An innovation is defined as “an idea, practice, or objective perceived as new by an individual, a group, or an organization” and diffusion has been defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system.” In this editorial, we highlight the continuing journey of the WHO surgical safety checklist from innovation to diffusion and the barriers associated with the latter part of the journey especially when junior doctors act as agents for change.

The origins of the checklist date back to 1935 when a long-range bomber designed by Boeing crashed during a competition. This accident resulted in the death of the most technically gifted pilot on board. A few pilots believed that this catastrophe was a result of a single pilot being forced to remember countless steps before take-off. Consequently, they designed a set of simple step-by-step checks for take-off, flight, landing and taxing. This resulted in an accumulation of 1.8 million miles without an accident and the end of the war. Similarly, it was stipulated that medicine had entered a similar phase and substantial aspects of clinical practice were too complex for clinicians to carry them out reliably from memory alone. It was noted that surgery focused more on organizational influences (climate, resource management, and policies) that impact supervisory processes (scheduling, training, and oversight), which in turn establish the preconditions (technological, teamwork, communication and leadership-related) that produce errors. Two other forces led to the genesis of the surgical checklist. The first was the enormous volume and burden of surgery – 234 million operations carried out globally with almost seven million patients having major complications and one million dying during or immediately following surgery every year. In England and Wales, the National Patient Safety Agency (NPSA) houses the Reporting and Learning System (RLS), a database of incidents of iatrogenic harm suffered by patients undergoing treatment in hospital. Data from 2008 reveal that 152,017 (15.5%) incidents can be found in the discipline of surgery. The second, and perhaps key driver, for bringing the checklist to life was the Safe Surgery Saves Lives campaign run by the World Health Organisation (WHO) which aimed to identify minimum standards of surgical care that can be universally applied across countries and settings. A core set of safety checks was identified in the form of a WHO Surgical Safety Checklist that could be used in any operating theatre environment. Each step on the checklist is simple, widely applicable, and measurable, and it has already been demonstrated that its use reduced death and major complications regardless of the healthcare economies it was applied to; it reduced mortality and morbidity in all eight centres, from the high-performing ones to the developing ones. An adapted version of the checklist has been developed by the National Patient Safety Agency (NPSA) in collaboration with a multi-professional expert reference group for use in England and Wales as shown in Fig. 1.

In the healthcare sector, we struggle to find true examples of disruptive innovation. However, it may be that the checklist is one of the tools that truly disrupts the passive culture surrounding safety in surgery and brings it to the forefront of the surgeon’s armamentarium. The journey surrounding the diffusion of the checklist has encountered all the problems cited in a recent article by Soar et al. (2009): the mandatory use of the checklist – a set of simple checks on a single sheet of paper resulted in a lukewarm reception from frontline clinicians. The use of briefings and debriefings together with the checklist was welcomed by healthcare professionals such as nurses and theatre staff. Most staff criticised the top-down approach to dissemination. Other problems have also been highlighted. One of the pilot sites in the study by Haynes et al. reported the problems it faced with adoption of this life-saving tool. These included the presence of a hierarchical structure which sometimes prevented all team members from being seen as equal partners, thereby hampering use of the checklist. Consequently, the vehicle chosen to support the implementation of the checklist is Patient Safety First and the Save 1000 lives, which are both led by a team of experienced frontline clinicians and managers. The ideology behind this is to secure national, regional and local leadership and win hearts and minds of all healthcare professionals involved in the care of the surgical patient. An innovation methodology promoted has been to start adoption in one theatre by making use of the enthusiasts, using regular PDSA (Plan, Do, Study and Act) cycles and gradually rolling it out across all theatres in the hospital. To date, a notable community of 161/167 (96%) acute trusts (hospitals) have signed up to Patient Safety First. There is constant support, learning and sharing through this campaign.

At the moment, the NHS has a predominant top-down approach to implementing change, yet only 15–20% of its staff are engaged in quality improvement projects. One overlooked group includes the fresh, enthusiastic, coal-face individuals who are the junior doctors and more often than not feel like passive agents for change, implementing national initiatives not by choice but due to their locus in the hierarchical matrix. We sought to assess the ability of junior doctors to act as catalysts for change through a bottom-up initiative during a fixed period (one week) through the use of the surgical

Editorial

The WHO Surgical Safety Checklist – Junior doctors as agents for change

doi:10.1016/j.ijsu.2010.06.004
safety checklist – a disruptive innovation. Through a national initiative called Project SAVED (Surgical checklist And improVinG the Experiences of Doctors in training) trainee surgeons and anaesthetists through their representative national organisations were asked to use briefings, the checklist and debriefings during one theatre list.14 This involved them reading pre-prepared material related to the checklist – the evidence for the checklist, briefings and debriefings. The next step involved their ability to gather both senior support and engagement from their other theatre colleagues by sharing the material they read. The trainee doctor’s team would then use briefings, the checklist and debriefings for an entire operating list. At the end of the exercise, these junior doctors filled in an online questionnaire, reporting their experiences and received a certificate for their portfolio. Unfortunately, less than 1% (53/5500) of all invited trainees participated. 24/53 (45%) agreed strongly with the statement that their team embraced the use of the checklist and saw it as a key tool to improve patient safety in the operating theatre. Encouragingly, 45/53 (85%) of all those who participated would want the checklist used if they were patients.

Several reasons may be cited for the low rate of participation by trainee doctors. Our results echo the disruptive effect of this form of technology with only the enthusiasts opting to participate in our national initiative. These “disruptive innovations” by their nature upset the status quo, and although they initially offer a potentially simpler and better alternative to existing technology or methods, their uptake remains slow. Nevertheless, junior doctors should be able to engage in a conversation with their senior colleagues about the merits or otherwise of using the checklist. Perhaps they could be encouraged to perform local audits on certain key standards that form the basis of the checklists. They could also be given opportunities to test any innovative methods available in facilitating reliable and consistent use of the checklist, briefings and debriefings. For those, who are inspired, there may be opportunities to build networks of like-minded junior doctors interested in surgical safety. This faculty could be a powerful ally to national bodies interested in developing and promoting tools to enhance safer surgery such as the checklist.

Other reasons could also be postulated for our limited success. Perhaps the usefulness of the checklist still needs to resonate more with the minds of junior doctors. The benefits of the checklist can only be experienced if we incorporate the checklist into our daily surgical practice. The obvious benefits of a reduction in mortality and morbidity may be noticed. However, there may be more subtle but significant benefits such as improving communication, teamwork and handovers among clinical staff. As a result of the increased efficiency, there is potential for theatre over-runs to be minimized, as well as possible anticipation of critical events, which could help free up more time for training. This could prove to be profitable in light of working time restrictions imposed on healthcare staff. We must also be wary that the checklist if used incorrectly can be hazardous to patient safety. It could also lengthen a long theatre list and be likened to yet
another bureaucratic procedure that keeps managers happy. It also behaviors us to ask ourselves whether the pressures of workload, apathy, demoralisation and lack of ability to change the attitudes of some senior colleagues still pervade our medical fraternity.

To that effect, organisations such as the NPSA through the Patient Safety First campaign and the Save 1000 lives campaign are trying to engage not only the early adopters of safety interventions but the wider medical community by forging stronger relationships with colleges, using peer-to-peer approaches, a blend of top-down and bottom-up initiatives and even exploring ways of engaging medical students. Not only are they trying to enable each frontline healthcare professional to be an active agent for change, but they also aim to promote strategic organisation, give people the skills, tools, support and power to effect change. This approach is favoured by key individuals such as Marshall Ganz, a key person involved in President Obama’s campaign, who believes that social movements are about bringing real change, “not yearning for it, thinking about it or exhorting it.” It is also worth noting that companies such as Google seem to have created a sense of ambition, fearlessness and self-belief in their new recruits. Such enthusiasm to develop novel ideas and change the world still exist after a decade of being operational. Can we foster a similar culture amongst junior doctors?

The checklist story is an exciting one and is a rare opportunity for junior doctors regardless of their level of training to drive change. This might provide the impetus for re-evaluation of the junior doctor’s current role which appears to focus mainly on clinical skills. We will fail in our fundamental duty of primum non nocere if we fail to use the surgical checklist for our patients who are at the mercy of our blade.

**Conflict of interest**

All authors declare that they have no financial and personal relationships with other people or organisations that could inappropriately influence (bias) their work.

**Funding**

Funding for Project SAVED was through the Patient Safety First campaign

**Ethical approval**

All authors have made substantial contributions to the following: (1) the conception of this editorial, (2) conception and design of the Project SAVED study, acquisition of data, analysis and interpretation of the study, (3) drafting the article and revising it critically for important intellectual content, and (3) final approval of the version to be submitted.

**Acknowledgements**

Suzette Woodward, Patient Safety Director, National Patient Safety Agency and Kevin Cleary, Medical Director, National Patient Safety Agency for their comments on earlier versions of the manuscript. Francesca Lyons, Communications Team, NRLS for proof-reading.

**References**

currentPage=all; 10th December 2007 [accessed 01.06.10].

Sukhmeet S. Panesar
National Patient Safety Agency, Patient Safety Division, 4–8 Maple Street, London W1T 5HD, UK
* Corresponding author.
E-mail address: sukhmeet.panesar@npsa.nhs.uk (S.S. Panesar)

Andrew Carson-Stevens
Wales Centre for Health, 14 Cathedral Road, Cardiff CF11 9JL, UK
E-mail address: carson-stevens@doctors.net.uk (A. Carson-Stevens)

J. Edward Fitzgerald
Association of Surgeons in Training, 35–43 Lincoln’s Inn Fields, London, WC2A 3PE, UK
E-mail address: edwardfitzgerald@doctors.org.uk (J.E. Fitzgerald)

Mark Emerton
Chapel Allerton Hospital, Leeds Teaching Hospitals NHS Trust, West Yorkshire, UK
NHS Institute for Innovation and Improvement, England, UK
E-mail address: me.emerton@nhiworld.com (M. Emerton)

25 January 2010
Available online 17 June 2010