

**MINIMALLY INVASIVE SURGERY WEEK**  
**SLS • MIRA • SRS JOINT ANNUAL MEETING**  
**GENERAL SESSION ABSTRACTS**

**Wednesday, September 5, 11:30am-12:30pm**

**KEYNOTE LECTURE**

**When Will Minimally Invasive and Robotic Surgery Replace Almost All Open Surgeries?**

Speaker: Camran R. Nezhat, MD

[Click Here for Abstract/Article](#)

**Wednesday, September 5, 5:45pm-6:15pm**

**Honorary Chair Presentation: Role of Surgery in Reproductive Medicine**

Jie Qiao, MD, PhD

Reproductive surgery could be divided into surgery as a primary treatment for infertility, surgery to enhance in-vitro fertilization outcome, and surgery for fertility preservation. Tubal disease accounts for 25%–35% of female factor infertility. A successful tubal repair gives the patient the possibility of conceiving more than once without further treatment. It also gives the couple the psychological advantage of being able to conceive spontaneously. A normal uterine cavity is a prerequisite for implantation, and hysteroscopic correction of intrauterine pathology, including polypectomy, myomectomy and metroplasty, increases the chances of having a successful pregnancy. Management of hydrosalpinx before in-vitro fertilization treatment by laparoscopic salpingectomy or proximal tubal occlusion increases the in-vitro fertilization delivery rate. Surgery also plays an important role in preservation of fertility. This includes laparoscopic ovarian transposition, ovarian tissue removal for cryopreservation and ovarian transplantation.

Although HSG is still considered to be the first line investigation for tubal patency, false positive results often present physicians an “IVF-ET or not” dilemma. Standard laparoscopy is still considered as the gold standard for investigation of the tubes and pelvis in infertile women, but it is thought to be invasive and not cost-effective especially when the investigation has shown normal findings. Transvaginal hydrolaparoscopy( THL) is a less invasive procedure and an effective supplement to standard laparoscopy for infertility treatment.

The future of surgery, and reproductive surgery in particular, will involve the use of sophisticated technology. It will allow for a fully integrated operating room with capacity for robotic surgery, teleconsultation, and possibly telesurgery.

**Honorary Chair Presentation: Canada’s Contribution to the Field of Medical Robotics**

Mehran Anvari, MB BS PhD

Canada has a rich history in the field of robotics, but is most recognized for being the manufacturer and supplier of all robotic systems used on the Space Shuttle and the Space Station. Canadian surgeons have also been recognized for their leading work in the field of remote telesurgery using robotics, the Canadian Telesurgical Network and NEEMO 7 & 9 missions in collaboration with NASA and Canadian Space Agency and TATRC. The Canadian Telesurgical Network demonstrated the efficacy of telesurgery in a rural setting allowing community surgeons to offer better quality and more advanced laparoscopic procedures in a rural community. During the NEEMO 7 & 9 mission, expert surgeons from the Centre for Minimal Access Surgery (CMAS) successfully used telementoring and telesurgery to perform surgical procedures with astronauts in a remote habitat under water. This expertise and knowledge that Canada has displayed in the field of medical robotics has been leveraged in the development of 2 major entities, the Neuroarm and the Image Guided Autonomous Robot (IGAR). The

technology that went into developing NeuroArm, the world's first robot capable of performing surgery inside magnetic resonance machines, was born of the Canadarm as well as Canadarm2 and Dextre. The Centre for Surgical Invention and Innovation (CSii) in Hamilton, Ontario, is in collaborations in the development of an advanced platform for use in the early detection and treatment of breast cancer. The image-guided autonomous robot (IGAR) will provide increased access, precision and dexterity, resulting in more accurate and less invasive procedures. Both entities are moving to commercial production shortly. Canada continues to be at the forefront in the field of medical robotics.

**Thursday, September 6, 7:40am-8:30am**

**GENERAL SESSION: BEST OF UPDATES**

**Robotic Assisted Microsurgery: Vasectomy Reversal, Varicocelectomy & Groin Pain Procedures**

Sijo J. Parekattil, M.D.

Since its inception in the early 2000's, robotic assistance with urologic procedures continues to expand. The magnification, three dimensional visualization, and surgical control offered by the latest daVinci® Si-HD system has led to its integration into microsurgical procedures for male infertility. The addition of robotic assistance may allow an improvement in outcomes similar to when the operating microscope was introduced in microsurgery. Though the use of robotics in microsurgery is still in its early phases, initial findings are encouraging.

This presentation covers robotic microsurgical procedures and tools for male infertility and chronic orchialgia/ testicular pain such as: vasovasostomy, vasoepididymostomy, sub-inguinal varicocelectomy targeted denervation of the spermatic cord and targeted abdominal denervation. Human clinical studies on over 700 cases so far appear to show improved operative efficiency and comparable outcomes. The use of robotic assistance during robotic microsurgical vasovasostomy appears to decrease operative duration and improve the rate of return of post-operative sperm counts compared to the pure microsurgical technique. The preliminary findings are promising, but further evaluation is warranted.

**Best of Updates: NOTES, LESS SPA and Single Port Surgery Committee**

**Beyond Conventional Laparoscopy: LESS, SILS, Microlaparoscopy and NOTES**

Kevin J. E. Stepp, MD

This update will review the rapid growth of alternatives to conventional laparoscopy. Attention will focus on new or modified techniques including single port laparoscopy, hybrid microlaparoscopy, and robotic surgery and NOTES. Advances in optical imaging systems have improved visualization and ergonomics of single port laparoscopy. Additionally, the current status of available instrumentation will be discussed. Specific techniques will be illustrated including the use of conventional as well as articulating laparoscopic instruments, microlaparoscopic instruments. The importance of a systematic intra-operative approach will be presented. Single port and reduced port robotics will be discussed. Future developments will be considered.

**Best of Updates: Pediatric Surgery Committee: Pediatric Minimal Access Surgery: Equivalent or Better?**

David W. Bliss, MD

The rapid adoption of minimal access procedures across the range of surgical specialties has been perceived as a significant advance in minimizing pain and improved cosmesis, recovery, intracavitary adhesions, and patient satisfaction. A growing body of data supports many of these assertions in Adult Surgery. However, while Pediatric Surgeons have been early adopters of these approaches and have innovated many operations, they have only recently begun to rigorously study the differences between open and minimal access procedures.

There is a broad repertoire of MAS operations being performed on children ranging in age from premature newborns to adult-sized teenagers. There has been nearly universal adoption of laparoscopy for pyloromyotomy, appendectomy, cholecystectomy, and gastroesophageal fundoplication. In addition, a growing number of Pediatric Surgeons are now performing complex procedures including major thoracic (esophageal atresia, diaphragmatic hernia, anatomic lung resection), hepatobiliary (choledochal cyst, biliary atresia, hepatic resection), oncology (biopsy and/or resection of Wilms

tumor, Neuroblastoma), and gastrointestinal (atresia, colectomy and ileoanal pull-through, Hirschsprung's disease, and anorectal malformations).

Until recently, reported series were small and were lacking comparison groups. However, Pediatric Surgeons have begun publishing better retrospective studies with control groups and have generated comparative trials to objectively evaluate the merits of MAS. From Nissen fundoplication, pyloromyotomy, and appendectomy to more complex matters such as anorectal reconstruction and congenital diaphragmatic hernia, there is a growing body of data to support that MAS is at least comparable to open approaches and, in select circumstances, seems to have improved outcomes.

**Best of Update: Fertiloscopy/Transvaginal Endoscopy Committee**

**Eccentric Hysteroscopy: Expanded Utilization**

Stephen A. Grochmal, MD

Hysteroscopy is one of the oldest endoscopic procedures described in the medical literature and was first performed by Pantaleoni in 1869. Until recently, diagnostic and operative hysteroscopy had been an underutilized and challenging procedure for the majority of practicing gynecologists. Due to a concerted effort by specialty organizations (like SLS) promoting hysteroscopy training venues in conjunction with improved technologies from device manufacturers, the interest, enthusiasm and utilization of hysteroscopy is now on the rise. Hysteroscopy is considered the platinum standard for diagnosing, sampling, and treating intrauterine disease and is recognized as a safe, office-based procedure. But this is only the beginning. As hysteroscopy continues to become de rigueur in the treatment repertoire, we can anticipate an expansion of novel and unique (eccentric) applications.

This update provides a brief overview of hysteroscopy's evolution with a focus on new "outside the paradigm" procedure applications and techniques expanding the hysteroscopy envelope as we know it. The latest technological advances and accoutrement for improving the performance and safety of hysteroscopy procedures resulting in enhanced standard of care will be discussed. Although often difficult to look ahead and imagine the future, novel hysteroscopy design concepts influenced by third generation nanotechnologies will also be highlighted. Lastly, we discuss unique situations where hysteroscopy procedures have crossed over to other medical specialties leading to enhanced patient care. In conclusion, we may ponder the conundrum if these are really eccentric, expanded applications or just evolutionary next steps?

**Thursday, September 6, 8:30-9:45am**

**MULTIDISCIPLINARY PLENARY SESSION: "Surgery is a Team Sport" Education for the OR from Surgeon, Nurse, Tech, Anesthesia, Central, etc....How to Run an Efficient, Cost-Effective, Economically Responsible Operating Room!**

**How Much Money is Needed for a Safe, Cost Effective and Enjoyable Operating Room Environment?**

Nicholas Archer

**The Operating Room from "The Head of the Table"- An Anesthesiologist's Perspective**

Gregory H. Adkisson, MD

Operating Rooms function well if there is a coordinated team of professionals working to ensure that all of the varied components are in place and are brought together at the precise moment of an operative event, including the backup equipment, personnel and procedures to assist in the event of unforeseen complications, in order to ensure an optimal outcome for an individual patient. The surgeon, as the traditional "Captain of the Ship" is responsible for scheduling a patient for surgery, but there must be a competent and well-run system to bring a patient to in order for an operation to proceed. From the moment an operation is scheduled to the point a patient is discharged safely to home, there are a multitude of necessary and often unseen events that play a role. The surgeon, anesthesiologist, circulating nurse and surgical scrub create a critical "Team" that must work together to ensure a safe and successful outcome. Specialty teams may be necessary for certain types of operations. A majority of errors can be attributed to lapses in communication. Increasing importance has been placed on the concept of a "Time Out" to review the patient, procedure and critical aspects of each case. Ongoing communication is vital to keep the surgeon aware of any significant changes during the case. A "Debrief" to discuss

what went right or what needs to be improved, along with a discussion of ongoing treatment needs should be conducted. Successful teams will work together with the primary focus on the patient.

### Quality Measures in the Operating Room, What Insurance Companies Want to Know about You and Your Team...How are Outcomes Measured?

Gustavo Stringel, MD, MBA

The practice of Medicine continues to become more complex. New regulations appear every day, making it difficult for the practitioner to understand, keep up and implement some of the regulations that directly affect his/her surgical practice.

The main focus is on performance, quality, safety, and outcome.

The Center for Medicare and Medicaid services (CMS) has taken drastic measures to evaluate performance and outcome, with penalties for hospitals or providers that fall below certain levels. Payment for services is often denied for preventable complications or errors, readmission to the hospital and other situations. With over one billion claims each year their power to dictate policy is undeniable. CMS has designed Recovery Audit Programs that have resulted in penalties to Hospitals or providers that do not abide with their guidelines.

Insurance companies have followed suit and created more regulations and hurdles to curtail payment to providers.

New and more complex safety regulations and checklists are implemented in the Operating Room and throughout Hospitals to prevent error, improve quality and safety, and produce better outcomes.

Health Care Organizations have been developing programs to improve leadership, efficiency, communication, teamwork and safety for the patients, often hiring professional companies to develop these programs.

Patient safety and quality now is linked to a well-informed and satisfied consumer (patient). CMS and insurance companies will link reimbursement to patient satisfaction. Programs such as HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) have developed surveys to standardize and measure patients' perspectives of hospital care.

The new Paradigm is not only to create a culture of safety but also of patient satisfaction.

### The Surgeon as Captain of the Ship

Jay A. Redan, MD

All personnel in an Operating Room usually look to the surgeon to lead them through a successful OR procedure and 99% of the time the operation proceeds without incident. However, when the surgical procedure becomes difficult, stressful and sometimes life threatening, the Captain (i.e. the surgeon) must take control and instruct his team quickly, decisively and correctly. Orchestrating any procedure involves accurate and current knowledge of several key points:

- Your OWN TRUE skill level... (Does your talent stop at your wrist?)
- Your INSTITUTION'S available technology... (Does it scream 1965 or 2025?)
- The skill level and education of your OR TEAM... (Do you have your "A team" or the "after 3 team"?)
- The RESOURCES of your hospital... (Is it sound fiscally?)
- FIRST DO NO HARM... (Are you practicing evidence based medicine?)
- Finally, you have a duty to be economically responsible for the care of the patient.

When scrubbed at the operating room table, the Surgeon must be able to construct a rapid mental checklist and give orders that can return a chaotic situation to normal. These abilities can differentiate a good from a bad leader. This presentation will give some insight for the premise; the Surgeon as "Captain of the Ship."

### The Information You Need When and Where You Need It - Scholarly Search and Interactive E Books

Paul Alan Wetter, MD

SLS provides powerful and easy to use resources for surgeons and related personnel, available for free on the Internet at [www.SLS.org](http://www.SLS.org). This is the only place on the web where you can find out what is being said about an MIS topic at National and

International meetings, peer review, index medicus journal, textbooks on surgery and surgical history. Our website includes powerful search features along with text and video that are excellent resources for information to help improve your practice. The Scholarly Laparoscopy Search provides a simple way to search for information and literature on a wide range of laparoscopic and MIS topics. From one place, you can search across many sources using the subset of MIS search topics by specialty. Features of the Scholarly Laparoscopy Search include the ability to search multiple sources from one convenient place, find papers, abstracts, articles, research material and MIS Information, locate complete journal articles from JSLS, Journal of the Society of Laparoendoscopic Surgeons, learn about key advancements in MIS, and fast one-click search is easy to use. SLS also offers free open access interactive E books and online textbooks for your educational use. This presentation will help you learn how to access all of this information and more.

**Thursday, September 6, 10:30am-11:30am**

**MULTIDISCIPLINARY PLENARY SESSION: Single Access and Minimizing Ports: Multidisciplinary Town Hall Challenge/Debate**

**Traditional Laparoscopy**

James C. "Butch" Rosser, MD

**Minilaparoscopy**

Gustavo L. Carvalho, MD, PhD

The advantage of less trauma and better cosmetic outcome mainly motivated surgeons to adopt novel surgical approaches which are clearly followed by an increasing interest by the surgical industry whose financial support to some specific new approaches should make us face it with a rational and critical analysis. Focusing not only in developing a new surgical technique but should also make us improve our daily practice to the patient, in order to provide less trauma, less pain, more safety and cost-effectiveness.

Minilaparoscopic surgery was first presented several years ago (1996) proposing diminish surgical trauma by reducing the diameter of the standard laparoscopic instruments. However, the first used instruments were not cost-effective for its first attempted procedure: minilaparoscopic cholecystectomy. At that time, they used expensive and very fragile mini-scopes and disposable materials making minilaparoscopy unpopular and limited for the laparoscopic surgeons.

The advent of natural orifice transluminal endoscopic surgery (NOTES) and single-incision laparoscopic surgery (SILS) is now challenging every surgeon to improve the esthetic results for patients. Minilaparoscopic or Needlescopic surgery represents a refinement in laparoscopy, potentially as cosmetically effective as NOTES and SILS.

Besides gallbladder surgery, minilaparoscopy has been successfully employed to other surgical procedures as appendectomy, simpatectomy, inguinal hernia repair among others, proving to be feasible, safe, cost-effective and as cosmetically effective as the others no skin scar surgical techniques (NOTES and SILS). In addition, on one hand, it is important to emphasize that minilaparoscopy, being a conventional laparoscopic refinement, keeps the same practical principles in what concerns surgeon's dexterity, safety and easy identification and dissection of target anatomic structures. Furthermore the recent use of 3.5mm low friction trocars offer in addition to better cosmesis an increase in dexterity and precision to minilaparoscopic procedures

**NOTES**

David Rattner, MD

It is fair to say at this point that NOTES cholecystectomy has not gained widespread acceptance in the USA. This is due to multiple factors. The first factor is that the leading surgical societies, interested in evaluating safety and efficacy before endorsing a technique, stated in The White Paper that NOTES is investigational and should only be performed under IRB supervision. This posture has led to consistent denials for payment by insurance companies. Furthermore, many IRB's have placed very restrictive inclusion criteria on NOTES protocols limiting the available patient population for this procedure. In

spite of the fact that trans-vaginal pelvic surgery is performed nearly every day for hysterectomies, uterine suspension, and was used in the past for tubal ligation, and in spite of the fact that there is abundant published literature that these procedures do not impair sexual function, many IRBs do not allow the procedure to be performed on any woman who might wish to have children in the future effectively excluding all pre-menopausal women. Another barrier in the USA has been activist intervention by the FDA to block approval of devices that make NOTES surgery easier to perform. The FDA took the position that NOTES was a high risk approach and therefore prevented device makers from using the 510K pathway (ie a device can be approved if it is substantially equivalent to a pre-existing device) to get their products approved for clinical use. This created a nearly insurmountable financial barrier for many companies to get their products to market.

In contrast to the USA, German surgeons are embracing the NOTES approach for cholecystectomy. There have been more than 6000 trans-vaginal cholecystectomies performed in Germany and most are recorded in a national registry (<http://www.dgav.de>). German surgeons modified the original technique by using a long rigid laparoscope transvaginally rather than using a flexible gastroscope. This makes the procedure much easier to perform.

Just as the German surgeons veered away from dependence on the flexible endoscope, we and others realized that a rigid platform would be useful for trans-rectal approaches to the peritoneal cavity. Trans- anal endoscopic microsurgery had been developed in the 1980's by Dr Gerhard Buess for treating large benign tumors of the mid and upper rectum. It was felt to have very limited application, but as we began exploring trans-colonic access devices for NOTES (given that only half the population are suitable for transvaginal access) this platform proved to be nearly ideal. It became immediately apparent that visualization deep in the male pelvis was superior to what one could obtain by either laparoscopic or open surgery. Both the MGH group and Dr Antonio Lacy's group in Barcelona have completed human clinical trials for the treatment of rectal cancer via a NOTES approach. Our preliminary work has convinced us that we can perform an oncologically proper total mesorectal excision as well if not better than with standard techniques.

Another area where NOTES seems likely to have great impact is in the treatment of achalasia. Once inside the submucosal tunnel of the esophagus, one can see the circular muscle fibers clearly and hence divide them at the level of the lower esophageal sphincter for the treatment of achalasia. This has in fact generated a great deal of excitement leading to yet another procedure with an acronym –Per Oral Endoscopic Myotomy-POEM. This procedure is getting increasing attention in the US but the largest experience to date comes from Japan where more than 100 POEM procedures have been reported with excellent results.

### Single Access and Reduced Port Laparoscopy

Kevin J. E. Stepp, MD

This discussion will focus on the benefits of emerging trends beyond conventional laparoscopy. Attention will focus on new techniques to include single port laparoscopy, hybrid microlaparoscopy, and reduced port robotic surgery. New instrumentation to facilitate better outcomes will be introduced. Data will be presented where available on outcomes, learning curves, and generalizability. Benefits for the patient will be illustrated. Patient selection and specific techniques to facilitate success and minimize complications will be considered.

### Thursday, September 6, 11:30am-12:30pm

MULTIDISCIPLINARY PLENARY SESSION: I Could Use a Robot – But Should I? Who, Why, When, and Where - Jointly with the Minimally Invasive Robotic Association (MIRA) and The Society of Robotic Surgery (SRS)

### Robotic Assisted Partial Nephrectomy: Is it Better than the Laparoscopic or Open Surgical Approach?

Howard N. Winfield, M.D.

Partial Nephrectomy is now considered the gold standard for most renal tumors which are 4 cm or less in size and suspected to be renal cell carcinoma. Up until the early 1990's this operation was performed by the open surgical approach with its expected attendant morbidity. With the advent of advanced laparoscopic techniques this operation was undertaken in 1992 by a small group of very skilled urologic laparoscopic surgeons. Despite the laparoscopic challenges of working in a 2

dimensional visual field with diminished “degrees of freedom of movement” and performing both ablative and reconstructive maneuvers, the results were very comparable to the open approach with respect to oncologic effectiveness. The blood loss and perioperative pain requirements were less with the laparoscopic approach resulting in shorter hospitalization and convalescence. However, the technical demands of laparoscopic partial nephrectomy have been significant with a somewhat higher postoperative hemorrhage rate compared to open surgery.

With the advent of robotic surgery in the last decade, partial nephrectomy is gaining in popularity due the significant technical advantages with respect to visualizations, instrument movement and ergonomics. Tying surgical knots and renal parenchymal reconstruction is markedly improved with robotic assistance compared to traditional laparoscopic surgery. Perioperative results indicate shortened OR surgical times, less postoperative bleeding and comparable hospitalization and convalescence times to laparoscopic surgery. Oncologic results are equal to both laparoscopic and open partial nephrectomy.

In summary, robotic-assisted partial nephrectomy is more user-friendly than the laparoscopic approach but with comparable perioperative and postoperative results. Open partial nephrectomy should be considered in select cases where “cold ischemia or no vessel clamp” is required due to tumor location, solitary kidney or pre-operative renal insufficiency. The operating room costs associated with robotic partial nephrectomy are greater than laparoscopic or open surgery. These costs can be offset to some extent by shortened intraoperative and postoperative hospital times.

### Robot-Assisted Laparoscopic Hysterectomy is Really Just Open Surgery in Disguise

Arnold P. Advincula, MD

### Robot Assisted Fundoplication for Reflux Disease Overkill?

Ivo A.M.J. Broeders

Robot assisted fundoplication has been performed since the introduction of the da Vinci system in 1998. Fundoplication for reflux disease is performed at relatively large scale, and it includes both extensive dissection and suturing. Robotic setup is straightforward. For these reasons, the procedure appeared to be an attractive target for gastro-intestinal surgeons. Extensive research has been performed in randomized setup. Patient numbers have been small though and studies usually focused on traditional outcome parameters. A clear case for robotics in fundoplication could not be made based on the results of these studies.

Nevertheless benign surgery of the esophagus and stomach might be an interesting target for robot-assisted surgery. The procedure might be of value for gastro-intestinal surgeons during their learning process. Also, technical superiority has been proven in the field of myotomy for achalasia with regard to the number of accidental perforations. Robotics may prove their benefit in hiatal hernia and reflux disease under circumstances with complex anatomy or difficult dissection. Giant hiatal hernia and redo-reflux disease ought to be regarded as areas of special interest for the application of telemanipulation technology.

## Friday, September 7, 7:40am -8:40am

### MULTIDISCIPLINARY PLENARY SESSION: The Changing Face of Healthcare for Surgeons....Work Time Directives

#### The European Perspective and Current Trends within the European Union

Oscar Traynor, MCh FRCSI. Royal College of Surgeons in Ireland

The traditional model of surgical training is the “apprenticeship” model which has been in place for more than 100 years. Apprenticeship works very well in surgical training but its success depends on: 1) long work hours over many years; 2) close working relationships between trainer and trainee. The European Working Time Directive (EWTN) has imposed a 48 hour limit on weekly work hours for surgical trainees across Europe. This has posed a major challenge for surgical training under the traditional apprenticeship model. The reduced exposure to surgical learning opportunities in the hospital workplace must therefore be supplemented by an offsite structured education programme with a heavy emphasis on simulation. At the Royal College of Surgeons in Ireland (RCSI) we have developed a structured education programme addressing: 1) Core Knowledge; 2) Technical Skills; 3) Personal Skills. The Core Knowledge component is a weekly online programme, SCHOOL for

Surgeons, which delivers a case of the week (with expert analysis/feedback), a journal club, technology update, and radiology seminars. There are also regular assignments, which are mandatory for all trainees. The Technical Skills component is a syllabus based modular simulation programme which all trainees must complete. This programme includes an annual technical skills assessment. The Personal Skills component is a syllabus based human factors programme, developed and delivered jointly by psychologists and surgeons. It also includes an annual formal assessment. These programmes are an integral part of our surgical residency programme and feed into the annual trainee appraisal process. The offsite structured education programmes somewhat mitigate the adverse effects of reduced work hours on surgical training

### Current Threats to Surgical Training Require Radical Thinking

Richard K. Reznick, MD, MEd

Changes in the healthcare environment have impacted on surgical training in unprecedented ways. Most countries have approached these pressures through minor modifications using current structures. The presenter will argue that we are at a precipice that mandates a dramatic look at fundamental curricular structures to cope with the tsunami of current pressures. He will present data from an experimental model of curricular change and will bring into the discussion similar situations from other professions. He will conclude with some suggestions regarding the continuum of medical education.

1. To review current tensions that challenge conventional models of surgical education
2. To understand the current shifts in healthcare education curriculum design to a competency based model
3. To discuss the role of simulation based education in an accelerated learning model

### United States Experience and Coping Strategies for the 80 Hour Week

James C. Hebert, MD

Duty hour restrictions, introduced by the ACGME in 2003, have generated controversy among program directors regarding the impact on operative volume and patient care. Many programs had difficulty meeting the requirements early after these were instituted, but most programs now are in compliance. Systems for reporting and monitoring duty hours were instituted. In order to meet the standards, many programs created night float rotations and hired surrogates, physician assistants and nurse practitioners. Increased work hours by attending surgeons to help with patient care activities have also been reported. While the impact of duty hours on educational outcomes is the subject of debate, it is clear that programs have had to develop more efficient strategies for educating residents. Some programs cut elective rotations as well as time on non-essential rotations. Non-teaching services were also created in some programs to lessen the clinical load. More didactic and simulation activities have been created. The latest iteration of duty hour requirements in 2011 makes accommodations for chief residents to provide longitudinal care, but the limitations of PGY1 residents to 16 hours and other duty hour changes coupled with new supervision requirements have added more stress on programs, and the impact on resident education, particularly for surgeons, remains to be seen.

### Improve the Outcomes for Six Million Surgical Patients – ORReady

Paul Alan Wetter, MD

Over Two Hundred and Thirty Million Operations are performed worldwide each year. Experts estimate that by following a series of safety guidelines, 2-3 % (roughly Six Million surgical patients around the world) could have better surgical outcomes each year. While this may help only a small number of patients in a small local hospital, cumulatively it has the potential of being beneficial to an enormous number of patients worldwide. Research has confirmed that multiple industries benefit by applying the safety steps presented here. When applied in the operating room, these same steps can and do reduce complication rates and improve outcomes for our patients. Top centers, leading surgeons, nurses and OR teams in multiple specialties have adopted various forms of these steps, and have been reducing error rates by 40% and cutting death rates in half. Regrettably, many hospitals and surgeons worldwide have not yet instituted these good-outcome-producing principles. Our goal is to encourage worldwide use of the ORReady Steps in all hospitals within Six Years. Once followed, this could improve the outcomes for 6,000,000 patients worldwide annually.

### Special Presentation: (Nearly) All You Need to Know to be a Great Surgical Teacher (in about 15 minutes — 2012 edition)

Hilliard Jason, MD, EdD\*

Do you aspire to become, or might you already be a highly competent surgeon? If “yes,” you probably pursue some specific strategies that are part of being and remaining an expert surgeon.

Perhaps your strategies include:

1. Engaging in active, continuous learning.
2. Reflecting on and being self-critical about what you do as a surgeon.
3. Being open to constructive critiques by colleagues you respect.

As you likely realize, these are some of the characteristics of professionals who are, and who remain, highly competent throughout their careers in any field.

Yet, teaching is often treated differently. A lot of medical and surgical teaching is done in ways suggesting that some of our colleagues believe teaching doesn't require any special understandings, skills or ongoing learning. In many programs the attitude seems to be that just about anyone who is somewhat expert in a specialty, such as surgery, has all that is needed for being a decent teacher.

In this brief overview, I'll encourage you to consider that achieving excellence as a teacher is at least as demanding as achieving excellence as a surgeon. I'll identify some steps you might want to consider taking toward becoming and remaining an even more expert teacher than you already are.

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\* Clinical Professor, Family Medicine, University of Colorado Denver HJason@mac.com

Formerly: Co-Director of Education, SLS; Editor, Education for Health

Founding Director, Division of Faculty Development, AAMC

### **Fundamentals of Robotic Surgery (FRS): Overview and Results of First Two Consensus Conferences**

Richard M. Satava, MD, FACS

Roger Smith, PhD

**Objective:** To describe the development process of the FRS curriculum and document results of the project to date

**Methods:** Full life-cycle curriculum development using a combined classic and modified Delphi process and adaptation of the Alliance of Surgical Specialties for Education and Training (ASSET) templates for curriculum development

**Results:** The full life-cycle curriculum process was presented and accepted. Outcomes Measures for 26 skills were defined, with associated metrics, errors and testing methodology by a consensus conference that included surgical educators, accrediting organizations, residency review committees, multiple specialty societies, and multiple surgical certifying Boards. The FRS curriculum was developed using the ASSET Curriculum Development Template that resulted in the division of the tasks into 3 categories (pre-operative, intra-operative and post-operative), and inclusion of the 26 skills into 7 specific tasks. (1 pre-operative, 5 intra-operative and 1 post-operative) plus 5 Fundamentals of Laparoscopic (FLS) tasks The next consensus conference will be the Validation Study Design, followed by a multi-institutional validation study by 10 participating American College of Surgeons – Accredited Educational Institutions.

**Conclusions:** A rigorous methodology was utilized to define the critical Outcomes Measures for the FRS curriculum. A curriculum of 7 tasks was developed in accordance with the ASSET curriculum template. Input from subject matter experts from surgical education professionals and stakeholders in governing bodies, certifying organizations and multiple surgical societies resulted in a multi-specialty FRS curriculum that will be validated and offered to certification boards for their consideration.

**Saturday, September 8, 9:00am-10:30am**

Future Technology Session with Keynote Speakers: “Robots – Real and Virtual”

### Dynamic Legged Robots

Marc Raibert

Boston Dynamics, Waltham, MA 02451, USA

We have developed a family of legged robots designed for travel on rough terrain, terrain too rough for existing wheeled and tracked vehicles. Our focus is on robots with dynamic behavior that balance actively under sensor-based controls. The talk will outline the key engineering challenges and solutions faced in developing robots that travel on rough terrain (rocky, muddy, icy, sand, wet), tolerate mechanical disturbances, run fast (18 mph), use arms to pick up and throw heavy objects, and use visual perception to follow a leader and negotiate cluttered terrain.

### Special Effects: From Feature Films to Surgical Simulation

Digital Domain Tactical, Inc.

Mark Covey

At its foundation Digital Domain Media Group (DDMG) is a multi-Academy Award® winning digital production company. Having produced visual effects for over 90 major motion pictures, DDMG creates some of the world’s most stunning digital imagery for entertainment. It is best known for its expertise in creating digital humans for use in feature films such as The Curious Case of Benjamin Button, Tron: Legacy, X-Men: First Class, and The Girl with the Dragon Tattoo.

As viewer expectations continue to raise the bar of digital standards, DDMG strives for increased accuracy in its products. Our goal is to produce not only an artistically engaging image but also a physiologically accurate avatar. To this end, we continue to refine our efforts on the Digital Human Project. Our proprietary software applications realistically replicate the human body and include the rapid development of faces and bodies, the generation of eyes, and the accurate development of a full muscular-skeletal body. These applications ensure that DDMG can easily traverse the “uncanny valley” and produce a realistic human avatar. The next step will be providing like realism to medical training systems for surgical simulation.

As the tools and practices in digital development for feature films mirror those used in the modeling, simulations, and gaming (MS&G) domains, DDMG decided to enter the world of training and education. By porting our software applications for use in the MS&G realms, DDMG hopes to increase the fidelity of training of some of our nation’s most challenging professions.