

Methodology: The tool utilizes a thorough investigative process sufficient to produce credible and practical data which can be used to form a “System Improvement Plan.” While the scope of the project can be seen as relatively broad, the assessment process allows for adaptation to a wide variety of EMS system models which bring specific focus to the greatest areas of improvement opportunity with practical applications and alignment with those resources which are available to a given governmental entity.

Presentation: This abstract, (in both oral and poster presentation format), demonstrates a portional mock evaluation with focus on those components often overlooked by both evolving and mature formal system designs by the international EMS community. The SAGA approach is an invaluable tool for those responsible for integrating the functionality and needs of a broad range of stake holders into the overarching prehospital delivery system in building support for qualitative improvements.

Prehosp Disaster Med 2011;26(Suppl. 1):s21–s22
doi:10.1017/S1049023X11000835

(A79) Where Do Ed Patients Come From?

J. Rego,¹ G. Fitzgerald,² S. Toloo²

1. School of Public Health, Kelvin Grove, Australia
2. School Of Public Health, Brisbane, Australia

A lack of access to primary care services, decreasing numbers of general practitioners (GPs) and free of charge visits have been cited as factors contributing to the rising demand on emergency departments. This study aims to investigate the sources of patients' referrals to emergency departments and track changes in the source of referral over a six-year period in Queensland. Data from Queensland Emergency Departments Information Systems were analyzed based on records from 21 hospitals for the periods 2003–04 to 2008–09. The emergency department data were compared with publicly available data on GPs services and patients attendance rates. In Queensland, the majority of patients are self-referred and a 6.6% growth between 2003–04 and 2008–09 (84.4% to 90% respectively) has been observed. The number of referrals made by GPs, hospitals and community services decreased by 29.4%, 40%, 42% respectively during the six-year period. The full-time workload equivalent GPs per 100,000 people increased by 4.5% and the number of GP attendances measured per capita rose by 4% (4.25 to 4.42). An examination of changes in the triage category of self-referred patients revealed an increase in triage category 1–3 by 60%, 36.2%, and 14.4% respectively. The number of self-referred patients in triage categories 4–5 decreased by 10.5% and 21.9% respectively. The results of this analysis reveal that although the number of services provided by GPs increased, the amount of referrals decreased, and the proportion of self-referred patients to emergency departments rose during the six-year period. In addition, a growth in urgent triage categories (1–3) has been observed, with a decline in the number of non-urgent categories (4–5) among patients who came directly to emergency departments. Understanding the reasons behind this situation is crucial for appropriate demand management. Possible explanations will be sought

and presented based on patients' responses to an emergency department users' questionnaire.

Prehosp Disaster Med 2011;26(Suppl. 1):s22
doi:10.1017/S1049023X11000847

(A80) Nationwide Study to Improve Door-to-Balloon Times in Patients with Acute ST Elevation Myocardial Infarction Requiring Primary Percutaneous Coronary Intervention Using Prehospital ECG Transmission

M.E. Ong,¹ A.S. Wong,² S.G. Teo,² C.M. Seet,³ B.L. Lim,³ D.C. Foo,² S.M. Lai,⁴ S.H. Ong,² F.C. Lee,³ K.P. Chan,³ V. Anantharaman,³ T.S. Chua,² P.P. Pek,³ H.H. Li⁵

1. Department of Emergency Medicine, Singapore, Singapore
2. Cardiology, Singapore, Singapore
3. Emergency Medicine, Singapore, Singapore
4. Accident and Emergency, Singapore, Singapore
5. Clinical Research, Singapore, Singapore

Objective: To reduce nationwide door-to-balloon times (DTB) in patients presenting with acute ST-elevation myocardial infarction (STEMI) requiring primary percutaneous coronary intervention (PCI), by adoption of pre-hospital wireless 12-lead electrocardiogram (ECG) transmission by Singapore's national ambulance service.

Methods: A phased, prospective, before-after, interventional study of all patients who presented to the national ambulance service with the diagnosis of STEMI. In the 'Before' phase, chest pain patients only received 12-lead ECGs on arrival at the Emergency Departments (ED), where diagnosis of STEMI could be made. In the 'After' phase, 12-lead ECGs were performed in the field by ambulance crews and transmitted while en-route to the hospitals. Diagnoses of STEMI was made by on-duty emergency physicians (EP) prior to patients' arrival and PCI activated. Data was collected from ambulance run sheets, ECG transmission logs, EDs and cardiology units.

Results: 451 eligible patients from “Before” and 214 patients from “After” phase were included in the analysis. Median DTB time was 88 minutes in the “Before” and 52 minutes in the “After” phase ($p = 0.0001$). During office hours, median DTB times for 'Before' and 'After' phases were 84 minutes and 47 minutes, respectively ($p = 0.0001$). After office hours, median DTB times for 'Before' and 'After' phases were 95 minutes and 54 minutes, respectively ($p = 0.0001$). There were 11 false positive activations in “Before” phase and one in the “After” phase.

Conclusion: Pre-hospital ECG transmission resulted in significant reduction of DTB time; this effect occurred regardless of whether patients presented to the ED before or after office hours. No increase in false activations was found in the “After” phase. Pre-hospital ECG transmission should be adopted as “standard of care” for all STEMI cases meeting the criteria for PCI.

Prehosp Disaster Med 2011;26(Suppl. 1):s22
doi:10.1017/S1049023X11000859

(A81) Curing Overcrowding and Boosting Patient Flow in a High Volume, Low Capacity Emergency Department

J. Arnold, I.G. Ferguson, A. Montefusco, C. Nguyen
Emergency Medicine, San Jose, United States of America

Background: Overcrowding afflicts emergency departments (ED) worldwide. The CDC has reported that EDs in the

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.

Prehosp Disaster Med 2011;26(Suppl. 1):s22–s23
doi:10.1017/S1049023X11000860

(A82) Triage in the Prehospital Setting

A. Khorram-Manesh,¹ A. Hedelin,² P. Ortenwall²

1. Research and Education, Gothenburg, Sweden
2. Gothenburg, Sweden

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%).

Prehosp Disaster Med 2011;26(Suppl. 1):s23
doi:10.1017/S1049023X11000872

(A83) Pediatric Disasters: Key Elements for Improving Care

S.E. Mace,¹ C.T.J. Doyle²

1. Emergency Services Institute, Cleveland, Ohio, United States of America
2. Emergency Department, Ann Arbor, Michigan, United States of America

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.

Prehosp Disaster Med 2011;26(Suppl. 1):s23
doi:10.1017/S1049023X11001257

(A84) Video Documentation as a Supplemental Teaching Tool for Multi-Focused Emergency Management Exercises

C. Tedeschi,¹ L.M. Hilmi²

1. Emergency Medicine, New York, United States of America
2. Bel Air, United States of America

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