Abstracts
Original research on the development of emergency medicine

Emergency Medicine is continuing to advance in Africa, as evidenced by the many abstracts that were presented at EMSSA’s 3rd Emergency Medicine in the Developing World conference in November (www.emssa2011.co.za). The abstracts we highlight in this editorial represent submissions from emergency physicians, nurses, pre-hospital medics and health professionals from all over world, and represent different facets of the development of emergency care.

Education
Training physicians to practice in an acute setting is a crucial step in developing and sustaining Emergency Medicine (EM). A training program should be tailored to address the needs and resources of the different practice settings. Sisay et al. describe the development of an EM residency at Addis Ababa University, Ethiopia. An Ethiopian task force partnered with the University of Toronto and the University of Wisconsin to develop a curriculum and include aspects specific to the needs of the practice environment in Ethiopia.

ZeMinkandé’s study also reflects the need for EM training programs. They report on a program in Cameroon that has successfully trained 25 physicians (unfortunately suspended for the last 2 years for financial reasons). Cameroon has incorporated in-service training for Emergency nurses, and has incorporated first-aid training into its medical school curriculum. However, this does not negate the need for physician training programs. The authors argue strongly for restarting the training program, expanding nursing training, and extending first aid training to the public.

As Emergency Medicine continues to grow, emergency providers will play a larger role in improving the health of the community. One example is discussed by Ribeiro et al., where the authors organized a CPR course for primary school students in Brazil. The course used video instruction with medical students to facilitate the course. A six month follow-up demonstrated the retention of basic life support skills ranging from 68% to 83%.

One of the challenges in developing an Emergency physician training program is creating the didactics when faculty are also performing multiple administrative and clinical roles. To assist with providing educational content, Meshkat and Hunchak describe an online compendium of lectures targeted to practice environments with limited resources. This will be a very useful resource; while this is not the first online compendium of educational materials for Emergency training in low resource environments, it is nonetheless a welcome and much-needed project.

Training practitioners also involves assessing their skills and knowledge. Mumm et al. described the incorporation of mock oral cases into the curriculum for mid-level Emergency Care providers in Uganda. The six trainees collectively completed 326 of 330 critical actions in the oral cases. The trainees found the exercise very useful for understanding their strengths and weaknesses, and felt the cases were reflective of the clinical environment.

Planning and injury surveillance

The 2010 FIFA World Cup in South Africa relied on many Emergency providers to care for the thousands of spectators. Emergency Physicians helped plan for the medical care at the various events associated with the tournament. Allgaier et al. analysed the accuracy of a model developed for mass gatherings in the developing world, used to predict healthcare staffing at events. For large events, the model over predicted the need for basic life support and advanced life support. For small events the model under predicted the need for medical personal, by an average of one patient per event.

Petroze et al. present the results of three months of data collection for a trauma registry at a referral hospital in Kigali, Rwanda. Four hundred and nine patients were entered into the registry with 52% of injuries being caused by motor vehicle accidents. Morbidity and mortality data were also analysed, 5% mortality in Emergency, 30 day mortality of 2% in patients admitted and 8.9% of hospitalized patients contracted infection. This represents the successful implementation of a
trauma registry and a sample of the information that can be gained from a registry.

Emergency nursing

As Emergency Medicine advances, there is also a need for specialized nursing training. LoBue et al. performed a qualitative assessment of nurses working in the Emergency setting at Muhimbi National Hospital, Tanzania. Training areas were identified as well as preferred methods for education. This represents a comprehensive assessment of nursing training needs and highlights the need for a comprehensive approach for improving Emergency care.

Heynset al. documented the development of a conceptual framework for Emergency nursing in South Africa. The framework was developed by the Emergency Nursing Society of South Africa and represents the standards of nursing specific to Emergency nursing which are based on three components: emergency nursing practice, domains of practice, and work environment.

Teklu Sisay, Meshkat Nazanin, Hunchak Cheryl, Janis Tupesis. Improving Emergency Care in Ethiopia: Establishment of an Emergency Medicine Residency Curriculum at Addis Ababa University (presentation)

Background: The high morbidity and mortality of acutely injured and ill patients in Ethiopia has been inadequately addressed by the existing health care system. Faculty leaders from the Addis Ababa University (AAU) School of Medicine set out to develop an EM residency training program to address the lack of trained EM providers and to improve emergency care in Ethiopia.

Methods: A Task Force of non-emergency medicine consultants established an emergency centre at Tikur Anbessa Hospital and partnered with the University of Toronto and University of Wisconsin to develop and implement an EM residency training program.

Results: After reviewing global EM residency curricula, AAU and its partners developed a three-year EM graduate curriculum adapted to the low-resource Ethiopian health context. It features three unique components that distinguish it from other international EM development endeavours to date: (1) an on-going regular exchange of in-country EM faculty teachers, (2) dedicated bedside teaching and mentorship by partner and host faculty and (3) concurrent longitudinal courses in Clinical Epidemiology and EM Administration. Five residents have successfully completed the first year of training with a second cohort of trainees in progress.

Conclusion: AAU faculty and partners have successfully created and implemented the first EM residency training program in Ethiopia. This multi-faceted curriculum is anticipated to address the emergency health care needs of Ethiopians and to be instructive in developing future EM residency training programs throughout Africa.

Ze Minkandé J., Metogo N.J., Nnomoko E., Malongte P., Takongmo S., Essomba A. Emergency medicine in Cameroon (presentation)

Background: Emergencies are acute pathologic situations, characterized by their seriousness and their time limited management. Faced with the growing incidence of emergency pathologies and disaster situations, the inadequacy between request and care services and the need to bring protocols into emergency services, it is vital to dedicated medical personnel dealing with emergencies. Cameroon has been committed to providing such personnel since 2002. It is thus important to evaluate the knowledge and needs of emergency medicine in our system, nine years after training commenced.

Methods: A prospective, descriptive study in the form of a survey of personnel trained in emergency medicine, their workplace, reception facilities and existing training.

Results: Currently only one school trains emergency physicians in Cameroon. This comes as a degree under the auspices of the Faculty of Medicine of the Yaounde I University. In total 25 emergency physicians have been trained. Training has been on hold for the last two years however due to lack of financing. Other advances include emergency nurses that are trained in service, integration of first aid in the medical curriculum and allocating two of the 25 physicians to work within the emergency services sector. All of the local emergency physicians are members of the local scientific society of emergency medicine. There is currently an emergency centre in most referral hospitals, including district level hospitals. Cameroon has adopted the French emergency medical assistance service (SAMU) model for prehospital care.

Conclusion: Emergency medicine is an important service in Cameroon. There is a clear need to restart the University degree programme, to open a school for emergency nursing, to extend first aid training to the public, to reinforce existing structures and to make use trained personnel within this service.

Lucas Ribeiro, Pedro Menezes, Rafael Germano, André Schmidt, Antônio Filho. Providing basic life support for Brazilian primary school children using video-based course and undergraduate medical students as facilitators – six month retention (presentation)

Background: Providing basic life support on a population basis is challenging, since it requires considerable number of instructors. Besides, the teaching method should be simple, skill-based and associated with high retention levels. A learning-tree concept including undergraduate medical students as intermediate links between instructors and general population is being advocated to overcome these limitations. We evaluated immediate and six-month retention of a composite strategy including undergraduate medical students as facilitators for a video-based learning section to primary school.

Methods: American Heart Association “CPR-for-family-and-friends” (CPR-FF) educational program, “Watch-and-practice” two-hour section was employed. A 25-question-multiple-choice questionnaire regarding General Knowledge, Sequence and Technical information was applied before, immediate after and in the six-month follow-up. The Technical questions were classified as Ventilation, Chest Compression and Automated External Defibrillator (AED). We stratified our results based on public establishments’ status, since it could be a potential confounder for our reality.

Results: One-hundred and forty-nine school children (60 public, 89 private, 14 years-average) were enrolled and completed the six months follow-up. The results were expressed as percentage (standard deviation) of the estimate stratified
by Public and Private – Total: 75.5(28.0) × 77.9(24.8) – p non-significant; Sequence: 75.7(38.0) × 83.1(38.7) – p < 0.05; Technique: 71.0(32.5) × 77.7(24.0) – p non-significant; Ventilation: 67.9(34.9) × 85.6(32.5) – p < 0.05; Chest Compression: 75.4(43.2) × 68.9(27.4) – p non-significant; AED: 74.4(29.0) × 78.4(43.3) – p non-significant.

Conclusions: (1) The CPR-FF was effective for Brazilian children. (2) Retention was high, similar to values found in the international literature. (3) Private school children presented higher retention regarding ventilation technique. (4) Medical undergraduate students could be employed as intermediate link in a learning tree.


Background: The development of emergency medicine (EM) as a specialty is rapidly expanding worldwide and is typically achieved through the establishment of EM training programs. Yet, educational materials are unnecessarily recreated with the establishment of each new program and most available materials are tailored for use in high-resource settings where disease epidemiology, resource availability and diagnostic/treatment guidelines vary greatly from those in developing countries.

Objective: To develop a comprehensive compendium of free, open-access, evidence-based, peer-reviewed online EM teaching modules designed for teachers and learners in low-resource health settings.

Methods: The modules are being developed and reviewed by faculty with expertise in EM education and global health using a standardized format. They are published online as low-bandwidth PowerPoint presentations divided into the following three streams: Clinical, Clinical Epidemiology and Administration. A team of editors oversee website content development and maintenance.

Results: Fifteen modules have been developed to date and are undergoing peer review. Over 100 modules are planned for publication over the next three years. A growing network of authors, reviewers and editors is actively being recruited.

Conclusions: This online compendium will provide the first free, open-access, evidence-based, peer-reviewed educational resource for teachers and learners in EM development worldwide. We aim to reduce unnecessary duplication and increase the context specificity of available global EM educational materials and, ultimately, to establish a globally accepted standard for EM practice in low-resource health settings.

Philip Mumm, Mark Bisanzo, Bradley Dreifuss, Stacey Chamberlain, Sara Nelson, Heather Hammerstedt. Mock Oral Cases as a Training and Assessment Tool for Emergency Care Providers in a Rural Ugandan Emergency Centre (poster)

Background: The study objective was to assess the utility of mock oral cases as a useful educational/assessment tool in a mid-level “train-the-trainer” Emergency Care Provider (ECP) training course in a rural Uganda.

Methods: In 2009, Global Emergency Care Collaborative (GECC) implemented an Emergency Care Provider program at a district hospital in rural Uganda. To augment the traditional didactic and bedside education strategies, a new evaluation tool of mock oral cases, designed to closely simulate a variety of emergent conditions seen at the district hospital, was introduced. Each ECP was presented the series of mock oral cases by an American senior Emergency Medicine resident physician and scored based on pre-selected diagnostic, therapeutic and disposition related “critical actions” for each case. After completing the series of cases, the ECPs answered a survey regarding their opinion of the mock oral cases as an evaluation and education tool.

Results: Collectively, the six ECPs correctly executed 326 of the total 330 possible critical actions (55 possible correct critical actions per ECP). The post-case surveys indicate that the ECPs universally found the cases to be applicable to clinical practice, beneficial to identifying clinical strengths/weaknesses, and recommended instituting the mock case presentations into the ECP curriculum as learning and evaluation adjuncts.

Conclusion: This study demonstrates that mock oral cases can be a useful educational tool in a mid-level ECP training program in rural Uganda. Using oral cases as an assessment tool of individual ECP and group performance and knowledge gaps warrant further study.


Introduction: Mass gatherings are held worldwide, however, no predictive staffing models have been prospectively validated in the developing world. A Developing World model was developed to prospectively predict medical staffing requirements for mass gatherings in resource-limited settings. The model was validated during the 2010 FIFA Soccer World Cup, held in South Africa for predictions of basic, intermediate, and advanced life support services, and the number of ambulances needed to transport patients to a hospital.

Methods: Retrospective evaluation of patient data forms, collected at twelve event sites during the 2010 Soccer World Cup, allowed for analysis of patient contacts and the provision of care needed to adequately treat each patient. The findings were compared to the resources predicted by the Developing World model.

Results: During the study period 1631 patients were treated (overall patient presentation rate of 0.851), with a majority of patients required basic life support services (78.4%). The model over-predicted this service for all 129 mass gathering events, with an average over-prediction of 4154 basic life support minutes per event. Intermediate and advanced life support requirements were consistently over-predicted for large events (overall attendance greater than 24,000). For small events, the under-prediction of intermediate and advanced life support services were 36.9% and 14.6%, respectively; however, the majority of under-predictions required the treatment of one patient per event. Ambulances were accurately predicted or were over-predicted for 73.7% of the events.

Conclusions: The Developing World model is an appropriate tool for planning mass gathering events in the developing world, as the model predicted a realistic requirement of limited resources.
Background: Injury is a growing contributor to global morbidity and mortality with 90% of injury deaths occurring in low-income countries. Regionally developed trauma registries have been shown to be effective mechanisms for injury surveillance in resource-limited settings. Due to scarce resources and delays to hospital care, we hypothesize that implementation of a trauma registry with outcomes assessment, including length of stay and complications, in addition to mortality measurements may be more useful for improving healthcare delivery in resource-limited settings.

Methods: A 31-item, 2-page registry form was developed based upon regional trauma registries for use at a 500-bed university referral hospital in the capital city of Rwanda. Patient demographics, injury details, pre-hospital care, and emergency centre interventions were recorded. Data were collected over a three-month period from March to June 2011. Inpatient 30-day follow-up data were abstracted from patient charts, ward reports and operating room logs.

Results: A total of 409 patients were entered into the new registry. Road traffic accidents caused 52% of injuries. Two percent of patients were proclaimed dead on arrival, and there was 5% mortality in Emergency. A total of 305 patients were admitted for inpatient care (75%) with a 3% 30-day mortality. Inpatients 30-day 30% of patients were proclaimed dead on arrival, and there was 5% mortality in Emergency. A total of 305 patients were admitted for inpatient care (75%) with a 3% 30-day mortality. Inpatients 30-day follow-up data were abstracted from patient charts, ward reports and operating room logs.

Conclusions: Utilization of outcomes assessment in injury surveillance can provide measurable markers for systemic improvement in low-resource settings.

Natalia LoBue, Anthony Pho, Angelina Sepeku, Marwa Obogo. Developing Clinical Training for Emergency Nurses in a National Referral Hospital in East Africa (presentation)

Background: The Emergency centre at Muhimbili National Hospital is the first in Tanzania. Approximately 36,000 patients were seen in 2010, the first year of operation, with an average admission rate of 80%. Clinical training curricula for emergency nurses have not yet been developed.

Aim: To determine the quality and scope of prior training and perceived training needs and priorities of Tanzanian nurses at a new Emergency centre after 18 months of operation.

Methods: Methods included qualitative semi-structured interviews conducted as part of a quality assurance review. Nurses’ were interviewed regarding: job histories; prior level, quality and scope of training; perceived knowledge gaps and needs for future training; and beliefs about effective training methods.

Results: Staff nurse backgrounds vary greatly in age, education level, professional experience and mastery of nursing skills. None of the nurses had prior experience in emergency care. Reported limitations of prior training included: little structure, no assessment or recognition of training advancement; and schedule not convenient for all nurse shifts. Identified priorities for future training included: basic nursing skills, equipment specific training and trauma care. Preferred training methods included on-job training, frequent repetition, self-learning, assessment and experienced emergency nurse mentorship.

Conclusion: Based on our results, nurses have limited prior training for work in the Emergency centre setting and identify specific knowledge gaps and priorities for future training. We are currently initiating a mixed-method emergency nurse training curriculum tailored to these results, including self-study materials, assessments, certificates as well as a program for experienced emergency nurse clinical mentorship.

Tanya Heyns, Petra Brysiewicz, Jean Augustyn. A conceptual framework for standards for emergency nursing in South Africa (poster)

Introduction: The Emergency Nurses Society of South Africa (ENSSA) is a sub group of the Emergency Medicine Society of South Africa (EMSSA), a non-profit, speciality organisation dedicated to maintaining and enhancing the quality of emergency care provided to ill/injured patients and their families. ENSSA serves the public, the emergency nursing community and its membership by meeting the professional, educational and research needs of emergency nurses.

Aim: Develop a conceptual framework intended for emergency nursing practice in South Africa, which can be utilised to guide unique national standards.

Method: A preliminary conceptual framework for standards for emergency nursing in South Africa was developed based on a review of relevant national and the international literature and legislation. The conceptual framework was then presented to and refined by the Executive Committee of EMS-SA, as well as a group of practicing emergency nurses.

Results: The conceptual framework was developed to structure the “Standards for Emergency Nursing”. The framework illuminates the essential and unique concepts of emergency nursing. The conceptual framework consists of three interlinked components, namely emergency nursing practice, domains of practice and work environment. Central to the framework is the synergy between the emergency nurse, patient and family which is regarded as vital to ensure optimal care outcomes.

Terrence Mulligan*
University of Maryland School of Medicine, Dept. of Emergency Medicine, Maryland USA, Stellenbosch University, Division of Emergency Medicine, Cape Town, South Africa

Jennifer Reifel Saltzberg
University of Maryland School of Medicine, Dept. of Emergency Medicine, Maryland USA.

*Corresponding author. Tel.: +1 2024446824; fax: +1 4103288028.
E-mail addresses: terrymulligan@yahoo.com (T. Mulligan), jenny_moyna@yahoo.com (J. Reifel Saltzberg)

Available online 20 October 2011