

620 USD). This system has been so helpful for the hospitals, they now supply medical personnel for no cost.

Conclusion: This system of triage and separate medical supervision of “simply” intoxicated patients has been successful in the management of a large number these kind of patients.

Prehosp Disaster Med 2011;26(Suppl. 1):s147–s148
doi:10.1017/S1049023X1100481X

(P2-38) Operational Response to a Gastroenteritis Outbreak in the Emergency Department

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Mass gatherings can be disruptive to the daily operations of any emergency department (ED). These events usually are spontaneous and sudden. Therefore, operational processes must be effective and concise when dealing with a sudden surge. This study examines the Tan Tock Seng Hospital (TTSH) ED response process to a gastroenteritis (GE) outbreak. Prompt identification and establishment of a casualty holding and treatment area ensured smooth operational capacity, which allowed these patients to be segregated from the mainstream ED crowd and more specific care to be rendered. Entrance and exit points of the designated area were established with controlled access to prevent cross-contamination with the mainstream patient load. Patients with GE who presented with acute symptoms required immediate assessment and intervention, placing stress on existing personnel. Hence, adequate personnel was an important factor that could not be disregarded. Staff burn-out was a plausible issue that was recognized from the start and attempts were made to prevent burnout by creating an encouraging work environment and allowing frequent relieving of duties. Communicating the event to relevant departments ensured that the ED was adequately supported during the GE outbreak, both administratively and logistically. This was a reflection of the established communication channels. Leadership also had an essential and crucial role to play as the nursing and medical leaders had to be decisive, delegate roles and give concise instructions during the chaotic situation. The availability and access to ample logistical supplies saves on precious time, which allowed more focus on patients. In summary, procedures and protocols, together with staff preparedness, enhances an ED operational capability of effectively responding to mass gatherings.

Prehosp Disaster Med 2011;26(Suppl. 1):s148
doi:10.1017/S1049023X11004821

(P2-39) Public Health Safety for Traditional Mass Gatherings in India: A 10-Year Analysis

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Introduction: In the past decade, India has witnessed many lapses in crowd safety during mass gatherings. The high casualty rate in stampedes during traditional mass gatherings has prompted the study of these events. Wide variations exist in casualty rates for similar events, and key issues in healthcare services in these special situations were addressed in the Indian context.

Methods: From 2001–2010, Mass gathering data were collected from news items reported in the archives of newspapers, “The Times of India”, “The Hindu” and “The Indian Express”. The keywords used were: “stampede”, “mass gathering”, “mass-gathering events”, “mass-gathering incidents”, “crowd”, and “crowd management”. The study included triggers for the incident and the number of casualties (dead and injured) in each incident.

Results: In 27 separate mass gatherings in India, there were 936 dead and 540 injured casualties. The unique characteristics of mass gatherings in India included a predominance of old and vulnerable people in traditional mass gatherings, in contrast to the young and middle-aged groups who gather for music and sporting events elsewhere. Further, alcohol/substance abuse, brawls, and violent behavior were absent at traditional Indian mass gatherings. Non-traditional mass gatherings accounted for a lesser number of incidents in India, and were located in movie theatres and railway stations.

Conclusions: In a populous country like India, traditional mass gatherings predominate, and ensuring the health, safety, and security of the public at such events will require an understanding of crowd behavior, critical crowd densities, and crowd capacities in the Indian context. However, planning for mass gatherings can be developed using the existing body of knowledge of mass-casualty preparedness, food safety, and health promotion.

Prehosp Disaster Med 2011;26(Suppl. 1):s148
doi:10.1017/S1049023X11004833

(P2-40) Patient Allocation to Hospitals During Mass-Casualty Incidents

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Due to the limited resources of specialized hospital departments, the allocation of patients to different hospitals according to severity is an extraordinarily complex and time-critical problem. The emergency capacity was determined for all medical centers ($n = 135$) in the State of Hessen, Germany, for patients of various triage categories (red, yellow, green) during normal working hours, and during weekends and nights and included logistic specifications of a potential helicopter landing. These data were entered into a state register. Using the data from the “acute-care-register”, a Ticket System was developed that allows operations management to assign patients according to the severity of their condition, urgency, and specialization requirements (e.g., neurosurgery, ophthalmology, pediatrics) to a hospital without exceeding the admission and/or treatment capacity of the hospital/facility. During a non-critical period, the order of allocations depending on the distance from the clinic is planned in advance so that no further modifications are necessary during the acute intervention phase of an emergency response. Additional notification of hospital capacities for severe casualties provided during the emergency response can be easily and immediately supplemented. Due to the relatively low frequency of such emergency responses, a cost-effective concept that is easily adaptable to the respective fields of application was decided upon. The system is a sticker

set customized for the respective rescue teams. The sets will be carried permanently in the rescue equipment by the organization manager of the rescue service team. The equipment is not dependent on electronic components. The cost per sticker set is approximately US\$50. Keeping track of the patient allocations is assured.

Prehosp Disaster Med 2011;26(Suppl. 1):s148–s149
doi:10.1017/S1049023X11004845

(P2-41) Emergency Medical Response Systems in a University Athletic Program: A Descriptive Analysis

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Introduction: Unpredictable environmental conditions, crowd dynamics, and a variety of medical emergencies create logistical and clinical obstacles when planning emergency medical response coverage for mass-gathering events. In a collaborative endeavor between a university athletics program and an academic division of Emergency Medicine, a stadium emergency medical response system was created consisting of hospital-based healthcare providers and pre-hospital healthcare providers.

Objectives: Provide descriptive statistics relevant to the nature and frequency of injury/illness, location of treatment within stadium confines, and resources used in the care of students, event staff, and spectators during collegiate football operations, to assist in future planning of mass-gathering events.

Methods: A continuously updated, quality assurance database of de-identified, aggregate statistics was utilized to analyze trends regarding aspects of medical operations.

Results: During a 7-game home football season, there were a total of 399 patients encounters, including 1 cardiac arrest (0.25%), 12 “life-threatening” (3.01%), 121 urgent (30.33%), and 266 routine (66.67%). Total season attendance was 201,248 attendees (28,749/game and 19.83 patients encounters per 10,000 in attendance). Twenty-eight patients were transported (1.39 per 10,000), with eight resultant hospital admissions. Encounters varied by complaint, with skin (42%) comprising the largest number of encounters. Other categories included: (1) heat-related (23.5%); (2) allergic (15%); (3) neurologic (10.3%); (4) cardiopulmonary (3.5%); (5) gastrointestinal (3.6%); (6) musculoskeletal (5%); and (7) other (5%). Encounters increased noticeably when the heat index was greater than 80 °F– (29.4 vs. 10.5 per 10,000 attendees).

Conclusions: The collaborative effort by a multi-level provider model adequately covered presenting medical conditions. Consistent with previously literature, a strong correlation existed between heat index and number of patient encounters deemed urgent and routine. Interestingly, the number of “life-threatening” encounters did not appear to vary much with the heat index. Further studies of medical presentations and provider/resource utilization could provide for predictive modeling of future staffing and supply models.

Keywords: athletics program; crowds; mass-gathering events; sporting events; stadiums

Prehosp Disaster Med 2011;26(Suppl. 1):s149
doi:10.1017/S1049023X11004857

(P2-42) Mass-Gathering Risks in the Beijing Subway System

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Introduction: Mass gatherings pose a significant risk on health and safety. The mass gathering in the subway systems in Beijing represents a daily risk. An average of 4.52 million passengers rode the subway each day between 15 November and 30 November 2010, with the highest daily passenger number totaling 5.14 million. The purpose of this study is to identify the health and safety aspects of mass gatherings in Beijing subways, and proposes strategies that may mitigate these risks.

Methods: The methods included a literature review, field visitation of the subway systems, and interviews of 20 passengers and 10 management personnel from the subway system.

Results: Many safety and health measures has been taken by the Beijing Subway System, including emergency exit signs and other safety signs, prohibition of smoking, firefighting equipment and explosion-proof tanks, safety inspection of bags, and safety education in the subways. However, additional key health and safety aspects were indentified, including: (1) lack of strict flow control of passengers in interchange subway stations; (2) lack of platform safety gates in Line 1, Line 2, Line 13; (3) lack of passenger control during peak hours; (4) lack of biomedical monitoring systems in the subways; and (5) lack of health facilities and rescue equipments in the subways.

Conclusions: Mass gatherings pose great risks on subway passengers in Beijing, including psychosocial risks, biomedical risks, and environmental risks. Additional safety measures need to be taken to ensure the safety and health of passengers in subways in Beijing.

Prehosp Disaster Med 2011;26(Suppl. 1):s149
doi:10.1017/S1049023X11004869

(P2-43) Utilizing a Unified Health Command Structure for Mass Gathering Preparedness and Response: Lessons Learned from the 2008 Pacific Arts Festival

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Background: The Pacific Arts Festival is a mass-gathering event occurring every four years in Oceania. The 10th festival in American Samoa, July 20 to August 2, 2008, brought 2200 performers and 2500 tourists (a 15% population increase) from 27 Pacific nations to the island. Anticipated healthcare concerns included hospital surge (175% in 2004), HIV/STI transmission, imported/communicable diseases, food/water/sanitation-borne illness, interpersonal violence, and healthcare resource utilization.

Objective: To describe the preparedness and response efforts for this mass gathering event by emergency medical services, the hospital, and the department of health.

Methods: A retrospective review of after-action reports, public health and emergency department surveillance records, and