Teaching in the Operating Room

Educational Principle

Doctors lack confidence in their procedural skills after completing the current NHS postgraduate training curriculum. A survey of 181 doctors, published in the open access journal *BMC Medical Education*, has shown that from ten of the procedures medics are officially required to be competent at, most are only confident of their ability to perform five.

-Graeme Baldwin

The BID method, an easily taught approach to surgical instruction, was shown to significantly improve the acquisition of surgical skills during a simulation-based skills course.

We anticipate this method may provide an ideal framework for time-efficient and effective surgical instruction

-Dr. Daniel Hoppe

The B.I.D Method

**Briefing**

This is a short (2- to 3-minute) interaction at the scrub sink. The purpose of the interaction is to assess the needs of the learner, to cause the learner to assess her own learning needs, and to jointly establish learning objectives to guide both learner and teacher. Ideally, the learner establishes her own objectives for the operation. The teaching surgeon /preceptor assists by prompting and guiding the formulation of the objective. Having learners involved in setting the objectives allows them to begin the process of deliberately identifying areas in which practice is needed, and deliberately reviewing past experiences to formulate needs to be addressed in the current operation. This process allows learners to integrate the experience into their semantic networks, making it more likely that the information can be retrieved later. The attending surgeon /preceptor starts the conversation with a brief question about goals for the operation or previous experiences. Learning objectives can follow from this brief needs assessment.

**Intraoperative Teaching**

The objectives set in the briefing focus the intraoperative teaching. Although other standard forms of intraoperative communication will still be present (i.e., the attending physician will still coach and guide the learner through the operation), the focus of most of the didactic talk will be on the one or two learning objectives set for this operation. This ensures that the teaching is not simply a nonspecific flow of talk, but instead, discussion focused on mutually shared learning goals. Irby argued that, over time, medical teachers develop teaching scripts. The preceptor can still use teaching scripts, but those scripts are manifest in the briefing session and in the intraoperative teaching and are based on mutually developed learning objectives.

**Debriefing**

After the operation is finished, ideally during the closing, the preceptor and the learner debrief about the encounter. The debriefing consists of four elements:

1. reflection
2. rules
3. reinforcement
4. correction.

Because the debriefing is focused specifically on the intraoperative teaching, which is focused on objectives set at the beginning of the encounter, it is short. In our example, debriefing the learner during the closing took less than 5 minutes. Debriefing begins with the attending physician asking the learner to reflect on his or her performance and attainment of stated objective. This allows the preceptor to understand the
perspective of the learner, and to diagnose any problems the learner is having with his perception of the encounter. Most importantly it requires the learner to assemble his own thoughts about what was learned during the encounter.

Excerpted from The Briefing, Intraoperative Teaching, Debriefing Model for Teaching in the Operating Room Nicole K Roberts, PhD, Reed GW Williams, PhD, Michael J Kim, MD, Gary L Dunnington, MD, FACS Journal of the American College of Surgeons

Resources

OR Live online surgical webcasts

In Surgery, simulation can help:

- increase patient safety by facilitating surgical proficiency and certification;
- delivering economic benefits for surgical skills centers by delivering cost-effective solutions that increase the speed of learning;
- accelerate the pace of adoption of new procedures and devices.

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population Introduction of the WHO Surgical Safety Checklist into operating rooms in eight diverse hospitals was associated with marked improvements in surgical outcomes.

Review of comparative studies of clinical skills training: Better outcomes are associated with workplace-based training and a course which provides repeated episodes of training spaced out over a period of weeks/months with the facility for practice of the skill. These findings are important as many current clinical skills training courses do not use the techniques associated with better outcomes.

Computers and Virtual Reality for Surgical Education in the 21st Century Computer-based training in technical skills has the potential to solve many of the educational, economic, ethical, and patient safety issues related to learning to perform operations. Although full virtual-reality systems are still in development, there has been early progress that should encourage surgeons to incorporate computer simulation into the surgical curriculum.

The effects of practice and instruction on speed and accuracy during resident acquisition of simulated laparoscopic skills. Practice, with or without dynamic instruction, results in significant improvement in the speed of performance of simulated laparoscopic surgical skills. The addition of dynamic instruction to simulator-based practice improves the quality and consistency of resident acquisition of laparoscopic surgical skills.

Efforts to enhance OR teaching

Effective Or Teaching Skills

- explains reasons behind decisions
- answers questions clearly
- involves learners (pathology)
- provides feedback without belittling

Evaluation of the operating room as a surgical teaching venue The purpose of this study was to examine the educational activities that occur during the operating-room experience. Technical training in the procedure being done was the primary educational activity, but there were long periods when no form of education was taking place. The operating room provides the teacher and learner with uninterrupted time together, and this time can and should be used for clinical teaching and learning.

Evaluation of a Preoperative Checklist and Team Briefing Among Surgeons, Nurses, and Anesthesiologists to Reduce Failures in Communication One hundred seventy-two procedures were observed (86 preintervention, 86 postintervention). The mean number of communication failures per procedure declined from 3.95 before the intervention to 1.31 after the intervention. Thirty-four percent of briefings demonstrated utility, including identification of problems, resolution of critical knowledge gaps, decision-making, and follow-up actions.

Full scale computer simulators in anesthesia training and evaluation: As technology acquires an increasingly important role in medical education, full scale computer simulators represent an exciting potential in anesthesia. However, the full potential and role of simulators in anesthesia is still in development and will require a dovetailing of clinical theory and practice with current research in medical education.

A human factors analysis of technical and team skills among surgical trainees during procedural simulations in a simulated operating theatre.

Practice based learning and improvement Objectives: At the end of the workshop participants were able to: 1) List the components of the competency of practice based learning & improvement 2) Describe methods of teaching the competency 3) Discuss evaluation tools for this competency and implementation into residency programs

Resident Teaching Versus the Operating Room Schedule: An Independent Observer-Based Study of 1558 Cases. Anesthesia teaching increased the time to surgical incision by an average of 4.5 minutes. This finding, similar to previous reports in educational settings such as surgery and ambulatory care, also demonstrates that intraoperative anesthesia teaching does increase the time required for a physician encounter. Although our results indicate that teaching occurred in the majority of cases, the issue of decreased teaching when attending anesthesiologists were directing care in more than one OR is very worrisome, as this coverage ratio will become more prevalent in the future. In an environment of cost-containment and need for increasing efficiency in ORs, data from this investigation suggest the need for innovative
teaching techniques coupled with computer simulation to supplement anesthesia resident teaching in the future.

**Teaching Surgical Skills — Changes in the Wind:** Sheer volume of exposure, rather than specifically designed curricula, is the hallmark of current surgical training. But as opportunities for learning through work with "real" patients have diminished, interest in laboratories with formal curricula, specifically designed to teach surgical skills, has increased dramatically. In this new model of surgical education, basic surgical skills are learned and practiced on models and simulators, with the aim of better preparing trainees for the operating room experience.

The 10-year experience with a psychomotor skills laboratory at the Department of Surgery of the Université de Montréal is reported.

**Virtual reality training improves operating room performance:** results of a randomized, double-blinded study. The use of VR surgical simulation to reach specific target criteria significantly improved the OR performance of residents during laparoscopic cholecystectomy. This validation of transfer of training skills from VR to OR sets the stage for more sophisticated uses of VR in assessment, training, error reduction, and certification of surgeons.

**Stress and Burnout Among Surgeons** Training for and practicing surgery are stressful endeavors. Studies involving national samples of surgeons from surgical subspecialty societies and graduates of surgical training programs suggest that burnout rates among surgeons range from 30% to 38%.

**Quantifying factors influencing operating theater teaching, participation, and learning opportunities for medical students in surgery.** Although operating theater attendance is recognized as an important component of the medical school curriculum, overall attendance at sessions was low. Attendance could be increased by ensuring students knowing what is expected of them, making them feel welcome, setting learning objectives, and allowed them to actively participate. These results highlight the need to ensure that the time spent by medical students in the operating room is positive and maximized to its full potential through structured learning involving all members of the theater team.