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INVITED COMMENTARY

Ten Years and Counting: Sustaining Effectiveness of the Surgical Safety Checklist Through Ongoing Implementation Efforts

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In their study, entitled "Implementation of the World Health Organization Surgical Safety Checklist correlates to reduced surgical mortality and length of hospital admission in a high income country," authors de Jager et al. contribute to the growing evidence that surgical checklists can save lives and prevent complications around the world, this time in a tertiary care center in Australia [1]. Beyond its heretofore unstudied setting, what is also noteworthy about this study is its finding that the checklist's positive impact on mortality reached significance in the long-term (2–3 years post-implementation), highlighting the behavioral and cultural changes the checklist is thought to engender. As the Surgical Safety Checklist celebrates 10 years of use in operating rooms around the world, its staying power is evident; however, there is still much to learn about how we can sustain the effectiveness of the checklist over time.

Several studies, including this one, have examined the impact of the checklist in the longer term and have reported results supporting the Surgical Safety Checklist as a sustainable intervention in both high-income as well as low- and middle-income countries (LMICs). Implementation of a voluntary checklist-based surgical safety program in South Carolina was associated with a reduction in mortality in deaths after inpatient surgery over its first 3 years [2]. Furthermore, a study comparing surgical outcomes at a referral hospital in Moldova, an Eastern European LMIC, at 1 and 20 months after implementation of a Surgical Safety Checklist with pulse oximetry found that the long-term period was associated with a greater reduction in complications and surgical site infections along with an increase in the mean rate of completion of the checklist items [3].

Although these early results are encouraging, we also acknowledge that they may not be generalizable to settings that have not implemented the checklist as deliberately and with as much support. From the literature, anecdotes, and our own experiences, we know that checklist usage can be highly variable across and even within facilities, which has implications for patient safety [4]. The many barriers to initial checklist implementation are well-documented and strategies to overcome these are available [5–7]. However, equally as challenging is sustaining enthusiasm and support. As checklist use becomes habitual for the upcoming generation of surgeons, it is important that they develop the right habits and remember the checklist's function not only as a memory aid but as a tool to improve operating room teamwork and communication. It is becoming evident that checklist implementation cannot be thought of as a one-time event but as part of a facility's ongoing efforts to improve patient safety.

Although we still have much to learn about how to sustain the effectiveness of the checklist, the study by de Jager et al. provides insight into potential ways to do this by highlighting two important principles of implementation: (1) build a multidisciplinary team and (2) coach the checklist [1]. In their description of implementation, the authors report that the WHO Surgical Safety Checklist was adapted with input from the Royal Australasian College of

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Surgeons, the Australian and New Zealand College of Anaesthetist, the Royal Australian and New Zealand College of Ophthalmologists, the Royal Australian and New Zealand College of Obstetricians and Gynecologists, the Australian College of Operating Room Nurses and the Perioperative Nurses College of the New Zealand Nurses Organization. They also report that the nursing unit manager would conduct a monthly observational audit of checklist compliance for ten random surgical procedures; the auditor would not simply observe but, on noticing incorrect checklist use, would address any issues with the surgical team to ensure compliance, which, as de Jager et al. acknowledge, is essentially coaching even if it was not intended to serve this purpose. The results of this study make sense within the context of these implementation efforts. The inclusive multidisciplinary approach to checklist modification laid the foundation for long-term effectiveness as it likely allowed for the creation of a tool that not only had support from the highest levels of leadership but also that was highly acceptable to all the different team members of the operating room. However, the delayed impact of the checklist may be a result of the somewhat infrequent and random "coaching." As the authors rightly note, culture change takes time, which could explain the delayed impact, but, perhaps, this could have been expedited with more formalized early coaching efforts.

As we look ahead to the next 10 years of effective checklist use, we must be cognizant that implementation efforts may have to be modified for different settings. For example, intensive coaching may be less feasible in resource limited settings; however, there may be other strategies to support implementation such as a gradual roll-out of the checklist in which a facility is not given more to do than they can handle. Additional consideration will also have to be given to how best to implement subspecialty surgical checklists as well as checklists to be used in outpatient ambulatory surgery centers. In its next decade of use, we anticipate that the checklist will continue to spread to new environments and be modified in unique ways; it will be up to the global surgical community to continue to communicate learnings of implementation successes and failures to get us closer to our shared goal of making surgery safer everywhere.

Compliance with ethical standards

Conflict of interest The authors report no proprietary or commercial interest in any product mentioned or concept discussed in this article.

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