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What is This?

Patient safety: a core value of nursing – so why is achieving it so difficult?

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Abstract
Patient safety in the perioperative setting is determined by many interdependent factors including reliable systems, good teamwork, psychological safety, optimal communications and most crucially shared vision and goals. The necessary organizational, environmental and behavioural conditions for quality care are not new and were in fact known to Florence Nightingale as much as 150 years ago. As noted by Nightingale, and something that remains unchanged today, the greatest threat to patient safety are the frailties of the human condition, complacent attitudes and unconscious behaviours. Recognizing that error is normal and somewhat inevitable, given the complexity of modern surgery, is undoubtedly the first step to mitigating error and harm, and the basis from which to tackle variability and sub-optimal conditions to deliver quality improvement.

Keywords
patient safety, teamwork, reliability, standardisation, professional socialisation, human factors

Background

> If a patient is cold, if a patient is feverish, if a patient is faint, or he is sick after taking food, if he has a bed sore, it is generally the fault, not of the disease, but of the nursing. (Nightingale, 1860)

Nightingale's observations shared 150 years ago remain relevant for contemporary nurses, given the variation in clinical quality experienced by patients in the National Health Service (NHS) and the number of adverse events (Figure 1) that continue to cause patients harm. Regarded a visionary of her time (Mongomery Dossey, 2009), Nightingale viewed nursing quality as dependent on consistent reliable care and suggested patient deterioration to be attributable to variability and a lack of due diligence on the part of individual staff, versus

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> '*an unintended injury or complication, resulting in prolonged hospital stay, disability at the time of discharge or death, caused by healthcare management/delivery, rather than the patient's underlying disease process*',   (de Vries et al., 2008)

Figure 1. Defintion of an adverse incident

the patients underlying disease. Committed to standardisation and routine, Nightingale wrote (1860):

> the thing which strikes the experienced observer most forcibly, is that the symptoms or the suffering, generally considered to be inevitable and incident to the disease, are very often not symptoms of the disease at all, but of something quite different . . .

Arguing patient safety and restorative health to be dependent on effective leadership, standard procedures and reliable processes, Nightingale (1860) commented:

> It has been said, and written scores of times, that every woman makes a good nurse. I believe, on the contrary . . . let whoever is in charge, keep this simple question in her head (not, how can I always do this right thing myself,) but how can I provide for this right thing to be always done? . . . the pride is rather in carrying on a system . . .

Focussing on perioperative care to illustrate the complexity of patient safety, this paper outlines safety policy of the past decade and develops to explore the relationship between error, teamwork, communication, process reliability and safety tools. It is not the intention of the authors to offer a systematic review, rather a digest of evidence, to illustrate the interdependencies between perioperative nurses and the systems in which they work. While speciality oriented in focus, the paper is considered relevant to nursing and healthcare more broadly.

Policy, context and current Issues

More than a decade has passed since the publication *To Err is Human* (Kohn et al., 2000) challenged policy makers and health professionals across the United States of America (USA) to acknowledge the scale of patient harm attributable to adverse events. With evidence that medical errors (de facto, nursing) were killing more people than died through road traffic accidents, breast cancer and AIDS/HIV each year, the report suggested that improvement would not be achieved by blaming 'bad' people, but by learning from error to develop systems that enable 'good' people to do their jobs more effectively and safely.

An Organisation with a Memory (Department of Health (DoH), 2000) followed, reporting similar features and failures in the NHS. Citing a sample study by Vincent et al. (2001), which indicated that on average one in 10 patients admitted to in-patient services experience unintentional harm, the report concluded that significant numbers of harm events were avoidable. Recommendations arising from the report (Figure 2) formed the basis of safety policy for the next five years, with *Building a Safer NHS* (DoH, 2001) providing ambitious aims, including the creation of the National Patient Safety Agency (NPSA) and the National Reporting and Learning Service (NRLS).

By 2005, concerned that demonstrable improvement was not being realised relative to the levels of public money invested in organising infrastructure, the National Audit Office

- Undertake a programme of basic research into adverse health care events in the NHS

- Make full use of new NHS information systems to help staff access learning from adverse health care events and near misses

- Act to ensure that important lessons are implemented quickly and consistently

- Identify and address specific categories of serious recurring adverse health care events

- Introduce a single overall system for analysing and disseminating lessons from adverse health care events and near misses

- Make better use of existing sources of information on adverse events

- Improve the quality and relevance of NHS adverse event investigations and inquiries

- Introduce a mandatory reporting scheme for adverse health care events and specified near misses

- Introduce a scheme for confidential reporting by staff of adverse events and near misses

- Encourage a reporting and questioning culture in the NHS

Figure 2. Recommendations of *Organisation with a Memory* (2000)

(NAO, 2005) highlighted that 2,180 patients died in the previous year due to an adverse event.

With a commitment to advance and improve organisational arrangements and the NHS's overall approach to patient safety, *Safety First* (DoH, 2006) provided further strategic direction and action-oriented deliverables, including simplification of adverse event reporting, identification of resources to support frontline staff in their improvement efforts and founding of a National Patient Safety Forum, to oversee the design and implementation of national patient safety initiatives.

Research and the incidence of harm, captured and published by the NRLS, continues to affirm that treatment and patients' hospital experience cause significant harm. Today, as in Victorian times, despite evidence to the contrary, the predominant and pervasive view of health professionals is that complications, such as deep vein thrombosis, pressure sores, ventilator acquired pneumonia and surgical site infections (common post-operative complications) are inevitable, not unreasonable, consequences of surgery/hospitalisation. Sadly for patients, too few professionals appreciate the complexity of causation and fail to recognise that patients continue to suffer less as a result of their underlying illness, or disease, but as a consequence of their treatment and flawed hospital systems (Vincent et al., 2001).

Evaluation of successive policies (Figure 3), together with national and international safety learning, has illustrated over time that simply 'telling' people, 'what' they need to do in order to improve patient safety fails to take account of the complexity and scale of health systems, local contexts and human-centred considerations – collectively described as human factors (Evans, 2007). Additional targeted efforts, supported by campaigns that

embrace the energising principles of social movement and transformational change (Figure 4) were recognised as means (Berwick et al., 2006) to secure

- commitment of hospital/trust boards to lead and prioritise patient safety
- system redesign to address inherent system-oriented faults (Alexander and Staggers, 2009; Nemeth et al., 2009)
- data capture and measurement/interpretation, demonstrate improvement over time and track or identify new emerging problems
- the engagement and energy of front line nurses and clinicians to deliver care bundles and standardised practice.

- *To Err is Human : Building a Safer Health System (2000) Institute of Medicine*

- *An Organisation with a Memory (2000)*

- *Building a Safer NHS (2001) est: NPSA and NRLS*

- *World Health Assembly resolution (WHA55.18) on Patient Safety (2002)*

- *Learning from Bristol: The DoH response to the Report of the Public Inquiry into children's heart surgery at the BRI 1984-1995 (2002)*

- *Seven Steps to Patient Safety (NPSA) (2004)*

- *Central Alert System (CAS) (2004)*

- *Building a Safer NHS for Patients : improving medication safety (2004)*

- *The Shipman Enquiry (5th Report)(2004)*

- *World Alliance for Patient Safety (2004)*

- *A safer place for patients, learning to improve patient safety. NAO (2005)*

- *Safety First :   A report for patients, clinicians and managers (2006)*

- *National Safety Forum (2007)*

- *Trust, Assurance and Safety. The regulation of Professionals (White paper 2007)*

- *Our NHS Our Future : NHS Next Stage Review Interim Report (2007)*

- *Safety First (One year on) (2007)*

- *High Quality Care for All : NHS Next Stage Review Final Report (2008)*

- *House of Commons Select Committee : 6th Report 2008-09 on Patient Safety (2009)*

- *Govt response to Select Committee report (2009)*

Figure 3. Patient safety policy of the last decade

While campaigns galvanised action and commitment to 'no avoidable harm, no avoidable death', the policy of 'learn' versus 'blame', strenuously promoted since 2000, has proved less successful; punitive action, scape goating, harassment and bullying continue to prevail in many organisational cultures, at both the system and individual professional level (Kennedy, 2009).

Understanding why such negative behaviours pervade the NHS is explained in part because human beings are incapable of consistently following rules and routinely deviate from standard procedure to creatively manage changing situations. Amalberti et al. (2006) observe that deviation is particularly encouraged and tolerated in healthcare to deliver organisational efficiencies, but system flaws, poor understanding, inadequate impact assessments and insufficient peer control of reckless or overconfident individuals results in the boundaries of safe practice being reached and breached on a regular basis. The interdependencies of system demands and capacity, risk assessment, individual judgement, organisational culture and transparency, subsequently 'test' the balance of 'tolerance' versus 'blame and punitive action' when individuals and organisations are required to account for their actions. Unless, as is observed in high-reliability organisations, there is a commitment to investigate, learn from and respond to safety incidents in a transparent manner, blame of individuals is inevitable (McDonald et al., 2009).

Fear of blame and seeing incident reporting as a bureaucratic administrative duty inhibits incident reporting to the NRLS by all professional groups, but notably doctors, including surgeons (Waring, 2005). Doctors' indifference to support for a national reporting and learning system might be explained because doctors lead mortality and morbidity reviews

100,000 Lives Campaign, Institute of Healthcare Improvement 2004

Clean Care is Safer Care: Clean your Hands, World Health Organisation 2004

Action of Patient Safety High 5's, World Health Organisation 2006

5 million Lives Campaign, Institute of Healthcare Improvement 2007

Scottish Patient Safety Alliance: NHS Scotland 2007

HSC Safety Forum, Northern Ireland, 2007

Safe Surgery Saves Lives, World Health Organisation 2008

Patient Safety First, England 2008

1000 Lives, Wales 2007

1000 Lives, Wales 2008

High Impact Actions for Nursing and Midwifery (2009)

Figure 4. National and International Patient Safety Campaigns

integral to their practice, but is also due to compensations that have been encouraged, such as the Confidential Reporting System for Surgery (CORESS), owned and operated independently by professional bodies. This situation reflects a combination of individual and collective 'mistrust'. While systems are in place that assure 'no blame', the failure to engage sufficient numbers of doctors in broader systemic learning from incidents is problematic. Ironically, in the absence of deep and systemic learning, avoiding errors is often interpreted by doctors as being about 'trying harder' and 'vigilance'.

Although harm events can be attributed to specific individual errors, which sometimes result in judgements of gross negligence or criminal proceedings, they are in fact often predisposed by systemic problems, for example poorly designed equipment, unreliable processes or conflicting work pressures. In most circumstances, warnings in the form of 'near miss' incidents precede a case of injury signalling, problems or flaws with a given system, yet the capacity of the NHS to identify the potential for this type of systemic or organisational failure remains elusive, requiring forensic examination, to reach new understanding. In particular, attention needs to be paid to the relationship and interdependencies of:

- policy, practice, systems of work and process;
- workspace and equipment design, procurement, maintenance and training;
- the professions, culture, and human behaviour;
- leadership, management and the role of 'the board'.

Failure in a few trusts in the past 18 months, most notably Mid Staffordshire NHS Trust, symbolise the complexity and interdependencies required to assure patient safety; most notably the relationship and dissonance between national policy and clinical practice at the frontline, and poorly understood risk/efficiency trade-offs at board level. Specific to Mid Staffordshire, Francis (2010) concluded that patients were routinely neglected due to severe shortages of staff because the trust, having lost sight of its fundamental responsibility to provide safe care, had become preoccupied with cost cutting and targets. Disturbingly, indifference to patient need had become the norm, general professional behaviour was lacking and a culture of fear was evident.

Shining the light on Mid Staffordshire highlights that attitudes of 'acceptable harm' can be pervasive: they are synonymous with poor clinical outcomes and patient complaints and the antithesis of ethical and compassionate caring. Of further significance, in cultures in which fear of retribution and reprisal for 'speaking out' are the norm, poor practice and breaches of established safety practice will be common.

While the previous government were the first in the world to prioritise patient safety as a policy for the NHS, and much work has been done, too many services remain unsafe and too many hospitals lack the features, disciplines and culture of high-reliability organisations.

The House of Commons All Party Health Select Committee (2009) concluded that failures in patient safety owed much to contradictory policies and a lack of synergy in policy development, citing the paradox of the government's prioritisation of targets, financial balance and pursuit of foundation trust. The multiple impacts of increasing patient throughput, reducing waiting times and financial targets, with few safety and quality targets, undoubtedly proved a macro-level systemic safety challenge for the NHS. The committee determined that all future policy in respect of the NHS should be predicated on the principle that the first priority of the NHS, without exception, is to ensure patients do not suffer avoidable harm.

A change in government in May 2010 heralds further change in health policy. *Equity and Excellence: Liberating the NHS* published in July (DoH, 2010) calls for regulation and inspection to be strengthened and positions doctors at the heart of healthcare leadership and NHS commissioning. Related to the policy changes and despite the white papers' emphasis on patient safety, the subsequent and associated review of arms length bodies will close the NPSA by 2011. At a time when greater focus on safety will be required it is incredulous to many and unclear how the learning legacy and safety function of the Agency will be safeguarded. The white paper, with its emphasis on doctors, also fails to recognise that quality, innovative, productive and preventative healthcare is predicated on the principle of teamwork, involving all professions that make up the healthcare team.

The failure of the white paper to explicitly acknowledge the contribution of nursing visionaries and their leadership as a significant force for and driver of safety improvement is at best unfortunate and at worst naïve and detrimental to the safety improvement agenda. At a time when the government has pledged to put patient safety centre stage, it needs to be acknowledged that delivery of this agenda will require the talents and energies of all in the healthcare team, from the board room to the frontline. There should be no pseudo professional demarcations, or perpetuation of the historical power differentials that were a feature of Nightingale's day.

While the white paper provides a direction of travel, it is expected that the report of the public inquiry of Mid Staffordshire NHS Trust, due early 2011, will have ramifications for the NHS and shape the detail of safety policy for years to come.

Perioperative harm: Scale and mechanism

The NRLS, now recognised as the largest repository of patient safety incidents (PSIs) in the world, receives in excess of one million reports per year, from healthcare staff in England and Wales. Focussing on surgery in particular, PSIs are diverse, but tend to be reported more often in emergency versus elective situations, in-patient versus ambulatory settings and when patients suffer co-morbidities and require more complex procedures (Gawande et al., 2003; Choy, 2006). Although there is potential for bias in who reports and what is reported, analysis of the available data highlights that patient accidents, clinical treatment, hospital infrastructure problems, medication and documentation errors remain the predominant causes of reported failure, while higher-order systemic contributions, and the lower-order behavioural issues that contribute to error are rarely identifiable (Catchpole et al., 2009). While there are ongoing debates regarding methodology in calculating the scale of patient harm, it cannot be ignored that too many patients die or are injured needlessly through omissions of care and failure to apply standard procedures (Pearse et al., 2001). All information available through the NRLS is therefore useful in order to understand how accidents can be avoided in the future.

An alternate approach, complimentary to incident reporting, involves the direct observation of surgical care; this reveals additional detail about the frequency and severity of 'near miss' intraoperative events. Far from being smooth and uneventful as is the intent of perioperative nurses, individual operations and surgical lists can experience significant interruptions and process disruption (Catchpole et al., 2005, 2006; Christian et al., 2006; Catchpole et al., 2007; Wiegmann et al., 2007). Although frequently dismissed as innocuous, seemingly 'minor' process deviations, 'glitches', are now recognised as not only disrupting the process of care and reducing efficiency, but also a significant factor in increasing the potential for catastrophic error. Inadequate training, poor supervision of staff, case mix issues, problems of bed availability,

changes to the operating list and equipment availability/ malfunction are commonly identified glitches that contribute to surgical failure, leading to patient harm (Rogers et al., 2006). Too few perioperative nurses, however, recognise the cumulative impact of seemingly 'minor' day-to-day problems that can combine to create serious harm (Reason, 1990, 1997, 2000). A patient with an unusual anatomy, a fogging camera, a less experienced surgeon, a 'broken' instrument, a relentlessly ringing mobile phone and a non-assertive scrub nurse as individual challenges can invariably be compensated, but their cumulative impact, akin to Reason's notion of lining up the holes of a Swiss cheese, increases the potential for the patient to endure a bile duct injury during their laparoscopic cholecystectomy procedure. While glitches and 'near misses' rarely cause direct patient harm, they are increasingly recognised as stressful and distracting to the team, impacting on overall performance, resulting in reduced efficiency of the list and increased procedure costs. It is therefore extremely valuable to attempt to minimise all minor errors in surgical care, not just the more obvious devastating failures (Runciman et al., 2000; NPSA, 2010a).

Less cohesive teams and teams in which communication is poor create more potential for error and are less likely to recover when things go wrong (Catchpole et al., 2007). Of note, communication failures characterised by poor timing, missing information or unclear purpose are all too common in the operating room, occurring in 30% of team exchanges (Lingard et al., 2002), a third of which lead to process problems, increased cognitive load, interruptions, or increased tension between team members (Lingard et al., 2004). In cardiac surgery, a speciality that has enjoyed particular scrutiny, it has been demonstrated that the team-related behaviour of surgeons is directly related to their surgical learning curves and patient outcome (Pisano et al., 2001; Carthey et al., 2003). Environments in which the physical and psychological well being of perioperative nurses is compromised, because of team conflict, horizontal violence and bullying and inter/intra personal challenges, have also been shown to inhibit optimal performance and result in suboptimal patient outcomes, signalling a correlation between nurse and patient safety (Beyea, 2004; Institute of Medicine, 2004; Sedlak, 2004; Undre et al., 2006).

Effective teams, by contrast, enjoy positive communications and experience fewer problems per procedure, performing efficiently and effectively, as evidenced by shorter operating times, glitch-free lists and reduced 'turnaround times' between cases (Catchpole et al., 2008a,b). Effective communication skills, supported by structured communication tools and standardised language techniques, have also been shown to facilitate psychological safety between team members and to mitigate causation and cumulative error (Nestel and Kidd, 2006).

Given that effective teamwork is increasingly regarded as a contributory feature of safe perioperative care, yet teamwork can often be far from ideal, it is useful to consider how operating teams evolved.

Professional socialisation, roles and relationships: The foundation to perioperative teamwork

Nightingale's model of nurse preparation, shaped by the status of Victorian women, influenced nurse education for decades and determined the early role and function of nurses in the operating room as assistants to/'handmaidens' of the surgeon. The principles of obedience, virtue, servility and unquestionable execution of medical orders, prized by Nightingale, resulted in authentic and feigned subservience in theatre nurses and corresponding expectations/behaviours in surgeons, a less than positive aspect of Nightingale's legacy that shaped working relationships for decades (Parker, 2005: 54).

As modern surgery evolved, authoritative and experienced theatre sisters (for they were predominantly female) successfully manipulated their relationships with surgeons to maintain a hierarchy in the operating room, in which nursing was overtly deferent toward medicine. However, while appearing deferential and passive, nurses deployed covert strategies to assure the safety and smooth running of the operating room. The doctor–nurse games identified by Stein (1967) were routinely played out in the drama of the operating theatre, with the senior surgeon regarded as the leader, unless matched and managed by an equally formidable theatre sister (Maran and Peterson-Brown: 445, in Flin and Mitchell, 2009). The sister and surgeon, as principal characters of the 'theatre', forged strong co-dependent relationships that assured the power and position of both in relation to the wider surgical team, supported by the gender distinctions of surgeon (man) and nurse (female).

From the mid 1960s the role development of the operating department assistant (ODA) gathered pace, and an increasing number of men entered the perioperative workforce; the increases in the number of women pursuing medicine and surgery as a specialism were much slower by comparison and were something Nightingale strongly opposed in her day, arguing that there was a priority for 'better trained' nurses, rather than a need of 'women doctors'. Although the overt gender differentials that shaped working relationships of Nightingale's time may have all but disappeared, they continue to shape contemporary behaviours, with too many perioperative staff preoccupied with 'not upsetting' the surgeon, or working to keep 'surgeons happy', often engaging in deliberate deviations from standard procedures to do so (Timmons and Reynold, 2005).

Progressing from orderlies and attendants through 'on the job' training in the 1950s, to more formal vocational training in the late 1960s, ODAs developed their position within the multi-professional team. By 1970, a review of the organisation and staffing of operating theatres (Lewin, 1970) concluded that the educational preparation of ODAs should be improved and the role formerly commissioned. From the mid 1990s the title 'practitioner', versus assistant, was encouraged and increasingly used, preparatory education became university based and, in October 2004, the title and role of the ODP became protected and regulated, such that contemporary ODPs and nurses now share equal standing in the perioperative environment.

Originating as assistants, ODPs were historically subordinate to the registered perioperative nurse, an organising principle that prevailed in excess of 60 years, because of the accountability framework (Civil, Criminal and Employment Law, Professional Regulation) and specific laws relating to the regulation, control and administration of medicines. With some exceptions, the leadership potential of ODPs was therefore generally inhibited, until the legislative change of 2004, which arguably liberated the profession and increased the career opportunities of individual practitioners, at scale.

As the ODP profession developed, conflict regarding occupational boundaries between nurses and ODPs were commonplace, contributing to uneasy working relationships in many operating theatres (Timmons and Tanner, 2004). Fortunately, boundary disputes are increasingly less common, assisted in part by a common pay spine that offers little incentive to employers to substitute one profession for another; however, increasing reference to registered practitioner, versus distinguishing nurse or ODP, has resulted in 'team leader' replacing sister/charge nurse, and claims of leadership confusion, as the traditional relationships and hierarchies of the operating room have changed.

The interdependence of the anaesthetist and surgeon offers a further dynamic influencing the behaviour of the surgical team, for each has specific task functions and duties to perform

that are not interchangeable and for which each is professionally and legally accountable. Interactions and exchange in the operating room are therefore behaviourally complex and the question of 'who is in charge' is a common preoccupation. Thus, in the absence of shared values, tacit understanding and common purpose to frame the working day, roles and biases, shaped by history, socialisation and professional context, have the potential to inhibit effective teamwork.

Surgery is increasingly complex, demanding inherently multi-professional and often multi-speciality team working; encouragingly, the traditional doctor–nurse/surgeon–sister relationship has changed substantially and for the better, in part through the development of new roles and new services, but also because of what patients think of the professions (Radcliffe, 2000).

The traditional view of theatre nurses as 'administering subservient angels' and surgeons as 'authoritative gods', is mediated by patients' expectations, their access to information via the internet and increasing publicity regarding human error and medical and nursing fallibility (Stein et al., 1990). As the barriers that inhibit effective working relationships are disabled and professionals become increasingly equal and respectful partners in the clinical domain, it remains none the less important that the history that shapes professional roles is understood rather than ignored (Fagin and Garelick, 2004). Delivering patient safety and good surgical outcome increasingly requires all team members to undertake both follower and leader roles, as no one individual has the privilege or capacity to always be leader (Wallin et al.: 133, in Flin and Mitchell, 2009). Followership and leadership, however, assume significant collaborative adjustment behaviours, professional maturity, situation and self-awareness to support the mutual task and maintain the integrity of the surgical team. Delivering a shared goal of safe patient care in an environment as complex as the operating theatre demands new approaches to education and practice that include information exchange to build shared mental models, collaborative decision making that accounts for discrete roles, expertise and accountability and lastly models of distributive leadership, which facilitate delegation and prioritisation of tasks as the patient's situation demands (St Pierre et al.: 122, in Flin and Mitchell, 2009).

Towards safer teams

We have described how poor teamwork and communication in theatre are regularly associated with adverse events and other process failures and acknowledge that considerable evidence emphasises their interdependency. Developing more effective teams to migitate error and harm is therefore a reasonable goal, yet professional attitudes to teamwork and error continue to limit their potential (Bognar et al., 2008). While individuals increasingly recognise the ubiquity of error, they fail to acknowledge individual vulnerability to error and the impact of self on the performance of others. Surveys reveal that professionals find it difficult to discuss safety issues, that experienced clinicians are often reluctant to accept and encourage contributions from junior staff, and there is poor support from management to achieve safer teams (Sexton et al., 2000; Fleming et al., 2006; Flin et al., 2006).

Consultant surgeons perceive and rate the performance of the teams they work in to be much better than the trainees or nurses perceive it to be (Makary et al., 2006) and leaders often face difficulties in recognising problems in their own teams, or indeed their own impact on the team's overall performance (Sexton et al., 2000). Pronovost et al. (2005) identified that the teamwork perception of nurses most accurately related to indicators of good team

performance, including clinical outcome, staff well being, staff turnover and staff mental health, suggesting attitudinal and behavioural shifts are required amongst other team members in order to secure common perceptions and shared understanding.

Overcoming social and historical barriers to achieve safer teams will not be without challenge, but professionals need to persevere to deliver continuing improvements in surgical care. As many of the challenges relate to cultural and organisational issues, the development of value-based improvement aims, supported by the executive board and delivered through effective clinical leadership and management is vital. To compliment strategic and operational effort, there is also growing evidence that interventions and tools introduced at the individual team level can influence attitudes and behaviours with positive effect.

Checklists, most notably the Surgical Safety Checklist introduced by the Global Alliance for Patient Safety (WHO, 2008), have been shown to improve safety and process reliability in surgery (Haynes et al., 2009). While checklists mitigate errors of omission, promote consistency of repetitive tasks, improve procedural learning and process reliability, they can also improve teamwork by providing a method to capture errors that may not have been previously identified (Reason, 1990). Checklists also create the opportunity to establish and confirm distinct and shared goals for the team, discuss multi-professional issues, and qualify explicit delineation of roles and responsibilities (Gawande, 2009). However, a checklist will only be effective if it is well designed and used appropriately (Verdaasdonk et al., 2009). For example, even though a surgical site marking checklist was mandated in the USA by the Joint Commission on Accreditation of Healthcare Organizations in 2004, wrong site surgeries and near misses continued to be reported at scale (Giles et al., 2006). Checklists offer considerable potential to improve surgical safety, but their potential is only fully optimised when they are locally owned, adapted and championed through visible clinical leadership. Of significance, checklists should be used 'in the spirit in which they were intended', which demands proactive inter-professional attention and full team commitment (Bosk et al., 2009; Clarke and Reid, 2009; Mahajan and Reid, 2009).

Pre-operative safety briefings and post-list team debriefings are increasingly recognised as further means of enhancing team preparedness, effectiveness and overall performance (Patient Safety First, 2010a). Safety briefings can be structured by a checklist and the two are increasingly viewed as complimentary (NPSA, 2010b); briefings focus on safety issues and proactive planning and risk anticipation of the whole operating list, while checklists focus on procedural checks and sharing of information of individual patients. Briefings offer many benefits, including enhanced team awareness, greater knowledge through shared information, explicit confirmation of actions taken and problem identification to facilitate prompt decision making/follow-up action; perhaps more crucially, briefings also facilitate psychological safety (Lingard et al., 2004). For example, in many adverse events, route cause analysis highlights that someone present was aware of a problem but felt unable to speak up. Explicit confirmation of the need to speak up tempers cultural and hierarchical barriers that might otherwise inhibit individual confidence to do so. There is also growing evidence that briefings further improve surgical flow and reduce glitches, delays and post-operative complications (Patient Safety First, 2010b). National learning, the model of continuous improvement informed by research and practice development, continues to inform efforts to improve safety in the operating room. A 5 step process of briefing, sign in, time out, sign out and debriefing to close the loop on learning, is now encouraged across the NHS and promoted by professional bodies (NPSA, 2010b).

A final means of achieving safer teams is to improve the non-technical skills of team members through teamwork-team based training courses (sometimes referred to erroneously

as 'Human Factors' training or Team Resource Management training). The importance of training in non-technical as well as technical skills (Yule et al., 2006; Mitchell and Flin, 2008) is increasingly recognised because of the accruing benefits of improved interpersonal behaviours and cognitive performance. Although increasingly included in undergraduate curriculum and financed at individual organisational level to support surgical teams, non-technical skills are far from embedded as standard methods to improve perioperative team skills and safety improvement, which warrants further attention.

Conclusion

Nightingale (1860) recognised that individual failure can cause patient harm, but that good care is also dependent on effective systems:

> . . . the very elements of nursing are all but unknown, by this I do not mean that the nurse is always to blame . . . arrangements often make it impossible to nurse.

Through research, innovation and technological advance, many of the clinical problems of the 1800s have been overcome. Modern surgical practice and patient outcomes undoubtedly exceed what might have been imagined by Nightingale and her peers, yet the same challenges of standardisation, process reliability and system failure remain, contributing to surgical harm.

Quality for patients needs to be assured by perioperative nurses; while some aspects of the surgical care pathway will be dependent on the nursing domain, much depends on effective teamwork.

Equity and Excellence: Liberating the NHS (DoH, 2010) closes the door on 10 years of Labour policy for health, committing the new government to putting patients and their safety at the heart of healthcare. While translation of national policy to secure local improvement will always be challenging, given historical, cultural, organisational and professional influences, the next decade provides the opportunity to embrace safety science and human factors to equip perioperative nurses and surgical teams to deliver safer, more efficient care for patients.

Key points

- Too many patients suffer or die as a consequence of their treatment and flawed hospital systems.
- The notion of 'acceptable harm' is a dominant and pervasive view, detrimental to quality patient care.
- 'Near miss' incidents are 'warnings' that there is a problem or flaw, with a given system.
- The history and socialization of the professions is better understood, than ignored.
- Effective teamwork and optimal communications are fundamental to safer care in the operating room.
- Cohesive teams are more resilient and better able to compensate glitches and minor process errors.
- Checklists have been shown to improve safety and process reliability.
- Safety science and an understanding of human factors can assist surgical teams deliver safer care.

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