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FEATURE

SURGICAL SAFETY

Clean cut surgery

Jane Feinmann reports on a new initiative to reduce the incidence of infection after surgery

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Infection of the surgical site, a major threat for all postoperative patients and a leading cause of hospital acquired infections, is a particular problem in low resource settings, where rates are double those reported in Europe and the United States.[1] With no global approach to instilling best practice, it's a problem that causes unnecessary morbidity and mortality and strains hospital systems and budgets.

Now Lifebox, the non-profit organisation chaired by American surgeon and author Atul Gawande, has aspirations to substantially reduce infections with a new technical programme. As with their ongoing work on safe anaesthesia, Clean Cut (checklist expansion for antisepsis and infection control—customisation, use, and training) uses the World Health Organization's Surgical Safety Checklist to identify and overcome particular barriers that hospitals in low resource setting hospitals face in delivering safer surgical care. The WHO checklist has been shown to reduce risk of surgical complications and mortality by up to 40%.[2]

First developed by Gawande with a team of clinical and behavioural experts at WHO in 2009, the checklist requires surgical teams to take basic safety precautions, such as ensuring that blood is available if required, as well as more personal changes. These include getting all team members to introduce themselves before each session, challenging the hierarchy in operating theatres that prevents junior members of the team from speaking out if they see that something is wrong. Its use became compulsory in hospitals in England and Wales in 2009.

In 2011, Gawande helped found Lifebox, a charity committed to safe surgery globally. In the five years since its launch, it has facilitated the distribution of 11 000 Lifebox pulse oximeters to operating theatres in 100 countries, making surgery safer for 10 million patients globally. Pulse oximeters (as well as the surgical safety checklist) are now being used by hospital teams that see the worst road traffic incidents, the most delayed patient presentations, and the widest margins between wealth and health access.

Clean Cut is a technical programme that brings data, communication systems, best practices, and local expertise together to fight healthcare associated infection, particularly the surgical site infections that cause postoperative complications in at least 10% of surgical cases.

The project, funded by the GE Foundation as part of its Safe Surgery 2020 programme, aims to normalise antiseptic practice, including "skin preparation, checks to ensure the integrity of gowns and drapes and that instruments are decontaminated, the appropriate use of antibiotics delivered at the right time as well as swab counts before and after the operation," says Tom Weiser, a trauma surgeon at Stanford University Medical Center and part of the team that helped to create, implement, evaluate, and promote the WHO checklist.

Slow change

Clean Cut is not expected to be a quick fix for the problem. On average, 12 in 100 surgical patients in these countries develop postoperative infections as a result of workforce shortages, patient overcrowding, unavailability of microbiological identification and sensitivity testing, poor perioperative care systems, and the lack of specialist wound care services. "This is another slow idea that involves cultural change, genuine collaborative teamwork as well as a lot of extra hard work for all the professionals involved," explains Gawande, who is also professor of surgery at Harvard Medical School.

Antiseptic operations took decades to accept and become a requirement in operating theatres in wealthy countries, Gawande points out. "Compliance at the time of Lister's first description required hard work from surgeons, in particular the need to wash hands with carbolic soap which burned the surgeons' skin and provided no immediate benefit to the patient," he says. "Even today sterility is often not a priority in low and middle income countries—with many surgical units using a single set of surgical instruments that may be old and simply washed or inadequately sterilised between cases."

A study from Nicaragua found that only one in eight rural clinics have an autoclave machine, explained Ed Fitzgerald, a general surgery registrar in London and clinical adviser to Lifebox. Furthermore, local and national guidelines have led to variable compliance with basic antiseptic practices such as hand washing and a lack or inappropriate use of antibiotics.

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Cultural shift

The Clean Cut approach, points out Gawande, demands "an immense collaborative effort with little immediate benefit to the individuals putting in the effort." It's a profound cultural change, according to Gerlinda Lucas, executive director of the World Mate Emergency Hospital in Battambang, Cambodia, a 109 bed trauma hospital for land mine and road crash patients. The hospital is a pilot site for the Clean Cut project involving an agreement on who decides on buying more sterile gloves as well as who owns the obligation to close the quality gap. "It means accepting that everyone in the operating theatre has the right to point out that the surgeon's glove is torn, which is very different from the conventional hierarchy of surgical autonomy—the 'what I say goes' position of the surgeon," she says.

Another barrier is that surgeons in many low and middle income countries regularly work 14 hour days, sometimes carrying out surgery using a hand torch if the generator fails, and where there may not be a receptacle to put a biopsy sample and blood, according to Abebe Bekele, general and thoracic surgeon at the Black Lion Hospital in Addis Ababa and chair of the Clean Cut Ethiopian scientific advisory board.

"To get change, we need to bring together a team to brainstorm about a system that doesn't work—starting with establishing a curriculum for trainees, then presenting it to our surgical colleagues, and finally bringing it to the government," he says. "It will take five years to bring about the kind of change in our hospitals where health professionals will feel they cannot work without the checklist. But it will be worth the wait."

For further information about Clean Cut see www.lifebox.org/clean-cut/ .

Competing interests: I have read and understood BMJ policy on declaration of interests and have no relevant interests to declare.

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2 de Vries EN, Prins HA, Crolla RMPH, et al. SURPASS Collaborative Group. Effect of a comprehensive surgical safety system on patient outcomes. *N Engl J Med* 2010;363:1928-37. doi:10.1056/NEJMsa0911535 pmid:21067384.