]**
Project:	The Designing Out Medical Error (DOME) project was a three-year multidisciplinary project set up with the aim of reducing medical error by creating a better fit between healthcare processes on surgical wards and the equipment and products that support them.
Why this project?	One in ten hospital patients in the UK suffers unintended harm as a result of medical error. A key contributing factor is that clinical processes continue to evolve but the design of much ward-based equipment remains largely unchanged.
Approach:	The research team consisted of designers from the Helen Hamlyn Centre for Design at the Royal College of Art, surgeons and psychologists from Imperial College London and Imperial College NHS Trust, operations management expertise from Imperial College Business School as well as Human Factors specialists.
	The team mapped surgical processes with NHS staff and patients, investigated how safety was managed in analogous industries, and used novel research techniques to identify and prioritise the five most error-prone processes on surgical wards: hand hygiene; information handover; vital signs monitoring; isolation of infection; and, medication delivery.
	Interventions were designed for each process and tested in a simulated ward environment, including: the CareStation(TM), an all-in-one unit for the equipment needed for patient care in the bed space; a communication campaign for hand hygiene; and, a new trolley to monitor vital signs that is easier to clean and use.
Outcome:	The project won a number of awards and was also exhibited internationally including at the Hunterian Museum at the Royal College of Surgeons.
	Some of the design interventions are undergoing clinical trials and have been taken forward by manufacturers to production.

Case 10	**Patient Safety First: Assessing fetal wellbeing in labour – Leeds Teaching Hospitals NHS Trust[24]**
Project aim:	To make cardiotocograph (CTG) interpretation a more reliable method of assessing fetal wellbeing in labour.
Why this project?	Misinterpretation of CTGs, poor documentation and failure to refer to a doctor are key trends in adverse neonatal outcomes. Some trusts

implemented a 'fresh eyes' approach to CTG interpretation ensuring that CTG traces are interpreted by more than one person. A fresh eyes approach recognises that factors such as fatigue, familiarity and limited knowledge can lead to lack of objectivity and can impede accurate interpretation of a CTG. The trust took this a stage further and implemented a CTG categorisation buddy system where midwives on the delivery suite were paired together to make assessments of each other's CTG traces.

Approach: Most hospitals use a pre-printed sticker that sets out the NICE criteria to determine if a CTG is to be categorised as normal, suspicious or pathological. The CTG classification is made at least every hour and a sticker is placed in the notes. However, this approach requires a buddy to independently assesses the CTG categorisation and countersign the sticker if they agree. If there is a disagreement the midwife and buddy will immediately refer the CTG to the midwifery coordinator and/or the registrar for their clarification. If agreement still cannot be reached, the CTG is referred to the consultant. Once categorisation has been agreed, guidelines set out an action plan based on NICE recommendations for CTGs found to be suspicious or pathological.

With the buddy system, the same two colleagues for each shift make an assessment of the CTG trace. It was recognised that there's a risk they would perpetuate each other's mistakes - the margin for error may have been greater than with a true fresh eyes approach. However, being paired with a named buddy was more likely to remind and motivate midwives to review categorisation of their CTG tracings. It also maintained continuity of care and privacy for the woman.

The labour ward coordinator allocated buddies at the start of each shift and ensured the system was managed properly – clearly displaying buddy allocations on the board and in notes. When pairing buddies the coordinator took into account the experience and capability of staff. Midwives of the same band were not paired – junior staff needed to know they could challenge the categorisation of a more senior midwife. The buddy system enshrined this ability to query a colleague's judgement.

A positive approach was also important, with the emphasis not on policing or checking midwives but rather about supporting midwives and making that support an integral part of clinical procedures. The system also had other benefits, providing a good learning opportunity to improve CTG categorisation skills and complement formal CTG training.

Actively involving midwives and obstetricians at the development stage and enabling them to take ownership of the change in practice was also important to successful implementation.

Outcome: Within the LTH's maternity units, the buddy system had become an integrated part of everyday practice and had been extend to antenatal fetal monitoring. Work was required to evaluate the effects on neonatal outcomes, however, even without formal evaluation the buddy system had made a huge difference to team working – it provided a valuable learning

opportunity and encouraged a more open culture where midwives could freely challenge each other's judgement.

Case 11	**NICE: Commissioning stepped care for people with common mental health disorders - Rotherham, Doncaster and South Humber Mental Health NHS Foundation Trust[25]**
Project:	Rotherham, Doncaster and South Humber Mental Health NHS Foundation Trust commissioned a community therapies impact model across steps 2 to 4. The impact model was underpinned by collaboration with service users, who were proactive in their treatment and care.
Why this project:	NICE recommends that a stepped-care model is used to organise the provision of services and to help people with common mental health disorders, their families, carers and healthcare professionals to choose the most effective interventions.
Approach:	In stepped care the least intensive intervention that is appropriate for a person is typically provided first, and people can step up or down the pathway according to changing needs and in response to treatment.
	Care was provided by a multidisciplinary team in the community, including a consultant psychiatrist, and nursing, social care, occupational health and psychological therapy staff. Care-planned treatment was provided by qualified case managers, who coordinated initiation of an appropriate step of treatment and by care navigators who coordinated care for people with chronic common mental health disorders.
	Most people were referred into the service by their GP surgery, where a psychological wellbeing practitioner (PWP) would be part of the team, or by self-referral via Talking Shop (a town centre walk-in facility offering signposting and lifestyle and wellbeing advice). People were offered a menu of step 2 social and emotional wellbeing programmes, including community groups, facilitated self-help and individual tailored sessions provided by PWPs and support workers. At step 3, one-to-one support was provided by a senior clinical team member, including medication management (overseen by non-medical prescribers such as nurse specialists), psychological interventions and additional telephone-based support for people with chronic common mental health disorders.
	The service was enhanced by 'Talking sense' – a bespoke internet-based telehealthcare service providing online support for people with common mental health disorders, links to recommended websites, crisis help, self-help information and online psychological intervention sessions.
Outcome:	Evaluations from a range of bodies (including stress control, sleep and self-esteem groups) praised the accessibility of the interventions and show clinically significant improvement, including improved self-esteem, awareness and self-management.

Case 12	**Patient Safety First: The leadership intervention – Newham University Hospital[26]**
Project aim	Patient Safety First was a voluntary campaign led by NHS clinicians and managers with the aim of encouraging trusts to effect measurable changes in practice and culture.
	This leadership intervention was designed to encourage boards to put patient safety as their highest priority, to lead by example and to effect change for the better.
Why this project?	The culture of an organisation can have a significant impact on patient safety and the quality of care received.
Approach	Leadership walkrounds consisted of the chief executive, the chief operating officer or the chief nurse touring the wards with the associate director of nursing, patient safety programme manager, the matron and key members of the medical team. The walkarounds were as multidisciplinary as possible, with all members of staff invited to comment, whether they were therapists, physio therapists, porters or part of the housekeeping staff. This allows representatives from all staff to have face-to-face contact with the executive team and suggest areas for improvement.
Outcome	Awareness of patient safety was in each clinical area, and staff were empowered by seeing changes made for the better following their suggestions.
Case 13	**Patient Safety First: Reducing Harm from deterioration intervention – NHS Somerset[27]**
Project:	To reduce the number of falls in community hospitals.
Why this project?	In 2007, the National Patient Safety Association reported that 28,000 falls were reported in community hospitals each year[28]. This was a pertinent issue for NHS Somerset within newly built hospitals where patients had their own bathrooms, making them less visible to nursing staff.
Approach:	An audit was performed in one of the pilot hospitals to find out exactly when and where falls were taking place. It was found that the majority were happening during the night so regular 15-minute walkrounds for the nursing staff were initiated so that they could check if patients were wandering out of their beds and looked unstable - or if they had fallen, and had not already been helped. The PDSA (Plan-Do-Study-Act) cycles, as recommended by Patient Safety First, was used to test out the changes.
Outcome:	The walkrounds served not only to reduce the number of falls, particularly of patients in non-visible side rooms, but also to empower night staff to recognise the risks and make them feel that they have made a significant difference to patient safety.

ENDNOTES

[1] *Never? Appendix 2, Department of Health Human Factors Reference Group Interim Report, 1 March 2012*, National Quality Board, March 2012
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[4] *A promise to learn – a commitment to act: improving the safety of patients in England*, National Advisory Group on the Safety of Patients in England, August 2013.
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[6] *Mid Staffordshire NHS Foundation Trust Public Inquiry 2013,* Department of Health, November 2013.
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[7] ibid 4

[8] ibid 1

[9] Further information on SaIL is available at:
http://www.guysandstthomas.nhs.uk/education-and-training/SaIL/simulation-and-interactive-learning-centre.aspx

[10] ibid 1

[11] ibid 1

[12] ibid 1

[13] ibid 1

[14] Case study provided by SaIL Centres at King's Health Partners. Further information on SaIL is available at:
http://www.guysandstthomas.nhs.uk/education-and-training/SaIL/simulation-and-interactive-learning-centre.aspx

[15] Further information on the work of the Health Foundation is available at: : http://www.health.org.uk/

[16] Further information on the work of the Helen Hamlyn Centre for Design can be found at:
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[18] Further information on Patient Safety First can be found at:
http://www.patientsafetyfirst.nhs.uk/Content.aspx?path=/

[19] ibid 15

[20] ibid 15

[21] *Redesigning the Ambulance Service: improving mobile emergency care.* Helen Hamlyn Centre for Design:
Available at: http://www.hhc.rca.ac.uk/308-3816/all/1/Redesigning-the-Ambulance.aspx

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[25] ibid 17

[26] *To ensure a leadership culture and environment that promote quality and patient safety improvement: Newham University Hospitals case study,* Patient Safety First, 2009.
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