

# International Emergency Medicine: A Review of the Literature from 2006

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## Abstract

The field of international emergency medicine (IEM) has grown rapidly over the past several decades, with a rise in the number of IEM fellowship positions, sustained growth in the international sections of major emergency medicine organizations, and an increase in the range of topics included under its rubric. One of the greatest obstacles to the continued growth of IEM remains the lack of a high-quality, consolidated, and easily accessible evidence base of literature. In response to this perceived need, members of the Emergency Medicine Residents' Association IEM Committee, in conjunction with members of the Society for Academic Emergency Medicine International Health Interest Group, embarked on the task of creating a recurring review of IEM literature. This article reviews 25 IEM research articles published in 2006. Research articles were selected for the review according to explicit, predetermined criteria that included both methodological quality and perceived impact of the research. It is the authors' hope that this annual review will act as a forum for disseminating best practices while also stimulating further research in the field of IEM.

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The development of both emergency medical care services and emergency medicine (EM) as a unique specialty choice among physicians is advancing rapidly around the globe. In addition, the field of international emergency medicine (IEM) is swiftly growing as a subspecialty domain in the United States and other countries with mature emergency medical

care systems. International sections, interest groups, and committees exist within each of the major U.S. EM organizations and, in some cases, have become the largest special interest section within these organizations. In addition, the number of IEM fellowship positions in the United States has increased significantly over the past decade, with more expected to open in the near future.<sup>1</sup> Finally, availability of international educational experiences, including electives abroad, has been shown to positively affect medical students' ranking of EM residency programs.<sup>2</sup>

The domain of IEM encompasses a broad spectrum of activities, often without clear boundaries, although generally falling into one of two categories: 1) development of emergency medical care systems in both developed and developing nations and 2) provision of direct patient care during humanitarian and disaster relief efforts. Emergency medical care development encompasses clinical, educational, and systems components at both the national and local levels. Included within this rubric would be efforts as diverse as developing a national disaster relief plan, creating a city-wide emergency medical services system, and training rural health practitioners to provide basic emergency services. The field of humanitarian relief also encompasses several different domains and is rapidly becoming more organized through critical analyses of executed operations. Both

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humanitarian relief agencies and donor governments are looking closely at ways to improve humanitarian response, including the conduct of rapid needs assessments, the deployment of personnel and supplies, and ongoing monitoring and evaluation.

One of the barriers to the development of the nascent field of IEM has been the lack of an easily accessible literature base that can be used to guide its development. Both research articles and communiqués of value to various stakeholders in IEM are spread throughout the general medical literature, the EM literature, the public health literature, the health policy/health systems literature, and the humanitarian/disaster literature. Many publications with IEM relevance exist only in the gray literature in the form of assessments or reports by international agencies, national or local governments, foundations, donor agencies, financial institutions, or nongovernmental organizations. Furthermore, IEM research may be published in a variety of different languages, limiting its accessibility to U.S. audiences.

Recognizing the need for a clear and accessible literature base to guide the growing field of IEM, members of the Emergency Medicine Residents' Association IEM Committee and the Society for Academic Emergency Medicine International Interest Group joined together to create an annual review of IEM literature. This review, focusing on research published in 2006, gathers together a number of articles from disparate sources, presenting the ones chosen as having specific relevance or value to one of the previously described domains of IEM. This review is not intended to serve as either a systematic review for clinical guidance or as an exhaustive review of literature relevant to IEM.

## METHODS

One of the primary difficulties in creating a review of the IEM literature remains defining the boundaries of the field itself. For our 2006 review, we expanded the set of search criteria used in our 2005 review<sup>3</sup> to include more than two dozen separate search terms. We conducted an Ovid search of MEDLINE for articles published in 2006. Our search included both a set of

“international” search terms, including world health, developing countries, tropical medicine, international, global, emerging countries, and third world, as well as a set of “EM” terms, including EM, EM services, acute disease, critical illness, emergencies, wounds and injuries, relief work, rescue work, disasters, refugees, disease outbreaks, multiple trauma, triage, war, vulnerable populations, emergency treatment, pre-hospital, humanitarian, and conflict. Based on the language abilities of our research team, we limited our search to articles published in English, French, Spanish, or German. Our initial search produced 1,042 articles published in 2006 containing at least one “international” and one “EM” term, of which 1,004 were published in English, French, Spanish, or German. After performing an initial review of the abstracts for these articles, we further reduced our search to 112 articles relevant to the field of IEM. We then conducted a hand search of five major EM journals, including *Academic Emergency Medicine*, *Annals of Emergency Medicine*, *Emergency Medicine Journal*, *European Journal of Emergency Medicine*, and *Journal of Emergency Medicine* for articles of IEM relevance, producing 18 additional articles for review.

Our review team critically appraised each of the 130 full-text articles produced by both our MEDLINE and hand searches. To standardize the review process, each member of the review team used the same eight criteria, as much as they could be applied to individual articles, to assess both the methodological quality and the perceived importance of each article (Table 1). Based on these criteria and assessment for overall relevance to IEM stakeholders, 25 articles were chosen for formal review. Each of the 25 articles was reviewed by both an EM resident with international experience and a faculty editor with extensive knowledge and experience in the field of IEM.

## RESULTS

The results of our IEM literature review are presented in Table 2.<sup>4-28</sup> The articles are listed alphabetically by the name of the lead author. An annotated bibliography, including a summary and critical analysis of each article,

Table 1  
Review Criteria

Quality	
Study objective	Did the study authors develop a clear hypothesis or purpose before undertaking the study?
Study design	Was it an observational study/randomized controlled trial or a cross-sectional survey? Were random samples or convenience samples used?
Quality control	Were routine quality control checks performed on the data? Do the methods specify how study staff were trained?
Data analysis	Were the correct statistical tests used to analyze the data, and were the results statistically significant?
Research ethics	Was the study approved by a local/international institutional review board? Did it follow standard ethical practices (i.e., Declaration of Helsinki)?
Importance	
Overall significance	Was the study objective meaningful? Were the differences measured “clinically significant” in the population studied?
External validity	Would the results and conclusions of the article likely apply to a diverse range of international settings?
Likely impact	Would the conclusions of this article, if widely publicized, be likely to affect international emergency medicine practice?

Table 2  
Top 25 International Emergency Medicine Articles of 2006

First Author	Title
Anderson	The globalization of emergency medicine and its importance for public health. <sup>4</sup>
Brennan	Humanitarian aid: some political realities. <sup>5</sup>
Burke	Individual-based computational modeling of smallpox epidemic control strategies. <sup>6</sup>
Burkle	Population-based triage management in response to surge-capacity requirements during a large-scale bioevent disaster. <sup>7</sup>
Coghlan	Mortality in the Democratic Republic of Congo: a nationwide survey. <sup>8</sup>
Dib	Analysis and applicability of the Dutch Emergency Medical Services (EMS) system into countries developing EMS systems. <sup>9</sup>
DiMaggio	The behavioral consequences of terrorism: a meta-analysis. <sup>10</sup>
Kayongo	Making Emergency Obstetric Care (EMOC) a reality: CARE's experiences in areas of high maternal mortality in Africa. <sup>11</sup>
Kupper	Drugs and drug administration in extreme environments. <sup>12</sup>
Kwak	Experience of a Korean Disaster Medical Assistance Team in Sri Lanka after the South Asia tsunami. <sup>13</sup>
Leather	Working together to rebuild health care in post-conflict Somaliland. <sup>14</sup>
Lee	Coordination and resource maximization during disaster relief efforts. <sup>15</sup>
Levy-Bruhl	Role of antiviral drugs in containing pandemic influenza. Contribution of recent modeling exercises. Synthesis prepared by the InVS/Inserm "Epidemiology" group. <sup>16</sup>
Macfarlane	Training of disaster managers at a masters degree level: From emergency care to managerial control. <sup>17</sup>
Maitland	Children with severe malnutrition: can those at highest risk of death be identified with the WHO protocol? <sup>18</sup>
Malik	Mass casualty management after a suicidal terrorist attack on a religious procession in Quetta, Pakistan. <sup>19</sup>
Miller	The Afghan Symptom Checklist: a culturally grounded approach to mental health assessment in a conflict zone. <sup>20</sup>
Mock	Evaluation of trauma care capabilities in four countries using the WHO-International Association for Trauma and Surgical Intensive Care (IATSIC) Guidelines of Essential Trauma Care. <sup>21</sup>
Molyneux	Improved triage and emergency care for children reduces inpatient mortality in a resource-constrained setting. <sup>22</sup>
Moss	Child health in complex emergencies. <sup>23</sup>
Roudsari	Childhood trauma fatality and resource allocation in injury control programs in a developing country. <sup>24</sup>
Tanon	Medical emergencies related to HIV/AIDS in tropical zones: a prospective study in Cote d'Ivoire (1999–2000). <sup>25</sup>
Wang	The rationale of fever surveillance to identify patients with severe acute respiratory syndrome (SARS) in Taiwan. <sup>26</sup>
World Food Program	Nutrition in emergencies: World Food Programme (WFP) experiences and challenges. <sup>27</sup>
Yamada	The Sri Lanka tsunami experience. <sup>28</sup>

can be found as an online Data Supplement at <http://www.aemj.org/cgi/content/full/j.aem.2007.08.008/DC1>.

## DISCUSSION

The articles listed in Table 2 span much of the spectrum of topics contained within the rubric of IEM. Several articles, such as those by Dib et al.<sup>9</sup> and Mock et al.,<sup>21</sup> evaluate emergency medical services and trauma care systems in both developed and developing countries, while a review by Anderson et al.<sup>4</sup> discusses the global spread of EM as a specialty. Studies by Kayongo et al.,<sup>11</sup> Molyneux et al.,<sup>22</sup> and Tanon et al.<sup>25</sup> look at ways of improving emergency care for special populations (women, children, and people living with human immunodeficiency virus) in a developing country context. A relatively large proportion of studies examined methods of evaluating morbidity and mortality and improving the delivery of humanitarian aid during disasters and conflict situations. Finally, a number of articles, such as those by Wang et al.,<sup>26</sup> Levy-Bruhl,<sup>16</sup>

and Burke et al.,<sup>6</sup> look at mechanisms for improving both local and global pandemic response.

This review has succeeded in consolidating a disparate set of recently published articles into an easily accessible product. Academicians will likely find the review useful in providing ideas for further research, as well as encouraging multisector and cross-country collaboration. Practitioners of IEM, whether they are hospital administrators, policy makers, or international humanitarian aid workers, may find this a useful tool for helping them guide the creation of IEM programs worldwide. Over time, we hope that this annual review will stimulate the further development of a true IEM literature base. As the field of IEM continues to grow, this literature base will likely prove instrumental in guiding its expansion over time.

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