

DISASTER AND HUMANITARIAN RESPONSE

Byers M, Russell M, Lockey DJ. Clinical care in the “Hot Zone.” Emerg Med J. 2008; 25:108-12.

Triage in the Hot Zone: not quite ready for prime time.

Summary: The authors provide their comments on medical care in the “Hot Zone” created by a hazardous material (HAZMAT) or chemical, biological, radiological, or nuclear (CBRN) event. They discuss the current UK model for dealing with such incidences, and how it could be refined to, in their opinion, achieve better outcomes. Through their argument construct, they discuss examples of actual CBRN events, such as the Sarin nerve gas release in the Tokyo subway system, and how a more intense triage system within the area most affected by an event may have saved additional lives. The article provides a useful range of information on critical areas such as classification of chemical incidents, clinical roles, equipment, and training, and proposes a “Hot Zone” treatment plan. Other than a brief mention from one analysis of a British CBRN episode response drill of times for triage and treatment of victims, the authors use no specific metric analyses of their proposals to support their contention of an improved victim outcome potential.

Comment: Military or civilian CBRN/HAZMAT threats remain an important challenge for emergency medical services (EMS) practitioners and planners. The authors lay out the basic framework of the current UK EMS system, including the challenges it faces, and provide concrete suggestions for improvement. The analysis and conclusions are simple and adapted from current advanced trauma life support and advanced cardiac life support guidelines. The authors rightly point out that responders entering the hot zone would need to be wearing appropriate personal protective equipment. Such equipment is variably available, is often available only to specific teams within response services, as in the Paris and Tokyo systems, and requires a finite time to be donned. Examination of the actual implementation of these changes and the resultant effect on the timing of interventions through computer modeling or experimental drills would allow for a more in-depth examination of the proposed changes.

By Michael Blake

Collander B, Green B, Millo Y, Shamloo C, Donnellan J, DeAtley C. Development of an “all-hazards” hospital disaster preparedness training course utilizing multi-modality teaching. Prehosp Disaster Med. 2008; 23:63-7.

A two-day course titled Hospital Disaster Life Support (HDLS) shows promise in training health care professionals and administrators in disaster management and response.

Summary: This prospective, observational study developed a hospital disaster preparedness training course titled Hospital Disaster Life Support (HDLS), and evaluated one offering of the course. In order to overcome perceived limitations of single mode training courses, this course was developed incorporating classroom lectures, tabletop sessions, skills sessions, and disaster exercises. The report offers an outline of the course content. There were a total of 84

participants, including 11 physicians, 40 nurses, 23 administrators, and 10 other personnel. The two day, 16-hour course addressed seven core competencies of disaster training for health care workers, as developed by a separate research team. Emphasis was placed on teaching hospital personnel general principles of disaster management by addressing biological, conventional, radiological, and chemical mass-casualty incidents. A pre-test and a post-test were administered to assess knowledge gained. Attendees completed an evaluation survey at the end of the course as well. The average (\pm standard deviation) scores on the pre-test and post-test respectively were 69.1 (\pm 12.8) and 89.5 (\pm 6.7) with an improvement of 20.4 points ($p < 0.0001$, Student's t-test). The evaluation survey revealed that participants felt HDLS was educational (4.2/5), relevant (4.3/5), and organized (4.3/5).

Comment: This article built on other publications outlining a need on the part of hospital personnel for training in general disaster response principles and on publications delineating core competencies in such response. Strengths of this training approach included the incorporation of a variety of health care workers and administrators, and a pre- and post-course assessment of knowledge. The authors did not, however, specify the roles of the administrators attending, nor did they address the importance of involving representatives of all clinical and non-clinical hospital support services in any training aimed at improving disaster response behavior. The authors do not discuss any validation of the pre- and post-tests themselves. The study did not assess retained knowledge from the course to determine the need for and optimal frequency of refresher training. Although the course incorporated multi-modality teaching, the pre- and post-examinations included only written tests, with no practical assessments. A final critical issue not addressed in the analysis was cost in all aspects, including course development, course presentation, and compensation for attendees. Further studies are necessary before widespread implementation of the HDLS system is warranted. Training of hospital personnel in general disaster response through courses such as the HDLS would likely contribute to mitigating the impact of disasters in settings around the world.

By *Maria Glenn*

Greenough PG, Lappi MD, Hsu EB, et al. Burden of disease and health status among hurricane Katrina–displaced persons in shelters: a population-based cluster sample. *Ann Emerg Med.* 2008; 51:426-32.

Understanding the vulnerabilities and medical conditions of hurricane Katrina survivors may help public health experts improve preparation for future large-scale disasters.

Summary: Large-scale natural disasters may affect populations already struggling with a significant burden of disease, socioeconomic vulnerability, and marginalized health care access complicating the immediate provision of medical care and the recovery of health care systems serving the displaced populations. This population-based study evaluated the demographics and burden of disease in the population of displaced persons living in Red Cross shelters in Louisiana after hurricane Katrina (2005). Four hundred ninety-nine (499) shelter-resident adult evacuees chosen using a two-stage 18-cluster sample technique were interviewed two weeks after hurricane Katrina using a population-based demographic and health assessment survey tool developed specifically for this study. Survey questions focused on demographics, socioeconomic

indicators, acute and chronic burden of disease, and health care access. The racial mix of the sample population matched that of the city of New Orleans, the socioeconomic indicators revealed an overall lower socioeconomic status than the national average, and the self-reported health conditions suggest a higher burden of chronic disease. More than one third of respondents reported arriving at the shelters with symptoms warranting immediate medical intervention, including, dehydration, dyspnea, injury, and chest pain. The authors did not specify how it was determined that these reported symptoms “warranted” treatment, what the final diagnoses were, or what treatment was rendered. Respondents without health insurance or those afflicted with chronic disease requiring medications were nearly twice as likely to present with acute symptoms on arrival to shelters. The study was limited by recall bias and lack of representation of the evacuee population with special needs.

Comments: Disasters affect the poor and vulnerable disproportionately. This study employed a population-based epidemiologic approach to catalogue the socioeconomic and demographic characteristics and self-reported medical conditions of Hurricane Katrina victims residing in Red Cross Shelters, revealing the particular vulnerabilities of that population in the setting of a large natural disaster. Notably, the study analyzed the largest population ever displaced to shelters by a natural disaster in the United States, sampled a population that closely represented that of the affected area (New Orleans), and minimized recall bias with a recall period of two weeks. This study provides a starting point for disaster planners, especially those in high and middle income countries seeking to manage resources for diagnostic and treatment interventions, implement communicable disease prevention strategies, and plan for contingencies in the immediate post disaster period.

By *Vineet Gupta*

Iserson KV, Heine CE, Larkin GL, Moskop JC, Baruch J, Aswegan AL. Fight or flight: the ethics of emergency physician disaster response. *Ann Emerg Med.* 2008; 51:345-53.

Whether an emergency physician should “stay and fight” or flee during a disaster or pandemic will never be an easy decision, but good risk communication can at least ensure a more rational response.

Summary: This article explores the ethical implications of an individual health care worker’s decision to participate in medical response or flee along with his or her family in the event of a large-scale disaster or pandemic. Opening with the argument that disasters requiring emergency health care worker response will continue to occur on a regular basis, the authors then review the history of physician response to pandemics and natural and man-made disasters. The authors address disasters from ancient Greece and medieval Europe to present day New York and New Orleans, presenting both examples of physicians fleeing at the first sign of threat, and of physicians remaining to treat the sick and wounded, despite high personal danger. The article goes on to discuss the role that personal values, professional ethics, and duties owed to individual patients, colleagues, and society as a whole play in a physician’s decision to remain at his or her post during a disaster, and how these may be superseded by personal and familial demands in certain cases. The authors explore the point at which risk (and the fear of taking that risk) supersedes the aforementioned sense of obligation using decision theory, focusing on

physicians' ability to exert control over risk, their sense of duty, and their tolerance of danger. Finally, the process of "risk communication" as a tool to allay panic both in the community and in health care professionals is discussed, with special attention to the role that senior emergency physicians can play through behavior modeling (continuing to work, sharing positive fact-based messages, etc). After a final brief note regarding the present limitations of surge capacity of most EDs in the United States, the authors conclude that ultimately, perception of risk and willingness to accept that risk as well as ethical imperatives will determine physician response to pandemics and disasters, and that it is incumbent on society to develop high quality risk communication systems to support those who choose to "stay and fight."

Comment: In this focused review of the ethical issues surrounding emergency health care workers' decisions to respond to a pandemic or disaster despite great personal risk, the authors provide a thorough discussion of the issues while offering an intriguing solution that invites further study. While limited by the need to rely more on historical record than evidence-based data regarding physician response to risk and the beneficial effect of risk communication, the understanding of this important ethical dilemma gained from the cross-disciplinary approach to the discussion makes this article an important contribution to the emergency medicine ethics literature.

By *Amelia Pousson*

Miller AC, Arquilla B. Chronic Diseases and Natural Hazards: Impact of Disasters on Diabetic, Renal and Cardiac Patients. *Prehosp Disaster Medicine*. 2008; 23:185-94.

Chronic disease exacerbations are common in the aftermath of natural disasters. An improved understanding of these needs can yield a more effective emergency disaster response.

Summary: Exacerbations of chronic diseases comprise a significant disease burden during and after natural disasters. The authors of this comprehensive review sought to assess the burden of chronic renal failure, cardiac disease, and diabetes during natural disasters through a review of the PubMed, Ovid, and Medline databases. Twenty-five to forty percent of individuals affected during hurricanes Katrina and Rita lived with at least one chronic disease. Chronic diseases accounted for almost a third of visits to health posts at these disaster sites. Loss of dialysis resources is common in the relief phase of natural disasters as dialysis services have substantial logistic support needs and rely on the availability of larger quantities of pure water, electricity, trained staff, and functioning facilities. As such, the nephrology community has responded with the development of the Renal Disaster Relief Task Force (RDRTF) to assist in the provision of emergency dialysis in disaster situations. The RDRTF has been activated multiple times in response to disaster since its conception in 1989. The authors also suggest that patients prepare themselves for disaster situations and develop emergency plans (including fluid restriction and dietary monitoring) as well as copies of medication lists and medical history. With respect to diabetes, the authors suggested that diabetic patients prepare an emergency diabetes medical kit, as well as a copy of a diabetic medical database (example provided in the article) and medical alert identification in the instance that patients are unconscious or otherwise unable to provide a medical history. Patients should also be educated in carbohydrate counting, and be able to properly dose insulin during times of stress. There is ample evidence to suggest that patients with

cardiovascular disease suffer exacerbation and higher morbidity after natural disasters. Patients with cardiovascular diseases should carry their medical information and their medications with them and cardiac-friendly relief food supplies should be developed and stocked.

Comment: This article brings focus on the care of chronic illness exacerbation in the immediate post natural disaster time period. The authors provide significant evidence to support their contention that chronic disease exacerbation is a significant contributor to the morbidity and mortality associated with natural disasters. The authors' focus on cardiac, diabetic, and renal chronic diseases is well-placed given the prevalence of these illnesses in many societies, but the recommendations suggested likely have utility across a broad range of chronic medical issues. The responsibility for preparation lies with both the patient, who must develop and maintain emergency plans for the management of his or her chronic illness, and disaster response entities, which must include chronic disease management in their response plans. An awareness of the large populations of individuals with chronic illness and an increased focus on the management of these illnesses in disaster management will contribute to a more effective natural disaster response.

By *Tomislav Jelic*

Roberts B, Browne J, Ocaika KF, Oyok T, Sondorp E. The reliability and validity of the SF-8 with a conflict-affected population in northern Uganda. Health Qual Life Outcomes. 2008; 6:108.

The SF-8, a health related quality of life instrument (HRQOL), is valid and reliable for use in conflict-affected populations such as in camps for internally displaced persons (IDPs) in northern Uganda.

Summary: Humanitarian agencies have identified the need to provide a wide range of interventions to address physical and mental health in conflict-affected populations. The ability to standardize the measurement of factors impacting and determining health in this population would greatly aid provision of services. Several HRQOL instruments exist and have been used successfully in refugees repatriated to Western countries, but none have been validated in conflict-affected environments. This cross-sectional survey aimed to validate the use of SF-8 in such a setting among internally displaced persons in Northern Uganda. This survey also includes items from the Harvard trauma questionnaire (HTQ) and the Hopkins symptoms checklist-25 (HSCL-25) to evaluate for post traumatic stress disorder and depression.

Multi-stage cluster sampling was used to identify participants (n = 1,206) with a response rate of 94%. Test-retest reliability was assessed in a smaller survey using the intra-class correlation test. Sample t-test was used to evaluate the sensitivity and specificity of the instrument for inter-class differences. The survey was successfully translated and back translated to Luo, the main language of the districts of interest, by experienced faculty at Gulu University fluent in both English and Luo. The survey showed good intra- and inter-class validity and reliability and demonstrated acceptable item response distribution, yielding strong evidence to support the reliability and validity of the SF-8 in this population.

Comment: The authors rigorously tested the SF-8 in this population of internally displaced persons in northern Uganda. The instrument chosen proved to be easily adapted to different

languages and cultural situations. However, the HTQ and the HSCL-25 were designed with parameters different from the SF-8 and have not been validated in this setting or for use in this way. This study is useful for international EM because it provides a measure by which advanced planning for medical assistance to internally displaced persons can be tailored to meet the needs of the community. It also provides a means to continuously assess the appropriateness of those services through constant re-application of the survey instrument.

By *Abiola Fasina*

EMERGENCY CARE IN RESOURCE-POOR SETTINGS

Akech SO, Hassall O, Pamba A, et al. Survival and haematological recovery of children with severe malaria transfused in accordance to WHO guidelines in Kilifi, Kenya. *Malaria J.* 2008; 7:256.

Rational use of blood transfusions coupled with effective anti-malarial treatment improves mortality in moderate and severe cases of pediatric malaria.

Summary: Malaria complicated by severe anemia is associated with increased mortality. It is reported that many blood transfusions given to children with malaria may be unnecessary due to the sickest children dying before blood is available, thus potentially unnecessarily exposing children to a greater risk for transfusion-associated infectious disease. The World Health Organization (WHO) has developed guidelines that recommend transfusion for pediatric malaria in malaria endemic regions with a hemoglobin (Hb) of ≤ 4 g/dL, or a Hb of 4-5 g/dL associated with respiratory distress. Using a prospective observational study, the authors reported hematological recovery at discharge and one month follow-up, and survival of children with malaria-associated anemia who were transfused or not according to the WHO guidelines. This report was a follow-on to previous reports of in-hospital results of the same study groups by the same authors.

A total of 241 patients were enrolled in a single center in the Kilifi District in Kenya where falciparum malaria is endemic. Twenty-seven percent of patients met the WHO guideline for transfusion at admission. An additional 18% of patients met criteria after admission and received transfusions during their hospital stay for development of altered mental status, respiratory distress, or a fall in hemoglobin after resuscitation or severe metabolic acidosis. Of 213 survivors, hematological follow up was available in 158 patients (74%). When compared to the group that did not receive blood transfusion, patients transfused were younger, with a mean age of 25 months (vs. 36 months), and were judged to have poorer nutritional status. Of note, hematological recovery, defined by mean hemoglobin measured one month post-discharge, was not statistically different between the transfused children (10.2 g/dL) and those not transfused (10.0 g/dL). The presence of post-discharge malaria parasitemia and young age (less than 24 months) were the only independent factors associated with poor hematological recovery.

Comment: This study highlights the importance of resource prioritization in acute illness in resource poor settings. Although this study was not a randomized control study, the results of this prospective study do suggest that the WHO guidelines for rational emergency blood transfusion in children with malaria-associated anemia can be safely followed without a

detriment in hematological recovery or mortality for those for whom the guideline does not recommend transfusion. This study is limited by a suboptimal patient follow up and the potential confounding variable of differing fluid resuscitation among patients enrolled in a concurrent trial. The WHO guidelines for blood transfusion in malaria-associated anemia are safe and effective; however, transfusion should be coupled with effective anti-malarial treatment as persistent parasitemia was associated with failure to maintain hematologic recovery.

By Zachary D. Tebb

Baqui AH, El-Arifeen S, Darmstadt GL, et al. Effect of community-based newborn-care intervention package implemented through two service-delivery strategies in Sylhet district, Bangladesh: a cluster-randomised controlled trial. Lancet. 2008; 371:1936–44.

In areas with high neonatal mortality and limited access to health care, an integrated package of preventative and curative newborn care is effective in reducing neonatal mortality.

Summary: In this randomized controlled trial performed in rural Bangladesh, 24 geographic population clusters averaging 20,000 people each were randomly assigned into three groups and followed over 30 months. The purpose was to investigate whether the promotion of maternal and neonatal health through community-based strategies could reduce neonatal mortality. In the first group (community-care), married women were offered education in town-hall meeting fashion by community health workers regarding maternal and neonatal preparedness and care seeking. In the second group (home-care), in addition to the above, pregnant women were visited by specially trained community health workers twice during the antenatal period and three times in the post natal period. The health workers in the home-care group were trained in maternal and neonatal preparedness, as well as neonatal assessment (based on an adaptation of a WHO integrated management of childhood illness algorithm) in order to encourage care seeking for ill newborns and to initiate antibiotic treatment at home following a study protocol. The third group (comparison) served as a control with no study intervention. The study showed no change in neonatal mortality in the community-care or comparison group, but demonstrated a 34% relative risk reduction in neonatal mortality in the home-care group.

Comment: These data are consistent with findings of previous studies demonstrating the potential for neonatal mortality reduction in areas with limited access to health care through improvement in key maternal and newborn care practices.

The authors' assertion regarding the sustainability of the intervention is encouraging. Strengths of the study include the large sample size, the long study length, the randomized-controlled design, the use of community members as the health workers, and the selection of neonatal mortality as the primary outcome. It is, however, somewhat unclear which specific interventions were responsible for the mortality reduction. Whereas both the community-care and home-care groups were effective in changing key prenatal and newborn care practices (i.e. iron and folate supplementation, clean cord-cutting techniques, delay in first bath, early initiation of breast feeding), only the home-care intervention resulted in a mortality benefit. This might suggest that the reduction in mortality came not from the prenatal or newborn care practices, but rather from recognition of newborn illness by trained health care workers and resultant early initiation of parenteral antibiotics or referral to designated health care facilities for management.

This study is important to the field of international emergency medicine because it demonstrates how neonatal mortality can be reduced in resource-limited regions by training community health workers to evaluate neonates in the home and refer them for higher level emergency-type care when appropriate.

By *Dan Millikan*

Bhutta ZA, Memon ZA, Soofi S, Salat MS, Cousens S, Martines J. Implementing community-based perinatal care: results from a pilot study in rural Pakistan. Bull World Health Organ. 2008; 86:452–9.

A simple, easily implemented community-based intervention can significantly reduce prenatal and neonatal mortality rates in a low-income country.

Summary: This pilot study, initiated in the Hala and Martiari subdistricts of the Sindh province in Pakistan, evaluated the feasibility of implementing a community-based intervention program to improve perinatal care. The authors developed and implemented an intervention package in four of eight randomly selected village clusters in rural Pakistan, where most births take place in the home, often in the presence of a Dia, or traditional birth attendant. The intervention, consisting of three components, focused mainly on enhancing the pre-existing Lady Health Workers (LHW) program, which had already trained around 93,000 community women in the delivery of perinatal home care. First, a supplemental module was added to the traditional LHW program that included community mobilization, basic newborn care, and group counseling. The module also encouraged coordination with the Dias and visitation of the mothers before, during, and after the birth. Second, a three-day voluntary training program was made available to the Dias, focusing on basic resuscitation and immediate newborn care. Finally, community volunteers were identified. These volunteers coordinated with the LHWs to organize group sessions aimed at educating women in the community about maternal and newborn care. In all clusters, including controls, health professionals were offered training in newborn care, and health centers were provided with the necessary equipment. The intervention was implemented over a two-year period. The authors report a significant reduction in stillbirths (from 65.9 to 43.1 per 1,000 births, $p < 0.001$) and neonatal mortality rates (from 57.3 to 41.3 per 1,000 live births, $p < 0.0001$) in the intervention villages. This is in contrast to the control villages, whose overall perinatal and neonatal mortality rates did not change. In the intervention villages, there was also a decrease in home births and an increase in deliveries conducted by a skilled attendant in the public sector.

Comment: This study highlights the persistent deficit in adequate perinatal care and the resultant high neonatal and infant mortality rates in low-income countries. While only a pilot study, the authors demonstrate that a multi-faceted intervention can have a significant impact on stillbirth rates and neonatal mortality. The intervention relied on the well-established Lady Health Workers program, which could limit the generalizability of the study. The authors point out the issue of staff retention as an impediment to implementation of this initiative, with loss of medical staff and changes in regional administrative staff leading to communication and consensus-building difficulties. The authors also indicate that more LHWs were available per inhabitant in the intervention villages, and that data were limited from the control groups because routine data

collection was not previously established. Although this may have affected their results, the observed lack of change in perinatal and neonatal mortality in the control group is consistent with other reports. This report underscores the reality that in many developing countries, bolstering emergency care capacity may be best done in ways that seem distant from most models of emergency medicine.

By *Nichole Bosson*

Bond GR, Pieche S, Sonicki Z, et al. A clinical decision aid for triage of children younger than 5 years and with organophosphate or carbamate insecticide exposure in developing countries. *Ann Emerg Med.* 2008; 52(6):617-22.

The presence of either pinpoint pupils or diarrhea at time of presentation could serve as a sensitive triage aid for identifying pediatric patients exposed to insecticides who will require hospitalization in a developing country.

Summary: In this prospective observational study, the researchers' goal was to develop a clinical decision aid that could be used for early identification of pediatric patients not needing care after insecticide exposure. The study population of 102 children, aged 2 to 59 months, was derived from 197 who presented to a specialty toxicology hospital in Cairo, Egypt within two hours of unintentional exposure to an insecticide. Each child included had not received any formal treatment (atropine, epinephrine, salbutamol, or similar medications) prior to arrival (home remedies other than ipecac were not considered as treatment). Seven eligible patients declined to enroll. All enrolled patients were admitted for at least 24 hours. Researchers evaluated two historical factors (diarrhea, "difficulty breathing") and eight features of the physical examination (tachypnea for age, bradycardia, lethargy, salivation, lacrimation, sweating/wet skin, pinpoint pupils, weakness, fasciculations). Subjects were retrospectively divided into resource-requiring, defined as "any use of a pharmaceutical agent (including atropine or pralidoxime), oxygen saturation less than 92%, admission to the ICU, or fatal outcome" and non-resource requiring groups. Clinicians who were unaware of the grouping criteria made the resource utilization decisions. Sixty-five patients met the requirements to be classed as resource requiring. Of these, 63 had pinpoint pupils, compared to five of the 30 patients in the non-resource requiring group. The presence of either diarrhea or pinpoint pupils was found in all 65 patients in the resource-requiring group, but only seven of the 30 patients in the non-resource requiring group. The sensitivity and specificity of diarrhea or pinpoint pupils to identify patients requiring resources by the treating physicians in this hospital would have been 1.00 (95% confidence interval 0.95 to 1.00) and 0.77 (95% confidence interval 0.58 to 0.90), respectively.

Comment: This study provides insight into the clinical presentation of pediatric patients who have been exposed to insecticides in low-income countries where insecticide poisoning is common, but resources and access to hospitals are often limited. The study suggests a promising new triage aid that would be simple and sensitive, but remains to be validated prospectively. Despite limitations such as study size, choice of resources applied, and lack of a clear definition of indications for the application of resources, this preliminary report of the association of historical and examination findings with a crude measure of severity of poisoning provides a

start toward development of clinical triage guidelines for insecticide poisoning in developing countries.

By *Tomislav Jelic*

Fleischmann A, Bertolote JM, Wasserman D, et al. Effectiveness of brief intervention and contact for suicide attempters: a randomized controlled trial in five countries. Bull World Health Organ. 2008; 86:703-9.

Patients who present to emergency departments in the developing world after a suicide attempt are at high risk for death in the ensuing months – a brief intervention may help change that risk.

Summary: This study was designed to evaluate whether a brief emergency department intervention, followed by sustained contact, would reduce suicide mortality among suicide attempters. This randomized controlled trial enrolled consecutive suicide attempters in eight emergency departments in five culturally and geographically varied cities in low and middle-income countries (Campinas, Brazil; Chennai, India; Colombo, Sri Lanka; Karaj, Islamic Republic of Iran; and Yuncheng, China). The enrolled patients either received brief intervention and contact (a one hour ED session followed by nine phone calls or visits) or treatment as usual (as defined by current prevailing norms in the respective EDs). Patients were followed for 18 months, with rates of completed suicide as the primary outcome.

In the study, 2973 subjects were assessed for eligibility, and 1867 (62%) were enrolled. Of the 1106 patients deemed ineligible, 70% were excluded for leaving against medical advice, while an additional 15% were too ill to participate and 7% refused to take part in the study. No significant differences were found in patient sex, education, employment, marital status, substance abuse, or prior suicide attempt between the two groups. However, patients in the treatment as usual group were significantly more likely to have attempted suicide in a manner that put their life in danger (41.0 vs 34.6%, $p=0.017$). Nine percent of patients were lost to follow-up during the course of the study (12.5% in the treatment as usual group and 5.4% in the brief intervention and contact group). At 18 month follow-up, there were significantly more deaths from all causes in the treatment as usual group (2.7 vs. 1.3%, $p=0.037$), as well as significantly more deaths from suicide in the treatment as usual group (2.2 vs. 0.2%, $p<0.001$).

Comment: This article addresses a common problem in international emergency medicine and suggests a potentially useful and cost-effective intervention. Its strengths include its study design, its implementation across widely culturally different sites, and a relatively low loss to follow-up. As noted by the authors, the study has several limitations, including the difficulty in identifying patients who have attempted suicide, the large number of potential enrollees who left against medical advice prior to randomization, baseline differences in severity of the suicide attempt between the two groups, and different follow-up rates for the two groups. However, it is unlikely that these factors alone obviate the study's findings.

This study comes in the context of an increasing body of literature showing that brief interventions may be helpful in the ED setting. However, most of these prior studies have been conducted in high-income countries. The suggestion that this interventional strategy may be helpful in a variety of low and middle-income countries is particularly welcome, as it can be directly generalized to other developing world contexts, where WHO estimates that 85% of the

877,000 deaths due to suicide occur each year. A cost-effectiveness study would be helpful in defining the cost-benefit ratio, as this strategy must compete for scarce resources with other important suicide mitigation measures, such as the education of health care providers and the public, treatment of mood disorders, and limitation of access to lethal means (most commonly high-concentration pesticides in the developing world).

By *Marlow Macht*

Hildenwall H, Tomson G, Kaija J, Pariyo G, Peterson S. "I never had the money for blood testing" – Caretakers' experiences of care-seeking for fatal childhood fevers in rural Uganda – a mixed methods study. BMC Int Health Human Rights. 2008; 8:12.

Barriers to care for children in the developing world may be more about health care systems and providers and less about the severity illness or caretakers.

Summary: This study explores the barriers to care for children with acute febrile illness in rural Uganda by retrospectively evaluating caretakers' experiences in fatal cases. The authors identified deaths of children 1-59 months of age in the Iganga/Mayuga Demographic Surveillance Site between March and June 2006. Primary caretakers were approached four to six weeks after the death of the child for structured verbal/social autopsy interviews complemented by open-ended interviews in cases where the child had been febrile prior to death. Twenty-six interviews were conducted with caretakers who lost a child to a febrile illness during the study period. The authors identify three main categories of barriers to care: illness interpretation barriers, barriers to seeking care, and barriers to receiving adequate treatment. They determined that, although the first two categories led to some delay in care seeking, barriers to receiving adequate treatment were the most important. Only three of the twenty-six children were not attended to by an allopathic health care provider prior to their death. The authors conclude that private and public health care providers should receive training, support, and equipment to ensure appropriate basic care for the treatment of children with febrile illness. The authors do not attempt to determine cause of death because of the variability in the predictive values in verbal autopsies and, instead, stratify illness by symptoms.

Comment: This study examines a significant public health problem and attempts to determine important barriers to adequate care of children with febrile illness. The authors clearly identify categories of barriers that can serve to focus interventions, including misinterpretation of illness, financial and social constraints, and inadequate knowledge on the part of health care providers in combination with lack of appropriate resources at district hospitals. The authors did not catalogue the various issues reported in contact with the formal health care system that might have contributed to delays or inappropriate treatment other than in providing several excerpts from interviews. In interpreting these interviews, the formal health care system seemed lacking in both resources and training of staff in modern concepts of care for ill children. Long lines were reported along with delays in treatment once initial evaluation was complete as families were sent to obtain needed resources such as perfusion needles. In similar settings of low resource countries, institution of simple triage training and algorithms have been reported to significantly lower the mortality rate.ⁱ The current study, taken in concert with the report by Molyneux, et al. underscores the need for improved emergency medical care education as a low

cost method of improving mortality in childhood illness as sought in the United Nations Millennium Development Goals. Although twenty-six interviews were conducted, it is not clear if more children met study criteria and caretakers were not approached or declined to participate. The retrospective design and inherent emotional difficulties associated with narrating details surrounding the death of a child may have affected reporting and introduced bias.

By *Nichole Bosson*

ⁱ Molyneux E, Ahmad S, Robertson A. Improved triage and emergency care for children reduces inpatient mortality in a resource-constrained setting. *Bull World Health Organ.* 2006; 84:314-9.

Hofman JJ, Dzimadzi C, Lungu K, Ratsma EY, Hussein J. Motorcycle ambulances for referral of obstetric emergencies in rural Malawi: Do they reduce delay and what do they cost? *Int J of Gynaecol and Obstet.* 2008; 102:191–7.

Motorcycle ambulances may be a cost-effective means of transport to decrease maternal death associated with obstetric emergencies in the developing world.

Summary: This operational research study, performed under the auspices of the Malawi Safe Motherhood Project in partnership with the Averting Maternal Death and Disability project, assessed the cost and time from call to arrival at a district hospital between motorcycle ambulances placed at rural health centers and district hospital-based car ambulances. The authors report that the use of motorcycle ambulances reduced the median referral delay by 2 to 4.5 hours (35% - 76%), though data for the car ambulance trip times were not complete due to poor record keeping by drivers. The researchers derived a car ambulance travel time by driving each route themselves and adding some time for turnaround at the local health centers. The purchase price of the motorcycle ambulances was US\$1,965, while that of a car ambulance was \$48 325. Annual operating costs of the motorcycle ambulance were \$508 and \$12,139 for a car ambulance. In addition, the authors found that motorcycle ambulances were less likely to be misused for non-health related purposes. The authors reported in passing that the motorcycle ambulances also transported other medical cases to the district hospital and served to transport obstetric patients from their villages to the health center. Overall, they conclude that motorcycle ambulances at rural health centers were well accepted by the community for referral for obstetric emergencies.

Comment: This study highlights the important role that delay in referral plays in maternal mortality in much of the developing world. The authors investigate a unique and resourceful means of minimizing that delay by introducing the possibility of motorcycle ambulances. The authors have shown that motorcycle ambulances placed at rural health centers may offer an option for reducing referral times and cost associated with transporting obstetric patients to referral centers. Due to several limitations including the problems with obtaining hard data on the car ambulance trip times and the limited geographic population of study, further studies on larger numbers of rural health centers in different settings will be needed to determine the efficacy and cost-effectiveness of this solution. Of relevance to general emergency medical care capacity in developing countries, the authors point out that the motorcycle ambulances were used for transporting both adult and pediatric cases to the district hospital.

By *Sandeep Johar*

Koehlmoos TP, Gazi R, Hossain SS, Zaman K. The effect of social franchising on access to and quality of health services in low- and middle-income countries. Cochrane Database Syst Review. 2009: CD007136.

Despite great optimism in the role of social franchising in global health care delivery, there are no well-designed studies demonstrating its effect.

Summary: In low- and middle-income countries, non-governmental agencies are increasingly becoming involved in health care delivery. Social franchising represents a model for engaging the non-state sector in provision of health services, and is regarded as a means to “rapidly expand health coverage to the poor, capture economies of scale and reduce the information asymmetries that often adversely affect quality of care.” Similar to a commercial franchise, a social franchise exists when an organization that develops a particular system for delivering a social benefit allows individual entrepreneurs to copy that system, as well as its logo and branding, in order to replicate it for a larger audience. In this review article, Koehlmoos and al. sought to assess the effects of social franchising of health service delivery on access to and quality of services and on health outcomes. They searched for randomized controlled trials, non-randomized controlled trials, controlled before-and-after studies, and interrupted time series studies comparing social franchising models with other models of health service delivery, other social franchising models, or absence of health services, in a wide variety of electronic databases and gray literature. Two thousand two hundred and ten abstracts were identified by their search, but upon independent screening by two review authors, none were deemed eligible for inclusion in this review.

Comment: Despite the high level of interest among non-governmental organizations (NGOs) and the equally significant funding from sources such as the Global Fund, PEPFAR, and the Bill and Melinda Gates Foundation, the authors of this review were unable to find any high quality evaluations of social franchising. Only one retrospective interrupted time series study conducted by Lonroth et al. on the SQH franchise in Myanmar came close. However, such an example demonstrates that rigorous evaluations are not out of reach, and this review underscores the need for further studies. As the authors suggest, governments, NGOs, and international donor organizations should not only continue to follow future updates of this review so that they may effectively implement social franchising, but they should actively encourage and work with research organizations to develop such evaluations. In future updates, however, it will be crucial to include lay health worker interventions (which were excluded in this current review), as community health workers often play a vital role in health care delivery in low-income settings.

By *Maya Aarii*

Li MD, Doong JL, Chang KK, Lu TH, Jeng MC. Differences in urban and rural accident characteristics and medical service utilization for traffic fatalities in less-motorized societies. J Safety Res. 2008; 39:623-30.

An examination of the fatalities from traffic accidents in Taiwan elucidates opportunities for basic public health interventions, such as encouraging seatbelt and helmet use, and requiring lower speeds of travel.

Summary: This study attempted to characterize fatalities from traffic accidents in Taiwan, an example of a less-motorized society in order to facilitate the development of targeted interventions. The researchers examined the geographic differences in accident factors and medical services in road traffic accident deaths in the pre-hospital, emergency department and hospital settings. Taiwanese police reports, the national vital registration database and hospital databases were all linked to provide the requisite information. There were 2,496 deaths in the pre-hospital setting, 4,005 deaths in the emergency department and 2,941 in-hospital deaths. Both the pre-hospital and total death rate was higher in rural areas in comparison to urban areas. While the accessibility of hospital services was lower in the rural areas, the number of vehicles in rural and urban areas was equal. In the rural areas there were fewer restrained victims, a lower percentage of motorcyclists and a higher number of highway accidents. The study was limited in that not all road traffic deaths were included, namely, those without ID numbers, those who were transported between jurisdictions, or those for whom police reports were not completed were not included.

Comment: Road traffic accidents are a significant contributor to mortality worldwide. In middle and low-income countries, the number of road traffic accident deaths is rising rapidly as societies urbanize and road travel becomes more frequent. Despite the limitations of this study, the data-linkage method collating information from multiple databases yielded a fairly comprehensive data set. It may not be a surprise that the total and pre-hospital death rates were higher in rural areas given the fewer medical facilities and potentially longer response and travel times in these settings. However, factors including the overall higher speed of travel and lower rates of seatbelt use in rural areas could also contribute to these findings. Based on these data, the authors make multiple concrete recommendations for targeted interventions, including education campaigns to raise awareness about seatbelt and helmet laws, as well as an initiative to reduce the speed of travel on rural highways.

By *Amritha Raghunathan*

Nia SM, Naffisi N, Mohebbi HA, Moharamzadeh Y. The role of performing life support courses in rural areas in improving pre-hospital physiologic conditions of patients with penetrating injuries. J Coll of Physicians Surg Pakistan. 2008; 18(9):538-41.

In low-resource settings where formal emergency medical systems are lacking, basic pre-hospital care of the trauma patient can feasibly be taught and implemented in the field by locals.

Summary: This prospective observational study investigated the effects of a prehospital training program on penetrating trauma outcomes in rural Mehran, Iran. Seventy-six health care workers and educated villagers from Mehran were taught basic and advanced prehospital trauma care through a combination of lectures and skill sessions. Subsequently, demographic and outcome data were collected on victims of penetrating trauma who were treated at the provincial trauma center in Ilam over a three-year period. For comparison purposes, two groups were defined. The

first was comprised of patients who received prehospital intervention in the field, were evaluated at a local emergency center in Mehran, and were subsequently transferred to the trauma center in Ilam. The second was comprised of patients who were transported by private vehicle directly from Mehran to the trauma center in Ilam. In the group that received pre-hospital intervention, a statistically significant improvement in the Physiologic Severity Score (PSS) was observed between the initial evaluation at the local emergency center to the subsequent evaluation at the trauma center. On arrival at the trauma center, there was a statistically significant difference in mean PSS between groups, which favored the group that received prehospital intervention. A trend toward lower mortality in the pre-hospital intervention group approached statistical significance ($p = 0.051$).

Comment: This study attempts to build on evidence that grass-roots efforts to teach prehospital care in low-resource areas can improve trauma outcomes. Nevertheless, some methodological and study issues bear mentioning. There are significant differences between the two comparison groups. The group that received prehospital care was initially evaluated and triaged at the local emergency department, and as such, this group may have received additional care, which could have introduced a fundamental difference that contributed to the significant outcome differences. Moreover, there were significant differences in the injury patterns between the two groups including, importantly, the ratio of motor vehicle accidents. Critical information that would contribute to the analysis includes the method for dispatching prehospital caregivers to the field, the time between injury and provision of first interventions, the type and timing of resuscitation measures instituted at the local emergency center, and the timing of transfer to the trauma center. Although conclusions from the outcome data are limited by the above, a practical lesson can be distilled from the finding that prehospital caregivers performed hundreds of basic interventions in the field (i.e. control of hemorrhage, repositioning, warming) but did not employ the advanced techniques they were taught (i.e. cardiac massage, intubation, cricothyrotomy). In light of this, future efforts to educate first responders should focus on basic high-yield interventions.

By *Anne Daul*

Reyburn H, Mwakasungula E, Chonya S, Mtei F, Bygbjerg I, Poulsen A, Olomi R. Clinical assessment and treatment in paediatric wards in the north-east of the United Republic of Tanzania. Bull World Health Organ. 2008; 86:132–9.

Clinical assessment and treatment in pediatric wards in northeast Tanzania is poor, leading to missed diagnoses and inappropriate therapies.

Summary: The care of hospitalized children is a vital component of an effective pediatric health care system. In response to the limited diagnostic and treatment options available in most district hospitals in Tanzania, the Referral Care Manual (RCM), based on the Integrated Management of Childhood Illness (IMCI), was developed. This manual outlines syndromic guidelines for the care of common pediatric illnesses. In this observational study thirteen hospitals in northeast Tanzania were assessed and data were collected detailing aspects of inpatient and outpatient care. Outpatient consultations were directly observed and inpatient and outpatient records for the study time period were analyzed. The ward and hospital pharmacy were also inspected for the presence of essential drugs, infusions, and oxygen. Results revealed greater than 27,000 admissions to the

13 hospitals in 2004, with 826 (3%) deaths. Malaria accounted for more than 50% of admissions, followed by pneumonia (22%). Common complaints seeking pediatric outpatient consultation included fever, cough or difficulty breathing, and diarrhea. For the inpatient setting, weight, pallor, presence of cough, ability to drink, and the level of consciousness were rarely documented in the clinical records. RCM guidelines for specific diseases including malaria, pneumonia, and meningitis were either not checked or not documented. In conclusion, clinical assessment of children admitted to the pediatric wards is poor, which leads to missed diagnosis and incorrect treatment plans. Improved assessment and documentation are essential to provide optimal patient care. The study also revealed significant variations in the quality of care, access to care, and criteria for admission in the outpatient assessments, which may lead to both unnecessary admissions and inadequate outpatient treatment.

Comment: This study provides an important quantitative measure of the inadequacy of clinical documentation and care provided at resource-poor health institutions in developing nations. Guidelines for proper evaluation and clinical assessment, diagnosis, treatment, and documentation must be followed to allow for optimal management of these pediatric patients. Education is needed on the importance of both clinical skills and documentation. More comprehensive documentation may improve research seeking to delineate which areas of clinical care require larger investments of time and effort in order to preclude missed diagnoses and to more effectively manage the different disease entities seen in the pediatric population. Improving the care of pediatric patients in these settings will be a complex and multi-disciplinary task. The authors describe the process of multi-disciplinary audit as mandated by Tanzanian authorities. However, all attempts at clinical review will be hampered by inconsistent, non-standardized, and inadequate documentation. Furthermore, as stated by the authors, performing a more detailed analysis of patients, such as an IMCI assessment, will require further investments of time and training, perhaps necessitating other trade-offs in clinical care. Despite these significant hurdles it is imperative that strategies be developed to address the issues identified by the authors in this study.

By *Sandeep Johar*

Wisborg, T, Murad MK, Edvardsen O, Brinchmann BS. Life or death. The social impact of paramedics and first responders in landmine-infested villages in northern Iraq. Rural Remote Health. 2008; 8:816.

Paramedic training and first response system development can have a positive impact on health and the perception of development workers by the communities in which they work.

Summary: In 1996, a Norwegian non-governmental organization initiated a development program to train and equip first responders in rural, northern Iraq villages with the aim of improving prehospital care for victims of land mine explosions. This study is a qualitative analysis that uses grounded theory to analyze focus group discussions and small group encounters undertaken in 2005 to assess villagers' perceptions of the program. The analysis revealed that the paramedics were seen as having an overall positive impact on the community. In particular, the paramedics were valued not only for the medical care they provided but for the

security and status they offered, providing a draw to rural life during a time of difficulty and migration to larger cities. The role of the first responders, one of the few examples in these villages of outside assistance, were also noted to evolve during the study period in response to the general medical needs within the community. The authors conclude that the program had a wider impact on the society than solely the provision of health care through facilitating community acceptance of outside organizations and providing a counter to the influences driving out-migration.

Comment: This qualitative analysis of the development of first responder capabilities in rural Iraq, although somewhat biased by the population interviewed, provides an interesting assessment of one program's impact on rural society. The challenges faced by rural communities in northern Iraq, both in terms of danger from landmines and in terms of urban migration, are not unique to this setting. By using qualitative methods, the researchers were able to uncover some of the key societal benefits that would have been difficult to identify or quantify in a traditional analysis of numbers served and lives saved.

By *Kevin Lunney*

Young S, Hutchison A, Nguyen VT, Le TH, Nguyen DV, Vo TK. Teaching paediatric resuscitation skills in a developing country: introduction of the Advanced Paediatric Life Support course into Vietnam. Emerg Med Australas. 2008; 20:271-5.

Intensive training courses for medical providers may be successfully modified to provide teaching in emergency medicine in developing countries and may serve as a model for addressing deficiencies in areas of care.

Summary: A 2001 Vietnamese Ministry of Health nationwide study revealed significant deficiencies in the knowledge base and skill level of medical and nursing practitioners in the area of pediatric emergencies. In order to improve the care provided to pediatric patients, senior Vietnamese clinicians choose to implement an Advanced Pediatric Life Support (APLS) training course in several major hospitals. This article by Young et. al. delineates the experiences of a collaboration between a major Australian teaching hospital and the Vietnamese National Hospital for Pediatrics, undertaken to provide a course designed to educate APLS trainers from Vietnam. Along with Australian staff, Vietnamese personnel who were selected to attend an APLS trainers course in Australia returned to Vietnam and trained 183 doctors and 56 nurses, 52 of whom underwent additional training to qualify as new APLS instructors. The train-the-trainers model resulted in a growing number of skilled Vietnamese APLS instructors and, ultimately, attainment of the collaboration's primary goal, a self-sufficient APLS training infrastructure in Vietnam.

Comments: Intensive standardized training courses have been developed in response to documented deficiencies in particular areas of acute patient care. The APLS course is an example of a training program that may be widely exportable due to its generic content and structured, yet flexible approach. The structured flexibility allows APLS to be applicable in many different environments; however, standardized courses must rely on a medical infrastructure able to provide a specific standard of care, a capacity to identify provider

deficiencies, and a capacity for high-level local leadership and support, such as that provided by the Vietnamese Ministry of Health in this study. Vietnam, as a rapidly developing nation, was able to provide the infrastructure to support the training received through the APLS course; however, less developed nations may lack the essential resources necessary for practitioners to employ the skills learned in such a course. The success of the collaboration outlined in this article did not include an evaluation of the course effectiveness, as measured by a change in knowledge or provider behavior. Future studies in this area would greatly benefit from an effectiveness assessment. This study demonstrates that the APLS course, and likely others, can be successfully modified to provide teaching in a developing country and may serve as a model for addressing deficiencies in other practice areas of EM in those settings.

By *Suzanne Bentley*

EMERGENCY MEDICINE DEVELOPMENT

Eagles D, Stiell IG, Clement CM, et al. International survey of emergency physicians' priorities for clinical decision rules. *Acad Emerg Med.* 2008; 15(2):177-82.

A survey of emergency physicians in four high income countries identifies top priorities for the creation of clinical decision rules in such settings.

Summary: This study examines the need for development of new clinical decision rules (CDRs) by examining the priorities of emergency physicians in four high income countries. The researchers sent an email questionnaire to practicing emergency physicians from national emergency medicine associations in Australia, Canada, the United States, and the United Kingdom. Physicians were asked to select the top five clinical problems they wished to see addressed by a clinical decision rule. The clinical problems consisted of 21 adult and 5 pediatric cases. The groups were divided into the following categories: adult admission, adult imaging, adult management, and pediatrics. Individuals who were not physicians or were not currently practicing emergency medicine were removed from the study. Overall, 1150 of 2100 individuals responded to the survey. A top ten list was composed. The top clinical priority was the investigation of a febrile child less than 36 months old, second was the identification of central/serious vertigo, third was the lumbar puncture/admission of a febrile child less than 3 months old. The study found that the top ten priorities of the physicians from Australia matched the top ten overall. The authors note that the study lacks information on how representative the opinions were of the countries' respective national emergency associations. It was also noted that although survey response rates from the United Kingdom and the United States were less than the average response rate for published physician surveys (52-54%), the response to the primary query of ranking of clinical priorities was 55%.

Comment: This study helps to determine areas in emergency medicine that would benefit from the development of a clinical decision rule. Identifying common clinical problems that require the development of CDRs could help improve patient flow in the ED, reduce health care costs, or decrease exposure to potentially dangerous procedures and unnecessary radiation. This study opens the door for other researchers to develop CDRs in the areas identified. It is important to

consider that various countries, including the four chosen for the study, have variable rates of key morbidities, access to resources, and training, potentially limiting the generalizability of the findings of this study and subsequent clinical decision rules. However, the clinical conditions identified by respondents are conditions with global presence, implying that practitioners delivering emergency medical care in less developed settings would likely benefit as well from well-developed CDRs that address core clinical principles with attention to cost-effectiveness.

By *Tomislav Jelic*

Glew RH. Promoting collaborations between biomedical scholars in the U.S. and Sub-Saharan Africa. *Exp Biol Med.* 2008; 233(3):277-85.

Collaborations between researchers in the US and Africa can be fruitful endeavors, provided one has the right roadmap for the journey.

Summary: Drawing on years of experience in biomedical research, teaching, and humanitarian work in Nigeria, the author outlines successful steps towards collaborative research between the developed and the developing world. He identifies seven key areas to be considered in the formation of these partnerships, with the goal of encouraging current medical students and faculty to become involved in such collaborations. According to the author, identifying the appropriate partner, selecting an area of study and study benefactors, respecting geographic constraints, understanding limitations, setting benchmarks, becoming culturally immersed, and securing funding are each crucial elements. He also outlines the barriers to be expected, addressing specifically the areas of ethics and international review boards. Two components crucial to sustainability that he revisits several times include institutional support and the need for continuity in a program.

Comment: International health development agencies have brought focus on narrowing what has been described as the 10/90 gap in medical research between developed and developing countries (only 10% of research dollars go to diseases affecting 90% of the world's population). For students, residents, and faculty interested in advancing international research on emergency medical care of high global burden health problems through collaboration with colleagues in developing country settings, this article provides a road map to the possibilities and limitations. It provides the type of insight into forming international partnerships that is only possible through more than twenty years of personal experience. The essay is limited, however, by its single-author perspective. Incorporating additional viewpoints, especially from researchers and clinicians in low-income countries who have partnered successfully with colleagues in the developed world, would add to the validity of the piece.

By *C. Ryan Keay*

Ramarajan N, Krishnamoorthi R, Strehlow M, Quinn J, Mahadevan SV. Internationalizing the Broselow tape: how reliable is weight estimation in Indian children. *Acad Emerg Med.* 2008; 15(5):431-6.

The Broselow pediatric emergency weight estimation tool, developed and validated in western populations, may overestimate the weight of Indian children. The use of a corrective factor of 10% may help mitigate this inaccuracy.

Summary: While the Broselow Tape is certainly a useful tool in the estimation of weight and thus medication dosages and equipment sizes in pediatric acute illness and injury, questions remain regarding its utility outside of the western populations in which it was validated. The authors conducted a 6-week prospective cross-sectional study of 548 children at a government pediatric hospital in Chennai, India. Measured weight was compared to Broselow-predicted weight, as well as color coded Broselow Tape group and the percentage difference was calculated. Children were divided into three weight groups, <10, 10–18, and >18 kg, with 175, 197, and 176 children in each category respectively. The comparison between standard measurements and Broselow tape measurements showed accurate measurement by Broselow color zone in the <10 kg group 70.8% of the time, but only 56.3% of the time in the 10-18 kg group, and 37.5% in the >18 kg group. When Broselow-predicted weight for the two heavier weight categories was increased by a 10% correction factor, overestimation by one zone decreased from 38.6 to 19.3% in the 10-18 kg group and from 52.8 to 18.8% in the >18 kg group. This resulted in accurate weight measurement by Broselow tape + 10% correction factor to 77.1% for the 10-18 kg group and 63.0% for the >18-kg group.

Comment: This study elucidates both the possibility for error caused by using Western-standard derived resuscitation tools in a population where under-nutrition is much more prevalent and describes a potential corrective solution. The strengths of this study are in the cross-sectional approach to a population that is likely representative of a large segment of pediatric patients that international emergency medicine providers working in the developing world are likely to treat as well as the development of a simple, easy to apply correction factor. Although this correction factor has not been prospectively validated or tested in other undernourished populations outside the Indian subcontinent, similar studies may yield local corrective factors in other populations. Clearly more research is indicated to examine more closely these population differences and to validate candidate corrective solutions. Studies such as this one may yield a more accurate utilization of weight estimation tools such as the Broselow Tape in non-western populations.

By *Amelia Pousson*

Weiner SG, Kelly SP, Rosen P, Ban KM. The Eight Cs: A Guide to Success in an International Emergency Medicine Educational Collaboration. Acad Emerg Med. 2008; 15:678–82.

Using lessons learned from the Tuscan Emergency Medicine Initiative, eight factors were identified (“The Eight Cs”) that can serve as a guide to implementing a collaborative EM program in other environments: collaboration, context, culture, credibility, consulting, consistency, critique, and conclusion.

Summary: The Tuscan Emergency Medicine Initiative (TEMI) is a comprehensive program designed to build an EM training infrastructure in Tuscany, Italy. TEMI was undertaken by three universities and multiple hospitals and training programs in Tuscany in collaboration with Beth Israel Deaconess Medical Center and Harvard Medical International. During development of the TEMI, the authors identified eight concepts that were crucial to the success of their program. They present these Eight Cs as a guideline for establishing a collaborative EM training infrastructure and delineate the importance of these eight concepts with examples from their own work. Summarized below are the key components of each of the Eight Cs.

Collaboration: In order to foster a climate of equal exchange, the authors emphasize the need to have community physicians, hospital administrators, and academic administrators present for key meetings. They suggest an iterative process where different teaching methods and styles are introduced and physicians from host countries as well as those from countries with well-developed EM systems serve in teaching roles.

Context: It is of fundamental importance for the consultants implementing a training program to determine and understand the societal context that led to the desire or need for international support.

Culture: An understanding of the cultural context is crucial to effective communication.

Credibility: Credibility of the consulting group is essential to gain initial participation and to secure the necessary funding.

Consulting: Acting in the position of a consultant offers the advantage of being removed from the existing politics and policies within the host country.

Consistency: A standardized and consistent curriculum fosters a unified approach to patient care and a comprehensive knowledge base among trainees.

Critique: Constant evaluation by course participants, instructors, and developers, and a flexibility of the program to incorporate suggested modifications, is essential to establishing a training curriculum that will adapt with advancements in patient care.

Conclusion: Ultimately, the authors conclude that a successful EM training infrastructure results in the disappearance of the need for outside consultants.

Comment: The development of emergency medicine (EM) as a specialty has had an unequal pace throughout the world. At present, more than 30 countries formally recognize EM as a specialty; however, some have been developing the specialty for more than 35 years while others have far less experience. Because EM encompasses not only exemplary care in the management of acute traumatic and medical disease but a crucial leadership role in disaster response and an important voice in the development of public health interventions, each country will develop unique attributes of the specialty that best fit the environment of that country. Effective collaboration in the development of EM training infrastructure should allow for incorporation of the host country practitioners' expertise with their medical system while inviting the consulting practitioners' experience in the field of EM. This collaboration may prevent the duplication of effort and contribute to consistency in the scope and content of EM in each country. This article provides guidance for all those involved in collaborative EM development projects by offering the principles identified by the authors as the Eight Cs - principles that have often been underestimated or incompletely evaluated in other similar literature.

By *Suzanne Bentley*

PANDEMIC RESPONSE

Barrett R, Brown PJ. Stigma in the time of influenza: social and institutional responses to pandemic emergencies. J Infect Dis. 2008; 197 Suppl 1:S34-7.

Building community trust in the public health system can help alleviate the negative influence of stigma in the evolution of pandemics.

Summary: This essay, introduced at the 2006 Harvard University Asian Flu and Avian Influenza Workshop, offers a biosocial approach for the control of pandemics. The authors explore the impact of stigma on an epidemic, and discuss lessons learned from previous infectious disease outbreaks, such as the 1918 influenza pandemic and the 1994 Indian plague epidemic. The authors argue that stigma creates barriers against health care seeking, causes further impoverishment and social marginalization of already impoverished populations, breeds distrust in authorities leading to lack of cooperation, and distorts public perceptions of risk, ultimately causing mass panic. They assert that a pandemic preparedness plan is not effective without building a “surge capacity for public trust,” and that this can best be accomplished by the provision of robust public health services that all segments of the population have seen in action, protecting their health.

Comment: In this article, the authors shed light on a crucial yet under-recognized factor affecting pandemic preparedness: stigma. The authors contend that, particularly on the part of socially disadvantaged persons, fear of reporting possible disease that may lead to further social disenfranchisement may alter patient reporting of symptoms. The providers of acute and emergency care must be sensitive to the social impact of such a diagnosis, particularly one that is transmissible, as fear of the diagnosis may not only alter a patient’s willingness to seek care but contribute to the spread of infection. Emergency departments can also play a large role in developing community trust in the public health system through delivery of public health measures at the time of patient contacts, and through pro-active community disease prevention projects.

By *Maya Aarii*

McDougall CW, Upshur RE, Wilson K. Emerging norms for the control of emerging epidemics. Bull World Health Organ. 2008; 86:643-5.

Global public health security with respect to emerging and epidemic-prone infections requires multilateral coordination and cooperation that is transparent, reciprocal, and equitable.

Summary: Given that infections like severe acute respiratory syndrome (SARS) do not respect man-made geographic boundaries, national sovereignty is in some cases giving way to coordinated global prevention and management of emerging and epidemic-prone infectious diseases (EIDs). The “global public health security regime” involves multilateral cooperation, which explores and challenges legal, ethical, and operational norms. Four themes have surfaced during this normative shift and were solidified during the 2002-2003 SARS outbreak: 1) global

solidarity in providing surveillance and response; 2) the World Health Organization (WHO) taking the lead as a supranational public health authority; 3) justifiability of proportionate coercive global public health measures needed to curb outbreaks; and 4) interdependence of security, equity, and reciprocity in capacity building. The WHO has taken a stance to elevate the global prevention and management of EIDs to the level of a public good, akin to the global efforts that eradicated smallpox. In doing so, the authors have offered several advocacy and policy strategies to help garner further financial and political support from the global public health community.

Comment: Public health and medical care are often hampered by geopolitical divides that are unable to reconcile and manage the indiscriminate nature of certain communicable diseases. With EIDs becoming palpable threats to health security, every nation has the incentive in the name of self-interest to protect its own people. Participation in coordinated efforts to prevent and respond to EIDs, therefore, becomes important. With recommendations based on recent experience with both SARS and avian influenza, the authors make an argument for nations to include in the reasons for participation a concern for regional and global public health. The authors recognize that this effort will require transparency, reciprocity, and equity among all nations. Written as an advocacy piece, this article proposes that multilateral cooperation under these conditions is essential so that true global public health security may one day be realized.

By *Nina Chicharoen*

Wilson JM 5th, Polyak MG, Blake JW, Collman J. A heuristic indication and warning staging model for detection and assessment of biological events. J Am Med Inform Assoc. 2008; 15:158-71

This scale measuring the societal impact of biological events may help public health officials and governments provide appropriate and efficient responses.

Summary: A newly devised scoring model designed to evaluate the severity of biological events in a manner analogous to severe storm warning scales is presented in this article. The Wilson-Collman Scale calculates the magnitude of societal impact caused by infectious disease and provides health officials and governments a baseline assessment with which they may tailor their responses to infectious outbreaks. Using data from the SARS outbreak in 2002-2003, Rift Valley Fever in Kenya in 1997-1998, and Venezuelan equine encephalitis in 1995, a model was proposed for measuring social disruption due to epidemics. The authors then conducted media searches based on keywords to prospectively test the proposed model. Stage 1, or an “outbreak,” signifies a report of human disease involving only one medical facility and recognition of this by local officials. Stage 2, an “epidemic,” involves multiple facilities and is the first stage that involves public anxiety and demand for medical resources. In Stage 3 there is difficulty controlling the disease, depletion of supplies, official declaration of an emergency, and a request for international assistance. As public dissent widens, infrastructure begins to break down and the public begins to engage in such activities as hoarding resources. Finally, in Stage 4, social collapse occurs, characterized by mass evacuations, rioting, quarantines, closures of schools, and restriction of public transit. The authors successfully develop a model that uses multiple types of

indications and warnings to heuristically depict social disruption in the setting of a disease outbreak.

Comment: Proposed in this article is a model for scoring the severity of social disruption during an outbreak or epidemic. The widespread use of such a scale could be immensely useful for governments and non-governmental organizations in providing a rapid assessment that could help in the coordination of appropriate responses to outbreaks, including the allocation of resources and the use of media to direct the public response. The lack of effective, rapid, global reporting of disease will limit the scale's immediate impact; however, when used as an adjunct to traditional disease surveillance, the scale may offer invaluable supplementary information that could aid in disease containment. Another limitation is the complexity of the sources that contribute to the staging of a biological event. News media, governmental action, military involvement, and behavior of the populace each influence the staging. Despite this complexity, the authors were able to demonstrate that the observed responses were mostly similar from country to country.

By Jack Forrest