Impact analysis of Uganda hearing project. R. Byaruhanga, M. Awubwa, B. Westerberg, N. Shoman, T. Rolland, J.-P. Vaccani. From the *Department of ENT, Makerere University, Kampala, Uganda, and the Departments of Otolaryngology, †University of British Columbia, Vancouver, BC, ‡NYU School of Medicine, New York City, NY, and §University of Ottawa, Ottawa, Ont.

Background: The Uganda Hearing Project is a nonprofit organization teaching ear surgery to otolaryngologists in Uganda. The project started with 2 hands-on cadaveric temporal bone courses in 2003 and 2005. In 2006, 3 surgeons started returning for surgical visits. Methods: A retrospective chart review of all cases of middle ear surgery performed in Uganda from 2005 to February 2008. Results: During the first 2 years of the program, 35 middle ear cases were performed in Uganda using the operating microscope by foreign-trained otolaryngologists. Prior to the 2006 visit, only 2 middle ear cases were performed without foreign supervision by the local surgeons over a 2-year period. In the 1 year since the last visit, the local surgeons have performed 20 middle ear surgeries without supervision. This represents a 10-fold increase in output in a 1-year period by Ugandan otolaryngologists. Conclusions: The surgical visits by the Uganda Hearing Project have led to a 10-fold increase in middle ear surgeries performed by Ugandan otolaryngologists.


Background: To assess the outcome and impacts of “Surgery in Africa” (SIA), an international surgery initiative appearing on the web every month in order to improve the provision of educational and research facilities for the management of common surgical problems in Africa and other developing countries. Methods: SIA reviews and the group discussions that followed were evaluated to assess the number of users and their impact on training and practice. The reviews were also analyzed to identify the magnitude of research emanating from Africa and to assess the facilities available for treating common surgical problems. Results: By January 2008, 30 SIA reviews had been written. Of these, 4 reviews were by African authors and appear in the top 10 list of reviews visited. There are 2700 visitors per month, and the number of discussants has increased from 87 in 2006 to 181 in 2007. With SIA, it became clear that for certain common African surgical pathologies (like peptic ulcer disease and upper gastrointestinal bleeding), basic diagnostic facilities (like endoscopy) were not available in most places. Conclusions: Educational training materials in Africa are lacking, and SIA provides easily accessible, affordable and relevant reading reviews. The outcome of analysis also reveals that quality surgical research in Africa is severely lacking. SIA has highlighted the deficiencies in the development of surgery in that basic endoscopy is by and large not available, while the introduction of laparoscopic surgery is being eagerly pushed. The outcome of SIA is that surgical practice is gradually changing in Africa. There is a dire shortage of education materials, both for training and research. Future improvements should encourage research in Africa and the availability of endoscopy facilities.


Purpose: To evaluate the outcomes and impacts of a Short Stay Arthroplasty Initiative in South America via a comprehensive program evaluation. Methods: From 1997 to 2008, a multidisciplinary team of orthopedic surgeons, anesthetists, nurses and physiotherapists from Alberta and British Columbia have provided arthroplasty services to an underserved population of arthritic patients in rural Ecuador (Operacion Esperanza). In 2003, we designed and implemented a...
Background: Burkitt’s lymphoma (BL) is the most frequently encountered childhood cancer in tropical Africa with a mean patient age of 7 years, but it is observed in a few adults. In the African form of BL, patients most commonly present with jaw tumours, the maxilla more frequently involved than mandible, associated with loosening of teeth. While in the sporadic form, patients present with abdominal tumours that cause swelling and pain in the affected areas; central nervous system (CNS) involvement is less common.

Methods: This study employed 2 study designs. The study variables included sociodemographics, part of the body affected, type of surgery, outpatient/patient cases, operative diagnosis, blood transfusion, stage of the tumour and outcome of chemotherapy. Results: Thirty patients were recruited in the period of 8 months: the ratio of male:female patients was 2:1. Fifty-six percent of children had visceral Burkitt’s lymphoma, 27% had jaw tumours and 16% had CNS involvement. Blood transfusion, stage of the tumour affected the outcome, with stage 4 having the worst prognosis. The type of surgery depended on clinical findings. Conclusion: Visceral BL was the most common type of tumour that affected children seen in Kitovu Hospital. Therefore, there is a change in pattern of presentation of this tumour in African children. This study’s results differ from previously documented results that showed endemic tumours affecting the jaw while sporadic tumours affected the viscera.

LAPAROSCOPIC CHOLECYSTECTOMY IN MONGOLIA: ASSESSING THE IMPACT OF COLLABORATIVE SURGICAL EDUCATION. R.D. Matthews,* O. Sergelen,† R.R. Price.‡ From the *University of Utah Department of Surgery, the †Health Science University of Mongolia, and the ‡Intermountain Healthcare Department of Surgery / Intermountain Surgical Specialists.

Background: Laparoscopic cholecystectomy has become the standard of care in the developed world, however, finances constrain this technology in the developing world. Laparoscopic cholecystectomy, first performed in Mongolia in 1994, currently comprises only 5% of cholecystectomies. Ten-day training courses were given by American surgeons and our Mongolian colleagues in the capital, Ulaanbaatar, in 2006 and 2007 and Erdenet, in 2007. Little data exist regarding the introduction of laparoscopy in developing countries. Methods: Following 2 laparoscopic courses in June 2007, data on cholecystectomy were collected prospectively from 5 Mongolian hospitals for 6 months. The diagnostic work-up, length of procedure and hospital stay, intraoperative or postoperative complications, and documentation of the primary surgeon and assistants were collected. Results: One-hundred and ninety-two cholecystectomies were submitted, 156 of which were laparoscopic. Patients underwent ultrasound diagnosis before surgery (100%). Average length of laparoscopy was 63 (standard deviation [SD] 35) minutes but varied dramatically between hospitals (43–127 min). There were 3 conversions, 2 for bleeding (1.3%). Postoperative complications occurred in 4 patients (2.6%), with 1 return to the operating room for bleeding and common bile duct injury (0.6%). Average hospital stay was 2 days and varied by hospital (1–4 d). Forty-six percent of the laparoscopic cholecystectomies were at a single hospital, where operative times and hospital stays were the shortest, and all were completed by a single surgeon. Conclusions: In Mongolia, despite cost, preoperative ultrasound appears to be the standard of care. Operative times and hospital stays vary greatly among hospital and surgeons and could be reduced as developing countries develop experience with the technique. The number and type of complications reported were low, and this appears to be a safe method to expand laparoscopy in Mongolia. Continued collaboration with international partners over many years is necessary for the continued expansion of laparoscopy in Mongolia.

ACCELERATED VERSUS STANDARD PONSETI PROTOCOL: A CASE-CONTROLLED STUDY. I. Ngayomela,* S. Pirani,† E. Naddumba,‡ R. Mathias,‡ A. Nakinsiga.† From the *Department of Orthopedics, Makerere University Medical School—Mulago Hospital Complex, Kampala, Uganda, and the †University of BC, Vancouver, BC.

Background: The Uganda Sustainable Clubfoot Care Project’s (USCCP) goal is to build capacity throughout the Ugandan healthcare system for the early detection and treatment of the congenital clubfoot by Ponseti treatment. Accelerated Ponseti protocol in Iowa, with casts changed every 5 days and treatment completion in less than 3 weeks,
has excellent results. It is unknown whether a similar strategy could be effective in Uganda. USCCP studied correction rates of accelerated Ponseti method (biweekly cast changes) versus the conventional Ponseti method (weekly cast changes) in the treatment of idiopathic clubfoot among patients in Mulago Hospital, Kampala. Methods: This was a 2:1 historical case-control study. Group A, accelerated protocol, comprised 35 infants with 49 clubfeet (mean age 28.7 d; initial mean Pirani score of 5.7; 22 males, 13 females; 14 bilateral, 21 unilateral). Group B, conventional protocol, comprised 64 infants with 102 clubfeet (mean age 34.2 d; initial mean Pirani score of 5.5; 48 males, 16 females; 38 bilateral and 26 unilateral). All cases were followed up until tenotomy indicated or bracing indicated if tenotomy unnecessary. Outcomes criteria were rates of correction (to tenotomy or brace initiation), length of treatment (numbers of casts, days of casting) and complications. Results: Rates of correction were 96% in Group A compared with 100% in Group B. The mean treatment duration in Group A was 16.3 (standard deviation [SD] 8.6) days compared with 34.7 (SD 20.9) days in Group B ($p < 0.05$). The mean number of casts was 3.7 (SD 1.01) in Group A, compared with 4.23 (SD 1.5) in Group B ($p < 0.05$). The mean pretenotomy Pirani score for Group A was 1.7 (SD 0.7) compared with 1.7 (SD 0.6) in Group B ($p < 0.05$). Complications were as follows: 2 clubfeet in 1 child in Group A failed to correct; 1 clubfoot in 1 child in Group A presented with edema and tenderness on the affected foot after his second cast change. No complication was documented in Group B. Conclusion: Accelerated Ponseti method protocol (cast changes twice weekly) in Uganda has similar early treatment outcomes in the management of idiopathic clubfoot as the conventional Ponseti method, with few complications. Significance: As in Iowa, accelerated Protocol, and hostels stay can be offered to caregivers who must travel long distances.


Introduction: Lack of emergency obstetrical services remains one of the principle reasons for high maternal mortality in sub-Saharan Africa. Learners in surgical programmes frequently are called upon to provide services at a relatively early point in their careers. This new course brings the concept of structured operative learning to early obstetrical training in 2 African universities, with a goal of accelerating surgical proficiency. Methods: A new curriculum (Structured Operative Obstetrics) was developed and piloted in 2 settings in Africa. This was run first as instructor's course, with the successful candidates then teaching the course to the course participants. These sites were: (1) Addis Ababa University in Ethiopia (Sept. 2007), with a total of 10 instructors and 14 students, and (2) Makerere University in Kampala, Uganda (Jan./Feb. 2008), with 10 instructors and 10 students. The course consists of a series of interactive lectures and 4 laboratory components. The interactive lectures series includes basic topics in obstetrical and surgical care, is built on adult learning concepts, and is based on local curricula and a wide international evidence base. There are also 4 laboratory segments to the course: (1) basic surgical techniques, suturing and knotting; (2) vaginal delivery skills (postpartum hemorrhage, retained placenta, cervical laceration, vacuum extraction); (3) cesarean sections skills (skin-to-skin simulation using models, as well as suturing techniques using animal — beef heart — tissue; and (4) a clinical laboratory section in the operating room. This lasts up to 10 days and involves learners doing 6 cases under direct supervision, 3 partial cases (closing after baby is delivered) and 3 complete cases (skin-to-skin cesarean section), with detailed feedback from experienced clinicians. In Kampala, 1 central high-volume centre was used for all clinical activity. In Addis Ababa, 3 sites were used, each with smaller volumes. Results: In Uganda, all 12 students successfully completed all 6 of their cases within a 7-day period. In Ethiopia, 8 students had completed their required cases by the end of the 10-day clinical period, while the rest took up to 6 weeks to complete them. Pre- and post-tests were carried out at the beginning and end of each course. The Addis Ababa pretest mean score was 14.3/20, and the post-test mean was 18.3/20. In Kampala, the pre-test mean score was 15.2/20, and the post-test mean was 18.7/20. Qualitative and quantitative evaluations revealed high levels of satisfaction with the course. Conclusion: A new structured operative obstetrics course was successfully piloted at 2 sites in Africa. Both sites plan further courses, where it is expected that this course will become part of the training of junior residents as well as interns.

INTERNET 2 INTERNATIONAL FORUM ON ROAD TRAFFIC TRAUMA: 2 YEARS EXPERIENCE. J.P. Waddell,* E. Johansen,† J. Blazquez.‡ From the *Association for the Rational Treatment of Fractures (ARTOF) and University of Toronto, Toronto, Ont., the †Global Orthopaedic Research and Education Network (GOREN), and the ‡World Bank.

In September 2006, an inaugural Internet 2 broadcast was carried out in an effort to improve communication between practitioners, government officials and international bodies to develop an exchange of information regarding road traffic injury. Broadcasts were initially sponsored by the Société Internationale de Chirurgie Orthopédique et de Traumatologie (SICOT), the Association for the Rational Treatment of Fractures (ARTOF) and the World Bank. They have subsequently been supported by the US State Department through their Distance Learning Program.

The initial series of broadcasts addressed the following areas: (1) first-responder care, (2) transport of the injured, (3) minimal hospital requirements for care of the injured, (4) physician training and credentialing and (5) reintegration of the injured patient into the community.

Subsequent series of broadcasts were segregated by regions addressing sequentially the Americas, Europe and Africa, Asia and the Middle East and the Orient. These broadcasts were specifically designed to elicit specific problems identified by individuals working in those regions regarding road traffic injury. Several common themes were identified in every region, including the need to improve road infrastructure, necessity for enforcing current rules and regulations regarding
road traffic, improved education for drivers and the public at large, better emergency treatment for road traffic injury victims and, finally, better definitive care for the specific injuries associated with road traffic trauma.

Coordinating efforts between SICOT, ARTOF, the World Health Organization, the World Bank and the US State Department, we hope to begin to influence governments in these areas to adopt specific measures to address these concerns.

We feel this is an important initiative in international surgical cooperation, taking us beyond education of surgeons to the education of government officials and other policy-makers.

Maj or general surgery by clinical officers in a central hospital in Malawi. I.K. Thawe, B. Mwatiibu, H. Mothes, T.J. Wilhelm. Department of Surgery, Zomba Central Hospital, Zomba, Malawi.

Background: The human resource crisis in Africa has revived the interest in “nonphysician clinicians.” Regarding surgical activity, their important role in emergency obstetric surgery has been reported from East Africa. However, there are no reports about their role in major general surgery. The aim of this study was to evaluate the contribution of clinical officers (COs) to major general surgery in a Malawian central hospital. Apart from COs, the department of surgery is usually staffed with 1 specialist surgeon recruited and funded by German governmental development aid, which has also supported hospital infrastructure and equipment since 1995.

Methods: Data on procedures and surgeons were collected from theatre books for a 5-year period (January 2003 to December 2007). Three procedures (prostatectomy, ventriculo-peritoneal [VP] shunt implantation, bowel resection in strangulated hernia) were selected for outcome analysis. Patients’ characteristics and data on postoperative morbidity and mortality were collected from patient files. Orthopedic procedures performed by orthopedic surgeons were excluded.

Results: In total, 2931 major general surgical procedures were performed: 1487 (49%) by specialist surgeons, 1128 (38.5%) by COs alone and 366 (12.5%) by COs assisted by surgeons. COs performed 53.1% (119/224) of all prostatectomies alone, 49.3% (69/140) of VP shunt implantations and 33% (22/66) of bowel resections in strangulated hernias. Early postoperative in-hospital morbidity and mortality were similar in specialist surgeon- and CO-operated cases.

Conclusions/Significance: Following adequate instruction, COs are capable of successfully performing major general surgical procedures. They can play a vital role in countries that lack specialist surgeons. Long-term international cooperation can successfully provide training and supervision.

Emergency skills training of nondoctor frontline health workers in Ethiopia. A.A. Gobeze, B. Ghosh. From the *College of Health Sciences, Hawassa University, Awassa, Ethiopia, and the †Nevill Hall Hospital, Abergavenny, UK.

Purpose: In Ethiopia, 85% of the population lives in rural areas with no access to a doctor or hospital, and depends upon 1 of 700 health centres (HC). Many HC are over 100 km from hospitals, have no doctor and are headed by the nondoc tors (ND) such as health officers (HO) and nurses. The clinical outcome of patients requiring emergency interventions, such as following trauma, with life- or limb-threatening emergencies or with complications of pregnancy, depends on the level of skills training of the NDs. HOs receive only 1 week of operative skills training; nurses receive even less training in practical skills. Method: The authors initiated an emergency skills training program for the student NDs and, following needs assessment, a continuing medical education (CME) course for the graduate NDs from 2002. So far this has resulted in emergency skills training for 300 student HOs and CME with emergency skills training for 200 HOs and 110 midwives. The CME includes teaching skills, so that skills are learned by the participants and can be cascaded down to many more. Results: Pre- and postcourse evaluation, formal and informal feedback shows NDs place great value on these training workshops. Many travel over 1000 km to attend these workshops. It is not unusual to find emergency surgery in rural hospitals, where there are no doctors, being carried out by HOs trained in these skill workshops. This has also resulted in the creation of a Training of the Trainers program, development of a national task force to support skills training of NDs and plan for a Master’s degree in emergency surgery for the HOs. Conclusion: Owing to the scarcity of doctors, for several decades from now, emergency care of majority populations in many sub-Saharan countries will have to rely upon the NDs; their skills training is vital for delivering health care to the majority of the population.
Of the pediatric otolaryngology patients seen from 1996 to 2007, 35.2% were otological cases. Sensorineural hearing loss accounted for 14.6% of pediatric cases and 41.3% of otologic cases (excluding otitis media). However, the manpower required to manage them is lacking. Conclusion: Sustainable efforts would enable the cataract and cleft programs in Nigeria achieve maximal potentials; urgent international collaboration toward prevention/rehabilitation of children with hearing loss is crucial.

NEUROSURGICAL EDUCATION IN TAIWAN: A 25-YEAR FOLLOW-UP. D. Fairholm,* S.T. Lee,† C.N. Chang,† T.N. Lui.† From the *University of British Columbia, Vancouver, BC, and the †Chung Gung University, Taipei, Taiwan.

Background: Traditional international education has provided partial or full training in developed countries. Numerous factors have resulted in “brain drain” to these countries. A third alternative is for surgeons from developed countries to live and work in developing countries as educators for extended periods of time. Methods: The author spent nearly 6 years in Taiwan between 1979 and 1984, where he was assisted in development of a neurosurgical service and training program at Chung Gung Memorial Hospital and University. In 5 years, the service grew to 130 clinical beds using 3 operating rooms daily and developed specialized teams for the management of head injuries and spinal cord injuries. A training program was established, and 5 young surgeons completed training and entered practice within an expanding hospital system. Results: A 20-year follow-up was conducted and reported in Neurosurgery. These young surgeons have matured and become university and national leaders. One of the direct social and political impacts of this group was the introduction of helmet legislation, which reduced mortality from severe head injuries by more than 80%. The long-term impact reveals more than 500 neurosurgical beds within the system of 5 hospitals. Specialization has developed in many aspects of neurosurgery, and large volumes of high-quality surgery are conducted daily. The training program has continued over the past 25 years and expanded into 3 collaborating programs. Fifty-four neurosurgeons have passed the certification exams, and 39 now work within the subspecialized hospital system. Many have assumed leadership roles in the country including 4 heads of department, 3 vice superintendents, 1 dean of medicine, many researchers with 77 international publications in the past 10 years and 2 professorships.

SUCCESSFUL MODELS FOR LOCAL, SELF-SUSTAINABLE DELIVERY OF EYE CARE AND CORNEAL TRANSPLANTATION IN THE DEVELOPING WORLD. P.J. Dubord, Department of Ophthalmology and Visual Sciences, University of British Columbia, Vancouver, BC.

Background: The World Health Organization estimates there are at least 180 million people worldwide who are visually impaired. Forty-five million of these people have profound visual loss. Ten million of this group are blind due to corneal problems. These numbers are expected to increase. Fortunately, 80% of the visual loss is treatable. The epidemiology of corneal blindness is diverse and dependent on endemic disease and local environment. The impact of corneal transplantation has been found to be 4 times more effective than cataract surgery (daily adjusted life years). Method: This initiative to address corneal blindness began in 1989 with the L V Prasad Eye Institute in Hyderabad, India, and Eyesight International (Canada). In the early 1990s, a comprehensive program based on medical standards responsive to local, cultural and government needs was established. Professional leadership programs, including administrative, technical and fellowship training, were developed. A Center of Excellence for Eye Banking and Transplantation serves as a resource centre for eye banking and corneal transplantation for Hyderabad, India, and the developing world. Subsequently, we have partnered with additional international nongovernmental organizations. Results: The L V Prasad Eye Bank Center of Excellence is the largest eye bank in the developing world, with more than 1400 penetrating keratoplasties yearly. In 1990, approximately 25 surgeries were performed. Hundreds of technical and administrative personnel have been trained, and more than 75 ophthalmologists have undergone fellowship training in corneal transplantation and eye banking. Currently, 2 other eye banks have been established with 2 new 70 000 square-foot facilities. Currently, we are covering 80 million people for these procedures. Conclusions: The basic success of this program depends on excellent partnerships, the development of comprehensive medical standards and a centre of excellence that trains health care professionals at all levels of eye banking and transplantation. This is in the background of quality, accountability and local self-sustainability for this unique program in the world.

EXPERIENCE IN PILOTING A SURGICAL SKILLS CURRICULUM USING LOW COST SIMULATION AT THE MUHIMBILI UNIVERSITY, TANZANIA. N. Mbembati, * S. Taché, † N. Marshall, † F. Tendick, † C.A. Mkony, † P.O’Sullivan.† From the *Muhimbili University Health and Allied Sciences, School of Medicine, Dar es Salaam, Tanzania, and the †University of California San Francisco, Global Health Sciences, San Francisco, Calif.

Background: The traditional surgical training apprenticeships have been severely impacted by shortages of teaching faculty and insufficient learning resources. Such has been the case at the Muhimbili University of Health and Allied Sciences (MUHAS), which has experienced a drop in medical graduates willing to become surgeons and suboptimal preparation for those practising surgery in the field. In order to enhance technical skills in general surgery and emergency procedures for senior medical students, a practical surgical skills practicum using locally developed simulation models was designed and piloted at MUHAS. Methods: A 2-day training course in surgical skills based on a curriculum from the Canadian Network for International Surgery was developed for 9 different general and emergency surgical skills. Some simulation models for the surgical skills were created using locally available materials. The curriculum was piloted on 36 senior medical students having completed their surgery rotation at MUHAS. Evaluation was measured by pre- and post-training Observed Structured Clinical Exams (OSCE) and surveys of self-perceived performance. Results: Thirty-six students participated in the study. Skill acquisition for the 5 OSCE categories after the
training demonstrated a 4-fold increase in performance level with average increases in OSCE scores from 6/30 to 15/30.

Conclusions: Introducing a surgical skills simulation practicum within the surgery rotation is one way of addressing the deterioration in surgical apprenticeship. This will reposi-
tion MUHAS to provide a well-qualified workforce in surgery to staff much needed rural medical posts in Tanzania. Further testing of this model is required to determine its applicability to other resource-limited settings seeking to develop skill-

TRENDS IN AIDS-ASSOCIATED MALIGNANCIES IN RURAL ZIMBABWE. Michelle Davey,† Paul Thistle,† Dan Schwartz,‡ Gay Pratt.§ From the *Department of General Surgery, McMaster University, Hamilton, Ont., the †Salvation Army Howard Hospital, Glendale, Zimbabwe, ‡Brown Medical School, Providence, RI, and §the Ottawa Hospital—General Campus, Ottawa, Ont.

Purpose: To study the incidence of the AIDS-defining malignan-
cies, Kaposi’s sarcoma (KS), non-Hodgkin lymphoma (NHL) and invasive cervical cancer (ICC), in the context of a resource-poor setting with a high burden of HIV infection.

Methods: Retrospective chart survey of histopathological analysis of biopsy specimens at a rural Zimbabwe hospital for the period 1994–2006, paired with annual HIV seropositivity data.

Results: Analysis showed an increase in incidence of KS and ICC, from 6.4 to 21 per 100 000 (p = 0.002) and 22.5 to 54.7 per 100 000 (p < 0.001), respectively. NHL incidence was uniformly low throughout this period of time, however, a trend toward increasing incidence was observed. Rural HIV seropositivity has steadily declined over this period, from 26.4% (1996) to 17.2% (2007) (p = 0.002).

Conclusions: In the context of a waning HIV epidemic and the increased avail-

OUTCOME OF SURGICAL IMPLANT GENERATION NETWORK (SIGN) NAIL INITIATIVE IN TREATMENT OF LONG BONE SHAFT FRACTURES IN KENYA. O.S. Otieno. Embu General Hospital, Kenya.

Background: Closed interlocked intramedullary nailing (IM), the standard method of treating long bone shaft fracture, has been a dream for most resource-poor hospitals like Kenyan regional hospitals. The Surgical Implant Generation Network (SIGN) initiative employs external jigs and slot finders instead of expensive fluoroscopy and fracture tables to achieve inter-

Methods: Seventy-eight consecutive patients with 20 tibia and 60 femur fractures were treated with SIGN interlocking nail at Embu Provincial Hospital, Kenya, between Dec. 2005 and Dec. 2007. Patient demographics, fracture characteristics and out-

Results: Male-to-female ratio was 3:1, and the age range was 18–82 years. There were 63 closed and 17 open fractures, of which 71.25% (57/80) were recent fractures, 15% (12/80) were nonunions, 7.5% (6/80) were malunions and 6.25% (5/80) were due to failed plating. Cases seen included 22.5% (18/80) retrograde femur, 52.5% (42/80) antegrade femur and 25% (20/80) tibia. Inter-

Conclusion: The SIGN initiative is a valu-


**Methods:** Residents attending 1-week international plastic surgery missions concentrating on cleft lip and palate repair from 2 different countries (Peru and Thailand) used a low-tech method to tabulate their involvement in screening and operation on patients with these defects. Cases were stratified by degree of involvement by the resident. A similar 7-day time period at British Columbia’s Children Hospital (BCCH) was evaluated in the same manner and results stratified in the same way. **Results:** Comparison of BCCH results with international missions have shown that the number of weeks required to achieve a similar exposure to screening patients was 9.75 weeks. The number of weeks required for a resident to achieve the same number of cases in which the resident did greater than 50% of cases was 3.43 weeks. The number of weeks required to achieve the same number of cases which involved cleft lip and palate was 3.43 weeks. Of cleft lip and palate cases, residents did greater than 50% of the surgery 37.5% of the time versus 14.3% of the time at BCCH. Residents functioned as the surgical assist in Peru 62.5% of the time versus 85.7% of the time at BCCH. **Conclusion:** The data obtained have been used to justify the resident teaching and learning experience on international plastic surgery missions on the basis of volume of screening cases and surgical cases in which a resident is involved and number of surgeons exposed compared with the experience of plastic surgical residents at a major children’s teaching hospital. On the strength of these data, this kind of plastic surgical experience has been encouraged and developed at the University of British Columbia.

**Training Requirements for International Surgery: A 10-Year Review of Cases Performed in a Developing World Teaching Hospital.** J.E. Chan,† K.M. Chan, N.E. Cleek,‡ S.M. Hameed.* From the Departments of Surgery, †University of British Columbia, Vancouver, BC, and ‡Loma Linda University, and the †Pan-African Academy of Christian Surgeons, Cameroon.

**Background:** International surgery is a rapidly growing area of interest. Surgical residents are increasingly spending time in developing-world medical centres, but little guidance is available for adequate preparation. A better understanding of the scope of international surgery will improve both visiting resident and receiving hospital satisfaction. **Methods:** The Banso Baptist Hospital in Cameroon serves as a training site for the Pan-African Academy of Christian Surgeons (PAACS), an accredited, 4-year surgical residency-training program in West Africa. An on-site retrospective review of the operating room records was conducted, covering the 10-year period between 1997 and 2006. Data on patient demographics, diagnosis, surgical procedure and subspecialty, primary surgeon and urgency were collected. The PAACS educational guidelines were reviewed and compared with the operative caseload. **Results:** A total of 17,363 major cases were performed over the 10-year review period. Overall, general surgery (6658 cases, 38.3%), gynecology (4062, 23.4%) and obstetrics (2709, 15.6%) constituted the majority of cases. Elective cases totalled 13,397 (77.2% of total cases); of these, general surgery (5436 cases, 40.6%), gynecology (3593, 26.8%), orthopedics (1586, 11.8%) and urology (1220, 9.1%) were the most commonly involved subspecialties. Of 3966 emergency cases, obstetrical (1936 cases, 48.8%) and general surgical (1224, 30.9%) procedures were most frequently performed. Cesarian sections accounted for 97.0% of obstetrical emergencies. **Conclusions:** International surgery encompasses a wide scope of surgical expertise, extending beyond the usual North American curriculum. Residents should be familiar with performing cesarian sections. Electives in gynecology, orthopedics or urology may also better prepare general surgery residents for an experience in international surgery.

**Prospective Evaluation of Sustaining the Boston Keratoprosthesis in the Developing World: A Pilot Project.** J.D. Ament,* R. Pineda,* Y. Tilahun,† I. Behlau,* C.H. Dohlman.* From the *Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Mass, and the †Menelick II Hospital, Addis Ababa, Ethiopia.

**Purpose:** To determine whether the Boston Keratoprosthesis (KPro) is a sustainable ophthalmic device in patients considered high-risk candidates for penetrating keratoplasty (PK) in the developing world. **Methods:** Through an international collaboration between the Massachusetts Eye and Ear Infirmary, Boston, Massachusetts, and the Menelick II Hospital, Addis Ababa, Ethiopia, 6 preselected patients underwent surgery with the Boston Keratoprosthesis. Lens extraction was performed in all patients who were not pseudophakic or aphakic. Patient selection criteria included hospital access, repeated graft failures, binocular blindness or monocular patients and patients considered high-risk candidates for PK. An International KPro Protocol was developed to standardize pre- and postoperative evaluation and patient education. To reduce costs, the patient’s own cornea was always considered as a carrier for the KPro instead of a donor cornea. Locally available chloramphenicol and ciprofloxacin ophthalmic solutions were substituted for the US standard. A monthly drop with 5% povidone-iodine was recommended for broad antimicrobial prophylaxis. Patients were followed weekly for the first 4 weeks and monthly thereafter to monitor visual acuity, intraocular pressure (IOP), wound integrity, infection and medication compliance. **Results:** This pilot study reports 1-month data on 6 eyes of 6 Ethiopian patients who received a KPro under local anesthesia. No adverse complications occurred during surgery. All patients noted improved visual acuity postoperatively, ranging from counting fingers (CF) at 1 m to hand motion (HM) preoperatively to between CF at 5 m and 20/40 postoperatively. All patients were able to self-administer their ophthalmic medications. At 1 week, there were no issues with inflammation, postoperative wound complications, IOP, contact lens wear, or visual acuity.
retention or compliance. Conclusion: Early data indicate that the Boston KPro may be a viable ophthalmic device for high-risk PK candidates in the developing world. Careful patient selection, standardized protocol implementation and meticulous postoperative follow-up and surveillance are necessary for long-term sustainability. Further longitudinal data are recommended.

IMPLEMENTING THE ESSENTIAL SURGICAL SKILLS PROGRAM AT THE KILIMANJARO CHRISTIAN MEDICAL CENTRE: CHALLENGES AND OPPORTUNITIES. T.K. Asano,† K. Chilonga,‡ K.A. Mtea,§ R. Fairfull-Smith.† From the Departments of Surgery, †University of Ottawa, Ottawa, Ont., and the Tumaini University, Moshi, Tanzania.

Background: The Essential Surgical Skills (ESS) program is a 5-day workshop designed to teach generalists in developing countries procedural skills required for obstetric and surgical emergencies. This course has been recently (2003) implemented in Tanzania at the Kilimanjaro Christian Medical Centre (KC MC). Purpose: To identify the barriers and facilitators of implementing this curriculum in Moshi, Tanzania. Feasible approaches to address barriers and to encourage facilitators will be discussed. Methods: Qualitative data were collected from direct observation of the implementation of the ESS at KC MC (November 5–9, 2007) as well as nonstructured interviews of the course facilitators, preceptors and students. Results: Challenges were identified in the areas of administrative support, course structure, preceptors and learners. Facilitating factors included stable financial support, learner enthusiasm and ongoing course facilitation by Tanzanian and Canadian surgeons. Approaches to address current barriers were also identified, including training and hiring administrative support as well as preworkshop debriefing for the preceptors in order to improve course flow. Routine local preceptor training workshops may improve the availability and local ownership from the Tanzanian teaching staff. Workshop registration should be limited to the most senior medical and assistant medical officer students in order to maximize the educational benefit. Integration of the workshop into the core curriculum may be considered. Conclusion: There is general agreement that the surgical skills workshop is an important addition to the KC MC curriculum. Collaborative efforts are required to ensure the sustainability of the program and that maximal educational benefits of the program are realized.

A ROADMAP TO GLOBAL HEALTH EDUCATION: A STUDENT-LED INITIATIVE. C.L.C. Collins,* S.K. Yeong,* D.J. Duffy,† G.K. Blair.† From the *University of British Columbia Faculty of Medicine, and the †Office of Pediatric Surgical Evaluation and Innovation, BC Children’s Hospital, Vancouver, BC.

Background: Students, residents and physicians are eager to learn about and participate in global health but often have little understanding of where to begin. As such, BC Children’s Hospital, in collaboration with UBC medical students, has identified a need for the development of training experiences to help prepare health care students and professionals for effective and meaningful global health work. The team identified a need to first understand the current level of global health background of students, residents and faculty, and to conduct learning needs assessment to evaluate what kind of training would be most useful. Methods: A working evening dedicated to global health education was held in March 2006. Attendees were asked critical questions about the process by which a global health education curriculum could be developed, implemented and evaluated. Additionally, an online questionnaire was sent to medical students and faculty in Family Practice, Pediatrics, Obstetrics/Gynecology and Surgery to explore experiences in global health and needs for training and access to global health resources. All endeavours during the 2006/2007 year have been evaluated for areas of strength and weakness. Results: A collaborative, student-led group, The Global Health Initiative (GHI), now exists with strong support from many stakeholders in the UBC medical community. The program is designed to be sustainable and continuous from year to year. Conclusion: The GHI offers vibrant learning experiences in the classroom and in the field, and has made steps toward unifying the many diverse global health efforts within the UBC Faculty of Medicine.

GASTRIC CANCERS AT KIBOGORA HOSPITAL. G. Ntakiyiruta. Kibogora Hospital, Nyamasheke, Rwanda.

Background: Epigastric pain is very common in our patients of both sexes, and upper gastrointestinal endoscopy is offered in very few hospitals. Antacids are routinely prescribed countrywide. Helicobacter pylori are very common in our region. Not only do most clinicians lack the means to diagnose the infection, but they also cannot confirm its eradication. Many of our patients present with advanced gastric cancer with no prospect for cure. Methods: This was a retrospective descriptive study of gastric cancer patients seen over a 1-year period from July 2006 to June 2007 at Kibogora Hospital. Data were collected from records of patients with diagnoses of gastric cancers. Results: Thirty-five subjects were diagnosed with gastric cancer during the study period. Their age ranged between 30 and 80 years with a mean of 55.8 years. There were more females (20, 57.1%) than males (15, 42.9%). On admission, patients had the following characteristics: epigastric pain, 100 (100%); vomiting, 33 (94.3%); severe weight loss with wasting, 29 (82.9%); gastric outflow obstruction, 21 (60%); epigastric tenderness, 29 (82.9%); and epigastric mass, 13 (37.1%). Diagnosis of advanced gastric cancer was made at endoscopy in 29 (82.9%). Palliative surgery was done for 34 (97.1%) patients. Twenty-seven (77.1%) patients had markedly improved quality of life and were discharged home. Only 1 patient died in hospital. The hospital stay ranged between 7 and 32 days, with a mean of 14 days. Fifty percent of the specimens sent for pathology were reported as gastric adenocarcinoma of the intestinal type. Conclusion: Gastric cancer is an important public health problem in our region. Clinicians need to adequately diagnose and eradicate H pylori infection if the incidence of gastric cancer is to be reduced in this region. Surgery can only offer temporary palliation for advanced gastric cancer. There is a need for palliative care in this country.

Background: Genitourinary tuberculosis (GUTB) affects kidneys and bladder, leading to scarring and eventually loss of function. Reconstructive surgical procedures are implemented to preserve the function by relieving obstruction of the urinary tract. The objective of this study was to evaluate the outcome of urinary reconstructive surgical procedures in terms of improvement in renal function and quality of life. Methodology: A retrospective analysis of all patients who were treated for tuberculous stricture of the ureter and scarring of the bladder from January 2001 to December 2005 was performed. Outcome of interventions were assessed with the use of intravenous urogram (IVU), technetium-99m diethylene-triamine-pentaacetate (99mTc-DTPA) renogram and serum creatinine level. Results: Among 160 GUTB cases diagnosed in the 5-year period, only 51 patients fulfilled the inclusion criteria, considered in this study as some degree of scarring of the ureter and bladder. They were managed with reconstructive surgery alone or in combination with temporary diversion. Sixteen (31.5%) patients had elevated serum creatinine levels greater than 1.5 mg%. Nadir serum creatinine levels less than 1.5 mg% occurred in 9 patients following various procedures. Panurethral or multiple segment involvement occurred in 24 ureters, where 10 required eventual definitive reconstructive surgery. Twenty-eight bladders were found scarred and 17 needed augmentation procedures. Conclusions: On the basis of acceptable renal function determined by Tc-scan renogram and other functional assessments, an overall favourable outcome of 92% at median follow-up of 18 (range 6–48) months was observed.