

# Bethune Round Table 2011

## 11th Annual Conference: Clinical Care in Context

June 3–5, 2011, Montréal, Que.

### Global health conferences: Are they truly “global”? The Bethune Round Table paradigm for promoting global surgery

As recognition of the contribution of injury and surgical disease to the global burden of disease grows, strategies to address these challenges have emerged, including on-site surgical support, larger-scale surgical education and capacity-building programs.<sup>1</sup> In addition, there are a number of global health conferences whose main goals are to exchange, learn and expand on our experiences in global health, foster young leaders in global health and build new partnerships to further such endeavours.

Norman Bethune (1890–1939) was a pioneer in global surgery who developed innovative approaches to surgical care during the Spanish civil war and the Second Sino-Japanese War.<sup>2</sup> The Bethune Round Table (BRT) on global surgery was initiated by the Office of International Surgery, University of Toronto, under the leadership of Massey Beveridge and the Canadian Network for International Surgery (CNIS) in 2001 as a forum to propagate Dr. Bethune’s vision, explore issues in global surgery (e.g., education, systems of care, surgical public health and advocacy) and foster innovative ideas for further development of global surgery. The meeting occurs annually and rotates among major Canadian academic medical centres (e.g., Toronto, Vancouver, Calgary, Montréal), bringing together leaders in global surgery from Canada and around the world. One of the main objectives is to create an environment for direct interchange among interested parties from different parts of the world. The 11th annual Bethune Round Table was hosted in Montréal in June 2011 by the McGill University Health Centre and the CNIS. This meeting focused on global surgical education, capacity-building and, for the first time, disaster preparedness and response. In all, there were 12 countries represented from North America, Africa, Eastern Europe and Southeast Asia, and more than 25 podium presentations, 10 poster presentations and 3 focus sessions. The BRT has now become a model conference for global surgery, and several elements were essential for creating this successful paradigm.

Webster’s dictionary defines “conference” as “a meet-

ing of 2 or more persons for discussing matters of common concern.”<sup>3</sup> Most global health conferences focus on health challenges in resource-limited settings. One would therefore expect strong representation and input from health care professionals from these settings. Interestingly, on review of recent global health conferences in North America, only a minority of presentations were delivered by personnel from resource-limited settings.<sup>4–12</sup> How can one expect to have a productive exchange given such unilateral representation and opinion? The BRT has always promoted a balanced representation of health care professionals from resource-limited settings as well as North America. In fact, more than half of the speakers at the 2011 conference were from resource-limited settings. Such balanced representation is a fundamental prerequisite for the direct exchange and partnership necessary to achieve thoughtful, effective and locally relevant strategies to tackle global health challenges.

To achieve balanced representation, most speakers from resource-limited settings received scholarships covering flight and accommodation expenses; 12 speakers received full scholarships. Despite generous sponsorship support for this conference, careful use of funds allowed for maximizing such scholarships. For example, university facilities were used for accommodations, the conference auditorium and catering. Photographic services were provided by medical students with an interest in photography. The goal was not to have an extravagant conference with expensive meals, luxurious galas and lavish accommodations. Rather, we allocated funds for balanced representation and, more importantly, to promote and implement global health interventions while providing a comfortable and enjoyable conference setting.

While those already involved in global health continue to learn and expand on their experiences, it is essential that we introduce the younger generation of medical students and residents into this exciting field. It is only in recent years that students and residents have become increasingly involved in such programs despite always

having had a strong interest in global health. Opportunities for participation were previously rare and mostly reserved for attending physicians. At the 2011 BRT, medical students and residents actively participated in conference proceedings, including podium and poster presentations, and more than 45 first- and second-year medical students at McGill University volunteered at the conference. Contributing to the administrative and organizational efforts allowed students to attend all the sessions and social events (including the banquet dinner) free of charge. Not only was this essential and cost-efficient support for the conference, it was also a tremendous opportunity for students to network with global surgery leaders in North America and abroad. For example, students accompanied international participants from the residence hall to the conference centre and provided tours in old Montréal, creating informal exchanges with surgeons from different corners of the world and opening doors to potential academic and clinical endeavours and partnerships.

In line with the bilateral exchanges, in addition to the Canadian students and residents who participated in the BRT, several residents from East Africa also participated. Their opinions at the podium and during informal exchanges provided powerful insight into the local realities of global surgical interventions. It is the medical students and residents who are often the target of such interventions, and their opinions are essential for continued growth and improvement of such programs. Today's students and residents will be future leaders of global health interventions, and early involvement in global health is essential as they shape their careers.

Global health conferences provide an important forum for the continued development of interventions, dissemination of research and identification of challenges in resource-limited settings. The paradigm described highlights the importance of balanced representation, careful budgetary consideration and the essential participation of health care professionals at various stages of their careers in conference planning and implementation. This type of approach is key to achieving the goals of such meetings and allows for the effective promotion and growth of global surgery.

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## SELECTION OF ABSTRACTS PRESENTED AT THE BETHUNE ROUND TABLE 2011

**Surgery in children by untrained personnel: burden and mortality in a sub-Saharan African setting.** *E.A. Ameh, P.M. Mshelbwala, C.S. Lukong, B.A. Jabo, F. Suleiman.* From the Division of Paediatric Surgery, Department of Surgery, Ahmadu Bello University, Zaria, Nigeria

**Background:** Owing to a shortage of pediatric surgeons, many children with surgical conditions in sub-Saharan Africa are treated by those with little or no training in the surgical care of children, but this often produces avoidable complications. The burden of these complications has not been ascertained. **Methods:** We conducted a 6-year prospective review of children presenting with complications arising from surgery performed by doctors without adequate training in the surgical care of children. **Results:** There were 31 children (19 boys and 12 girls) aged 5 days to 12 years (median 4 yr). The indications for the initial surgery were both emergency (17) and elective (14). The surgical procedures done were intestinal resection (5), laparotomy (5), reconstruction for major congenital anomalies (4), incomplete tumour excision (3), colostomy (3), circumcision (3), hernia repair (2), incision and drainage of cystic swellings (2) and others (4). Seven (23%) of the patients had multiple surgeries before presentation. Twenty-seven patients (87%) presented with severe complications including enterocutaneous fistula (5), rapid progression/infection of tumour (5), extensive scarification jeopardizing corrective surgery (5), hemorrhage requiring transfusion (3), stoma complications (3), and the primary condition for which surgery was performed being left untreated (6). The complications resulted in significant increase in cost of treatment, and mortality in 7 (23%). The personnel who performed initial surgeries were general duty doctors (21), general surgeons (7) and unsupervised surgical trainees 3. The venue of surgery was private clinic (14 instances), tertiary hospital (8), district hospital (8) and mission hospital (1). The motive for doing the surgery was considered to be financial gain to the doctor (14, 45%) and poor judgment (17, 55%). In 30 (97%), the complications were avoidable. **Conclusion:** The burden of these complications is high and mostly avoidable. Periodic and regular skills training, and provision of basic instructive surgical manuals could prevent these complications.

**On-site production of a surgical skills training video: lessons from Guyana [video presentation].** *B.M. Cameron,\* S. Kalechstein,\* A. Permul,† B.H. Cameron.\** From the \*McMaster International Surgery Desk, Hamilton, Ont., and the †Georgetown Public Hospital Corporation, Georgetown, Guyana

**Background:** Instructional videos teaching simple surgical techniques have been shown to be effective. Commonly available and user-friendly video-editing software allows for the production of relatively high-quality training videos on-site in diverse settings. The primary purpose of this project was to produce a context-specific training video with local partners in Guyana (Institute for Health Sciences Education, Georgetown, Guyana) using video-

editing software on a laptop computer and to assess the perceived value of this training tool. **Methods:** A 5-minute instructional video was filmed and produced in Guyana demonstrating intraosseous (IO) needle insertion techniques. A compact, Canon video camera was used to film the simulated procedure, and video was edited using iMovie '09 for Macintosh. None of the production team had formal training in video-making. Participants and faculty ( $n = 33$ ) at a CNIS Trauma Team Training update course in Georgetown, Guyana, watched the video twice before completing a short quiz to assess knowledge about IO insertion steps and ascertain the participant's perceived value of the video as a training tool. **Results:** Concept, script-writing, filming and editing took approximately 40 hours to complete. The mean quiz score for the knowledge component was 83%. Eighty-eight percent of trainees agreed or strongly agreed that the video was a useful clinical tool ( $n = 29$ ), and 85% agreed or strongly agreed that it should be included in future training courses ( $n = 28$ ). **Conclusion:** The on-site production of a context-specific training video for simple surgical procedures using inexpensive audio-visual equipment is a useful and viable educational practice. The video produced effectively conveyed instructions and was well received by learners. Video-based instruction methods may be a cost-effective tool in future training scenarios.

**Factors influencing the adoption of laparoscopic surgery in resource-restricted contexts.** *I. Choy,\* S. Kitto,\*\* N. Adu-Aryee,<sup>§</sup> A. Okrainec.<sup>¶¶</sup>* From the \*Wilson Centre and †Department of Surgery, University of Toronto, ‡CEPD, University of Toronto, and Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, Ont., the §Department of Surgery, Korle-Bu Teaching Hospital and University of Ghana Medical School, Accra, Ghana, and the ¶¶Division of General Surgery, Toronto Western Hospital, University Health Network, Toronto, Ont.

**Background:** Despite the considerable amount of resources allocated to the development of laparoscopic surgical skills and knowledge in low-middle income countries (LMICs), their translation into effective and sustainable change has been minimal and sporadic. Whereas laparoscopy has been shown to provide numerous benefits to the health and well-being of surgical patients, it requires the implementation of new and unique surgical skills, technical knowledge and capital investment. Numerous partnerships between institutions across Africa, Asia and Eastern Europe and western institutions have often been met with mixed and disappointing results, despite adequate financial support. Thus, a more robust understanding of the factors influencing the adoption of laparoscopy in these contexts is required in order to create effective knowledge translation programs and create sustainable change. **Methods:** This study used a qualitative case study approach to analyze how a tertiary teaching hospital in Western Africa has approached the task of adopting and integrating laparoscopic surgery into their setting. A combination of participant observation, content analysis and semistructured interview methods was undertaken over a 3-month period to understand how various professional roles and institutional processes affected this adoption process. **Results:** This study found that the factors influencing the adoption and integration of laparoscopic surgery into an LMIC context were far more diverse and complex than current literature suggests. Whereas the

expected factors such as resource limitation and labour cost differentials were found, a number of other significant local and contextual barriers to the adoption of laparoscopic surgery were also identified including complex cultural, social, institutional and hierarchical processes. The findings support the argument that in order to effect sustainable change, traditional economic and training barriers must be addressed in concert with the cultural, social, institutional and hierarchical factors inherent to the local context in order to design effective education and KT programs. **Conclusion:** This study emphasizes the potential for improving knowledge translation activities in LMICs. By gaining a more robust understanding of the local contextual factors that influence the adoption of new technologies, including laparoscopic surgery, translational programs can be better tailored to suit local needs and effect sustainable change.

**The perceived effectiveness of using high fidelity mannequin trauma simulations in regions with limited resources. R. Gowing, D. Musson, S. Bacopulos, B. Cameron. From McMaster University, Hamilton, Ont.**

The role of using simulation in medical and surgical training programs continues to evolve as experience and variations of this robust tool continue to develop. With the almost limitless variability in applications and utilization of this tool, however, many questions remain about the validity, durability and best methods for applying it to a specific training purpose. This study questions whether the utilization of high-fidelity simulation scenarios is perceived by the participants of a trauma team training course to improve the course effectiveness in Guyana, South America. The organization of this exercise required a number of novel and specialized approaches to delivering a high-fidelity trauma experience. Such issues included development of scenarios that mimicked local clinical experience, provision of familiar equipment and emergency department resources as well as the delivery of orientation and debriefing exercises that were consistent with local training. The participants were surveyed using an exit survey that collected a combination of quantitative (Likert scale-based) and qualitative data about their experience. The participants felt overall that the utilization of a high-fidelity mannequin was very helpful or essential to the course and strongly agreed that the simulation improved trauma training. Our conclusion was that high-fidelity simulation is perceived as an effective learning tool for trauma training and may be practical and useful in countries with limited local resources.

**Southeast Asia Trauma Education Outreach Program. B.M. Jaffe, M. Unruh, M. Duke, R. Sherman. From Operation Smile, Norfolk, Virginia and the Department of Surgery, Tulane University School of Medicine, New Orleans, LA**

**Background:** Whereas trauma is the leading cause of death in people under 45 years of age, neither injury care nor cardiopulmonary resuscitation is taught in medical schools or training programs in Southeast Asia. Transport of the injured to the hospital is greatly impeded by the lack of emergency medical services systems. **Methods:** To improve the care of the injured on the streets and in the emergency room (ER), 5 years ago we developed a trauma education outreach program fostered by Operation Smile

for Southeast Asia, with multiple visits per year. Based on local needs assessments, 3 courses have been provided: first, a full protocol-driven ER trauma course for doctors (particularly trauma surgeons, ER physicians), nurses and medical students; second, a pediatric trauma course for children's hospitals; and third, a first responders course for police officers, taxi and ambulance drivers. Cardiopulmonary resuscitation and endotracheal intubation are taught in all courses. Trauma education has been provided in university and large urban hospitals as well as regional/district facilities. Recently, emergency medical technician basic courses have also been established. **Results:** The 2010 attendee statistics document initial success in fulfilling the trauma education needs (see Table). The techniques taught were used

**Table. Attendees of the 2010 Southeast Asia Trauma Education Outreach Program courses**

Country	MDs, RNs, trainees	Police officers	Ambulance drivers
Cambodia	329	219	10
Laos	63		
Myanmar	40	10	10
Vietnam	643	2	7
Total	1075	231	27

successfully in a stampede disaster in Phnom Penh. Studies are underway to document improvement in injury-incurred mortality and morbidity. **Conclusion:** The trauma education outreach program is beginning to fulfill the assessed needs of the people in Southeast Asia in saving lives on the streets and in the ER. We plan to expand the program to other underdeveloped nations.

**COSECSA: augmenting the surgical capacity of Africa and globally. P.G. Jani. From the Department of Surgery, University of Nairobi, Nairobi, Kenya**

**Background:** To highlight the role of the College of Surgeons in East, Central and Southern Africa (COSECSA) in augmenting the surgical capacity of Africa and globally. To review the accreditation processes of COSECSA, its training activities, its achievements and the difficulties it faces. **Methods:** Review of past COSECSA records and analysis of surveys performed. **Results:** COSECSA, with its aim to foster postgraduate education in surgery and to harmonize surgical education in the ECSA region, has over the last 10 years accredited more than 70 hospitals in 11 African countries for training in surgery. Regular written examinations are conducted once each year in each country with clinical and oral examinations being held on a rotating basis in one country every year for the last 8 years. These examinations attract an international panel of examiners (11 from 7 different countries in Dec. 2010), with the result that a total of 188 surgeons have been trained, of whom 79 MCS qualified (surgeons capable of performing emergency and a wide range of basic general surgical procedures) and 49 FCS qualified in 5 subspecialties (consultant level). Many of these trained surgeons are now providing the much needed surgical care in rural Africa, where such care is not readily available, and analysis of their work will be presented as achievements of COSECSA. Details of COSECSA, its accreditation processes, the different courses to facilitate training including e-learning, the workshops carried out and the examinations organized will be presented. Difficulties faced at present

including financial constraints of the college, economic hardships of the candidates, training in the peripheral areas and running of the various courses will be discussed. **Conclusion:** COSECSA is a unique and uncomparable regional surgical accrediting and training body augmenting surgical capacity in 9 countries of the ECSA region. Its impact so far has been phenomenal, and the future prospects of augmenting surgical capacity appear highly promising. The core purpose of COSECSA is to augment surgical capacity in the 9 ECSA countries and globally.

**Transition in road user injury in Uganda.** *B. Wandera,\* C. Nansamba,\* R. Lett.†* From the \*Injury Control Center, Kampala, Uganda (ICCU), and the †Canadian Network for International Surgery (CNIS), Vancouver, BC

**Background:** Previous studies from other low income countries and our studies showed that pedestrians were the most commonly injured road users. In Uganda, pedestrians constituted more than 43% of road users. With increasing motorization in Uganda, pedestrian injury may no longer be as prevalent. This study explores a transition in the category of road users presenting with road traffic injuries and correlates this change with changes in motor vehicle registrations. **Methods:** Using a 1-page trauma registry form, injury data were collected from 5 regional hospitals by trained health workers in 2002, 2004 and 2009. Road traffic injury patients' data from the 3 periods were compared using a  $\chi^2$  trends test to determine whether there was a significant change in the vulnerability of different categories of road users. Motor vehicle registrations statistics over the study duration were obtained from the registration bureau and examined for correlation with increase in vehicle occupant injuries. **Results:** Over the 3 periods, 10 728 injury cases were seen, of which 40% were owing to road traffic crashes (RTC). The overall mean age of patients with road traffic injuries was 27.6 years, and there was no age difference over the 3 study periods. Nearly 75% of RTC injuries were among males. On average, motorized 4-wheeled vehicle occupants constituted the highest proportion of injuries (37.3%) overall, followed by motorized 2-wheeled vehicle occupants with 24.7%, among road traffic crashes. There was an increase in motorized 2-wheeled vehicle occupant injuries over the 3 study periods. Similarly, the proportion injuries among pedestrians reduced significantly over the 3 study periods from 37.4% to 23.5% to 19.9% from 2002 to 2004 to 2009, respectively. There was a statistically significant reduction in pedestrian compared with occupant injuries (Cochran-Armitage trend test Z statistic = -9.17,  $p < 0.0001$ ). During the study period, there was a 120% increase in the registration of all motorized vehicles, jumping from 247 045 vehicles to 552 652 vehicles. There was a strong direct correlation between the percentage rise in vehicle registrations with the proportional increase in occupant injuries ( $r = 0.73$ ). The correlation was stronger for motorized 2-wheel vehicle (motorcycle) occupants and the corresponding motorcycle registrations than with motorized 4-wheel vehicles ( $r = 1.00$ ,  $p < 0.0001$  v.  $r = 0.5$ ,  $p = 0.667$ , respectively). **Conclusion:** There is a transition in road user injuries in Uganda from predominantly pedestrian to predominantly occupant injuries. This transition is strongly correlated with increased motorization in Uganda. Prevention strategies that target occupants, especially motorcycle occupants, are crucial to reflect the transition in road user injuries in Uganda. Policies, regulations and laws pertaining

to occupants, including the use of helmets and seatbelts, need to be enforced, and new ones developed to counter the rise in occupant injuries so that travelers are protected as they exercise their right of movement.

**Challenges in surgical capacity: a descriptive analysis of district hospitals in Uganda.** *A. Linden,\* S. Sekidde,† M. Galukande,‡ K.A. Kelly McQueen.†§* From the \*Harvard Medical School, Cambridge, Mass., and Georgetown University Hospital, Washington DC, the †Harvard Humanitarian Initiative, Cambridge, Mass., the ‡Department of Surgery, Makerere University, Kampala, Uganda, and §Valley Anesthesiology Consultants, Phoenix, Ariz.

**Background:** As a consequence of competing health demands in resource-constrained settings, surgical care remains one of the great disparities in global health. Recent data show one-third of the global population lacks access to basic surgical services and that a significant proportion of the surgically-amenable global burden of disease resides in developing countries. There is a large need for surgery yet a lack of data on the true surgical capacity of developing countries. This study seeks to quantify the surgical capacity of district hospitals in Uganda. **Methods:** Fifteen hospitals were visited throughout Uganda. A survey was administered through site visits and direct interviews. Data were collected on human resources, access, infrastructure, surgical volume and types and outcomes tracking. **Results:** The average catchment area per hospital was 534 471 people, with 0.2 operating theatres available per 100 000 people. A total of 9 surgeons and 0 anesthesiologists served the catchment population of 7.5 million. In all, 11 514 major surgeries were performed in a year, with 73% of these being emergency cases; 53% of cases were general surgery cases, whereas 44% were obstetrics and gynecology cases. The unmet need for cesarean sections was 64%. One surgery was done for every 10 in-patients. All hospitals had frequent power outages. Three hospitals did not have access to a continuous water supply. Pulse oximeters were not found in any of the surveyed hospitals' operating theatres. **Conclusion:** The capability to provide surgery in a low-income country setting is challenged by many factors. Further evaluation of the surgical capacity of developing countries is necessary to advocate for resource allocation, to incorporate surgical services into health system development and to elevate the large inequities in the global delivery of surgical care.

**Surgical education at Weill Bugando Medical Center: developing a sustainable curriculum and investing in local health care providers.** *K.B. Mitchell,\*† K.O. Pryor,† R. Hartl,‡ G. Giiti.†* From the \*Department of Surgery, Weill Cornell Medical College, New York, NY, and †Weill Bugando University College of Health Sciences and Weill Bugando Medical Center, Mwanza, Tanzania; the ‡Department of Anesthesiology, Weill Cornell Medical College, New York, NY; §Neurological Surgery, Spinal Surgery, Neurotrauma, Department of Neurological Surgery, Weill Cornell Medical College, New York, NY

**Background:** Whereas short-term surgical missions traditionally have been used to provide care in developing countries with limited resources, new efforts are focused on creating sustainable development among local health care providers. The goal of this

education project was to support local health care providers in developing a surgical curriculum at a new medical school, thus promoting long-term local goals and involvement. **Methods:** Working with local providers, residents and medical and assistant medical officer students, we identified the most common surgical conditions presenting to Weill Bugando, and the areas of greatest need in surgical education. We developed an electronic and print database of lectures on clinical surgery topics, as well as a basic surgical handbook. In addition, we started teaching basic surgical skills in the operating theatre, bridging to an official and recurring workshop through a supporting organization. Finally, anesthesiologists played a role in identifying key educational topics and supporting resources in the Bugando operating theatre. **Results:** The medical and assistant medical officer students report increased satisfaction with their clinical surgery rotation, as well as mastery of key educational subjects. In April, we anticipate the initiation of a biannual Essential Surgical Skills workshop through the Canadian Network for International Surgery. Additionally, we will continue supporting education through the frequent visits to Bugando of Weill Cornell attendings and residents. **Conclusion:** On a superficial level, short-term surgical missions appear to fill a void in the shortage of health care in the developing world. However, we conclude that global health resources are more appropriately used through projects giving ownership to local providers and promoting education as a foundation of development. This results in better coordination among local and visiting providers, as well as a greater impact on education and long-term growth of health care capacity.

**Bethune Round Table as a catalyst for global surgical education: Ukraine experience. I. Mogilevkina,\* A. Chaika,\* O. Henao,† A. Okrainec.† From the \*Donetsk National Medical University, Ukraine, and the †University of Toronto, Toronto, Ont.**

Laparoscopic surgery is one of the most common surgical procedures performed by gynecologists. In Ukraine there is no standardized educational tool for teaching and verification of technical skills of trainees in basic laparoscopic surgery. The University of Toronto Telesimulation Program based on the Fundamentals of Laparoscopy Surgery Course (FLS) was presented during the Bethune Round Table (BRT) 2010. A collaboration between the University of Toronto, Canada, and Donetsk National Medical University, Ukraine, was established in order to introduce FLS, with the aim of improving the quality of patient care following the BRT 2010 workshop. The objective of the project was standardization of technical skills of Ukrainian professionals. Several challenges were recognized: the language issue, lack of Internet access needed for telesimulation, too many professionals interested and a big discrepancy in the skills of participants. Owing to the language barrier, a decision was made to introduce only the manual skills component of the FLS course, aimed at developing and evaluating skills based on efficiency (speed) and precision (accuracy) of the surgeons. Translation by an experienced professional with good English has facilitated course introduction, pre- and post-test technical skills exam and telesimulation sessions. Internet access has been paid for by the course participants as cost-share. A total of 24 gynecologists joined the course, among them 11 beginners. Two groups had a total 8 telesimulation sessions each, divided by a self-training period. Significant improve-

ment in technical skills is expected. International collaboration within BRT facilitates global surgical education and is an important component in improving patients' safety all over the world. Development of Russian-speaking FLS didactic material and written tests available for professionals not only in Ukraine but in other countries of the former Soviet Union, in collaboration with the University of Toronto under the auspices of International Training Program, is an ultimate goal of the project.

**Impact of international collaboration in establishment of surgical skills training and capacity building in a developing country. PM. Mshelwala, T. Sholadoye, E.A. Ameh. From the Department of Surgery, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria**

**Background:** To review the impact of international collaboration on the evolution and quality of basic surgical skills training in a developing country. **Methods:** The Association of Surgeons of Great Britain and Ireland (ASGBI) in 2007 organized a 2-day basic surgical skills course at the local hospital. A "train the trainers" course was also organized for the local faculty thereafter. A detailed structured course outline was used. Subsequently, the local faculty has run the courses. A structured questionnaire using a Likert scale was administered to each participant at the end of the course and analyzed using SPSS version 17.0. **Results:** Over a 3-year period (2008–2010), 5 surgical skills courses were run by an entirely local faculty. In total, 91 participants from 12 centres attended the course; 89 from teaching hospitals, 1 from a non-teaching institution and 1 from a veterinary hospital. Eighty-two were surgical residents, 4 obstetrics and gynecology (OB/GYN) residents, 2 general duty doctors and 3 were fellows. Eighty-nine came from the northern region, 1 from south region and 1 from a francophone-speaking, neighbouring country. Fifteen found some aspects irrelevant: plaster of Paris application (9: all surgical residents) and skin grafting (6: 3 surgical and 3 OB/GYN residents); this was statistically significant ( $p < 0.05$ ). Thirty-four participants wanted the course duration extended, 42 wanted more procedures included (34 venous access and 8 minimal access surgery;  $p > 0.05$ ). Participants rated the quality of the resource persons as high (89 excellent, 2 good;  $p < 0.05$ ). **Conclusion:** The ability of the local faculty members to independently run the standardized course underscores the importance of international collaboration in establishing and maintaining basic surgical skills training in developing countries where resources may not be available to send all the surgical residents abroad for the training or sponsor foreign resources to the host countries to run the courses annually.

**Ethical challenges of surgical practice in the developing world: the case of Zambia. J. Munthali. From Department of Surgery, University of Zambia, School of Medicine, Zambia**

It is generally known that ethical challenges facing physicians today are numerous. Several factors have contributed to this development. The technical advances in medicine, a well informed patient population with easy access to the Internet, the evolution of medical law have all acted in concert to increase ethical pressure on practising physicians. Whereas ethical challenges in the developed world date back to the origin of medicine, in the developing world they are relatively new. Surgeons have

not been spared from this development, and the challenges in the practice of surgery have increased by leaps and bounds. Though such pressures on surgical practice in the developing world have not been as intense as in the more technically advanced countries, they have all the same come to the fore of late. This presentation discusses how the 6 core values of medical ethics, namely autonomy, beneficence, nonmaleficence, justice, dignity and truthfulness/honesty, impact surgical practice in the developing world. In addition, the issues of informed consent, confidentiality and physician-patient communication as pertaining to surgical practice in the developing world are addressed.

**Creation and construction of low cost surgical simulators.** *V. Munthali, H.L. Gill, L. Museru, R. Lett, M. Dakermadjji, D.L. Deckelbaum, T. Razek.* From the Muhimbili Orthopedic Institute, Tanzania, the McGill University Health Centre, Montréal, Que., and the Canadian Network for International Surgery, Vancouver, BC

**Background:** It is estimated that surgical diseases represent 11.2% of the total global burden of disease. Across Africa, there is 1 surgeon for 250 000 people, and that number drops to 1 per 2.5 million in rural areas. Training medical personnel in basic surgical skills is a critical public health issue. In high-income countries, there has been significant research into the advantages of simulator-based training as a means of promoting surgical competency. This knowledge led to the creation of a curriculum based on a series of low-cost, low-tech, universally applicable surgical training simulators. The purpose of this article is to describe the creation and construction these low-cost simulators. **Methods:** Based on a concept of “train the trainer,” the Canadian Network for International Surgery (CNIS) has created multiple standardized courses centred on the diffusion of essential surgical and obstetric skills through the use of basic, low-tech, low-cost simulators. The models are constructed using universally available low-cost materials. The materials are collected locally from furniture and butcher shops the day before the course, and the instructors, with the help of the students, then build the models in preparation for the course. **Results:** There are 5 basic simulator models used to teach limb amputation, saphenous vein cut down, supra-pubic catheterization, laparotomy and stoma creation, and cesarean section. The model leg is created using bamboo, foam and vinyl to simulate bone, soft tissues and skin. Intravenous (IV) tubing is then used to mimic vascular bundles. Similarly, a wooden board, vinyl covering and IV tubing are used to create the model leg for venous cut down. In order to practise supra-pubic catheterization, a bony pelvis is needed. In the pelvis, a toilet balloon mimics the bladder whereas plastic sheeting, foam and vinyl create the peritoneum, soft tissues and skin, respectively. Along those lines, the abdomen is created using 4 pieces of plywood covered with plastic sheeting, foam and vinyl. This is then filled with animal intestines and the students use this to learn how to perform a laparotomy and how to create a stoma. Finally, techniques for cesarean sections are taught using beef hearts as they are of similar consistency to the uterus. Since 1996, nearly 14 000 health care professionals have been trained in the basic surgical principles on these simple, cost-effective simulators. The durability of the educational framework has been demonstrated. **Conclusion:** As the surgical training in high-income countries shifts toward a more proficiency-based system with objective

measured goals and metrics, surgical simulation-based training is becoming increasingly important. In low-medium income countries where there are not enough surgeons to train the future generation, a collection of low-cost, easy-to-create and universally-applicable simulators is going to be invaluable. These simulators have been used successfully in over 8 low-income countries to train thousands of health professionals.

**A comparison of Kampala Trauma Score II and Revised Trauma score in Kigali University Teaching Hospital.** *A. Nzayisenga,\*† G. Ntakiyiruta,\* P. Kyamanywa.\** From the \*National University of Rwanda, Kigali Teaching Hospital, Kigali, Rwanda, and the †Fogarty International Clinical Research Fellow

**Background:** Injury is the leading cause of morbidity and mortality in developed as well as developing countries. According to Murray and colleagues, injury accounts for 13% of the overall mortality in Africa. Though injuries are common in our setting, and use of a trauma scoring system is becoming popular and is always an improvement in respected health institutions, especially trauma centres, no single trauma scoring system was routinely used in Kigali Teaching Hospital, which is the main “trauma centre” in the country. With regard to this, the Kampala Trauma Score II (KTSII) and Revised Trauma Score (RTS) were used in the Kigali Teaching Hospital, and measurement of the predictability of morbidity and mortality as well as the specificity and sensitivity of KTSII versus RTS in predicting mortality at 2 weeks were calculated. **Methods:** This study was prospective in nature and was done in a period of 6 months from May 1, 2010, and Sept. 30, 2006. Data were collected at the emergency unit of the surgical department at Kigali University Teaching Hospital. All patients admitted to the emergency ward between May 1, 2010, and Sept. 30, 2006, with injury that necessitated admission to the emergency and accident unit in the preceding 24 hours were included. Patients referred after initial surgical management were excluded to avoid bias. **Results:** In total, 176 trauma patients were recruited, treated and followed. Among these 176, 74.3% were male, and the great majority were patients of active age (> 5 and < 55 yr). Road/street injuries accounted for 73.9% of injuries; those caused by traffic accounted for 67%; 39.2% of the injured patients were passengers, whereas 19.3% of patients were pedestrians. Alcohol use was remarked in 23.9% of cases. The overall mortality was 15.3%, and the KTSII was comparable to RTS in terms of predicting mortality. **Conclusion:** At the end of this study, we have been able to demonstrate that KTSII can play a big role in managing the trauma patients in our setting. Not only it is easier to use, but also it has comparable values in terms of predicting morbidity and mortality.

**Strategies for developing breast cancer screening guidelines in a low-resource setting (Ile-Ife and Ilesha), Osun State, Nigeria.** *M. Omole,\* P. Lovrics,\* B. Cameron,\* F. Owotade,† J. Pemberton.\** From the \*McMaster International Surgery Desk, Hamilton, Ont., and the †Obafemi Awolowo Teaching Hospital Complex, Ile-Ife, Nigeria

**Background:** Among women, breast cancer is the most prevalent cancer worldwide, with 1.5 million women worldwide having a new diagnosis by 2010. It is estimated that, by the year 2020, 70%

of patients with cancer will live in countries that have less than 5% of the resources available for care of patients with cancer. Breast cancer has overtaken cervical cancer to be the most common malignancy in Nigerian women. One of the key strategies in Nigeria for the development of a population-based screening program is early detection to downstage symptomatic disease. However, there are no previous studies delineate the most effective methods of communication with women in low-resource settings such as Nigeria. The primary objective of the current study is to survey the effectiveness of different strategies for educating women about breast cancer in an urban setting in southwest Nigeria. **Methods:** Ethics approval was obtained from the local teaching hospital, Obafemi Awolowo Teaching Hospital Complex (Ile-Ife) and Hamilton Health Sciences. Women ages 25 to 70 ( $n = 90$ ) residing in a semi-urban region (Ile-Ife and Ilesa) participated in this qualitative study. Owing to the level of education, the majority of participants were interviewed by independent interviewers. Participants were asked to score on a 4-point Likert scale their preference for different forms of contact (home visits, media, etc.) and which contact strategy would be effective in promoting breast cancer screening. **Results:** Of participants, 77% were 40 years or older, and the majority of women did not have postsecondary school education. One hundred percent of women indicated gatherings and home visits as a better mode of contact. Conversely, communication via mail was not a preferred option for most participants. **Conclusion:** Interactive strategies were perceived as more effective in educating and promoting the participation of women in breast screening by Nigerian women.

**Analysis of the delivery of emergency orthopedic surgical care in Haiti pre- and postearthquake.** T. Pauyo,\* C.D. Hughes,<sup>†</sup> B. Alkire,<sup>†</sup> K. Nash,<sup>†</sup> D. Bayne,\* B. Jean Paul,<sup>‡</sup> J. Pyda,<sup>§</sup> S. Sullivan,<sup>¶</sup> S.O. Rogers,\*<sup>††</sup> J.G. Meara.\*<sup>†</sup> From the \*Harvard Medical School, the <sup>†</sup>Children's Hospital, Boston, Mass., <sup>‡</sup>Partners-in-Health/Zanmi Lasante, Haiti, the <sup>§</sup>University of Tennessee Health Science Center, Memphis, Tenn., <sup>¶</sup>Brown

University Medical School, Providence, RI, and <sup>††</sup>Brigham and Women's Hospital, Boston, Mass.

**Background:** Orthopedic care of critically injured patients has always been assumed to be vitally important in all natural disasters. On Jan. 12, 2010, a devastating earthquake hit Haiti and killed more than 200 000 leaving more than 200 000 injured. Few studies, however, have specifically examined the longitudinal effects of this earthquake on orthopedic health care delivery. **Methods:** A retrospective review of operative logs was conducted at the 5 main partners-in-health (PIH) surgical facilities in the central plateau region of Haiti. To evaluate the role of orthopedic surgery at the district hospital level, both pre- and postearthquake, we measured the number of orthopedic surgical cases performed at weekly intervals from July 2009 through July 2010. **Results:** Of all 4748 surgeries performed, 21.1% were orthopedic: 132 orthopedic procedures were performed across all hospitals before the earthquake compared with 876 postearthquake. Across the different hospitals, Cange accounted for 50% of the total orthopedic surgical volume, followed by St. Marc (25.5%). The most common surgical interventions other than débridement included closed reduction for fractures (16.1%), open reduction internal fixation (ORIF; 14.6%) and amputation (11.0%). Significantly fewer amputations were performed after the earthquake than before (9.1% post v. 25.4% pre,  $p < 0.001$ ), and the proportion of débridements increased (23.0% post v. 10.1% pre,  $p = 0.001$ ). There were no significant differences in the proportions of ORIFs, external fixations or closed reductions ( $p = 0.80, 0.27$  and  $0.29$ , respectively) when compared with pre-earthquake levels. **Conclusion:** The earthquake and subsequent surge in demand for essential and emergency surgical care had a significant impact on orthopedic health care delivery in rural Haiti. The increased number of total orthopedic surgical procedures exemplifies the critical role of orthopedic surgery following such a disaster in resource-poor settings. An increase in dedicated resources following the earthquake led to an improvement in availability of needed orthopedic operations for the local community.