Traditionally, surgical residents have learned basic surgical skills in the operating room. However, for a number of reasons, this learning model is no longer the best in today’s health care environment. For financial reasons, there is pressure to achieve “high turnover” in the operating room, thus shortening the time available for attending staff to teach and for residents to practice. As well, teaching hospitals in Metropolitan Toronto are seeing an increasing number of patients with complicated surgical needs, which require expert surgeons working at maximum efficiency. Finally, the ethical concerns of teaching and learning surgical skills on patients must be considered.

Thus in September 1998, the University of Toronto Surgical Skills Centre opened at Mount Sinai Hospital in Toronto as a complement, not a replacement, to the operating room for learning and practicing surgical skills. Their current vision is:

“To provide a laboratory setting where basic and complex surgical procedures can be learned and practised. Surgeons will achieve a higher level of expertise more rapidly in a laboratory setting, where they can employ educational principles of repeated practice with feedback. Educational research is conducted in skills acquisition and evaluation. This research will provide answers to fundamental educational issues and allow testing of innovations in surgery.”

Originally, the Surgical Skills Centre was founded in order to give residents more chances for repeated practice with immediate, individual feedback. More specifically, the centre runs the Surgical Skills Centre Curriculum (SSCC) for PGY1 and PGY2 residents from all surgical divisions and from the Departments of Otolaryngology. A Core Curriculum Committee, consisting of faculty from all surgical divisions, Otolaryngology, Obstetrics and Gynaecology, and a professional educator, oversees the curriculum and prepares the syllabus. Also, faculty from all divisions takes part as instructors, with a resident to instructor ratio of 6 to 1. The sessions are mandatory and take place every Tuesday for two hours. Examples of teaching topics include: tissue handling, dissection, wound closure, urethral and suprapubic catheterization, airway management, chest tube insertion and thoracentesis, insertion of lines, casting techniques, laparoscopic procedures and techniques for surgical biopsies. Residents generally rate this experience as very positive. They can practice procedures in a stress-free environment without worrying about time and harming patients. In addition, the focus of the instructor is the resident rather than the patient. Beyond the improvement in technical skills, this facility allows opportunities for better relationships to develop between the staff surgeons and the residents, thus increasing their confidence and potentially decreasing some of the intimidating factors associated with integration into a large surgical program.

In addition to the SSCC, individual surgical divisions and other departments conduct specialty-specific intensive courses at the Skills Centre. The surgical divisions involved are General Surgery, Cardiovascular Surgery, Orthopaedic Surgery, Plastic Surgery, Urology and Neurosurgery. Examples of sessions offered are “Aortic Stentless Valve Replacement”, “Lumbar Decompression for Spinal Stenosis”, “Brachial Plexus Dissection” and “Microsurgical Anastomosis”. Other departments that run sessions are Obstetrics & Gynecology (who run technical skills curricula about every 2 weeks), Otolaryngology, Internal Medicine, the Critical Care Unit, Emergency Medicine, Nursing, Dentistry and the International Medical Graduate Program. Programs have also been started for undergraduate medical students. A mandatory one-day per six-week surgery rotation in clerkship has been introduced, as well as sessions for second-year medical students, which will be piloted in the spring. The Surgical Skills Centre also offers Continuing Professional Development opportunities for mature surgeons. These courses are usually organized either by the respective surgical department or by surgical industry companies who desire to train surgeons on a new procedure or in the use of a new product. Finally, the Centre is involved with the high school co-op program, ‘Bring Your Kids to Work Day’ and the University of Toronto Mentorship Program AABHS (Association for the Advancement of Blacks in Health Sciences).

Thus far, the people who use the centre and the courses offered have been described, but what resources does the centre actually offer? The centre itself is located in the basement of Mount Sinai Hospital, more specifically the lower level (2nd) of...
Simulations represent another exciting training model that is available. They have laparoscopic robotic multitask models, which apparently feel very real, as well as a laparoscopic simulator, a colonoscopy/bronchoscopy simulator, as well as SimMan, a computer generated cardiac arrest model. SimMan is especially used by departments such as Emergency and Critical Care to practice airway intubations, central and arterial line insertions, emergency tracheostomies, and other emergency and critical care scenarios.

Thus, the Surgical Skills Centre is equipped to run a large variety of different sessions, for many kinds of groups. They can accommodate from five to six to over 30-person groups; they work evenings and weekends; they have all kinds of instruments, sutures and blades as needed and many other presentation and technical resources. They also have comprehensive teleconferencing and videoconferencing capabilities, including connections to the OR, where a surgeon can be performing an actual procedure, and the session participants can follow down in the lab. There is a fee associated with use of the Centre, and these fees apply to users who are not affiliated with the University of Toronto or Mount Sinai Hospital. There may also be reduced fees for affiliates of the Centre, depending on the group.

Finally, not only is the Surgical Skills Centre heavily involved in teaching, they also conduct a lot of research. They have great interest in all facets of surgical education, particularly findings that can eventually improve the transfer of surgical skills between surgeons. The Centre employs a Research Scientist, whose main area of interest is technical skill acquisition for surgery and his current main objectives are 1) to improve learning of technical surgical skills taught in a laboratory rather than in a traditional operating room setting, and 2) to create and validate a new, objective method of the evaluation of technical skills. He is also pursuing basic science research in the area of motor adaptations. Thus, many projects are underway and many have been published in the last five years based on research conducted at the Skills Centre. Some have won coveted awards, such as the paper by D.J. Anastakis and colleagues: Evaluating the Effectiveness of a Two-Year Curriculum in a Surgical Skills Centre (Baltimore, USA, April 2002), which was presented with the Best Paper Award by the Association for Surgical Education.

The University of Toronto Surgical Skills Centre at Mount Sinai Hospital is an excellent facility, heavily involved in both the teaching of surgical skills, and research to advance knowledge about skills acquisition. Their innovative Surgical Skills Core Curriculum for surgical residents, as well as the many opportunities they offer other departments, medical students and mature surgeons to improve their skills, make the Centre a great resource for all those in the health care field and an excellent tool to enhance the traditional teaching of surgical skills.

For more information about the Surgical Skills Centre, please consult their website: www.utoronto.ca/ssc/