metropolitan US provide 1 bed per 1800 patient visits per year on average.
Objective: We sought to improve patient flow in our 24-bed ED at Santa Clara Valley Medical Center, a large tertiary public hospital in San Jose, California.
Methods: We applied a bundle of interventions based on Lean principles aimed at improving overcrowding in our department step-wise from October 2006 to December 2010, ranging from rapid medical evaluation to physician on arrival. We measured patient volume, left without being seen (LWBS) rates, time to provider (minutes), and time to discharge (minutes) as monthly averages. We secondarily measured CMS core measure performance for pneumonia and STEMI care and patient satisfaction scores.
Results: Our emergency patient volume doubled from an average of 192 to 412 per day (peak). Our LWBS rate decreased from 16.0 to 1.4%. Our time to provider decreased from 86 to 32 minutes. Our time to discharge decreased from 210 to 145 minutes. Core measure performance improved to 100% for all five ED-related metrics. The percentage of patients who ranked their care as excellent increased from 30% to 45%.
Conclusion: The bundle of interventions based on Lean principles applied in our ED appears to have enabled us to significantly improve multiple operational outcomes, despite a doubling of our patient volume in our low capacity ED. Posting a physician on arrival, as the first healthcare worker that a patient meets when they enter the ED, may have had the greatest impact on operational performance.
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(A82) Triage in the Prehospital Setting

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Introduction: The prehospital management of a patient starts with a telephone call to and triage by the ambulance dispatcher centre followed by continuous evaluations by ambulance crews and staff at emergency departments.
Aim: The aim of this study was to find out if these units have the same triage systems and if the initial evaluation matches the outcome at the hospital emergency departments.
Method and Material: Over 27000 ambulance transports within Gothenburg were studied by evaluating the ambulance medical records with regards to initial triage performed by the ambulance dispatcher centre using a medical index and triage performed by ambulance crews and staff at the emergency departments. **Results:** There was no common triage system between these units. We also found a discrepancy between the initial triage using the medical index and physiological-anatomical triage performed by ambulance crews and staff at the emergency departments. As an example 50% of all patients triaged as priority one by the ambulance dispatcher centre were down-graded to priority 2–4 by the other units involved.
Discussion and Conclusions: A mutual and standardized system for triage is needed. Although over-triaged by ambulance dispatcher centre may be medically motivated, the difference between priorities should be minimized to a medically accepted level (25–35%).
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(A83) Pediatric Disasters: Key Elements for Improving Care

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80% of children are seen in non-Pediatric Emergency Departments (EDs). In a disaster, most children and their caregivers will go to the closest or their regularly identified ED for treatment. In disasters, the preservation of the Pediatric Tertiary Infrastructure for the sickest and most injured children is critical. Surge capacity for pediatrics may involve both ante-grade and retrograde distribution of pediatric patients and health care staff to preserve Tertiary capacity. Reverse Triage of stable pediatric patients to other hospitals with adapted units and staff can decompress tertiary facilities. General hospitals can allow an expanded care for pediatric patients. Surge capacity needs to be addressed to allow non-pediatric facilities to surge for pediatric patients. Disaster Credentialing by immediate cross-credentialing of appropriate health care staff needs to be reciprocal and internet based to allow appropriate staff to attend pediatric patients. Pediatric consultants can augment healthcare staff to allow input into expanded care roles. Pre-hospital providers should have more pediatric training. Rotated regional caches of pediatric equipment would expedite safe pediatric disaster site care and pre-hospital transportation to definitive care. Pediatric patients should routinely be included in disaster drills and in all-inclusive disaster plans, rather than in separate drills and plans. Pediatric patients are usually accompanied by caregivers who may need care as well. Secure tracking and reunification of unaccompanied minors needs to be addressed to allow tracking across jurisdictional boundaries. Limited access to data on children, and credentialing of shelter staff would preclude access by anyone without a specific need to know. There are no clear uniform liability statutes for care in declared disasters as well as no uniform agreements for reimbursement for medical care. These issues are an important facet of disaster care that still needs to be addressed.
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(A84) Video Documentation as a Supplemental Teaching Tool for Multi-Focused Emergency Management Exercises

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Introduction: Emergency management education and large-scale disaster drills help to increase local capacity for dealing with a multitude of hazards. Video recordings of disaster drills offer participants with little exposure to fundamental emergency management principles an introduction to important topics and scenarios. Such resources allow ongoing training

and education, thus maximizing the investment required to mount a large-scale exercise.
Methods: During emergency management exercises in Mumbai, India between 2008 and 2010, video recordings of prior exercises were used to augment training for clinicians, administrators and public health practitioners. During the exercises, videos depicting scenario-based disaster drills were produced for use as teaching and evaluation tools focused on pre-hospital care, trauma life support, and hospital operations. Videos are distributed digitally and online, extending the teaching impact of multi-day courses and serving as a benchmark for future exercises.
Results: During the 2010 exercise in Mumbai, approximately eight hours of video footage were recorded by professional producers, and by participants in the evaluation and monitoring track of the course. That footage was added to a library from exercises in Ahmedabad and Mumbai, India, in 2007 and 2008. Video was used as a tool for immediate feedback on participant performance as well as the foundation for ongoing instruction. Videos allowed students to be sensitized to important issues prior to taking part in a drill, and to participate in the post-drill evaluation process.
Conclusion: Video documents of disaster management exercises serve as a valuable addition to an ongoing program of emergency management education and preparedness. Short video pieces increase the effectiveness of a teaching program by providing re-usable, easily accessible, and setting-specific teaching tools.
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(A85) Analysis of Health Risk Perception and Behavior Changes during Elevated Temperatures for an Urban Chinese Population

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Background: Limited research has been conducted to understand the relationship between heat wave warnings with public awareness and behavioral changes in the Asian population. The Hong Kong Observatory introduced the "very hot weather warning" in 2000 to alert the public of heatstroke and sunburn in Hong Kong. However, the population's behavioral responses to these weather alerts is unclear. Moreover, the relationship between perceived health risks and behavioral changes has not been examined. The goal of this study is to examine the health risk perceptions and behavioral changes following public heat wave warnings in Hong Kong.
Methods: A cross-sectional, population-based, telephone survey, using the last-birthday method was conducted within two weeks following a heat wave warning in 2009. A heat warning and a health study instrument, based on Intergovernmental Panel on Climate Change (IPCC) guidelines and related literature was developed and validated. Descriptive and multivariate logistic regression analyses were conducted.
Results: The questionnaire was completed by 1,123 individuals whose socio-demographic characteristics were comparable to 2009 Hong Kong population census data. Of respondents, 83.6% were aware of the heat wave weather warning. Multivariate logistic regression of socio-demographic factors indicated that being female, those in middle age groups, and those with higher educational attainment was significantly associated with heat wave warning awareness. Among those aware of the public warning, the majority were unconcerned about potential adverse health effects, < 40% were aware of the community heat-related preparedness plans, and < 50% changed their behavior to mitigate the potential adverse health impacts of hot weather.
Conclusion: This is the first study to examine climate change and health behavioral responses in an urban Chinese population. Future research direction should further investigate correlations between awareness and health protective actions, as well as the drivers for health behavioral changes that mitigate the impact of climate change.
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(A86) Emergency Department Patient Presentations during the 2009 Heatwave in Adelaide

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Background: Recordings of heatwaves date back to the early 1900s and usually are associated with high mortality. In Australia, heatwaves have been the major cause of natural hazard-related deaths. Heatwaves usually do not carry the global media coverage associated with other disasters, and frequently, are referred to as silent disasters. The main impact of heatwaves is on health and human life.
Objectives: Preliminary results are presented for the 2009 heatwave, investigating the emergency department patient presentations from three public hospitals in Adelaide, a city in the central southern area of Australia.
Methods: Demographic and syndromic data were obtained from emergency department records. Ethics permission was obtained prior to data collection. Heatwave conditions occurred from 26 January–07 February 2009. Two non-heatwave periods were day-matched approximately two weeks before and after the heatwave. Data were analyzed by age groups, gender, and ICD codes for chronic conditions.
Results: The two largest groups of people presenting were between 15 and 64 years of age and > 75 years of age during the heatwave and non-heatwave periods. During the heatwave period, both groups had significant increases in patient presentation related to renal problems (ICD 10: N000-N3999) and dehydration and hyperthermia (ICD10: E86, T67). The latter syndrome was far more accentuated during the heatwave, with emergency department patient presentations rising from 2 (non heatwave) to 62 presentations for the 15 and 64 years cohort and from 4 (non heatwave) to 91 for the > 75 years cohort. Cardiovascular- and respiratory-related presentations showed slight increases during the heatwave, while mental health had high presentations for the 15–64 year cohort throughout heatwave and non heatwave periods.