"CPR Anytime" Prescription Distribution in an Urban Emergency Department : **Jeffrey D. Cochran[1], Joseph W. Heidenreich[1] : 1. Texas A&M University/Scott & White Memorial Hospital, Temple, TX, USA.**

INTRODUCTION: According to the AHA (American Heart Association), about 900 Americans die each day from sudden cardiac death, with an estimated 70% of these occurring in private residences. Early initiation of bystander CPR has been shown to be the best hope of survival for victims of cardiac arrest. Widespread layperson education in CPR is limited by lengthy and costly courses. Video-assisted self instructional CPR modules have shown to be as efficacious as traditional CPR courses while much more time and cost-effective. The AHA has recently endorsed a home CPR course called "CPR Anytime", a video-based self instruction kit for learning CPR. One proposed method for promoting layperson CPR education is physician prescriptions for a home CPR course. METHODS: We examined the compliance rate of patients discharged from the Emergency Department who were given a prescription for the "CPR Anytime" course. All patients discharged home from the ED during the study period were eligible to receive a prescription for the kit. Patients were provided written and verbal instructions regarding the importance of proficiency in CPR and how to order the kit. The kits were available for phone purchase through Laerdal Medical Corporation (Gatesville, TX) at a discounted rate of $27 USD. Prescription count was tracked through prescription duplicates as well as our ED's computerized patient tracking software (Picis ED PulseCheck, Wakefield, MA). The number of kits purchased by patients during the study was tracked by Laerdal via sales records for any sales made using the discount code provided on the prescription. RESULTS: A total of 1686 prescriptions were written and placed with patients discharged from the ED during the study period. Zero patients purchased a kit using the designated discount code provided on the prescription. DISCUSSION: The compliance rate of zero suggests that writing a prescription for "CPR anytime" from the emergency department is an ineffective intervention for increasing CPR proficiency among laypeople. Further investigation is planned to examine why no patients followed discharge instructions to purchase and use the kits.

Risk Stratification of Patients with Acute Pulmonary Embolism using the Pulmonary Embolism Severity Index Score from the Emergency Medicine Pulmonary Embolism in the Real World Registry (EMPEROR) : **Donald Schreiber[1], Jane L. Fansler[2], Beau Briese[1], Gigi Liu[1], Brian Hiestand[3], David Slattery[4], Jeffrey Kline[5], Charlie Pollack[6] : 1. Stanford University School of Medicine, Palo Alto, CA, USA. 2. Stanford/Kaiser Emergency Medicine Residency, Palo Alto, CA, USA. 3. Ohio State University, Newark, OH, USA. 4. University of Nevada School of Medicine, Las Vegas, NV, USA. 5. Carolinas Medical Center, Charlotte, NC, USA. 6. University of Pennsylvania, Philadelphia, PA, USA.**

INTRODUCTION: Evidence suggests patients with acute pulmonary embolism (PE) may be risk stratified into high and low risk groups. The Pulmonary Embolism Severity Index (PESI) score has been validated as a clinical prediction rule for mortality. The PESI score is derived from 11 clinical parameters that can be easily ascertained on ED presentation and stratifies patients into five risk classes (I-V). Patients in risk classes I (PESI<65) and II (PESI 66-85)

have low risk of short term mortality. Objective: To validate PESI as a predictor of inpatient and 30 day post-discharge mortality. METHODS: A prospective observational multicenter (22) registry of community and academic ED patients with PE ("EMPEROR") was conducted from 2006-08. Inclusion Criteria: ED patients with confirmed PE based on positive CTA, positive MRI, high probability VQ, positive pulmonary angiography or DVT diagnosed in the last 30 days with symptoms of chest pain or SOB. Patients with missing clinical data that precluded PESI calculation or without 30 day outcomes were excluded. Descriptive statistics with 95%CI and student's t-test, Fisher's exact test and chi-square test were used as appropriate. Holm step-down adjustment applied. Negative likelihood ratios (LR-) and negative predictive values (NPV) were calculated. RESULTS: 1427 patients were enrolled. 818 patients (57.3%) were identified as PESI Class I or II (LOW). The inpatient mortality rate in LOW was .7%, CI 0.1%-1.3%, vs 6.4%, CI 4.5%-8.4% in Class III-V (HIGH). The 30 day post-discharge mortality rate for LOW was .6%, CI 0.1%-1.1%, vs 4.1%, CI 2.5%-5.7% in HIGH. NPV for inpatient mortality for LOW was 99.5%, CI 98.4%-99.7%; LR- was .23, CI .11-.48. For 30 day post-discharge mortality, NPV for LOW was 99.4%, 95% CI 98.6%-99.8%, LR- was .29, CI .13-.64. CONCLUSIONS: In EMPEROR, the PESI score accurately identified acute PE patients with low risk for inpatient and 30 day post-discharge mortality. Further study using PESI to identify candidates for outpatient care is warranted.

Improving Outcomes In Severe Sepsis and Septic Shock:
Results of a Prospective Multicenter Collaborative : Chad M. Cannon[1], Chris Holthaus[2], Emanuel Rivers[3], Satheesh Gunaga[4], Marc Zubrow[5], Pat Posa[6], Ron Elkins[7], Bonnie Turman[8], Vipul Kella[4], Scott Davis[9], Nathan Lidsky[10], Truman J. Milling[11] : 1. University of Kansas Hospital, Kansas City, KS, USA. 2. Barnes Jewish Hospital, St. Louis, MO, USA. 3. Henry Ford Hospital, Detroit, MI, USA. 4. Henry Ford Hospital – Wyandotte, Wyandotte, MI, USA. 5. Christiana Care Health System, Newark, DE, USA. 6. St. Joseph Mercy Hospital, Ann Arbor, MI, USA. 7. Pacific Medical Center, San Francisco, CA, USA. 8. Porter Memorial Hospital, Valparaiso, IN, USA. 9. St. Cloud Hospital, St. Cloud, MN, USA. 10. Northwest Community Hospital, Arlington Heights, IL, USA. 11. University Medical Center at Brackenridge, Austin, TX, USA.

INTRODUCTION: Since 2001, a single-center, randomized, controlled trial of early goal directed therapy (EGDT) has been followed by multiple single center retrospective and prospective observational studies of EGDT with other interventions. All of these studies have repeatedly demonstrated improved survival for severe sepsis and septic shock (SS/SS). The purpose of this study was to examine the internal and external validity of these findings through a multicenter collaborative. METHODS: This is a prospective, observational study examining the primary outcome of in-hospital mortality in adult patients presenting with SS/SS before and after implementation of an early sepsis initiative beginning in the Emergency Department (ED) comprising best practice guidelines. Eleven centers representing a variety of community and tertiary care settings were included in the study. RESULTS: Over the study period 5,467 patients were enrolled: 1,446 pre- and 4,021 post-implementation. In spite of the post-implementation group's higher baseline APACHE II scores (8.45% higher predicted in-hospital mortality), the actual in-hospital mortality was 39.12% before implementation versus 28.97% after implementation ($P<0.001$). This resulted in an actual mortality relative risk reduction of 26.0% and absolute risk reduction of 10.15%. Secondary outcomes included statistically significant decreases in use of vasopressors (29%), mechanical ventilation (9.7%), and length of

hospital stay (5.6 days), all P<0.05. CONCLUSIONS: Implementation of an early best practice sepsis initiative beginning in the ED across a variety of clinical and geographic settings is uniformly associated with significant reductions in mortality, vasopressor use, mechanical ventilation, and hospital length of stay. This real world adoption of early sepsis best practice externally validates findings of previous single center studies and supports current initiatives in the management of SS/SS patients. Current and future resources and emphasis should be placed on overcoming logistical, institutional, and professional barriers to implementation of sepsis initiatives.

TU.36) Factors Associated with Research Productivity in US Emergency Medicine Residencies : Marc Pollack[1], Jonathan Walker[1], Henderson Thomas[1], David Vega[1] : 1. Emergency Medicine, York Hospital, York, PA, USA.

INTRODUCTION: Research productivity and factors associated with productivity in emergency medicine residencies (EMR) have not been well described. It is commonly believed that university and longer residencies produce more research. The objective of this study was to determine the amount of research produced by the different types of EMR, and identify factors associated with increased productivity. METHODS: Accepted abstracts from the past three years (2006, 2007, 2008) of the National SAEM meetings were reviewed. When authors from multiple institutions were identified, each EMR received credit for the abstract. Only US allopathic EMR were included. New EMR (<4 years old) were excluded. Variables evaluated were length of EMR, type of EMR (university or community), and number of residents per class. Analysis using Mann-Whitney and Pearson Correlation. RESULTS: 1614 abstracts were reviewed, resulting in 1767 data points over the 3 year period. A total of 127 EMR were included. The range of accepted abstracts per EMR was 0 – 98, with a median of 9 and a mean of 13.9. Eight EMR had no accepted abstracts. Three year EMR produced a mean of 11.7 abstracts (95% CI 9.5-14.0) with a median of 8 abstracts, compared to 4 year EMR that produced a mean of 21.6 abstracts (95% CI 13.1-30.2) with a median of 16 abstracts, p= 0.009. Community EMR produced a mean of 9.0 abstracts (95% CI 6.5-11.4) with a median of 6, compared to university EMR that produced a mean of 18.1 abstracts (95% CI 14.0-22.2) with a median of 15 abstracts, p< 0.001. Community 3 year EMR (49) had a median of 5 abstracts and university 4 year EMR (19) had a median of 20 abstracts, p<0.001. There was a 21.5% correlation between the number of residents per year and the number of abstracts produced, p=0.015. The range of residents per year was 6-19. CONCLUSIONS: Variables associated with increased research productivity as determined by accepted National SAEM abstracts are : 1-university program, 2- a 4 year program, and 3-a larger number of residents per class. University, 4 year EMR were the most productive research EMR.

TU.37) Use of a Resident Driven Program to Improve Resident Emergency Visit Documentation : Rajesh Mittal[1], Richard Sinert[1] : 1. Emergency Medicine, SUNY Downstate , New York, NY, USA.

INTRODUCTION: There is currently no standard documentation training for Emergency Medicine (EM) residents. Objectives: To improve emergency medicine residents' documentation of ED visits for reimbursement, medicolegal, and continuity of care purposes.

METHODS: Our EM residency consists of 72 residents, with 13 EM residents per year in a 4-year EM program and an additional 4 residents per year in a combined EM and Internal Medicine 5-year program. The study was done in our University affiliate (55,000 annual visits) which uses an electronic medical record (T-System, Dallas Texas, USA). A 15 minute documentation tutorial was developed by the authors and administered monthly to the ED residents (PGY 1-5) by a senior (PGY-4) resident during their administration rotation. Tutorials were administered during each of the resident's shift, using real time documentation of a typical active patient who was going to be admitted. Data Analysis: Charts were then analyzed by a senior EM administrative attending pre- and post-tutorial for: data score (0-6 pts: 1 point each for analysis of labs, X-ray, EKG, discussion with radiologist, obtaining prior records. 2 points each for review of prior records, independent visualization of complex test results) and H&P level (0-5 pt: level 5 obtained for recording 4 HPI elements, 10 ROS systems, 1 statement from at least 2 of past history/family history/social history, 8 PE systems). Comparison of pre- and post-documentation standards were by Mann-Whitney U (2-tails, alpha=0.05). RESULTS: During the 3 month study 16 residents were studied accounting for a total of 322 chart reviews (pre-tutorial n=152 chart review and n=170 chart reviews). There was a significant ($p<0.0001$) improvement in data scores for 15/16 residents; post- 3.0 (95% CI, 2.7 – 3.4) compared to pre - tutorial 3.9 (95% CI, 3.7 – 4.2) period. The tutorial also improved ($p=0.0008$) H&P scores: pre- 4.6 (95% CI,4.5 – 4.7) versus post- 4.8 (95% CI, 4.7 – 4.9) with improvement in 14/16 residents. CONCLUSION: A resident-to-resident administered 15 minute tutorial in real time significantly improved resident medical record documentation.

TU.38) Emergency communication: Addressing the challenges in health care discourses and practices :
Diana M. Slade[1], Marie M. Manidis[1], Jeannette McGregor[1], Hermine Scheeres[1] : 1. Centre for Health Communication, University of Technology, Sydney, Sydney, NSW, Australia.

INTRODUCTION: Effective communication is a major contributor to patient satisfaction with health care in general and with the emergency department (ED) in particular (Garling, 2008). METHODS: This paper outlines research undertaken in five EDs in Australian hospitals that examined spoken interactions between clinicians and patients. It identifies successful and unsuccessful interactions and analyses the linguistic and ethnographic complexities of emergency consultations. The research used a qualitative ethnographic approach with discourse (language) analysis. By combining these methodological approaches it was possible to analyse how talk was socially organised around health care practices and how language, organisational and other factors impact on the effectiveness of communication. RESULTS: Through taping and analysing all the interactions of the patients in the study from triage to disposition, we have identified the critical communicative moments that shape the quality of the patients' experience. The paper will present findings showing transcripts where knowledge and power are shared and negotiated at these critical points comparing these to the interactions where the patients are positioned as having little or no knowledge or control over their condition or treatment. In these latter examples, patients' cues are not picked up on, they rarely initiate or ask questions and they are not informed about processes or protocols. CONCLUSIONS: The paper addresses how the competing priorities of patient-centred care and organisational efficiencies are played out and highlights organisational contradictions and tensions. Our research has generated two sets of findings. On the one hand, consultations privilege bio-medical and efficiency approaches and

are rushed, fragmented and/or repetitive, limiting patients from becoming co-producers in their care team. On the other hand, these high-stress and conversationally-disrupted consultations, can result in co-productive and coherent clinician-patient interactions where clinicians develop empathy and rapport with their patients.

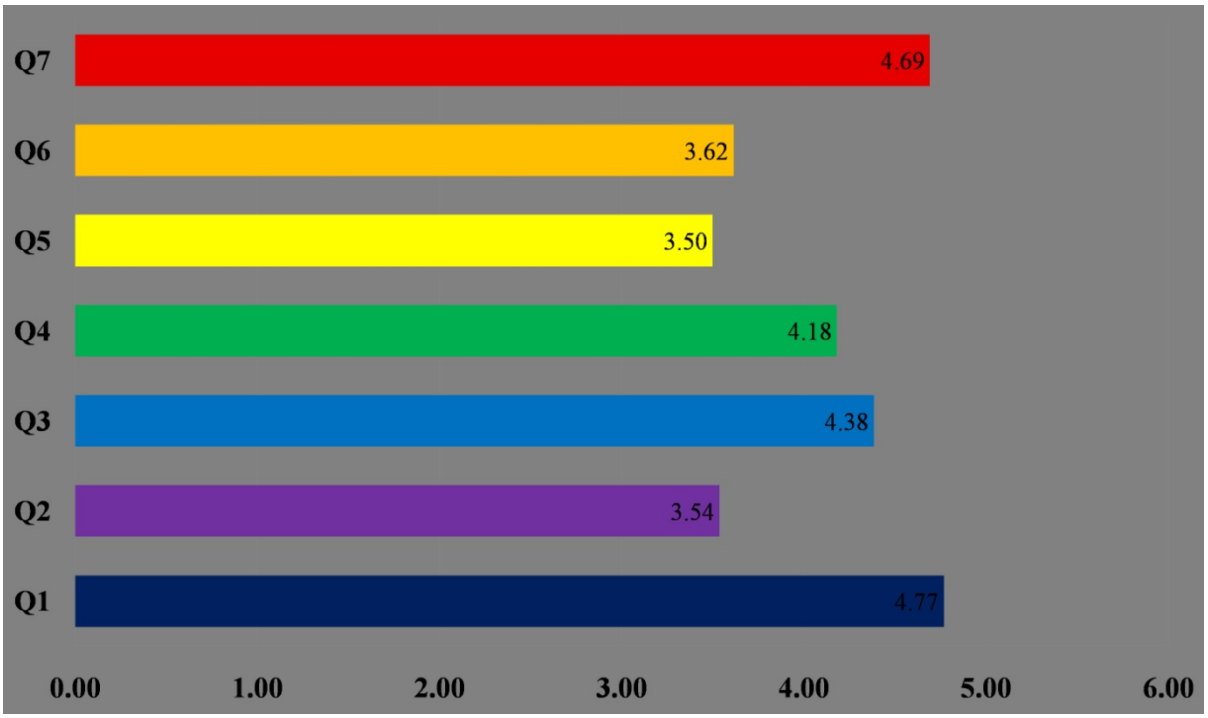
TU.39) The Role of Anesthesiology Curriculum in Improving Bag-Mask Ventilation and Intubation Success Rates of Emergency Medicine Residents : Hassan Soleimanpour[1], Changiz Gholipour[1], Rozbeh Rajaei ghafori[1] : 1. Emergency Departmaent, Tabriz University of Medical Science of Iran, Tbriz, Iran.

INTRODUCTION: Rapid and safe airway management is paramount to the successful management of critically ill patients in the emergency department. METHODS: This was an educational, interventional (Before and After) study conducted at Nikoukari hospital. A total of 18 emergency medicine residents (PGY1) received traditional intubation and bag-mask ventilation instruction for 36 hours, as well as mannequin practice, in the skill lab. Then the same group trained in airway management in the operating room for 1 month, as an anesthesiology curriculum. They were asked to ventilate and intubate 18 patients (Mallampati class I and ASA class I and II) in the operating room, before and after this curriculum. The intubation was considered to be successful when it occurred on the first attempt and within 20 seconds. Successful bag-mask ventilation defined by an increase in ETco2 to 20 mm Hg and back to baseline with 3 L/min fresh gas flow and the adjustable pressure limiting valve at 20 cm H2O. Success rates were recorded and compared by using McNemar test in SPSS 15. RESULTS: Before educational intervention in the operating room, the participants had an intubation success rate of 27.7% with the confidence interval (CI) of (0.07- 0.49) and the successful bag-mask ventilation was 16.6% (CI: 0-0.34). After the educational intervention in the operating room they had an intubation success rate of 83.3% (CI: 0.66-1), and the successful bag-mask ventilation was 88.8% (CI: 0.73-1). The difference in intubation success rates and successful bag-mask ventilation before and after the intervention were statistically significant, (P= 0.002 and P=0.0004 respectively). CONCLUSION: Since, emergency medicine residents success rate in airway management, has evidently improved after spending time on anesthesiology collateral courses, anesthesiology rotations seem to be an essential component for emergency medicine training program.

TU.40) Use of a Part Task Simulator vs. Cadaver Lab for Training Emergency Procedures : Anita Vashi[1], Yasuharu Okuda[1] : 1. Emergency Medicine, Mount Sinai School of Medicine, New York, NY, USA.

INTRODUCTION: This study aims to evaluate the use of a new procedural simulator in the training of emergency medicine residents. METHODS: Project Description: During orientation, 13 new residents participated in both the traditional cadaver lab and a procedural simulator station using TraumaMan (SimuLab, Seattle WA), for the placement of tube thoracostomy and pericardiocentesis. After completion of both experiences, participants were asked to complete a 7 question survey using a five point Likert scale (1 = strongly negative/dissatisfied, 5 = strongly positive/satisfied) to compare the two modalities for procedural training. Materials: The TraumaMan simulator is a portable, reusable device which

functions as an anatomically correct human simulator with appropriate landmarks that can be utilized for several surgical procedures. RESULTS: All 13 residents responded to the survey, 100%. Residents felt the procedural simulator was a valuable tool in the teaching of both tube thoracostomy and pericardiocentesis (mean 4.77, 4.38 respectively; SD 0.42, 1.00). In comparison to the cadaver lab, residents found the procedural simulator superior for teaching both tube thoracostomy and pericardiocentesis (mean 3.54, 4.18 respectively; SD 0.98, 1.11). Residents felt the procedural simulator improved their confidence for dealing with future trauma patients (mean 4.69, SD 0.46). CONCLUSION: Overall, participants found the TraumaMan procedural simulator a useful device for the training of tube thoracostomy and pericardiocentesis. Additionally, the simulator was equivalent to or better than the cadaver lab. Given the initial, promising results from this study and the logistical obstacles involved with cadaver and animal labs, the TraumaMan introduces a new way to improve the procedural skills of residents. Given the ease of setting up the procedural simulator and the ability for multiple people to practice procedures multiple times using one simulator, procedural simulation should be used as means to develop and refresh procedural skills in a residency curriculum.



Q1. TraumaMan is a valuable tool in teaching tube thoracostomy placement
Q2. TraumaMan is superior to the cadaver model in teaching tube thoracostomy placement
Q3. TraumaMan is a valuable tool in teaching pericardiocentesis
Q4. TraumaMan is superior to the cadaver model in teaching pericardiocentesis
Q5. TraumaMan is a realistic simulator for demonstrating response to treatment
Q6. There is a steep learning curve for the student using TraumaMan
Q7. TraumaMan improved my confidence for dealing with future trauma patient encounters

TU.41) Burnout among Emergency Medicine Residents and Practitioners in Iran; A National Survey : Mohammad Jalili[1], Gholamreza Sadeghipour Roudsari[1], Anahita Basirnia[1], Reza Azizkhani[1]; 1. Tehran University of medical sciences, Tehran, Tehran, Iran.

INTRODUCTION: The study objectives were to measure the level of burnout in emergency medicine residents and practitioners in Iran and to determine work related stressors and demographic variables associated with it. METHODS: A 75-item self-administered survey was prepared, including demographic and work-related data, work stressors and Maslach Burnout Inventory manual. Responders completed the questionnaire in the presence of one of the researchers. The three dimensions of Burnout (EE: emotional exhaustion, DP: depersonalization and PA: personal accomplishment) were calculated for each participant and ranked as high, moderate, or low. Then correlation between demographic, work-related factors and stressors with burnout level was investigated using univariate analysis. RESULTS: 161 of 188 eligible respondents participated in the study. 35% had a high score for EE, 39% had a high score for DP and 47% had a low score for personal PA. Work status (resident versus practitioner) and younger age were associated with EE. Living alone, work status, and younger age were associated with DP. Marriage, exercise and work status were associated with lack of PA. We determined 19 sources of work stressors (lack of equipment, physical environment, relationship with other services, curriculum overload, lack of system for support and encouragement, economic problems and future of emergency medicine, work related fatigue, patients' economic problems, work overload, difficulties to balance professional and private life, fear of malpractice, educational issues, image of emergency medicine in medias, not enough skills, violence in ED, care of old or terminally ill patients, consultant unavailability, new information and technologies, communication with colleagues) were all associated with higher levels of the 3 dimensions of burnout. CONCLUSION: A high level of burnout is widely prevalent among emergency medicine practitioners in Iran. It can be controlled by changing some of the stressors which are responsible. Further studies should be performed on coping mechanisms and effect of education on burnout and stressors' level.

TU.53) Portable Videolaryngoscopy for Emergency Department Intubation: A Comparison of Four Videolaryngoscopes : Jarrod M. Mosier[1], Sam Keim[1], John C. Sakles[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.

INTRODUCTION: Objective: To compare the success rate and performance characteristics of four commercially available portable videolaryngoscopes for emergency department (ED) intubations. METHODS: We evaluated all ED intubations performed with portable videolaryngoscopes at an academic medical center over a 21-month period (February 1, 2007-May 1, 2009). The following portable videolaryngoscopes were studied: GlideScope Ranger (GVR), C-MAC videolaryngoscope (CMAC), Pentax Airway Scope (PAS), and McGrath videolaryngoscope (MCG). When one of these devices was used for intubation, the operator completed a data collection form, which included the following variables: success, number of

difficult airway predictors, Cormack-Lehane (CL) view, optical fogging (OF), and lens contamination (LC). OF of each device was rated on a 0-10 cm visual analog scale (0=no fog, 10=complete fog). Lens contamination was rated as none, mild, moderate, or severe. Time to intubation was gathered from video recordings when available and defined as the time of insertion of the device to the cuff passing the cords. Data were analyzed using ANOVA and non-parametric statistical tests as appropriate with an alpha of 0.05 and p-values for pairwise comparisons were corrected for multiple tests. RESULTS: See table for results. CONCLUSION: For ED intubations, the GVR and CMAC had the highest success rate, the least optical fogging, and the least lens contamination of all portable videolaryngoscopes studied. The GVR was used on the most difficult airways when compared to the CMAC. However, success rate and all other performance characteristics were equivalent between the two devices.

Success Rate and Performance of Portable Videolaryngoscopes

Device	Success1	Time2 (sec)	DAP3	CL view4	OF5	LC6 (mild/none)
GVR	67/71 (94%) a	39.8 a,b	2.1 a	1.2 a,b	0.5 a	69/71 (97%) a
CMAC	51/53 (96%) a	28.7 a	1.2 b	1.0 a	0.7 a	43/53 (93%) a,b
PAS	12/19 (63%) b	38.0 a,b	0.9 b	2.0 b	2.6 b	13/19 (68%) b
MCG	11/14 (79%) a,b	53.1 b	1.4 a,b	1.6 a,b	4.7 b	11/14 (79%) a,b

1. Fisher’s exact test, p=<0.001, 2. Anova, p=0.01 3. Kruskal-Wallis rank test, p=0.0002, 4. Kruskal-Wallis rank test, p=0.0062, 5. Kruskal-Wallis rank test, p=0.0001, 6. Proportion of intubations with none or mild contamination, Fisher’s exact test, p=0.001.

NOTE: a or b denotes statistically similar pair-wise comparison

TU.54) Changes Over the Last Decade in Airway Devices Used for Intubation in an Academic Emergency Department in the United States : John C. Sakles[1], Stephen F. Chiu[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.

INTRODUCTION: Objective: To compare present-day usage of airway devices during emergency department (ED) intubations to those of a decade ago. METHODS: A series of 610 consecutive ED intubations performed over the last two years were compared to a series of 610 consecutive ED intubations performed in a study published a decade ago. After each intubation was performed in the ED, a data collection form was filled out by the intubator. Variables collected included device(s) used and other characteristics of the procedure. Descriptive statistics were used to compare the difference in frequency of airway devices used during the two time periods. RESULTS: The frequency of direct laryngoscopy (DL) has substantially declined while the use of videolaryngoscopes (VLs) and other optically-assisted devices has become more prevalent. See Table 1 for details. CONCLUSION: Presently, there is a greater variety of airway devices available for use in the ED than in the past. As a result, DL is used less frequently and VL has begun to replace DL. Though not statistically

significant, there has been a marked decrease in surgical cricothyrotomies, perhaps due to the availability of these new alternative airway devices.

Table 1: Frequency of Devices Used for Emergency Department Intubations

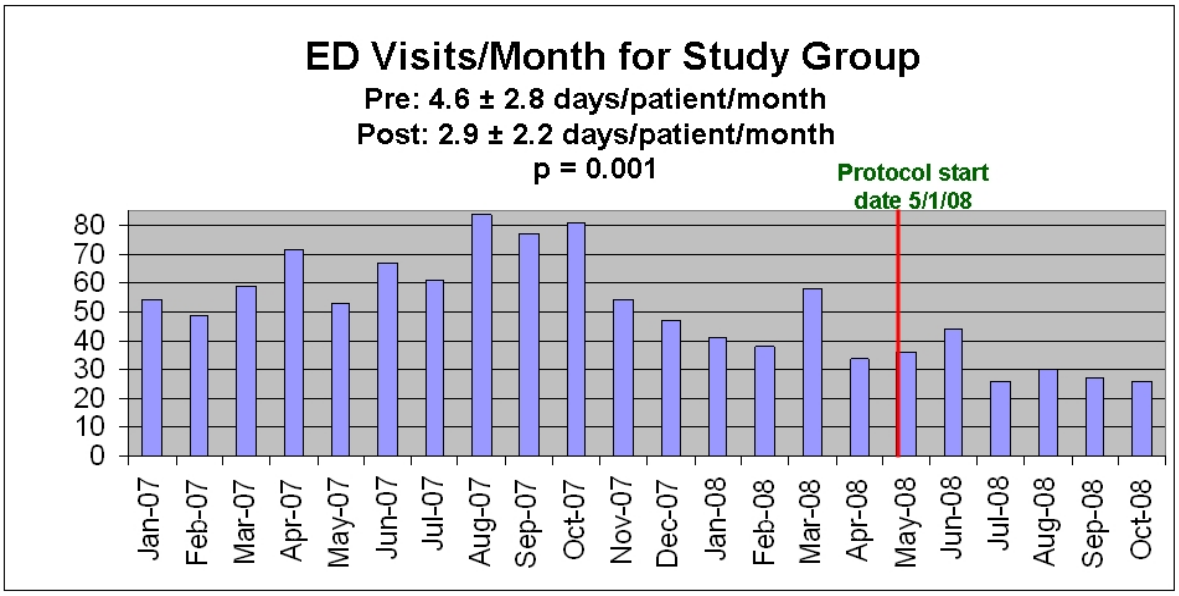
	1998 (n=610)	2008 (n=610)	p
DL	597 (97.9%)	332 (54.4%)	<0.0001
VL	0 (0.0%)	247 (40.5%)	<0.0001
FFO	0 (0.0%)	12 (2.0%)	0.0005
ILMA	0 (0.0%)	9 (1.5%)	0.0038
OA	0 (0.0%)	5 (0.8%)	NS
LS	0 (0.0%)	2 (0.3%)	NS
BNTI	6 (1.0%)	1 (0.2%)	NS
CRIC	7 (1.1%)	1 (0.2%)	0.069

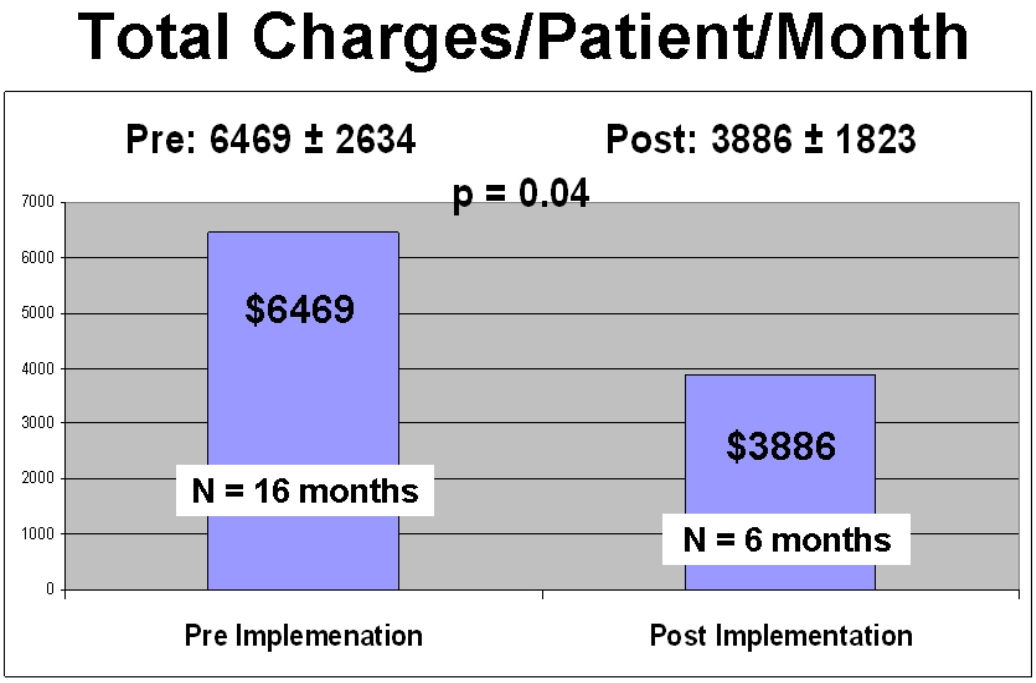
DL = Direct Laryngoscopy, VL = Videolaryngoscopy, FFO = Flexible Fiberoptic, ILMA = Intubating Laryngeal Mask Airway, OA = Optically-Assisted Laryngoscope, LS = Lighted-Stylet, BNTI = Blind Nasotracheal Intubation, CRIC = Cricothyrotomy

TU.55) Implementation of a Pain Protocol Reduces Emergency Department Visits and Charges For "Super Users" : Brent Passarello[1], Brian Levine[1], Neil Jasani[1], Susan Angeline[1], George Zlupko[1] : 1. Christiana Care Health System, Newark, DE, USA.

INTRODUCTION: Emergency department (ED) super users often visit frequently with recurring complaints centered on pain control. They require diligence due to complex medical histories, often develop a tolerance or dependence for analgesics and display heightened expectations with respect to pain management. At our institution, encouraging super users with recurrent pain needs to seek outpatient pain management had little impact on their healthcare usage pattern. OBJECTIVE: Determine if the implementation of a pain protocol impacts the number of ED visits, inpatient days, and charges for ED super users. METHODS: A query of our 2 hospital 150,000 annual ED visit system was performed to identify the top 100 most frequent users. A committee was formed to review candidates for the super user pain protocol. The protocol was implemented on the top 14 super user patients. All were provided a copy of the protocol, a list of pain management clinics, drug treatment centers, and social work contact

information. ED staff was educated on usage of the protocol. Chart review to determine the number of ED visits, inpatient days and total charges was performed. 16 months of pre-protocol data was compared to 6 months of post-protocol data. Analysis was completed using Student's t-test. A p value of ?0.05 was considered significant. RESULTS: In 2007, our 14 patients accounted for 758 ED visits and 386 inpatient days. The number of ED visits/patient/month decreased from 4.6 ± 2.8 pre-protocol to 2.9 ± 2.2 post (p-value = 0.001). Inpatient days/patient/month decreased from 5.8 ± 4.3 to 4.0 ± 4.2 but failed to reach significance (p-value =0.07). Total charges decreased from an average of $6469 ± 2634 per pt/month to $3886 ± 1823 per pt/month (p-value = 0.04) for an annualized savings of $433,944. CONCLUSION: Although our study focused on a select number of patients from one institution, we demonstrated that an ED based pain protocol reduced the number of ED visits and resulted in a substantial reduction in charges when applied to super users.





TU.56) Oral paracetamol and/or ibuprofen for treating pain after soft tissue limb injuries: single centre double-blind, randomised controlled clinical trial : Colin A. Graham[1], Paulina SK Mak[1], S. Y. Man[1], W. K. Woo[1], Giles N. Cattermole[1], Timothy H. Rainer[1] : 1. Emergency Medicine, Chinese University of Hong Kong, Hong Kong, New Territories, China.

INTRODUCTION: Non-steroidal anti-inflammatory drugs and paracetamol are commonly used oral analgesics in emergency departments (ED). Little is known about the relative efficacy of paracetamol and ibuprofen in the ED. Objectives: To compare the analgesic efficacy of oral paracetamol, ibuprofen and their combination, and to establish and compare the safety of these three regimes. METHODS: Single centre double-blind, randomised controlled clinical trial. Setting: University teaching hospital in Hong Kong with annual ED census of >140,000 patients. Participants: ED patients with clinically evident soft tissue injuries to the limbs or mechanical back pain. Ethics and power calculation: Ethical approval was obtained from the local clinical research ethics committee. 783 patients were required to demonstrate differences in adverse events between the regimes. Randomisation: Patients were randomised to one of three groups: 1. Paracetamol 1g x4 and placebo ibuprofen 400mg x3

daily; 2. Ibuprofen 400mg x3 and placebo paracetamol 1g x4 daily; 3. Paracetamol 1g x4 and ibuprofen 400mg x3 daily. Outcomes: 1. Analgesic efficacy both at rest and activity; 2. Presence, frequency and duration of adverse effects (up to 28 days). RESULTS: From 1332 potential participants, 783 patients (505, 64.5% male) were randomised. 705 (90%) completed the ED phase, 669 (85.4%) completed initial follow up and 583 (74.5%) patients completed the study. There were no clinically significant differences in pain scores (at rest or activity) at any point between the groups. Adverse events at 28 days: Group 1 had 16/262 (6.1%) adverse events (rash, epigastric pain, indigestion), Group 2 had 26/258 (10.1%) and Group 3 had 32/263 (12.2%). There was a significant difference in adverse events between Groups 1 and 3 (p=0.016, ?2 test) and a trend favouring Group 1 compared to Group 2 (p=0.097, ?2 test). CONCLUSION: Paracetamol is equally effective and has less adverse events than ibuprofen in the ED.

TU.57) Efficacy and Safety of Procedural Sedation with Propofol by Newly Trained Emergency Physicians in The Netherlands : **Maybritt I. Kuypers[1], Francis Mencl[2], Matthijs F. Verhagen[1], Maarten P. Simons[1] : 1. Onze Lieve Vrouwe Gasthuis, Amsterdam, Netherlands. 2. Summa Health Systems, Akron, OH, USA.**

INTRODUCTION: Objectives: To evaluate effectiveness and safety of procedural sedation and analgesia (PSA) with propofol by newly trained Dutch emergency physicians (EPs). METHODS: A prospective observational cohort study of patients undergoing PSA with propofol given by EPs from March 2006-May 2008. The setting is in an urban 45,000/yr visit emergency department (ED) in a hospital with an EM training program since 2000. PSA was introduced by visiting US based faculty in 2005. Primary outcomes were any adverse events and efficacy (procedural success rate). Data were recorded during the procedure with a standardized form. RESULTS: Of the 185 patients enrolled, 53% were male, ranging from 9 to 94 yrs (mean 54; SD = 20.7). Almost all (96.6%) had an ASA class score of I or II. Indications for PSA were reduction of dislocations (55.2%), electro-cardioversion (27.6%), fracture reduction (8.8%) and abscess/wound treatment (8.3%). The mean propofol dose required was 1.32 mg/kg (SD = 0.77). Half (49.7%) of the patients also received fentanyl at a mean total dose of 50 mcg (SD = 51.5). The mean Ramsay score was 4.45 (SD = 1.04) with a range of 1 to 6. The procedural success rate was 99.5%. Only one patient recalled the painful procedure. Overall the sedation event (SE) rate was 23.2% and included desaturation (11.5%), hypoventilation (10.3%), hypotension (4.4%) and bradycardia (2.2%), all of which resolved with simple supportive interventions. No serious adverse events were reported. One patient vomited, but showed no signs of aspiration. Increased age (p=0.002) and increased Ramsay scores (p= 0.012) were the only significant predictors of events. Patients > 60 yrs old had a SE rate of 38.7% (vs. 13.6%) and accounted for 66% of the events. Gender, patient weight, total dose of propofol, fentanyl use and type of procedure did not correlate with any adverse events. CONCLUSION: This study shows that PSA with propofol can be done safely and effectively by new EPs in a country where EM is still in an early stage. Age is the only independent risk factor for events. All SE were minor and responded to simple interventions.

TU.58) Intramuscular Diclofenac versus Intramuscular Tramadol In the Treatment of Renal Colic in the Emergency Department : **Shaden Salameh[1], Nurit Hiller[1], Meir Antopolsky[1], Ruth Stalnikowicz[1] : 1. Emergency, Hadassah University Hospital, Jerusalem, Israel.**

INTRODUCTION: NSAIDs are considered the mainstay in the treatment of renal colic. NSAIDs are contraindicated in patients with renal failure and are not recommended in patients with diseases which could involve the kidney. Objective: The aim of our study was to compare the efficacy of intramuscular Diclofenac and Tramadol in the treatment of renal colic in the emergency department (ED). METHODS: A prospective, randomized trial was conducted in patients with a clinical picture of renal colic. Diagnosis was confirmed by non contrast abdominal CT. Subjects were randomized to receive a single intramuscular injection of either 75 mg Diclofenac or 100 mg Tramadol. Ninety seven patients were included, of these 48 received Diclofenac and 49 received Tramadol. RESULTS: Patients' characteristics were similar at enrollment. Similar proportions of patients in each group had severe hydronephrosis and stones equal or larger than 4mm in size. Diclofenac was significantly ($P < 0.05$) more effective than Tramadol in reducing the severity of pain at 30 minutes as measured on a 10-cm visual analogue scale. Reduction of more than 50% in pain severity was observed in 64% of patients treated with Diclofenac and in 49% of patients treated with Tramadol ($P < 0.05$). More patients in the Tramadol group were given rescue analgesia (51% vs 21%). For all the study variables, Diclofenac was better than Tramadol. CONCLUSIONS: These results show that intramuscular Diclofenac as a single agent for the treatment of renal colic is more effective than intramuscular Tramadol. More studies are needed in order to confirm the present results. In the meanwhile intramuscular Tramadol is an alternative when contraindications preclude the use of NSAIDs.

TU.59) A Comparison of the Success Rate and Performance Characteristics of the GlideScope Ranger to the GlideScope Cobalt in Emergency Department Intubations : Clay P. Josephy[1], Sam Keim[1], John C. Sakles[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.

INTRODUCTION: The GlideScope videolaryngoscope (GVL) is being used more frequently for intubation in the emergency department (ED). There are multiple commercially available models of the GlideScope. The purpose of this study was to compare the performance the GlideScope Ranger (GVL-R), which utilizes a reusable blade, to the GlideScope Cobalt (GVL-C), which utilizes disposable blades. METHODS: We performed an analysis of 115 consecutive emergency department intubations in which the GVL-R or GVL-C were used. After each intubation, the operator filled out a data collection form in which the following variables were recorded: 1st attempt success (FIRST), final success (FINAL), Cormack-Lehane (CL) view, optical fogging (OF), degree of lens contamination (LC), difficult airway predictors (DAPs), and operator PGY (PGY). OF was measured on a 10 cm visual analog scale (0= no fog, 10=completely fogged). Lens contamination was graded by the operator as none, mild, moderate or severe. Descriptive statistics were used to compare the results. RESULTS: The success rate and performance characteristics of GVL-R were superior to those of GVL-C. See table for details. CONCLUSION: In patients undergoing emergent intubation in the ED, GVL-R had superior performance characteristics as compared to GVL-C, possibly accounting for the markedly improved success rate of the GVL-R. This suggests that the differences in the design characteristics of the reusable versus the disposable blade are

impacting the success rate of the two devices.

Sucess and Performance Characteristics of GVL-R vs. GVL-C

	GVL-R	GVL-C	p
FIRST Pass Success	45/50 (90%)	40/65 (62%)	<0.01
FINAL Success	48/50 (96%)	48/65 (74%)	<0.01
CL (Average)	1.1	1.7	<0.01
OF	0.4	2.7	<0.01
LC (Severe)	0%	18.5%	<0.01
DAP	2.4	2.2	NS
PGY	2.3	2.3	NS

TU.60) Who checks anaesthetic equipment? : Fiona M. Burton[1], Ross Junkin[2], Pam Doherty[2] : 1. Inverclyde Royal, Greenock, United Kingdom. 2. Western Infirmary, Glasgow , United Kingdom.

INTRODUCTION: We undertook an audit to see if anaesthetic medical staff routinely check equipment themselves. Anaesthetic equipment checks are necessary to minimise mortality and morbidity secondary to equipment failure. Equipment check guidelines from the Association of Anaesthetists of Great Britain and Ireland are recognised as the national standard and form an integral part of the Royal College's competency based training. Implementation of these checks is the responsibility of the anaesthetist, who must be satisfied that they have been carried out correctly. METHODS: A multicentre prospective audit carried out over one day in every elective theatre in use in two hospitals. Questionnaires were filled in by the Operating Department Practitioners (ODP) following observation of the anaesthetist's pre-list activity. The anaesthetists had no prior knowledge of the study. All forms were anonymised. RESULTS: Two hospitals were included with one being a District General Hospital and the other an inner city teaching hospital. In total, 21 theatres were enrolled. Of these 11 (52%) were staffed by a consultant only, 8 (38%) by a consultant and trainee and 2 (10%) by a Specialist Registrar (SpR). Our results showed that the anaesthetic machine was checked by medical staff in only 11 (52%) of the theatres, the Bain circuit in 9 (43%) and the airway trolley equipment in 9 (43%). All three checks were carried out in only 9 (43%) of the theatres. Both theatres staffed by SpR's alone undertook all three checks. Only 3 (27%) of the eleven consultant only theatres had all three checks undertaken. CONCLUSION: Our results show that adequate equipment safety checks are not being directly undertaken routinely by anaesthetists. We presented our findings at departmental meetings where a prominent explanation was that these checks are increasingly the role of the ODP. We now ask the question whether this is sufficient given that the ultimate responsibility for any resultant misadventure will fall to the anaesthetist.

TU.61) A Prospective, Blinded, Randomized Controlled Trial to Evaluate Ketamine-Propofol vs. Ketamine Alone for Pediatric Procedural Sedation. : **Amit Shah[1], Gregory Mosdossy[1], Michael Peddle[1], Kris Lehnhardt[1], Shelley McLeod[1], Michael Rieder[1] : 1. Emergency Medicine, The University of Western Ontario, London, ON, Canada.**

INTRODUCTION: Propofol (P) and Ketamine (K) are commonly used as single agents for emergency department (ED) procedural sedation. Studies have suggested that the combination of K and P may be an effective alternative to either agent alone. There are no prospective trials of this combination in pediatric EDs. Objective: To compare time to recovery, total sedation time, complications, adverse events and satisfaction scores when Ketamine-Propofol (KP) is used compared to K for pediatric ED procedural sedation.
METHODS: This trial included children (2-17 years) presenting to a pediatric academic ED requiring procedural sedation for management of an isolated orthopedic extremity injury. Patients were randomized to KP or K. Physicians, nurses, research assistants and patients were all blinded. KP patients received an initial dose of K 0.5 mg/kg and P 0.5mg/kg IV at time zero, followed by P 0.5 mg/kg and saline placebo every 2 minutes as needed to reach a predetermined sedation score. K patients received an initial dose of K 1.0 mg/kg and intralipid placebo IV, followed by K 0.5 mg/kg and placebo every 2 minutes as required. RESULTS: 136 patients (67 KP, 69 K) were enrolled (June 2007 - August 2008). Mean recovery time was faster in the KP group (11.4 min; 95%CI 10.2-12.7) vs. the K group (15.6 min; 95%CI 12.8-18.3). Total sedation time was also shorter in the KP group (15.2 min; 95%CI 13.6-16.8) compared to the K group (18.7 min; 95%CI 15.8-21.6). 8/67 patients in the KP group experienced adverse events (nausea/vomiting, emergence reaction) compared to 21/69 to the K group ($P<0.01$). Complications were not different between groups (KP 9/67, K 12/69). All sedation satisfaction scores were higher ($p<0.05$) in the KP group. CONCLUSION: Ketamine-Propofol is an effective method of pediatric sedation, providing more rapid recovery than Ketamine alone, with similar complication rates, less adverse events and higher satisfaction scores.

TU.62) Outcome of Laryngoscopic Attempts with Direct Laryngoscopy vs. GlideScope Videolaryngoscopy in Emergency Department Intubations : **John C. Sakles[1], Stephen F. Chiu[1], Jarrod M. Mosier[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.**

INTRODUCTION: Objective: To compare outcomes of tracheal intubation attempts in the emergency department (ED) using Direct Laryngoscopy (DL) and the GlideScope Videolaryngoscope (GVL). METHODS: This study analyzed a series of 881 consecutive ED intubations that occurred between 1 July 2007 and 19 May 2009. After each intubation in the ED, a data collection form was filled out by the operator. Variables collected on the data form include: number of attempts required to successfully intubate, device used, operator PGY, complications encountered, and difficult airway predictors (DAPs). An intubation attempt was defined as insertion of laryngoscope into the patients mouth, regardless of whether or not passage of an endotracheal (ET) tube was attempted. A successful attempt was defined as placement of the ET tube into the trachea. A failed attempt was defined as either inadvertent placement of the ET tube into the esophagus or inability to pass the ET tube through the vocal

cords. Descriptive statistics were used to compare DL attempts to GVL attempts. RESULTS: Whether used as an initial device or a rescue device, GVL had a statistically significant higher success rate per attempt than DL. See Tables 1 and 2 for details. CONCLUSION: In patients undergoing intubation in the ED, the success rate per GVL attempt was higher when compared to DL attempts even though GVL was used in more difficult cases. In the failed intubation attempts, esophageal intubations occurred more frequently when DL was used, especially when used as a rescue device.

Table 1: Outcome When Laryngoscope Used as an Initial Device

	DL	GVL
Tracheal Intubations	81.6%* (425/521)	91.8%* (224/244)
Esophageal Intubations	3.6%** (19/521)	0.4%** (1/244)
ET Tube Not Passed	14.8%† (77/521)	7.8%† (19/244)
DAPs (Average)	1.1‡	2.1‡

*: p=0.0002
**: p=0.007
†: p=0.007
‡: p<0.0001

Table 2: Outcome When Laryngoscope Used as a Rescue Device

	DL	GVL
Tracheal Intubations	55.0%* (27/49)	76.7%* (46/60)
Esophageal Intubations	16.3%** (8/49)	0.0%** (0/60)
ET Tube Not Passed	29.6%† (16/49)	23.3%† (14/60)
DAPs (Average)	2.6‡	2.0‡

*: p=0.024
**: p=0.001
†: p=NS
‡: p=0.030

TU.63) Comparison of Single Injection Volar Subcutaneous Block and Traditional Digital Block for Anesthesia of the Finger : **Vahid M. Kasmaei[1], Mohammad taghi Talebian[1] : 1. Tehran University of Medical Sciences, Tehran, Iran.**

Purpose: Finger injuries are common presenting problems in the
emergency department. This study compared the single-injection volar subcutaneous technique with the traditional digital block according to local anesthetic injection pain and satisfaction of patients.
Methods: This was a prospective, randomized, blinded, and controlled study. 128 patients who had finger injuries injected with 2% lidocaine. The two-injection dorsal method was used on 64 patients and the other 64 received the volar single-injection technique. The same investigator performed all blocks to the injured fingers.Type of block for each patient was randomized. patients completed a pain scale for each block and were then asked about satisfaction related to anesthesia by an other participant (blinded study). The area of anesthetic skin was assessed in each finger by pinprick testing.
Results: The volar single-injection technique received a mean rating for pain of 4.19 versus 4.67 for the traditional digital block (p =.167). So there was a lower pain score for the volar single-injection block,but the difference in pain scores between the two techniques was not statistically significant. Patient satisfaction in volar single-injection technique was higher and significant (p =.018).
Conclusions: The volar single-injection technique is easy to teach and learn and there is not increased chance of inflicting direct injury to the nerve or artery.On the other hand although the difference in pain scores between the two techniques was not statistically significant the patients satisfaction were higher in single volar subcutaneous injection. Therefore, the single-injection volar subcutaneous block is recommended as the technique of choice for anesthesia of the digit especially in emergency departments.patients for whom anesthesia over the dorsum of the proximal phalanx is required, were excluded from our study according to previous studies and this conclusion cannot be inferred to such patients.
Key words: Anesthesia, digital block, finger, volar subcutaneous single-injection.

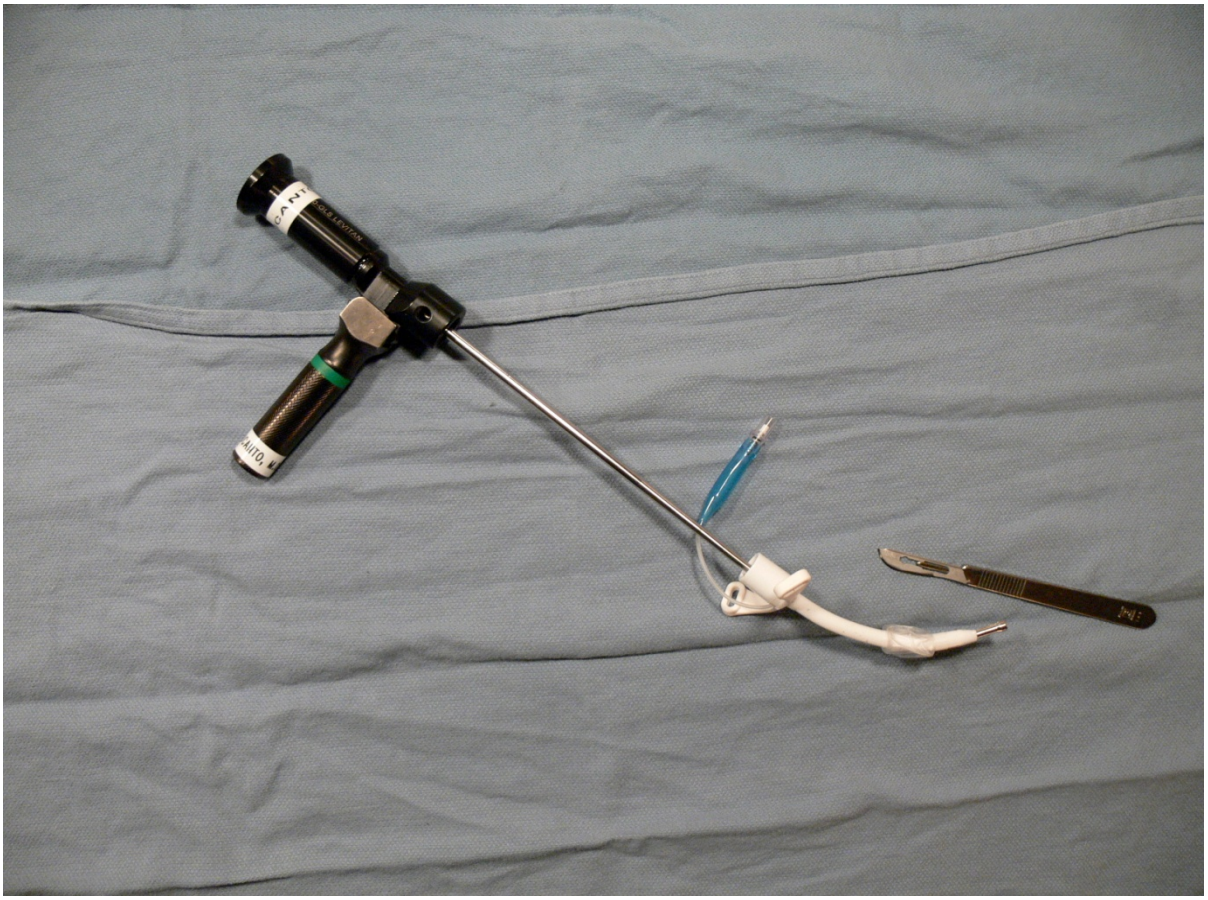
TU.64) Difficult Airway Management in the Emergency Department: A Comparison of Direct Laryngoscopy (DL) to GlideScope Videolaryngoscopy (GVL) in 704 Consecutive Intubations : **John C. Sakles[1], Jarrod M. Mosier[1], Uwe Stolz[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.**

INTRODUCTION: Objective: To compare the success rate of direct laryngoscopy (DL) to GlideScope videolaryngoscopy (GVL) during the intubation of emergency department (ED) patients with difficult airway predictors. METHODS: We evaluated 704 consecutive ED intubations performed with either DL or GVL at an academic medical center over an 18-month period (July 1st, 2007 through December 31, 2008). After each intubation was performed, the operator completed a standardized data collection form, which included the following variables: patient demographics, success, number of and type of difficult airway predictors (DAPs). DAPs included: cervical immobility, obesity, small mandible, large tongue, short neck, blood or vomit in the airway, airway edema, and facial or neck trauma. Data were analyzed using logistic regression and Fisher's exact test with an alpha=0.05. RESULTS: Overall success rate on first attempt of DL was 68% and of GVL 79% (Fishers exact test,

p=0.001). Unadjusted odds of success of GVL compared to DL on first attempt equals 1.8 (OR=1.8, 95% CI: 1.3-2.7). After controlling for DAPs, the odds of successful intubation with GVL are 2.4 times higher than DL (OR=2.4, 95% CI: 1.6-3.5) on first attempt. Logistic regression analysis of all DAPs independently showed that only the presence of blood in the airway, a small mandible, or a large tongue were statistically significant risk factors for increasing the odds of success with GVL as compared to DL. CONCLUSION: For ED patients requiring emergent intubation with blood in the airway, a small mandible, or a large tongue, use of GVL is more likely to result in a successful intubation than use of DL.

TU.65) Development of a rapid, safe, single-incision cricothyrotomy technique using a large ovine model: a proof-of-principle study : **Lorenzo Paladino[1], James DuCanto[2], Seth Manoach[1] : 1. Emergency Medicine, Kings County Hospital / SUNY Downstate, Brooklyn, NY, USA. 2. Department of Anesthesiology, Medical College of Wisconsin, Milwaukee, WI, USA.**

INTRODUCTION: We present a pilot study in which we use an ovine model to develop a rapid, safe cricothyrotomy technique using a Melker cuffed 5.0 cricothyrotomy catheter loaded over a fiberoptic stainless steel optical stylet. The technique requires a single incision. The stylet allows easy placement and facilitates visual, tactile, and transillumination confirmation of intratracheal placement. We recorded this process on video to facilitate the development of the procedure and to allow others may replicate it for further research or refinement. All devices used in this technique are currently employed in clinical practice. METHODS: We performed the procedure in 4 anesthetized sheep, varying the technique to maximize speed, demonstrate pitfalls, and optimize video recording of confirmation methods. We recorded each case using a 4-channel digital video recorder. RESULTS: After making a single scalpel incision we inserted the stylet and confirmed placement by visualization, transillumination, "click" palpation, and gentle stylet-driven tracheal displacement. We passed the cricothyrotomy tubes without difficulty and easily ventilated the animals. CONCLUSION: The procedure is rapid, incorporates redundant safety features, and uses equipment increasingly available to anesthesiologists, emergency physicians, intensivists and surgeons. The promising outcome of this pilot study should be verified in a larger controlled, comparative trial.



Tracheal View

TU.42) Platelet-Thrombin Activation markers have limited clinical diagnostic value in the assessment of emergency department patients suspected of acute venous thromboembolism: A prospective study : Paul Gayol[1], F. Lanza[2], T. Kirchgesner[1], F. Khalil[1], E. Bayle[1], H. Hssain[1], M. L. Wiesel[3], E. Sauleau[4], J. P. Cazenave[2], C. Gachet[2], J. Kopferschmitt[1] : 1. Emergency Department, Strasbourg University Hospital NHC (Nouvel Hôpital Civil) , Strasbourg, France. 2. Thrombosis Research Unit S 949 INSERM, Strasbourg, France. 3. Immunohematology Laboratory, French National Blood Transfusion Center , Strasbourg, France. 4. Department of Medical Informatics, Strasbourg, France.

INTRODUCTION: The pathogenesis of venous thrombosis, a complex multifactorial phenomenon, is not yet fully understood at this time. Moreover, limitations in clinical practice include biochemical failure to identify the patients with arterial and/or venous thromboembolic events. There is a clear need for positive biological markers in VTE. D-dimers have a high negative predictive value (NPV) but elevated levels do not help in diagnosis of VTE. Aims: To evaluate the diagnostic value of platelet-thrombin activation markers in Emergency Department (ED) patients with clinically suspected acute VTE (AVTE). We also focused on the plasmatic soluble GPV (sGPV), a novel bivalent activation marker. METHODS: One

hundred ten patients (42 men, 68 women; mean age 54.90 years, SD=18.17) admitted in the ED for suspicion of AVTE (<72 hours) and no previous history of risk factors for arterial thrombosis were included and classified in 2 groups: confirmed AVTE (n=42) and not confirmed AVT (n=68), according to Wells scores, D-dimer levels and imaging techniques. Plasma levels of thrombin generation markers such as sGPV, F1+2 prothrombin fragment (F1+2) and thrombin-antithrombin complexes (TAT), and platelet activity markers such as sGPV, platelet factor 4 (PF4) and von Willebrand factor (vWF) were determined and compared with D-dimer in all included patients. RESULTS: Significant values of sGPV were observed in AVTE patients compared with no AVTE patients (38.34 ± 20.71 vs. 29.69 ± 12.59 ng/mL, p=0.032, using a Mann-Whitney U non-parametric test). Significant levels were also detected in the AVTE group for TAT and vWF. Taken alone, sGPV, TAT and vWF had poor characteristics (Se, Sp, NPV, PPV) to detect AVTE. CONCLUSION: This report demonstrate a significant increase in plasma concentrations of sGPV, TAT and vWF in the confirmed AVTE population. However, these markers do not appear useful on an individual basis in admission assessment and diagnosis of ED patients suspected of AVTE, and failed to improve accuracy compared with D-dimer levels.

TU.43) USEFULNESS OF PROCALCITONIN IN EARLY DIAGNOSIS OF BACTERIAL INFECTION IN WELL-APPEARING INFANTS WITH FEVER WITHOUT A SOURCE : **Javier Benito[1], Carlos Luaces[2], Santiago Mintegi[1], Eider Astobiza[1], Roser Garrido[2], Jesus Velasco[2] : 1. Hospital Cruces, Bilbao, Basque Country, Spain. 2. Hospital Sant Joan de Deu, Barcelona, Cataluña, Spain.**

INTRODUCTION: Procalcitonin (PCT) is a new marker of infection and some studies have showed to be a sensitive indicator of severe bacterial infection (SBI). OBJECTIVE: To assess the value of PCT compared with that of total white-blood cell-count (WBC) and C-reactive protein (CRP) in predicting SBI in well-appearing infants with FWS and negative urinalysis. METHODS: A multicenter prospective study was performed between February and September-08 including previously healthy and well-appearing infants less than 36 months of age with FWS and negative urinalysis. For each patient we recorded demographics, clinical data and result of the workup studies. WBC, CRP and PCT were determined and compared. Specificity, sensitivity, multilevel likelihood ratios and receiver operating characteristic (ROC) analysis were carried out. Infant were classified as having definite, possible or no SBI. RESULTS: A total of 619 infants (median age 9.71 ± 7.78 months), 147 (23.7%) less than two months of age, were studied. A definite SBI was diagnosed in 11 patients (1.7%), (bacterial meningitis: n = 7, occult bacteremia: n = 3 and bacteremia and UTI n = 1) and 28 patients (4.5%) had a possible SBI (pneumonia: n = 10, UTI 14 and cellulitis 4). The area under ROC curve for definite and possible and definite SBI respectively was 0.67 (95% CI: 0.42-0.91) and 0.68 (95% CI: 0.56-0.79) for PCT, 0.66 (95% CI: 0.50-0.82) and 0.63 (95% CI: 0.52-0.74) for CRP and 0.61 (95% CI: 0.45-0.77) and 0.60 (95% CI: 0.50-0.69) for WBC. For infants with fever less than 12 hours (n=280) the area under ROC curve was 0.87 (95% CI: 0.69-1.00) for PCT, 0.71 (95% CI: 0.53-0.88) for CRP and 0.48 (95% CI: 0.27-0.69) for WBC for definite SBI. The yield of these tests was similar in the set of patients under two months of age. CONCLUSIONS: None of the markers studied appear to be reliable enough as screening tools of SBI in well-appearing infants with FWS and negative urinalysis. Procalcitonin seems to

perform better than CRP and WBC especially in the first hours of infections.

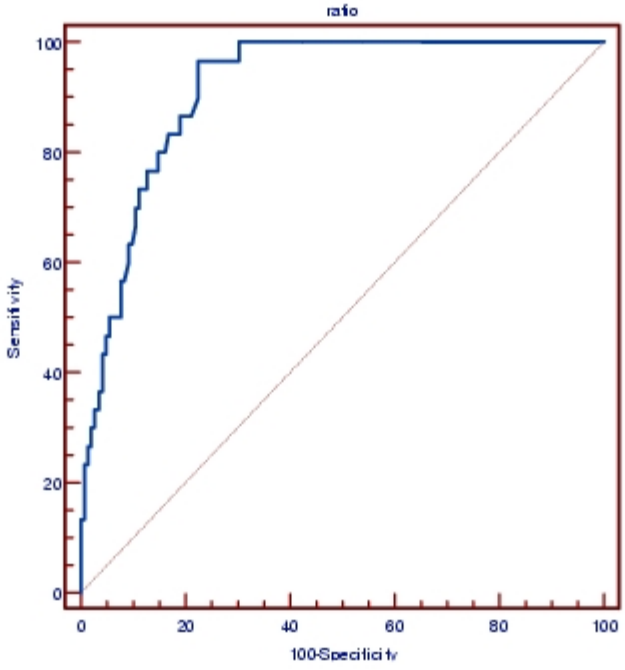
TU.44) Role of Plasma VEGF and its Soluble Receptor sFlt-1 Concentrations in Diagnosing Non-ST Elevation Acute Coronary Syndrome at Emergency Department : **Tzong-Luen Wang[1], Jiann-Ruey Ong[2] : 1. Shin-Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan. 2. Medical School, Fu-Jen Catholic University, Taipei, Taiwan.**

INTRODUCTION: This study is to investigate if plasma VEGF and its receptor sFlt-1 levels can be good diagnostic biomarkers in patients with UA/NESTEMI. METHODS: We prospectively recruited patients presenting with clinical symptoms suspected of UA/NSTEMI at a university-teaching hospital ED that accounted for annual 75,000 visits in both derivation phase and validation phase. Besides routine work-up such as ECG and cardiac enzymes, plasma VEGF and sFlt-1 were measured for each patient from a homogenous population in the derivation phase and a more heterogeneous population in the validation phase. RESULTS: In the derivation phase, the cut-off values of plasma VEGF, sFlt-1, and VEGF/sFlt-1 ratio (defined as [VEGF]/[sFlt-1] x 1000) derived from 275 consecutive patients (142 unstable angina, 30 NSTEMI and 103 non-ischemic chest pain) to diagnose UA/NSTEMI were 41 pg/mL, 9.0 ng/mL and 8.0, respectively, according to the receiver operating curve analysis. TIMI risk scores have good correlations with plasma VEGF, sFlt-1, and VEGF/sFlt-1 ratios. At each defined cut-off values, plasma VEGF has an overall sensitivity of 100%, specificity of 87%, positive predictive value (PPV) of 94% and negative predictive value (NPV) of 100% for the diagnosis of UA/NSTEMI among 311 patients (167 unstable angina, 37 NSTEMI and 107 non-ischemic chest pain) in the validation phase. Plasma sFlt-1 concentrations (sensitivity 100%, specificity 83%, PPV 92%, NPV 100%) and VEGF/sFlt-1 ratios (sensitivity 100%, specificity 98%, PPV 99%, NPV 100%) have the similar diagnostic power. CONCLUSION: Increased plasma VEGF and decreased sFlt-1 levels are good early indicators of UA/NESTEMI. A single measurement of low plasma VEGF level or high sFlt-1 level can accurately exclude the possibility of UA and NSTEMI at ED.

	UA (n=167)	NSTEMI (N=37)	NICP (N=107)
Age (year)	62±18	63±22	63±19
Sex (male %)	88 (53%)	20 (54%)	55 (51%)
Smoking (%)	50 (30%)	12 (32%)	30 (28%)
Hypertension (%)	49 (29%)	11 (30%)	24 (22%)
Hyperlipidemia (%)	21 (13%)	5 (14%)	15 (14%)
Diabetes (%)	23 (14%)	5 (14%)	16 (15%)
PAOD (%)	10 (6%)	3 (8%)	8 (7%)
Cerebrovascular disease (%)	25 (15%)	6 (16%)	3 (3%)
Pulmonary embolism (%)	0 (0%)	0 (0%)	1 (1%)
Malignancy (%)	8 (5%)	2 (5%)	2 (2%)
previous CAD (%)	125 (75%)	28 (76%)	21 (20%)
previous revascularization (%)	117 (70%)	26 (70%)	21 (20%)
previous heart failure (%)	33 (20%)	8 (22%)	4 (4%)
Ischemic changes in ECG (%)	55 (33%)	14 (38%)	5 (5%)
VEGF (pg/mL)	88±28	124±36	22±5
sFlt-1 (ng/mL)	6.0±0.8	6.0±0.8	15.2±4.5
VEGF/sFlt-1 x 10^3	12.2±4.6	19.6±4.8	49±2.2

CAD: coronary artery disease; ECG: electrocardiogram; NICP: non-ischemic chest pain; NSTEMI: non-ST elevated myocardial infarction; UA: unstable angina; VEGF: vascular endothelial growth factor

Patient characteristics in validation phase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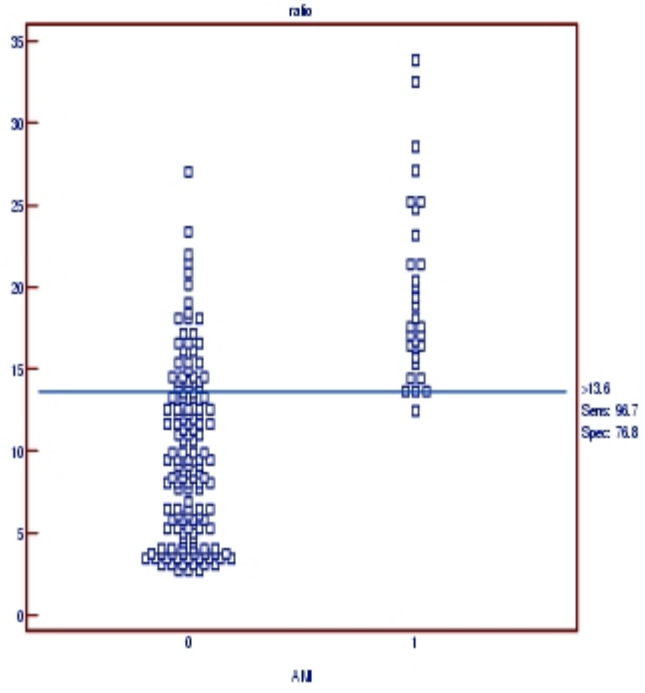
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>13.6
Sens: 98.7
Spec: 76.8

Receiver operation curve (upper figure) and plot distribution of plasma VEGF/sFlt-1 ratios among the patients with or without non-ST elevation myocardial infarction in validation phase

TU.45) The Percent of Total Emergency Department Visits for Congestive Heart Failure Declined from 1996 to 2008 : Bonnie McGuire Wreschner[1], John R. Allegra[1], Barnet Eskin[2] : 1. Morristown Memorial Hospital, Morristown, NJ, USA. 2. Emergency Medical Associates of New Jersey Research Foundation , Livingston, NJ, USA.

INTRODUCTION: Many advances have been made over the last decade in the treatment of congestive heart failure (CHF) patients, including the use of beta blockers and a focus on patient education. We hypothesized that this should result in a decrease in patients presenting to the emergency department (ED) with CHF. Our objective was to test this hypothesis in a large database of ED visits. METHODS: Design: Retrospective cohort. Setting: Consecutive patients seen by ED physicians in 28 urban, suburban and rural hospitals in New Jersey and New York between January 1, 1996 and December 31, 2008. Protocol: We classified patients as having CHF if the first ED diagnosis was congestive heart failure, heart failure or pulmonary edema or if one of these was listed as the second diagnosis and the first diagnosis was a respiratory diagnosis (shortness of breath, dyspnea, respiratory failure or wheezing). Data Analysis: We compared the annual CHF visits to total annual ED visits using the Student t test and performed a regression analysis. Alpha was set at 0.05. RESULTS: Of the 7,567,002 ED visits in the database, there were 104,489 visits (1.4%) with an ED diagnosis of CHF. The mean age of the patients with CHF was 73 +/- 18 years; 54% were female. There was a 49% (95% CI: 46% to 51%, $p<0.001$) decline in the percent of total ED patients that had CHF, from 1.6% in 1996 to 0.8% in 2008. The correlation coefficient for this downward trend was R squared = 0.75 ($p<0.0001$). CONCLUSION: We found a 49% decline in the percent of total ED visits for CHF from 1996 to 2008. We speculate the cause for this decline is likely due to advances in treatment for CHF.

TU.46) Risk stratification Of Syncope in the Emergency department: The ROSE study : Matthew J. Reed[1], David E. Newby[2], Andrew J. Coull [3], Robin J. Prescott [4], Keith G. Jacques [1], Alasdair J. Gray[1] : 1. Department of Emergency Medicine, Royal Infirmary of Edinburgh, 51 Little France Crescent, Edinburgh, EH16 4SA, UK., Edinburgh, United Kingdom. 2. Centre for Cardiovascular Sciences, Chancellor's Building, Royal Infirmary of Edinburgh, 49 Little France Crescent, Edinburgh, EH16 4SB, UK., Edinburgh, United Kingdom. 3. Department of Medicine of the Elderly, Royal Infirmary of Edinburgh, 51 Little France Crescent, Edinburgh, EH16 4SA, UK., Edinburgh, United Kingdom. 4. Public Health Sciences, University of Edinburgh, Medical School, Teviot Place, Edinburgh, EH8 9AG, UK., Edinburgh, United Kingdom.

INTRODUCTION: Syncope is a common, potentially serious condition accounting for many hospital admissions. Here, we aimed to develop and validate a clinical decision rule to predict one-month serious outcome and all-cause death in patients presenting with syncope to the

Emergency Department. METHODS: This was a single centre prospective observational study of adults presenting to the Emergency Department with syncope. Between 1st March and 27th October 2007, 550 patients were recruited into a derivation cohort. A clinical decision rule was devised and tested in a validation cohort of 550 patients recruited between 27th October 2007 and 22nd July 2008. RESULTS: One-month serious outcome or all-cause death occurred in 40 (7.3%) patients in the derivation cohort. Independent predictors were brain natriuretic peptide concentration ?300 pg/mL, positive faecal occult blood, haemoglobin ?90 g/L, oxygen saturation ?94%, Q wave on the electrocardiogram, chest pain and bradycardia ?50 /min. The ROSE rule was devised advising that a patient should be considered high risk for serious outcome and admitted if any of the seven ROSE characteristics is present (Figure 1). One-month serious outcome or all-cause death occurred in 39 (7.1%) patients in the validation cohort. The ROSE rule had a sensitivity and specificity of 87.2% and 65.5% and a negative predictive value of 98.5%. For every 1,000 patients, the ROSE rule would potentially avoid 149 admissions (equivalent to avoiding 70,000 admissions and saving £91 million in hospitalisation costs alone per annum in the UK) without affecting mortality although it would potentially miss 4 serious outcomes. CONCLUSION: The ROSE rule has excellent sensitivity and negative predictive value, performs better than previous CDRs (Table 1), and may be a valuable risk stratification tool in patients presenting to the Emergency Department with syncope.

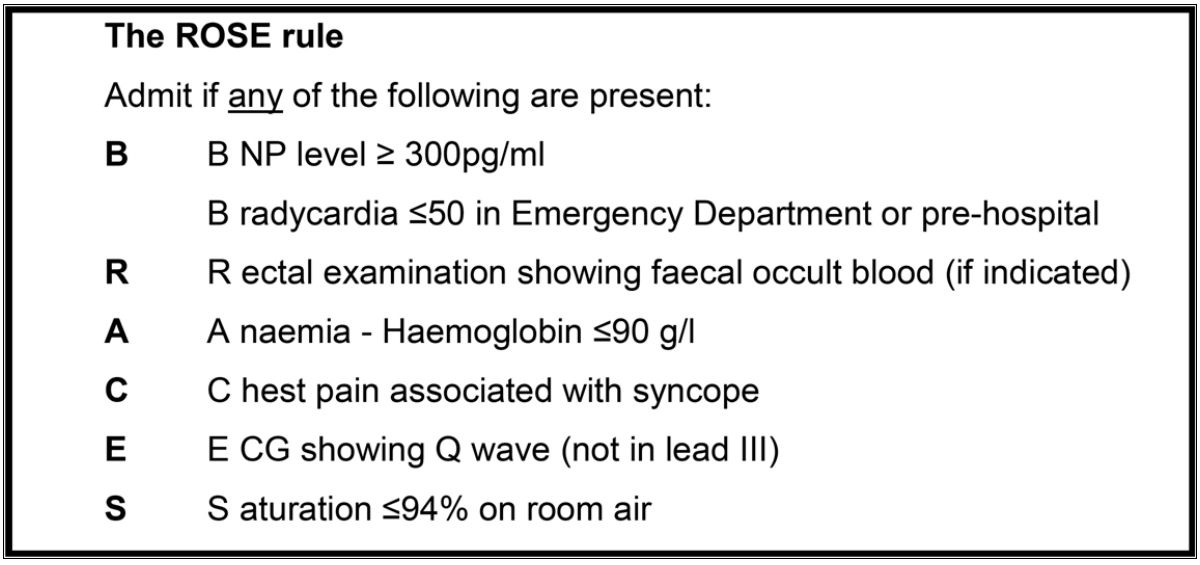


Figure 1: The ROSE rule

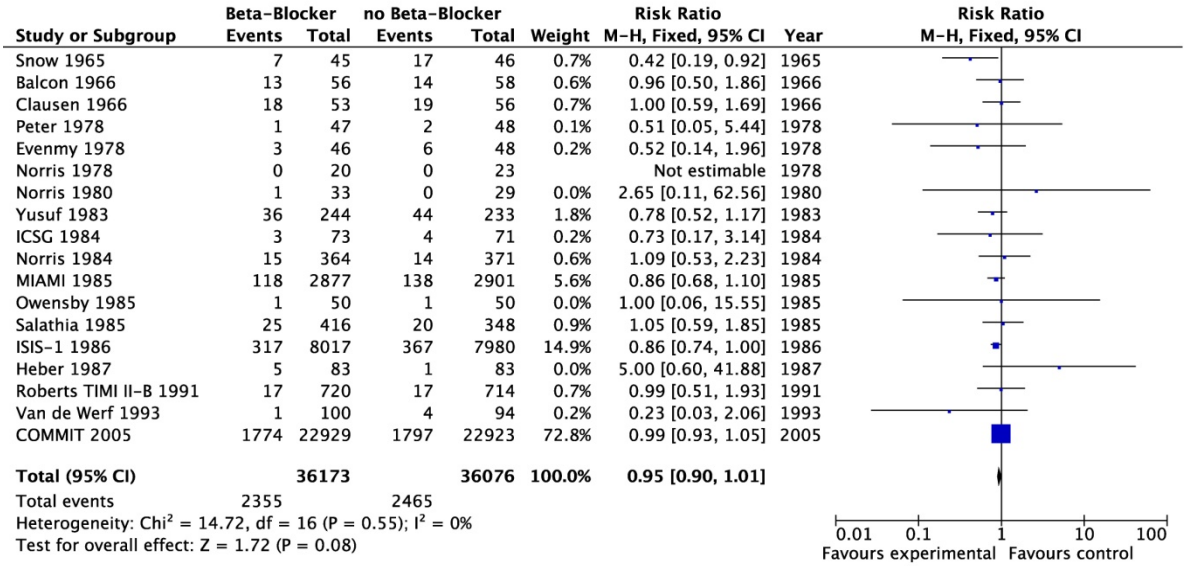
	Sensitivity	Specificity	PPV	NPV	+ LR	- LR	Comparison with admission in validation group (n=538)			
							Number extra admitted	Number extra discharged	Number of extra missed serious outcome or death	Number of extra missed deaths
OESIL score >3: All 4 OESIL criteria present	20.5 (10-37)	92.8 (90-95)	18.2 (9-33)	93.7 (91-96)	2.8 (1.4-5.7)	0.9 (0.7-1.0)	-	242	28	6
OESIL score >2: 3 or 4 OESIL criteria present	69.2 (52-82)	71.9 (68-76)	16.2 (11-23)	96.8 (94-98)	2.5 (1.9-3.2)	0.4 (0.3-0.7)	-	119	9	3
ROSE rule: Any criteria for admission present	87.2 (72-95)	65.5 (61-70)	16.5 (12-22)	98.5 (96-99	2.5 (2.1-3.0)	0.2 (0.1-0.4)	-	80	2	0
OESIL score >1: 2- 4 OESIL criteria present	76.9 (60-88)	41.9 (38-46)	9.4 (7-13)	95.9 (92-98)	1.3 (1.1-1.6)	0.6 (0.3-1.0)	34	-	6	2
San Francisco syncope rule: Any criteria for admission present	84.6 (69-94)	24.4 (21-29)	8.0 (6-11)	95.3 (90-98)	1.1 (1.0-1.3)	0.6 (0.3-1.3)	124	-	3	1
Martin GJ et al: One or more criteria present	100 (89-100)	21.6 (18-26)	9.1 (7-12)	100 (96-100)	1.3 (1.2-1.3)	0 (n/a)	144	-	0	0
STePS study: Any short-term risk factor present	89.7 (75-97)	19.2 (16-23)	8.0 (6-11)	96.0 (89-99)	1.1 (1.0-1.2)	0.5 (0.2-1.4)	152	-	1	0
OESIL score >0: Any OESIL criteria present	94.9 (81-99)	10.6 (8-14)	7.7 (6-10)	96.4 (86-99)	1.1 (1.0-1.1)	0.5 (0.1-1.9)	197	-	0	0

Table 1: Comparison of ROSE rule with existing clinical decision rules.

TU.47) Does the Early Administration of Beta-blockers Improve the In-hospital Mortality Rate of Patients admitted with Acute Coronary Syndrome? : Richard Sinert[1], Ethan Brandler[1], Lorenzo Paladino[1] : 1. Emergency Medicine, SUNY-Downstate , Brooklyn, NY, USA.

INTRODUCTION: Beta–blockade is currently recommended in the early management of patients with Acute Coronary Syndromes (ACS). Objective: A systematic review of the medical literature to determine if early beta-blockade improves the outcome of patients with ACS. METHODS: We searched Pubmed and EMBASE databases for randomized controlled trials from 1965 through 6/09 using a search strategy derived from the following PICO formulation of our clinical question: Patients: Adult (18+ years) patients presenting with clinical signs and symptoms of ACS within 24 hours of onset of chest pain. Intervention: Intravenous or oral Beta-blockers administered within 8 hours of presentation. Comparator: Standard medical therapy with or without placebo versus early Beta-blocker administration. Outcome: The risk of in-hospital death in the intervention groups versus the comparator groups. The methodological quality of the studies was assessed. Qualitative methods were used to summarize the study results. Data Analysis: In-hospital mortality rates were compared using a Forest Plot of Relative Risk (RR) (95% CI) between beta-blockers and controls. Review Manager (RevMan) [Computer program]. Version 5.0. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2008. Pooled treatment effects were estimated using relative risk (RR) for mortality rate with Mantel-Haenszel risk ratio, using a fixed-effects model. Heterogeneity was assessed by Chi-Square and the I2 statistic RESULTS: We

identified 18 articles n = 72,249 that met our inclusion/exclusion criteria. Heterogeneity: Chi2 = 15.7, df=16 (p=0.51); I2 = 0%. In-hospital mortality: RR = 0.95 (95% CI, 0.90-1.01) Only one of eighteen studies (n = 94) favored early beta-blocker therapy RR = 0.31 (95% CI, 0.12 – 0.86) In the largest of these studies, n = 45,852, a significantly (p<0.0001) increased rate of cardiogenic shock was observed in the beta-blocker (5.0%) versus control group (3.9%). CONCLUSIONS: Our systematic review failed to demonstrate a convincing mortality benefit for using beta-blockers early in the course of ACS.



TU.48) Cardiac Events During Super Bowl Games : Jeffrey H. Luk [1], John R. Allegra[1], Barnet Eskin[2], Dennis G. Cochrane [2] : 1. Morristown Memorial Hospital, Morristown , NJ, USA. 2. Emergency Medical Associates Research Foundation, Livingston, NJ, USA.

INTRODUCTION: We previously showed that the World Trade Center attacks on September 11 were associated with more cardiac-associated emergency department (ED) visits. A recent German study documented a factor of 2.7 times the number of cardiac events when Germany was playing in the World Cup. Our goal was to determine if cardiac-associated ED visits were similarly increased with Super Bowl games. This may have implications for ED and cardiac catheterization lab staffing. METHODS: Design: Retrospective cohort of consecutive ED visits. Setting: 19 NY and NJ EDs with annual visits between 24,000 and 75,000. Population: We a priori chose to examine all patients with cardiac-associated visits for the 18 hour period from 6 pm on the day of the Super Bowl to 12 noon the next day and for the same time periods during the weeks before and after the Super Bowl ("control" periods) from 1996-2008. Protocol: We used ICD9 codes to place ED visits into the following categories: acute

myocardial infarction (AMI); cardiac arrhythmia; cardiac arrest; and undifferentiated chest pain. We compared the number of visits in each of these categories during the Super Bowl period versus the average number of visits during the two control periods using the Chi square test. We used the Bonferroni Correction for multiple comparisons with alpha set at 0.013. RESULTS: Comparing the Super Bowl period visits to the average of the control periods, we found the following: total visits: 13721 vs. 14221; AMI: 25 vs. 27 (p = 0.83); cardiac arrhythmias: 18 vs. 21 (p = 0.63); cardiac arrests: 18 vs. 29 (p = 0.11); and undifferentiated chest pain: 192 vs. 365 (p = <0.0001), respectively. CONCLUSION: Unlike other potentially stressful events, Super Bowl games did not lead to an increased number of cardiac-associated ED visits. We speculate the decrease in number of undifferentiated chest pain patients during the Super Bowl period may be due to patients not presenting with chest pain because of preoccupation with the game.

TU.49) Fibrinolysis in Acute Pulmonary Embolism (PE) from the Emergency Medicine PE in the Real World Registry (EMPEROR) : Donald Schreiber[1], Brian Lin[2], Gigi Liu[3], Beau Briese[3], Brian Hiestand[4], David Slattery[5], Jeffrey Kline[6], Charles Pollack[7] : 1. Division of Emergency Medicine, Department of Surgery, Stanford University Hospital , Stanford, CA, USA. 2. Stanford/Kaiser Emergency Medicine Residency, Stanford, CA, USA. 3. Stanford Medical School, Stanford, CA, USA. 4. Department of Emergency Medicine, Ohio State University, Columbus, OH, USA. 5. Department of Emergency Medicine, University Medical Center of Las Vegas, Las Vegas, NV, USA. 6. Department of Emergency Medicine, Carolinas Medical Center, Charlotte, NC, USA. 7. Department of Emergency Medicine, University of Pennsylvania Health System, Philadelphia, PA, USA.

INTRODUCTION: Fibrinolysis (FI) is recommended for acute PE when SBP<90 (hemodynamic instability defining massive PE (MPE); Grade 1B) or for select high risk patients with low bleeding risk without hemodynamic compromise (Grade 2B). Actual clinical practice may vary, and the consequences are unclear. Objectives: To analyze use of FI in acute PE and to compare incidence of bleeding complications in and mortality rate of patients who received FI to those who did not. METHODS: A prospective multicenter (22) registry of community and academic ED patients with PE was conducted from 2006-08. Inclusion Criteria: ED patients with confirmed PE based on positive CTA, pulmonary angiography, or MRI, high probability VQ, or DVT diagnosed in the 30 days prior to presentation. Patients without 30 day outcomes were excluded. The PE Severity Index (PESI) score was calculated (Aujeski D et al. AJRCCM 2005; 172:1041-46). Significance adjustments by Holm step-down, descriptive statistics, Student's t-test, and Fisher's exact test with ?=.05 were used. RESULTS: 1869 patients were enrolled. FI was administered to 45 patients (2.4%); only 3 had SBP<90. All cause inpatient morality was 8.9% with FI vs. 3.2% without (p=.27,NS) and 30 day mortality was 2.2% with FI vs. 2.0% without (p=1.0,NS). No patient with SBP<90 who received FI died, while 15.4% of patients with SBP<90 who did not receive FI died inpatient. Of patients with SBP?90, inpatient mortality with FI exceeded inpatient mortality without FI: 9.5% vs. 2.9% (p=.026). Inpatient bleeding occurred more frequently with FI: 11.1% vs. 3.6% (p=0.047) but no fatal bleeding occurred with FI. PESI score was not significantly different between FI and non-FI groups. CONCLUSIONS: In this registry, many patients received FI without meeting current guidelines for FI; those patients had significantly greater inpatient mortality rates. Both the off-guideline use of FI and associated greater inpatient mortality rates appear to have multifactorial explanations for which we present some evidence. Also, FI may

be underutilized in hypotensive patients with MPE. Further study is needed.

Table 1. Inpatient and 30 Day Adverse Outcomes for Acute PE Patients Receiving and Not Receiving Fibrinolysis

Outcome	No Fibrinolysis	Fibrinolysis	p
Inpatient			
Mortality	3.2%	8.9%	0.265
Mortality from Bleeding	0.1%	0.0%	1.000
Bleeding Complications	3.6%	11.1%	0.047
30 Day			
Mortality (post-hospital)	2.0%	2.2%	1.000
Bleeding Complications	1.3%	0.0%	1.000
VTE	5.8%	6.7%	1.000
n	1824	45	

Table 2. Inpatient and 30 Day Adverse Outcomes by Hemodynamic Stability and Use of Fibrinolysis

Outcome	BP<90			BP≥90		
	No Fibrinolysis	Fibrinolysis	p	No Fibrinolysis	Fibrinolysis	p
Inpatient						
Mortality	15.4%	0.0%	0.943	2.9%	9.5%	0.026
Mortality from Bleeding	0.0%	0.0%	1.000	0.1%	0.0%	1.000
Bleeding Complications	3.5%	7.1%	0.209	7.7%	66.7%	0.001
30 Day						
Mortality (post-hospital)	13.5%	0.0%	0.505	1.6%	2.4%	1.000
Bleeding Complications	1.9%	0.0%	0.813	1.3%	0.0%	1.000
VTE	9.6%	0.0%	0.582	5.6%	7.1%	1.000
n	52	3		1772	42	

TU.50) The Value of initial Point-of-Care Fatty Acid Binding Protein in Chest Pain Patients to Determine Myocardial Infarction in the Emergency Department : **Yildiray Cete[1], Cenker Eken[1], Oktay Eray[1], Erkan Goksu[1], Selahattin Kiyan[2], Ridvan Atilla[3] : 1. Emergency Department, Akdeniz University, Antalya, Turkey. 2. Ege University, Izmir, Turkey. 3. Dokuz Eylul University, Izmir, Turkey.**

Objective: To determine the diagnostic value of point-of-care initial Fatty Acid Binding Protein (FABP) in patients with chest pain in the emergency department.
Methods: This study was performed in a tertiary care emergency department. Patients with typical chest pain were included into the study. Point-of-care FABP was studied during the admission and two hours after the admission. Patients were diagnosed as myocardial infarction or not ultimately by ECG and troponin levels.
Results: A total of 224 patients were included into the study. Seventy three of them (32.6%) were diagnosed as acute myocardial infarction. FABP had a sensitivity and specificity of %41 (95% CI: 29.7 to 53.2) and %100 (95% CI: 97.6 to 100) during the admission. Myoglobin had a sensitivity and specificity of %57.5 (95% CI: 45.4 to 69) and %90.7 (95% CI: 85 to 95) and initial cardiac troponin T had a sensitivity of 45.2% (95% CI: 33.7 to 57.2) and specificity of 100% (95% CI: 97 to 100) during the admission. Two hours after the admission FABP had a sensitivity and specificity of %56 (95% CI: 40 to 71) and a specificity of %99 (95% CI: 96.4 to 100).
Conclusion: Point-of-care FABP is good at diagnosing acute myocardial infarction during the presentation of chest pain patients. However, FABP was not found better than neither myoglobin nor cardiac troponin T in excluding AMI during the presentation of chest pain patients.
Key Words: Point-of-care, fatty acid binding protein, myoglobin, cardiac troponin, myocardial infarction, emergency department

TU.52) Patients hospitalized in emergency department for chest pain and immediately sent back home: a prospective trial with 60 days outcome. : **Emmanuel Montassier[1], David Trewick[1], Philippe Leconte[1], Gilles Potel[1] : 1. Emergency, Chu Hôtel Dieu, Nantes, France.**

INTRODUCTION: Chest pain patients often present a diagnostic dilemma to the emergency physician: it is essential to minimize unnecessary admissions and not to miss acute coronary syndrome (ACS) before discharge. The objective of this study is to determine the rate of adverse cardiac events and the clinical predictive factors of an adverse outcome for patients discharged from the ED with a presenting complaint of chest pain, within a period of 60 days. METHODS: From October 2007 to March 2008, consenting patients aged 25 years or older presenting to the ED with a chief complaint of non traumatic chest pain were prospectively enrolled. Patients discharged from the emergency department were contacted by phone in order to determine their clinical course within 60 days as of their discharge and to screen for an adverse cardiac event. RESULTS: During the four-month study period, 322 eligible chest pain patients were enrolled, representing 3.9% of all new medical admissions to the ED. 40.4% of these patients were hospitalized, while 59.6% were directly sent home. The rate of adverse cardiovascular events was 3.7%: one ST-segment elevation myocardial infarction and six non-ST-segment elevation myocardial infarction. All seven patients had either angioplasty

procedure (six) or coronary bypass graft (one). Factors significantly associated with an adverse cardiac event included: three or more known CAD risk factors (p=0.0005), pre-existing CAD: myocardial infarction (p=0.018) or angina (p=0.029), pre-existing hypercholesterolemia (p=0.008), presenting substernal pressure (p=0.02) and radiation to the jaw (p=0.03). CONCLUSION: Chest pain is a diagnostic dilemma for the emergency physician. In the absence of an accurate method of identification of the patients that can be safely discharged, the physician's triage decisions vary according to the level of perceived medical and legal risk. As a result, patients at risk for an adverse cardiac event are being missed in the ED. Future plans include the development of a protocol and its validation with a large population of patients.

TU.14) Use of potentially inappropriate drugs in elderly patients in the Emergency Department : Daniel Colprim[1], Silvia Minguez[1], Maria Jesus Lopez[1], Carlos Clemente[1], Alfons Aguirre[1], M Teresa Martinez-Izquierdo[1], Pedro Puertas[1], Agurne Garcia-Baztan[1], Isabel Campodarve[1] : 1. Hospital del Mar - IMAS, Barcelona, Spain.

INTRODUCTION: Beers criteria identify potentially inappropriate medication (PIM) use in older adults. OBJECTIVES: To determine the prevalence of PIM according to Beer criteria in elderly attended in our Emergency Department (ED) on admission and at discharge. METHODS: Retrospective study of patients aged 75 years or older attended in the ED between July 1 and 9, 2008 were included. Medical records were reviewed and the following were collected: age, service through which they were attended, medication habitually used, number of drugs used on arrival and on discharge, and prevalence of PIM in both cases. Beers criteria modified were used. RESULTS: We included 316 patients. Mean age: 81.7 (4.8). Medication habitually used was registered in 88.5%, with differences according to specialty: trauma 39%, urology 46%, general surgery 54%, vascular surgery 56%, digestolgy 86%, cardiology 91%, and medical emergency 96%. Patients admitted to the hospital (26.3%) were excluded. The median (range) number of drugs/patient was 6.22 (0–18) on admission and 6.79 (1–16) on discharge. A total of 28.9% had at least one PIM on admission and 3.4% had one PIM prescribed at discharge. PIM were prescribed by staff of medical emergencies (75%) followed by general surgery (12.5%) and psychiatry (12.5%). Most common PIM included: digoxin < 0.125 mg (8.2%), long-acting benzodiazepines (5.8%), doxazosin (4.9%), amiodarone (4.1%), ferrous sulphate > 325 mg (2.9%), amitryptiline (1.7%), short-acting benzodiazepines (1.2%), ticlopidine (0.8%), and naproxen, H1 antihistamines, fluoxetine (0.4%). CONCLUSIONS: Prevalence of PIM in elderly is high, and similar to that in previous studies. Diffusion of Beers criteria and inclusion in alerts of electronic medical records may be useful to decrease the rate of PIM. Moreover, recording medication used habitually by the patient at the time of performing medical history would be important.

TU.15) Assessing Falls Risk in Older Emergency Department Attenders : Rosa McNamara[1], Iomhar O'Sullivan[1] : 1. Emergency Department, Cork University Hospital, Cork, Ireland.

INTRODUCTION: Falls account for approximately 20% of all Emergency Department (ED) presentations among people aged 65 years and over. The majority of these patients are

discharged home. This cohort is at high risk of future falls, injuries, depression, functional decline, repeat presentation to the ED, and have higher mortality rates than their peers. Falls risk assessment is rarely carried out in the ED, as the principal focus of emergency management of fallers is the acute management of injuries. METHODS: We aimed to test the feasibility of introducing a screening tool to examine falls risk, and to measure the prevalence of self reported falls in ED patients. For a 5 month period, the Timed Up and Go (TUG) was measured at triage on all ambulatory patients over the age of 65 presenting to the ED. Each patient was also asked if they had fallen in the preceding 6 months. RESULTS: 3,043 patients over 65 years presented to the ED. 47.5%, were ambulatory and had a TUG recorded. 20.7% had an abnormal test. There was a higher prevalence of abnormal test recorded with increasing age with the exception of those aged over 90 years. 23.5% of patients who had TUG recorded, reported that they had fallen at least once in the previous 6 months. The rate of self-reported falls was directly proportional to TUG recorded. At 6 month follow-up, of the patients determined to have an abnormal timed up and go 14 were seen as new patients in the Geriatric Clinic. 11 patients already known to geriatric services were followed up. 269 (8.8%) patients had re-attended the ED. CONCLUSION: The implication of providing access to multidisciplinary assessment and intervention for all those deemed at risk of falls is huge. Formal falls assessment in the ED and targeted intervention could potentially reduce falls risk, with beneficial effects for the patient, the emergency department and wider hospital services.

TU.16) The Role of Health and Non-Health Related Factors in Repeat Emergency Department visits in an Elderly Urban Population. : Corina Naughton[1], Jonathan Drennan[1], Pearl Treacy[1] : 1. School of Nursing, Midwifery and Health Systems, University College Dublin, Dublin, Ireland.

INTRODUCTION: Patients aged 65 years or older account for a growing proportion of Emergency Department repeat attendances. This study aimed to identify health and socioeconomic factors associated with repeat ED attendance (previous six months) in patients aged 65 years or older and examine the interaction between social and health factors. METHODS: Three hundred and six patients were interviewed. Demographic, socioeconomic, physical, mental health and post ED referrals were examined. Logistic regression was used to identify factors independently associated with a repeat ED visit, Odds ratios (OR) and 95% confidence intervals (CI) are presented. Log likelihood ratio tests was use to test for interaction. RESULTS: ED revisits were reported by 37% of this elderly population. Previous hospital admission was associated with over a tripling of the risk per admission OR 3.78 (95% CI 2.53, 5.65). Other independent factors were anxiety OR 1.13 (95% 1.04, 1.22), being part of a vulnerable social network OR 2.32 (95% CI 1.12, 4.81) while a unit increase in physical inability as measured by the Nottingham Health Profile had a week association OR 1.01 (95% 1.00,1.02). There were no significant interactions between social networks and the other health related variables ($p>0.05$). In patients directly discharged from the ED 48% (71/148) had no documented referrals made to community services, of which 18% (27/148) were repeat ED attendees. CONCLUSION: Emergency Departments act as an important safety net for older people regardless of economic or demographic backgrounds. Appropriate assessment and referral are an essential part of this safety role.

TU.22) Ultrasound of the Inferior Vena Cava Can Assess Volume Status in Pediatric Patients : Sergey

Ayvazyan[1], Eitan Dickman[1], Antonios Likourezos[1], Stanley Wu[1], Hashibul Hannan[1], Christian Fromm[1], John Marshall[1] : 1. Emergency Medicine, Maimonides Medical Center, Brooklyn, NY, USA.

INTRODUCTION: Although approximately 9% of patients presenting to a Pediatric Emergency Department (ED) are dehydrated, there is no reliable method to measure objectively the degree of intravascular dehydration. We aim to evaluate whether ultrasound of the pediatric IVC can be used to reliably assess volume status. METHODS: This is a prospective cohort study. Pediatric ED patients ranging in age from 1 to 41 months were assessed by a pediatric emergency physician and stratified as either clinically euvolemic or hypovolemic. After consent was obtained, one of three emergency medicine residents performed trans-abdominal sonographic measurements of the IVC diameter. Measurements of the IVC diameter just caudal to the insertion of the hepatic veins were obtained in a longitudinal orientation. RESULTS: 75 pediatric ED patients were enrolled in the study; 63 hydrated patients (Group 1) and 12 dehydrated patients (Group 2). There were no statistically significant demographic differences between the groups (age, P=0.132; gender, P=0.206; weight, P=0.217). There was a statistically significant difference with regards to heart rate (group 1: median heart rate = 128.5 beats/minute (range: 92 to 178) and Group 2: 145.0 beats/minute [(range: 114 to 184); P<.05]. Sonographically, Group 1 had statistically significant higher median longitudinal IVC maximum and minimum diameters, and showed a trend toward a greater difference in diameter between the maximum and minimum, as compared to Group 2: Maximum = 64mm vs. 38mm, P<.001; Minimum = 45mm vs. 32mm, P<.05; with a median difference = 20mm vs. 12mm, P=.095 respectively. In addition, 0% of Group 1 demonstrated IVC collapse during inspiration whereas 25% of Group 2 showed complete collapse of the IVC during inspiration (P<.005); in other words complete IVC collapse during inspiration was seen only in the dehydrated patients. CONCLUSION: Maximum and minimum IVC diameters, as measured during respiration by bedside ED ultrasonography, were lower in clinically dehydrated pediatric patients. Moreover, sonographic visualization of a collapsed IVC may rapidly and reliably predict dehydration status.

TU.23) Thoracic Rapid Ultrasound in Trauma (TRUST): Test characteristics in penetrating injury : **Bret P. Nelson[1], Danny Duque[1], Vicki E. Noble[2], Betty Chang[3], Alison Lozner[2], Adam Levine[2] : 1. Emergency Medicine, Mount Sinai School of Medicine, New York, NY, USA. 2. Harvard Medical School, Boston, MA, USA. 3. Brookdale University Hospital and Medical Center, New York, NY, USA.**

INTRODUCTION: The test characteristics of bedside ultrasound (US) have not been well described in the setting of penetrating injury despite widespread use in trauma centers. Chest x-ray (CXR) is the initial modality of choice in screening for pneumo- and hemothorax, but is limited by patient position and time, and is inaccurate compared to CT scan. This study was designed to assess the test characteristics of US for pneumo- and hemothorax, hemoperitoneum, and hemopericardium in penetrating trauma. METHODS: Prospective, observational study at three urban Level I trauma centers. Patients with penetrating torso trauma were enrolled. Patients underwent standard ATLS protocols, and a Focused Assessment with Sonography for Trauma (FAST) and US for pneumothorax were performed

during the secondary survey by emergency medicine or surgery residents or faculty with variable prior training. All patients had either a CT scan, follow-up CXR (at 6 hours), or a chest tube placed as criterion standard. Sensitivity (Sens), specificity (Spec), positive and negative predictive values (PPV, NPV) with 95% confidence intervals (CI) were calculated for US and CXR; t-test was used to compare timing of US versus CXR. RESULTS: 91 patients with penetrating torso trauma were enrolled: 69 thoracic, 35 abdominal, and 13 with both. Pneumothorax was present in 14 patients, hemothorax in 11, and hemoperitoneum in 10. There were no patients with hemopericardium. The test characteristics for detection of these entities using US and CXR are detailed in the tables below. US was performed earlier than CXR (mean time 13.9 vs. 24.6 minutes from triage, p=0.006). CONCLUSIONS: US performed comparably to CXR in the initial evaluation of pneumo- and hemothorax from penetrating injury, and was completed more rapidly. Both tests are insensitive however, and more definitive imaging is warranted in the setting of a negative initial screen. Ultrasound for hemoperitoneum demonstrated a high negative predictive value, and may be undervalued in the setting of penetrating trauma.

Test characteristics of US compared to criterion standard

Indication	Sens% (CI)	Spec% (CI)	PPV% (CI)	NPV% (CI)
Pneumothorax	50 (24-76)	96 (88-99)	70 (35-92)	91 (82-96)
Hemothorax	18 (3-52)	95 (87-98)	33 (6-76)	89 (80-95)
Hemoperitoneum	70 (35-92)	95 (87-98)	63 (32-88)	96 (89-99)
Hemopericardium*	NA	99 (93-100)	0 (0-95)	100 (95-100)

*there were no cases of hemopericardium

Test characteristics of CXR compared to criterion standard

Indication	Sens% (CI)	Spec% (CI)	PPV% (CI)	NPV% (CI)
Pneumothorax	35 (9-25)	97 (90-100)	71 (30-95)	89 (80-95)
Hemothorax	27 (7-61)	99 (92-100)	75 (21-99)	91 (82-96)

TU.24) Diagnostic Accuracy and Reproducibility of Lung Ultrasound in Acute Dyspnea Evaluation in the Emergency Department - EUCAD1 (Emergency Ultrasound of the Chest in Acute Dyspnea 1) : Gian A. Cibinel[1], Giovanna Casoli[1], Fabrizio Elia[1], Monica Padoan[1], Alberto Goffi[1] : 1. ASL TO3 - SC Medicina e Chirurgia d'Urgenza, Pinerolo, Torino, Italy.

INTRODUCTION: In patients admitted to the Emergency Department (ED) with acute dyspnea, the initial diagnostic evaluaion (history, physical examination, EKG, chest X-ray, BNP) is often not very accurate in defining the etiologic cause (cardiac and/or pulmonary) together with the underlying pathophysiology. Objective: To evaluate the diagnostic accuracy and reproducibility of lung ultrasound in identifying cardiac causes of acute dyspnea in patients presenting to the ED. METHODS: Between January and July 2007 we prospectively enrolled 60 patients admitted to the ED of the Pinerolo General Hospital (Turin, Italy) with acute dyspnea (i.e. dyspnea appeared or worsened in the last 48 hours). In all patients we

performed lung ultrasound and evaluated the presence of diffuse interstitial syndrome using three antero-lateral thoracic windows, as well as the presence of pleural effusion using a basal window on both sides of the thorax. The final diagnosis (cardiogenic or non-cardiogenic dyspnea) was confirmed, in a retrospective way, by two expert physicians (an emergency medicine specialist and a cardiologist), not aware of the scope of the study, using all available data (clinical findings, EKG, chest X-ray, echocardiography - carried out in all patients, response to therapy), but not lung ultrasound results. RESULTS: The finding of diffuse interstitial syndrome by lung ultrasound was highly predictive for cardiogenic dyspnea (sensitivity 94%, specificity 96%, negative predictive value 93%, positive predictive value 97%, LR - 0.06, LR + 24.57). On the contrary, detection of pleural effusion was not helpful in differential diagnosis. The reproducibility of the lung ultrasound performed in an emergency setting was very good (k between 0.93 and 0.96). CONCLUSION: In patients presenting to the ED with acute dyspnea, lung ultrasound, performed with the purpose of identifying diffuse interstitial syndrome, is a very accurate technique for discriminating cardiogenic from non-cardiogenic causes.

TU.25) Diagnostic-therapeutic impact of lung ultrasound in acute dyspnea management in the Emergency Department – EUCAD2 (Emergency Ultrasound of the Chest in Acute Dyspnea 2) : Alberto Goffi[1], Marina Civita[1], Emanuela Laurita[1], Giovanna Casoli[1], Giulio Porrino[1], Gian Alfonso Cibinel[1] : 1. SC Medicina e Chirurgia d'Accettazione e Urgenza, Ospedale "E. Agnelli" - ASLTO3, Pinerolo, Turin, Italy.

INTRODUCTION: Lung ultrasound has elevated accuracy in the diagnostic evaluation of patients with dyspnea. However, no data concerning the diagnostic-therapeutic impact of this modality in patients with acute dyspnea in the setting of the Emergency Department (ED) are currently available.
Objective: To study the diagnostic-therapeutic impact of lung ultrasound in patients with acute dyspnea in the ED.
METHODS: Between June and October 2008, we prospectively enrolled 33 patients admitted to the ED of the Pinerolo General Hospital (Turin, Italy) with acute dyspnea (i.e. dyspnea appeared or worsened in the last 48 hours). The presence of 5 fundamental syndromes (consolidation, localized and diffuse interstitial syndrome, pneumothorax, and pleural effusion) was evaluated by lung ultrasound by the emergency physician who first evaluated the patient in the ED. We then compared the clinical diagnosis made before and after the performance of lung ultrasound, and we recorded the therapeutic changes that were introduced based on the ultrasonography findings. RESULTS: Lung ultrasound performance induced a change of the initial diagnosis in about 50% of the patients. In particular, the diagnostic hypothesis made after the first evaluation in the ED (main, respiratory pathophysiological and etiological) was modified, as a consequence of lung ultrasound results, in 48%, 55%, and 61% of the patients, respectively. In addition, ultrasonography findings led to therapeutic changes in 17 out of 33 patients (52%); if we considered only those patients in whom the diagnosis was modified after lung ultrasound, we recorded a therapeutic change in 78% of the patients.
CONCLUSIONS: Lung ultrasound improves the diagnostic impression in patients with acute dyspnea in the setting of the ED. This better diagnosis often leads to a change in the therapy, which can be oriented to the pathophysiology.

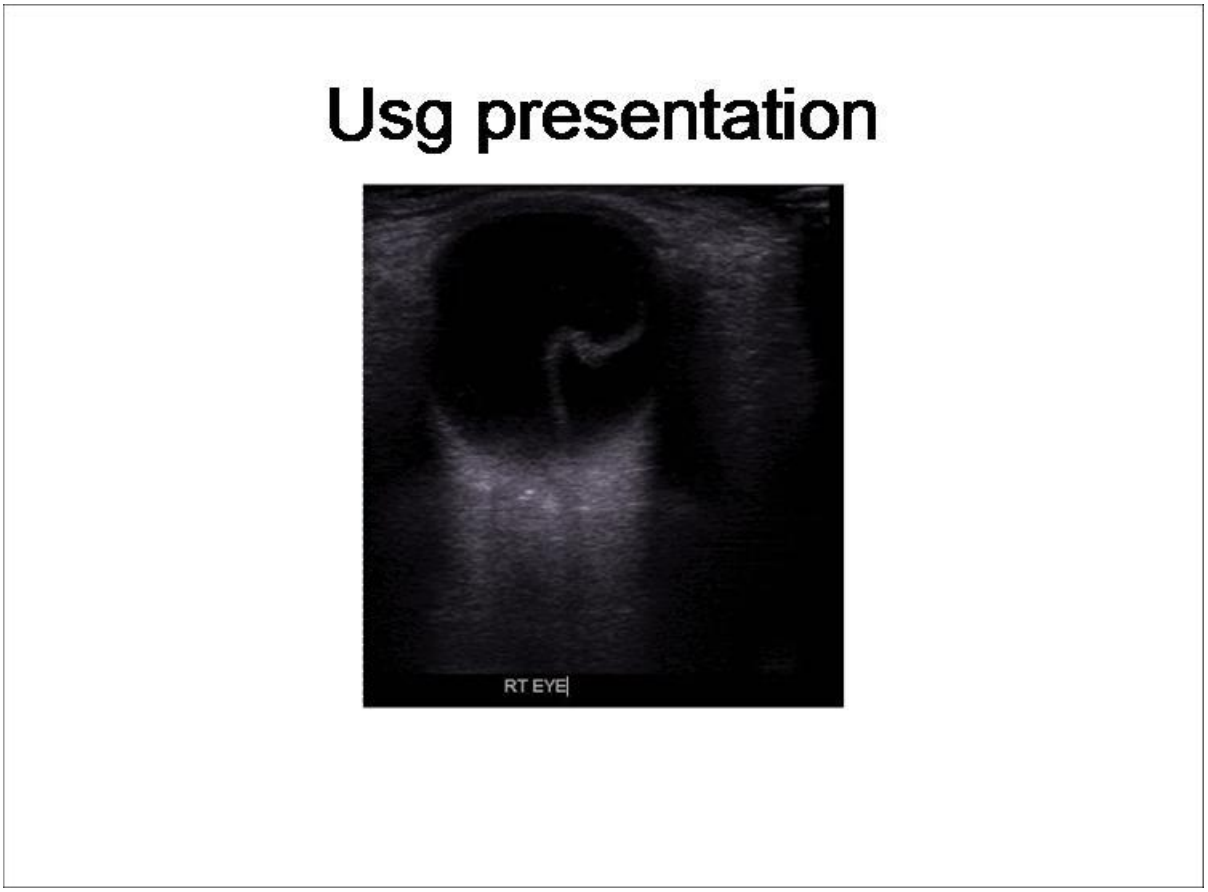
TU.26) Detecting pulmonary consolidation by chest ultrasound in patients with acute dyspnea at the Emergency Department: Comparison with chest X-Ray : **Maurizio Zanobetti[1], Claudio Poggioni[1], Alberto Conti[1], Francesca Innocenti[1], Marta Di Dio[1], Aurelia Guzzo[1], Stefano Grifoni[1], Riccardo Pini[1] : 1. Careggi University Hospital, Firenze, Firenze, Italy.**

INTRODUCTION: Currently, the standard chest X-ray (CXR) is the first routine examination in patients with dyspnea undergo in the Emergency Department (ED). Nevertheless, ED overcrowding and the ensuing increasing length of time requested to carry out a standard CXR and to draw up a report, may lead to a delay in diagnosis and a prolonged stay in the ED. Chest Ultrasound (ChUS) allows a quick bed-side examination of the patient with an immediate medical report, and without patient exposure to ionizing radiation. Therefore we have examined the concordance between ChUS and traditional CXR in detecting pulmonary consolidations. METHODS: We performed a prospective blinded study enrolling all consecutive patients presenting to the ED with acute dyspnea. After the initial evaluation consisting in past history, physical examination, 12-leads ECG, arterial blood gas determination and standard laboratory tests, all patients underwent a ChUS scan followed by a standard CXR. Radiologist was unaware of the ChUS results. The time elapsing between the CXR examination request and the medical report was also recorded for each patient. RESULTS: From Jan.2006 to Jan.2008, we have enrolled 404 consecutive patients (51% males). The sample mean age was 73 +/- 16 years (range 21-101). The overall concordance was 77,3% ($p < 0,0001$). We analyzed the concordance according to the location in the lung. Data showed an high concordance in every field of both lungs (Right: upper 92,1 %, middle 77,9 %, bottom 74,4%) (Left: upper 72,3 %, middle 75,6 %, bottom 75,9%), except for the apical field, were ChUS detected none and CXR only 2. Time elapsing between CXR request and medical report was 1 hour and 35 +/- 21 minutes. CONCLUSION: Our study evidenced high concordance values between ChUS and CXR to detect pulmonary consolidations. Beyond considering the large time-saving to final medical report for ChUS, without patient exposure to ionizing radiation, ChUS could become the main first routine examination used for shortness of breath patients admitted to the ED.

TU.27) Ultrasound guided diagnosis of clinically suspected retinal detachment : **Muhammad A. Majeed[1], Ashes Mukherjee[1] : 1. ED, nhs, Dudley, United Kingdom.**

CASE: A 76 yrs old man came to the A&E department with visual disturbance for 24 hrs. According to the patient he felt as if a curtain fell across his RT rye and on moving the eye he felt as if a black shadow was moving across the centre of his eye. He had H/O high blood pressure, high cholesterol. On examination, VA Rt 6/18 Lt 6/12 sclera, cornea and anterior chamber of the eye were clear. Fundoscopy on dilated eye showed area of devascularisation superomedially. He had intact peripheral vision but absent central vision. ED ultrasound revealed suspicious area looked like a heap of tissue. These images were produced using linear probe with water soluble jelly on the closed eye. The images can be improved by certain angulations of the probe. We can differentiate between retinal detachment and more feely moving vitreous haemorrhage by asking the patient to move his closed eye laterally and medially. The patient was transferred to eye hospital where he had laser treatment performed

with good results. DISCUSSION: The ED is the first interface for patients coming to hospitals. Ocular ultrasound is relatively new for ED physicians but we show how ocular ultrasound performed in the ED facilitates our diagnosis and decision to request ophthalmology consultation. In this case, with ultrasound, we diagnosed the clinically suspicious retinal detachment. This more objective evidence facilitated subsequent diagnosis and therapeutic steps. This situation illustrates the usefulness of bedside ED ultrasound. Retinal detachment puts the patient at a risk of having vision loss if appropriate ophthalmologic intervention is not provided. Bedside ultrasound allows a quick, easy and effective method of detecting retinal detachment in ED. We suggest that like other ED ultrasound competencies people should be encouraged to gain these competencies as well. We still recommend that emergency physician rely on their clinical skills including fundoscopy and slit lamps. However if in doubt perform an ultrasound as it is non invasive and quick way to confirm the doubts.



TU.66) A Placebo Controlled Double Blind and Randomized Trial of Prophylactic Etoricoxib Given to Prevent Yom Kippur Headache : Michael J. Drescher[1], Evan A. Alpert[2], Todd Zalut[3], Rafael Torgovicky[4], Zev Wimpfheimer[3] : 1. Emergency Medicine, University of Connecticut/Hartford Hospital, Hartford, CT, USA. 2. Sheba Medical Center, Tel Hashomer, Israel. 3. Shaare Zedek Medical Center, Jerusalem, Israel.

4. MSD (Merck) Israel, Tel Aviv, Israel.

INTRODUCTION: Religious fasting is associated with headache. This has been documented as 'Yom Kippur Headache' and' 'First-of-Ramadan Headache.' Rofecoxib(Vioxx®) a Cox-2 inhibitor with a 17 hour half-life, has been shown effective in preventing fasting headache when taken just prior to the 25 hour Yom Kippur fast. However, rofecoxib is no longer an available treatment option for patients. We hypothesized that another Cox-2 inhibitor with a longer half-life, Etoricoxib (Arcoxia®), would also be effective in preventing headache, providing another treatment option for patients. METHODS: We performed a double blind randomized prospective trial of Etoricoxib 120mg vs placebo, taken just prior to the onset of fasting, Yom Kippur 2008. Healthy adults aged 18 – 65 were enrolled from the community. Subjects completed a demographic data form and questions regarding headache history and a post-fast survey on headache during the fast. They were queried as to headache intensity, time of onset of headache, general ease of fasting and side effects. RESULTS: We enrolled 211 patients. 195 completed the post fast questionnaire (92%). Of those subjects receiving etoricoxib (n=99), 36 or 36.4% vs 65 or 67.7% of the placebo group (n=96) developed headache during the fast ($p<.0001$). Median severity of headache in the treatment group was significantly less for the treatment group (3.0 vs 5.0 on a visual analog scale of 10 ($p = .024$). Participants in the treatment group reported an easier fast compared to previous fasting experience. (4.0 vs. 3.5 on a scale of 1 to 5 ($p<.0001$). CONCLUSION: Etoricoxib 120mg taken prior to a twenty five hour ritual fast prevents and attenuates fasting headache.

TU.67) Therapeutic effects of bovine colostrum on focal brain ischemia/reperfusion injured rat model :
Han Sung Choi[1] : 1. Department of Emergency Medicine, Kyung Hee University Medical Center, Seoul, Korea, South.

INTRODUCTION: It is well established that bovine colostrum (BC) has a beneficial effect on intestinal ischemia/reperfusion (I/R) injury in a rat model. However, few studies have examined the therapeutic effect of BC on brain I/R injured rat model. We aimed to investigate the therapeutic effects of BC in focal brain I/R injured rats.
METHODS: Forty Sprague-Dawley rats were randomly divided into 4 groups (one sham operation group and three experimental groups). In male rats middle cerebral artery occlusion (2 h) and subsequent reperfusion (MCAO/R) was induced with the filament model. The cortical blood flow and cortical temperature were directly monitored and stabilized. Sensorimotor function was assessed using a neurological score prior to the MCAO and daily for 7 days following the MCAO. After 1 h reperfusion and twice daily during the experiment, the experimental group was given BC (4 ml/kg/day) per oral route (PO) and the other groups received 0.9% saline and low fat milk (LFM) after transient MCAO. Seven days later, we assessed the infarct volume using a computerized image analysis system, serum levels of pro-inflammatory cytokines (IL-1?, IL-6, and TNF-?), and inflammatory cytokine (IL-10).
RESULTS: The infarct volume and edema volume showed a significant reduced (-45%/-48%) in rats with BC feeding after focal brain I/R when compared to rats with LFM/saline feeding. IL-1?, IL-6, and TNF-? serum levels were significantly reduced in rats with BC feeding when compared to rats with LFM/saline feeding ($p<0.05$). Serum level of IL-10 was reduced in rats

with BC feeding after I/R when compared to rats with LFM/saline feeding, but there was no significant differences (p=0.087).
CONCLUSION: BC have beneficial effects in preventing brain I/R injury in rat model. BC ingestion after reperfusion in the patients with cerebral infarction may promote the recovery of brain I/R injury.

TU.68) Alteplase for Acute Ischemic Stroke: Experience in an Emergency Department of a Community Hospital.

: Angel Estella[1], Luis Perez Fontaiña[1], Antonio Jareño[1] : 1. Emergency Department. Hospital SAS Jerez, Jerez, Spain.

INTRODUCTION: Intravenous administration of recombinant tissue plasminogen activator (rt-PA) remains the most beneficial proven intervention for emergency treatment of stroke. OBJECTIVE: To assess the implementation of the “Stroke code” in routine clinical care at our emergency department from November of 2005 to March of 2009 and to describe the clinical outcome of patients who received treatment with intravenous rt-PA. METHODS: The aim of the “Stroke code” is the early recognition of selected patients with a suspected stroke who may be treated with thrombolysis therapy. "Stroke code" was implemented in our hospital in November of 2005. Prehospital emergency medical services, emergency department, critical care, radiology and neurology departments are involved. Inclusion criteria for intravenous administration of rt-PA (0.9 mg/Kg) were: age 18 years or greater, measurable neurological deficit, NIHSS >4 and <25, onset of symptoms < 3 hours before beginning treatment, CT without a multilobar infarction (hypodensity > 1/3 cerebral hemisphere). RESULTS: 120 “Stroke code” were activated from November 2005 to March 2009. rt-PA was administered in 52 patients (43,3%), 33 patients were males and 19 females. Mean age was 63,6 years. APACHE II (admission) 9,1±3,2 points. ICU length of stay was 3.8±1.6 days. 78,8% of patients had vascular risk factors. 26,9% were on aspirin at stroke onset. Post-treatment study imaging was performed 48 hours after thrombolysis: 6 patients developed, on CT, haemorrhagic infarct type 1 (asymptomatic small petechiae along the margins of the infarct). Two patients died, because of cerebral infarction with cerebral edema. Median NIHSS scores were 13.4 points at admission and 9.8; 8.3 and 7 at 2, 24 and 48 hours after treatment respectively. CONCLUSIONS: The emergency department plays an important role in the early recognition of selected patients with a suspected stroke to administration of rt-PA. rt-PA improved clinical outcomes and is safe in patients with acute ischemic stroke.

TU.69) Early risk of stroke in transient ischemic attack patients: validation of the ABCD^2 score in the emergency department :

Paola Perfetti[1], Giulio Trecco[1], Daniele Longo[1], Costantino Caroselli[1], William Mantovani[2], Giampaolo Rocca[1], Francesco Pratticò[1] : 1. Emergency Department, Ospedale Civile Maggiore, Azienda Ospedaliera di Verona, Verona, Italy. 2. Medicine and Public Health Department, Hygiene Section, Verona University, Verona, Italy.

INTRODUCTION: The short-term risk for stroke after a transient ischemic attack (TIA) has been recently stratified by a 7-point score based on age, blood pressure, clinical features, duration of symptoms and diabetes (ABCD^2). In some validation studies the score performed

poorly in identifying patients with large vessel stenosis, cardioembolism, andsubsequent stroke or death, while other authors concluded that ultrasonographic findings have a higher precision rate than the variables required to calculate the $ABCD^2$ score. The STORM (Survey about TIA Outcome and Risk Monitoring) project is a prospective study whose objective is to evaluate and to improve the predictive value of the score by adding electrocardiography (EKG) and carotid ultrasound. Here we present the preliminary results. METHODS: All subsequent TIA patients were enrolled in 5 months at the emergency department of the Ospedale Civile Maggiore in Verona. Five clinical items according to the $ABCD^2$ score were collected and EKG and carotid ultrasound were performed. Every patient was then contacted 2, 7 and 30 days later to verify whether a second episode of TIA, stroke, myocardial infarction or vascular death occurred. RESULTS: 11 (36.6%) out of 30 enrolled patients had a stroke or a second TIA episode within 30 days and the $ABCD^2$ score was not predictive of a higher risk in patients with a score ? 5 (41.2%) as opposed to patients scoring < 5 (30.8%). Only hypertension (RR=3, p=0.16) and EKG abnormalities (RR=2.62, p=0.38) remained independent predictors for stroke recurrence, unlike the overall $ABCD^2$ score (RR=0.91, p=0.75) or the detection of ? 50% carotid stenosis (RR=0.64, p=0.59). CONCLUSIONS: In our cohort the $ABCD^2$ score was not predictive of a high risk of stroke, neither EKG nor carotid ultrasound, however the low number of enrolled patients leads to no statistically significant results.

TU.70) Diagnosis and management of migraine in French general emergency departments: a large, prospective, multicentre study : Laurent Calvel[1], Nathalie Derouet[2], Marc Giroud[3], Christian Lucas[4], Gwendoline Meric[5], Patrick Plaisance[6], Dominique Valade[6] : 1. Hopital de Hautepierre, Strasbourg, France. 2. Centre hospitalier du Mans, Le Mans, France. 3. Centre hospitalier de Pontoise, Cergy-Pontoise, France. 4. Hopital Roger Salengro, Lille, France. 5. Pfizer, Paris, France. 6. Hopital Lariboisière, Paris, France.

INTRODUCTION: Migraine remains an under-diagnosed and under-treated illness. A significant number of migraineurs do not seek care from healthcare professionals, opting instead for self medication. In some circumstances they are led to consult in emergency department (ED). OBJECTIVES: From a cohort of patients presenting to ED, the objectives were to assess the frequency of patients consulting for headache and among them for migraine, to characterize the patients diagnosed as migraineurs and describe the ED migraine management. METHODS: This was a French observational, prospective study conducted in 22 ED centres during the same week. Data were collected from ED patient register, patient and ED practitioner questionnaires. Reason for consultation, patient demographic data, history of migraine and ED management were recorded. RESULTS: Out of 15835 patients admitted to ED, 479 (3%) were suffering from headache with 273 secondary headaches (57%) and 98 migraines (21%). The main reasons for ED consultations were an unusual attack severity (49%) and a lack of usual treatment efficacy (23%). The mean age of migraineurs was 38 with the majority being female (75%). The most common migraine treatments prescribed in ED were: analgesics level 1 (61%), NSAIDs (43%) and triptans (11%). At discharge, 7% of patients were prescribed a prophylactic treatment and 63% an acute treatment. 20% of migraineurs left the ED pain free, 9% resumed normal activity on the same day and 70% were satisfied with migraine management. CONCLUSION: In most cases, headaches were

secondary. The characteristics of the migraineurs consulting the ED were similar to that of the global migraineurs population. Migraine management in the ED setting partly follows the French recommendations, with however an under-prescription of the highest proof level medications (triptans). The patients were satisfied with migraine management in ED regardless of prescribed treatment rapidity in providing relief. The proportion of significant headache relief could still be improved by increasing the migraine specific treatment use.

TU.71) Relationship between Ambient Temperature and Emergency Department Visits for Headaches : Sophia W. Gee[1], John R. Allegra[1], Barnet Eskin[2] : 1. emergency, Morristown Memorial Hospital, Montville, NJ, USA. 2. Emergency Medical Associates Research Foundation, Livingston, NJ, USA.

INTRODUCTION: Knowledge of environmental influences may provide clues for headache triggering mechanisms. A recent single hospital study showed an association between higher ambient temperatures and increases in emergency department (ED) visits for migraine and non-migraine headaches. Our goal was to determine if there is a relationship between ambient temperature and ED visits for headaches in a large multi-hospital ED database. METHODS: Design: Retrospective cohort. Participants: Consecutive patients seen by ED physicians at 19 hospital EDs in Northern New Jersey from January 1, 1999 to December 31, 2008. Patients were included if the primary ICD9 diagnosis was headache, tension headache or migraine. Those whose primary diagnosis was headache but secondary diagnosis was migraine were analyzed as having migraine headaches. Headaches not specified as migraine were considered “non-migraine” headaches. We obtained the average monthly temperatures for northern New Jersey from the office of the state climatologist. We calculated the percent of visits for non-migraine and migraine headache to the total ED visits for the warmer “summer months” (June to August) and the colder “winter months” (December to February). We used the Student t-test with alpha set at 0.05. RESULTS: Of the 6,450,135 visits in the database, 80,103 (1.24%) had non-migraine headaches and 9,578 (0.15%) migraine headaches. The mean ambient temperatures for winter and summer were 0 degrees C and 22.5 degrees C, respectively. Comparing winter to summer months for non-migraine headaches there was an increase from 1.16% to 1.28% of total ED visits. This represents a statistically significant relative increase of 10.1% (95% CI, 8.0% to 12.0%, $p < 0.001$). However for migraine headaches the increase was only from 0.14% to 0.15%, representing a trend of a relative increase of 6.5% (95% CI, -0.3% to 11.5%, $p = 0.07$). CONCLUSIONS: We found an increase in the incidence for both migraine and non-migraine headaches in the summer months compared to the winter months, but this was statistically significant only for non-migraine headaches.

TU.72) Monitoring of absolute cerebral oxygen saturation (Fore-Sight technology) in acute intracerebral bleeding : Tineke Crits[1], Cathy S. De Deyne[2], Frank Jans[2], Kevin Lathouwers[1], Frank Weyns[1], Jan Wuyts[1], Guy Vundelinckx[1], René Heylen[1] : 1. Anaesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium. 2. Universiteit Hasselt, Hasselt, Belgium.

INTRODUCTION: Cerebral oximetry, based on NIRS, measures regional cerebral tissue oxygen saturation (SctO2) non-invasively. FORE-SIGHT cerebral oximeter, a recently introduced monitoring device, uses 4 precise wavelengths to determine absolute SctO2. We

want to report on the changes in absolute SctO2 occurring during craniotomy for acute intracerebral hematoma. METHODS: Fourteen patients (pts) suffering from acute intracerebral bleeding, scheduled for urgent craniotomy were included. All pts presented with reduced consciousness (GCS <8) and with signs of increased intracranial pressure (referring to CT imaging). Pts received systemic stabilization (intubation, ventilation, hemodynamic monitoring and support) and were transferred as soon as possible from the ER into the operating theatre (OR) for urgent removal of the intracerebral bleeding. As soon as possible, bilateral SctO2 monitoring was started (sensors applied bilaterally over patient's forehead). RESULTS: Pts arrived in the OR after a mean of 1.3hrs after ER admission. Five pts suffered from acute intracerebral bleeding, while 5 pts presented with acute subdural hematoma and 4 pts presented with acute epidural hematoma. In 2 of 14 pts, excessive ambient light interfered with SctO2 monitoring and no SctO2 data could be obtained. In the other 12 pts, SctO2 values ipsilateral to the intracerebral bleeding, were significantly lower than contralateral values. In 2 pts, ipsilateral SctO2 values below 55% were observed. Bone removal resulted in a significant increase in ipsilateral SctO2 in 2 pts. Opening of the dura resulted in a significant increase in ipsilateral SctO2 in 7 pts, while in 2 pts a significant increase in ipsilateral SctO2 occurred after effective removal of the bleeding. In no pts, did any significant change occur in contralateral SctO2 values. CONCLUSION: Non-invasive monitoring of absolute cerebral oxygen saturation might offer new opportunities for the emergency management of pts suffering from acute intracerebral bleeding.

TU.73) Prognostic value of bispectral index in comatose patients arriving to an emergency department : Tineke Crits[1], Cathy S. De Deyne[2], Guy Vundelinckx[1], Frank Jans[2], René Heylen[1] : 1. Anaesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium. 2. Universiteit Hasselt, Hasselt, Belgium.

INTRODUCTION Bispectral index (BIS) values revealed a good probability of recovery of consciousness in comatose patients (pts) after severe brain injury. These findings agreed with a recent report on the use of BIS in brain injured pts undergoing emergency surgery. To date, no data reports on BIS in the early hours of hospital admission of comatose pts. METHODS: Over a 24 months period, 39 adult pts with a GCS lower than 8 were included. In all pts, acute neurological insult was the cause of the comatose state. Of these 39 pts, 20 pts suffered from traumatic brain injury, 11 from intracerebral/subarachnoid hemorrhaghe and 8 from severe stroke. In all pts, BIS monitoring, including burst suppression ratio (BSR) monitoring, was applied for a 2hrs period during the first 6hrs of admission. Afterwards, GOS was recorded at 1, 3 and 6 months post-insult. RESULTS: In 8 of 39 pts (all revealing BSR exceeding 40%) BIS below 30 was observed. BIS pattern in the other 31 pts revealed BIS values between 30 and 60. In 10 of these 31 pts, moderate BSR elevations were observed (0-10) while for the other 21 pts no BSR was observed. As part of the neuro-critical management, all pts received standardized hypnotic/analgesic/neuromuscular blocking medications. Outcomes in the 8 pts with BIS below 30 was extremely poor. In all 8 pts, poor neurological outcome was already predicted by the clinical picture (mydriasis, GCS, CT scan information). All 8 pts died within 48hrs of admission. In the 10 pts with BSR between 0 and 10, no correlation was found with neurological outcome, as these pts did not reveal a worsened outcome compared with those 21 pts revealing 0% BSR on hospital admission. CONCLUSION: Use of BIS to predict early outcomes after severe neurological insult seems only to confirm a poor neurological prognosis,

already predicted by the clinical picture. BIS values below 30, when the BIS number is directly related to the suppression ratio (at least 40% BSR) could, however, be predictive in the early admission hours of comatose pts.

TU.74) Does reversal of anticoagulant drugs with protrombine complex concentrate in patients with intracerebral hemorrhage improve clinical outcome? : Femke Gresnigt[1], Peter Jager de[1], E. Louwerse[1] : 1. Emergency medicine, Jeroen Bosch Hospital, Utrecht, Netherlands.

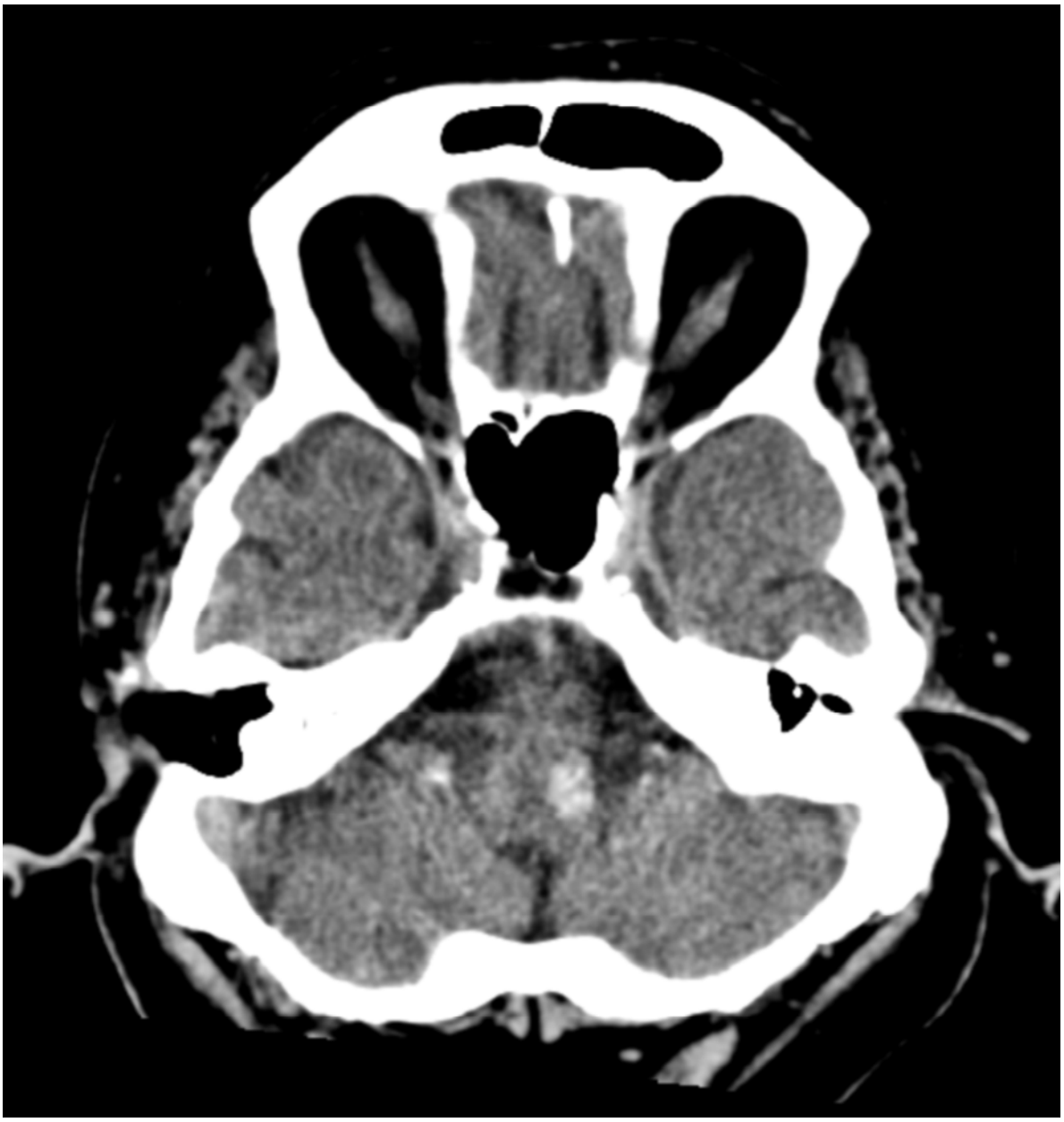
INTRODUCTION: Intracerebral hemorrhage (ICH) is a life threatening complication of oral anticoagulant therapy (OAT). More than two thirds of the patients will die. Initial hematoma volume is the best predictor for clinical outcome and progression occurs in 35%. Therefore treatment options may be aimed to prevent hematoma expansion by anticoagulant reversal with vitamin K, fresh frozen plasma or protrombine complex concentrates (PCC). CASE (Case report and research question): A male patient, 71 years old, with OAT, presented with dizziness, difficulty in swallowing and speech. CT-scan showed a 10.3mm hematoma in the brain stem. The international normalized ratio (INR) was 2.8. Admission to the ICU followed for supportive care and the OAT was discontinued. Clinical deterioration 14 hours after admission lead to the administration of PCC. MRI confirmed the brain stem lesion however no progression of the initial bleeding was observed. Is there evidence in favour of immediate OAT reversal in case of ICH due to OAT?
DISCUSSION: In our literature search we searched the Pubmed, Embase, Medline, Uptodate and Cochrane databases and the search strategy was intracerebral hemorrhage, oral anticoagulant therapy and anticoagulant reversal therapy as key words. There are no double-blinded randomised controlled trials and international guidelines are inconsistent. Most studies are retrospective, based on a small database and use different intervention and comparison groups. Information about the doses and administration of medication is not mentioned. Thrombotic complications (ischemic CVA or myocardial infarction) after PCC are to consider, however this is not included in this review. The obvious concept of reversal of OAT is to reduce hematoma growth and thereby improving clinical outcome. Although logical this is not supported by clinical research. The relevant studies are shown in table 1.
Conclusion: Based upon current literature it is not proven that reversal of OAT in patients with an intracerebral hematoma results in a better nor in a worse clinical outcome.

Tabel 1: Relevant articles

Author date	Patient group & study type	Intervention & Comparison	Outcomes	Results	Study weaknesses	Level of evidence
Boulis 1999	21 patients RCT	FIXCC and FFP (n=5) versus FFP (n=8)	Reversal rate and time clinical outcome	Faster rate and shorter time to correction No difference in outcome	Not blinded Small sample No standard time of outcome measurement	1b

Fredriksson 1992	29 patients Retrospective cohort study	PCC and vitamin K (n=10) versus FFP and vitamin K (n=7)	Reversal time Hematoma growth (by CT or autopsy) Neurologic deficits at discharge with mSR	Faster reversal of INR Less prominent progression of ICH Neurologic deficits tended to be less severe, no sign difference	Retrospective, not randomized and uncontrolled Small sample	2b
Huttner 2006	131 patients INR>1.5 within 12 hours Retrospective cohort study of a prospectively organised database	PCC (n=31) versus FFP (n=18) or vitamin K (n=6)	Early hematoma growth clinical outcome after 12 months	Less hematoma growth No sign difference in clinical outcome	Retrospective, not randomized and uncontrolled Exclusion 58%	2b
Sjoblom 2001	151 patients Multicenter retrospective cohort study	PCC (n=20) versus FFP (n=6) or vitamin K (n=25) or no intervention (n=25)	Mortality after 30-day	Higher mortality in PCC and no intervention group	Retrospective, not randomized and uncontrolled Exclusion 50% Not balanced regarding to several prognostic parameters	4

Abbreviations: FFP: Fresh frozen plasma, FIXCC: factor IX complex concentrate (Nonafact), FVIIa: activated factor VII complex concentrate (NovoSeven), GCS: Glasgow Coma Scale, ICH: intracerebral hemorrhage, INR: international normalised ratio, mRS: modified Rankin Scale, PCC: protrombine complex concentrate (Cofact).



TU.75) Pre-hospital delay after stroke onset: a developing nation scenario : Subhash Chandra[1], Dipti Agarwal[2], Alok Surana[3], Mudassir A. Khan[3] : 1. Medicine, All India Institute of Medical Sciences, New Delhi, Delhi, India. 2. Mayo Clinic, Rochester, MN, USA. 3. Mysore Medical College and Research Institute, Mysore, Karnataka, India.

INTRODUCTION: Early treatment with thrombolytics increases the odds of improvement at

24 hours and favorable 3-month outcomes compared to patients whose treatment is delayed. Hence, we planned this study to focus on the delay in reaching the hospital in patients experiencing a stroke. METHODS: A cross-sectional study was conducted over the period of 2 years; studying patients hospitalized for stroke in a tertiary health care center with major input from rural-populations. RESULTS: 134 patients (86 male, 48 female, 55.22% smokers, 46.76% alcoholics) were studied, mean age was 53.83 ± 18.02 years [significantly lower in females (mean difference 9.73years p=0.002)]. 40.30% were known hypertensive and 14.18% were newly-diagnosed. The majority (92%) of patients had locomotor and speech deficits, while 6% had a pure speech deficit. Only 14.93% of patients presented to the hospital within 5 hours of onset of stroke. The delay was > 24 hours in 50% of female and 29.06% of male patients. Overall, females reached the hospital later than males but this difference did not reach the statistical significance (p=0.095). CONCLUSION: In this part of the world, the majority of patients with stroke do not present immediately to the emergency department. This delay makes them less likely to receive benefits of thrombolytic therapy.

TU.28) The Importance of the Pharmacist in Reporting Adverse Drug Reactions in the Emergency Department

: Samuel B. Chaim[1] : 1. Emergency Department, Asaf Harofe Medical Center, Beer Yaakov, Israel.

INTRODUCTION: Adverse drug reactions are a common cause of morbidity and mortality. Spontaneous reporting of ADRs is partial and problematic worldwide. The objective of the current study was to evaluate whether the presence of a pharmacist in the emergency department will increase ADRs identification and the reporting to the pharmacovigilance unit. METHODS: The study was performed in the emergency department of a tertiary 792 beds hospital in Israel. The study was composed of two phases, 6 weeks each. Phase one, followed an introductory lecture regarding the importance of ADRs reporting, without pharmacist intervention. In phase two, all admission charts were screened by the attended pharmacist, in order to identify patients who may present with an ADR. All charts of patients admitted to the emergency department during morning shifts were evaluated by the pharmacist and the physician. When an ADR was suspected, the patient was interviewed by the pharmacist using a structured questionnaire. The main outcome measure was the number of reported ADRs by the medical ward to the pharmacovigilance website. RESULTS: During 48 days of the baseline period and 48 days of the study period, 1541 and 1544 patients were admitted to the emergency department, respectively. No ADR was reported during the baseline period. During the study period, 61 of the patients were suspected for presenting an ADR, 30 out of the 61 (49%) were identified as an ADR and reported. The number of reported ADRs was significantly higher during the study period ($p<0.01$). 5 out of 30 (16.7%) patients were hospitalized for suspected ADR. 16 out of 30 (53.3%) patients were hospitalized for other reasons. 2 (6.67%) of the ADRs were found to be highly probable, 14 (47%)were probable and 14 (47%) possible. 13 (43.3%) of the 30 ADRs were found to be preventable. 12 (40%) of the ADRs were life threatening according to the WHO criteria. CONCLUSIONS:Our results show clearly that the presence of a pharmacist in the emergency department is a major contribution to the diagnosis, care management and reporting of ADRs.

TU.29) Accuracy of medication history: pharmacist versus physician : Sabrina De Winter[1], Fons

Bakelants[1], Marc B. Sabbe[1], Ludo Willems[1] : 1. University Hospitals Leuven, Leuven, Belgium.

INTRODUCTION: Medication histories obtained by physicians and nurses are often incomplete. In previous studies the number of patients included was often low. In this study, we compare medication histories obtained in the ED by pharmacists versus physicians and we identify characteristics and factors contributing to discrepancies. METHODS: Medication histories were acquired by the pharmacist from patients admitted to the ED, planned to be hospitalized. A structured form was used to guide the pharmacist or pharmacy technician to ensure a standardized approach. Different sources were used to retrieve information. Discrepancies, defined as any difference between the pharmacist-acquired medication history and the one obtained by the physician, were analyzed. RESULTS: 3594 medication histories were acquired by the pharmacist or pharmacy technician. 59% of medication histories recorded by physicians were different from those obtained by the pharmacy staff. Within these inaccurate medication histories, 5963 discrepancies were identified. When comparing the discrepancy rate according to the specialty for which a patient is admitted, we observed an average of 2.1 discrepancies per medication history for Surgery, 1.5 for Internal Medicine and 1.7 for Emergency Medicine physicians. The most common error was omission of a drug (61%), followed by omission of the dose (18%). Drugs belonging to the class of psycholeptics, acid suppressants and beta blocking agents were related with the highest discrepancy rate. Acetylsalicylic acid, omeprazole and zolpidem were most commonly forgotten. The median time required for a complete medication review by the pharmacy staff was 15 minutes (range 5 – 90 minutes). CONCLUSION: This large prospective study demonstrates that medication history acquisition is very often incomplete in the ED. A structured form and a standardized method is necessary to obtain a complete medication history. Pharmacists are especially suited to acquire and supervise accurate medication histories, as they are educated and familiar with commonly used drugs.

TU.30) Adding ultra low dose naltrexone to morphine: Does it alter opioid requirements and opioid side effects? : Shervin Farahmand[1], Omid Ahmadi[1], Ahmadreza Dehpour[1] : 1. Emergecy Medicine, Medical School of Tehran University of Medical Siences, Tehran, Tehran, Iran.

INTRODUCTION: Ultra low dose opioid antagonists can enhance opioid analgesia and prevent tolerance in rodent nociceptive pain assays. Objective: We decided to study in humans whether adding ultra low dose opioid antagonists reduces opioid requirement for pain control or not. METHODS: A randomized, double-blind, controlled trial was designed to investigate whether the addition 5ml of ultra low dose naltrexone (1 ?g in a liter of sterile water) to morphine (0.05 mg / kg) changes total opioid requirement and side effects. Pain control measurements were evaluated every 15 min for the first hour, then every 30 min for the second and third hour and finally at the 4th hour. Pain was measured by the 11-point numeric diary pain intensity scale. The following side effects were evaluated: sedation, nausea, vomiting and pruritus. RESULTS: 267 patients (18 to 45 years old), 73% male and 27% female, with moderate extremities trauma were enrolled in the study. 129 patients were randomized to the morphine + naltrexone group and 138 patients were allocated to the morphine + placebo group. We found that opioid requirement dose did not differ significantly between groups

(Table 1). The morphine + naltrexone group had a lower incidence of nausea than the morphine + placebo group (Table 2). However, the incidence of vomiting, pruritus and sedation were similar between groups. CONCLUSION: The combination of ultra low dose naltrexone and morphine in moderate extremities trauma dose not affect opioid requirements, but it decreases the incidence of nausea.

Table 1: Group * Dose Crosstabulation

	requirment dose(0mg)	requirment dose(1mg)	requirment dose(2mg)	requirment dose(3mg)	Total
Morphin-naltroxone Group	21(16.3%)	54(41.9%)	53(41.1%)	1(0.8%)	129(100%)
MS-Placebo Group	27(19.6%)	56(40.6%)	52(37.7%)	2(2.2%)	138(100%)
Total	48(18.0%)	110(41.2%)	105(39.3%)	4(1.5%)	267(100%)

Table2: GROUP * Nausea Crosstabulation

	Nausea -	Nausea +	Totao
Morphin-naltroxone Group	127(98.4%)	2(1.6%)	129(100.0%)
MS-Placebo Group	122(88.4%)	16(11.6%)	138 (100.0%)
Total	149(93.3%)	18(6.7%)	267(100.0%)

TU.31) IMPROVEMENT OF THE QUALITY OF CARE FOR BATTERED WOMEN IN THE EMERGENCY DEPARTMENT : María Teresa Martínez[1], Nuria León[1], Isabel Campodarve[1], Elias Skaf[1], Silvia Mínguez[1], José Luís Echarte[1], Carlos Clemente[1], María Jesús López[1] : 1. Hospital del Mar, Barcelona, Catalunya, Spain.

INTRODUCTION: OBJECTIVES: To assess the frequency of presentation of battered women in the Emergency Department (ED), risk factors, detection by health care personnel and internal circuits in order to improve the quality of care for these women. METHODS: A prospective study of battered women attended in ED in 2004. Data were recorded on an anatomical map that included three pages. The original form was enclosed to the judicial note, a copy was included in the medical record, and the third was delivered to the social services. Frequent attendance was considered in the presence of a minimum of three annual visits. Data were analyzed with the SPSS vs 13.0 for Windows. RESULTS: 604 cases were collected. Age 34 (10) years. 40% were Spaniards. An anxious-depressive state was recorded in 59%. Violence occurred at home in 68% and in the presence of other people in 52%. 73% of women had suffered physical aggressions before and had not made any accusation. In 81% the aggressor was the current partner. Mild contusions were diagnosed in 93%. Cases were detected by health care personnel in 10%. 30% of women were frequent attenders. Most common reasons for consultation were non-specific conditions, gynecological, trauma, psychiatric, digestive, and neurological complaints. Risk factors for abuse were present in

53%, especially pregnancy, previous miscarriage, non-consenting sex, and increased violence. In 3% of cases, copies were not delivered to the IMAS social services. CONCLUSIONS: The high proportion of frequent attenders to ED and maltreatment-associated risk factors are main findings of the study as well as the low level of detection on the part of the health care personnel. The following measures to improve the quality of care were adopted: 1) education of the health care personnel, including annuals sessions to the new residents, and a continuing education course in the care of battered women addressed to IMAS personnel. 2) the anatomic map has been made available electronically, including the most frequent risk factors in our area of influence.

TU.32) Emergency Medicine in Europe : Eric Revue[1], Catherine Lebaupin[2], Olivier Ganansia[2], Said Laribi[2], Bahram Chaybany[2], Violetta Jauriac[2], Nathalie Flacke[2], Philippe Leveau[2], Marie Pierre Poloujadoff[2], Abdelouahab Bellou[4] : 1. Emergency Dept, Victor Jousselin's Hospital, Dreux, France. 2. International Committee of the French Society of Emergency Medicine (SFMU), Paris, France. 3. University hospital and Faculty of Medicine of Rennes1 and UAE University , Rennes (France), United Arab Emirates. 4. Faculty of Medicine & Health Science (FHS), Al Ain, United Arab Emirates.

INTRODUCTION: European Society for Emergency Medicine (EuSEM) integrates a federation of 24 European National Societies of Emergency Medicine (EM) representing 12,000 Emergency Physicians (EP). The main objective of the French International Committee was to evaluate the organization of prehospital and in hospital EM in EU. METHODS: A standard questionnaire on EM organization was mailed to the EU National Emergency Societies. The survey consisted of 20 open-ended and multiple-choice questions about the EM specialty, presence of prehospital EM, dispatching call-centre, EMS Emergency Departments (ED) and statistics activities. RESULTS: 24 European countries (88%) answered the questionnaire. 41% have a specific diploma in EM and a 4 years (3-6 years) training programme. 59% have a pre-hospital EM System (EMS) managed by physicians (44%). Several countries in North of Europe use paramedics. Prehospital EMS is partially managed by doctors (33%) or technicians (11%). 60% of prehospital EMS uses a dispatching call center for emergencies. Few countries implemented a 2-3-year EM-programme. The number of EDs (3-1600) and EP (1,2 EP/ 1000 inhabitant) varies. The EDs treat approximately 30000 patients/year. Admission rate is 27% (10-45%). Discussion: A rapid growing interest in EM and pre-hospital care throughout EU is observed. To date, EM specialty exists in United Kingdom, Ireland, Malta, Bulgaria, Slovakia, Hungary, Republic Czech, Romania, Belgium, Italy, Poland and Spain. The lack of resources and financial capabilities in some countries may hinder specialty development. Further growth of the specialty requires an understanding of the health priorities and the global health and development agencies that often assist these countries in supporting the health sector. 50% of countries use EPs in the pre-hospital emergency care setting. CONCLUSIONS: Some EU countries are in the early phase of emergency health care development. Assessment and evaluation of national resources, governmental structure, population demographics, culture and health care are needed. In 2008, EuSEM wrote the European Curriculum of EM specialty. The objective is to implement the basic specialty of EM in all EU countries.

TU.33) Large Increase in ED Visits for Head Trauma after a Celebrity's Death : Christina Campo[1], Brian

Walsh[1], John R. Allegra[1], Dennis Cochrane[1] : 1. Morristown Memorial Hospital, Morristown, NJ, USA.

INTRODUCTION: Actress Natasha Richardson died from a head injury on March 18, 2009. According to some reports, she initially appeared well after sustaining the injury. We hypothesize that the publicity surrounding this tragic event would be associated with an increase in Emergency Department (ED) visits for evaluation of head trauma. METHODS: Design: Retrospective cohort. Setting: Consecutive patients seen by ED physicians in 19 urban, suburban and rural EDs in New Jersey and New York during March 2009. Protocol: We classified patients as having head injury based on ICD9 codes. A priori, we chose to compare the daily visits for head injury for the ten days before and after March 18. We used the Student's t-test for statistical significance with alpha set at 0.05. RESULTS: Of the 86,791 total ED visits in March, 2009, 2567 (3%) were for head trauma. Of these, females comprised 46%. The median age was 21 years (interquartile range: 7 years to 51 years). There was a 73% (95% confidence interval, 53% to 94%, $p < 0.0001$) increase in daily ED visits for head trauma for the 10 days following March 18, 2009 compared to the 10 days before. There was little difference in median age, interquartile age range and gender before and after March 18 for patients presenting to the ED with head injuries. The number of visits for head trauma returned to the pre-March 18 range by March 31. CONCLUSION: There was a large increase in ED visits for head trauma for a brief period following the death of Natasha Richardson. Media coverage can have a profound influence on ED visits.

TU.34) Patients' satisfaction with emergency department: which physicians' care items have the strongest correlation with patients' points of view : **Sepideh Omidvari[1], Ali Azin[2], Ali Shahidzadeh Mahani[2], Ali Montazeri[1], Farid Abolhasani[3], Hajieh Jaafari[3], Fatemeh Hoseini[3], Fatemeh Goodarzi[4], Amir Mahmood Harirchi[1], Hamid Soori[1] : 1. Iranian Institute for Health Sciences Research, Mental Health Department, Tehran, Tehran, Iran. 2. Iranian Institute for Health Sciences Research, Social Medicine Department, Tehran, Tehran, Iran. 3. Tehran University of Medical Sciences, Tehran, Tehran, Iran. 4. Shahed University , Tehran, Tehran, Iran.**

INTRODUCTION: In different studies it has been shown that physicians' care has a strong effect on the degree of patients' satisfaction with the emergency department and their points of view. This study examines the degree of correlation between different items of the subscale of physicians' care of a patient satisfaction questionnaire and the variables willingness to choose the department to refer to in future, recommending the emergency department to others, patients opinion about the emergency department of the hospital and their general satisfaction with the hospital. METHODS: A study using a valid (from a prior qualitative study) and reliable (?=0.93) questionnaire was carried out in the emergency department in 3 major teaching hospitals in Tehran, Iran. Patients (n=670) who had been in emergency department at least for 10 hours, who were able to answer the questions without a need for an interpreter, did not have significant cognitive problems, and were well enough to answer the questions were included in the study. The questionnaire included 5 subscales, namely physicians' care, nursing care, behavioral aspects, physical comfort and hoteling, and being kept waiting. Physicians' care included sense of responsibility towards patients, being skilled, giving information to the patients, being kind, respecting patients, being compassionate, having interest in work and not

being negligent. RESULTS: All eight items of the subscale of physicians' care, were found to have a significant relationship with the four mentioned variables. But it was found that the strongest correlation was between sense of responsibility towards patients and willingness to choose the department to refer to in future and recommending the emergency department to others. Concerning patients' opinion about the emergency department and general satisfaction with the hospital, being compassionate had the strongest correlation. CONCLUSION: The findings of the study indicate that, from the points of view of patients, human and behavioral aspects of physicians' profession are as important as clinical care.

Table 1: Correlation between eight items of physicians' care subscale and patients' willingness to choose the department to refer to in future (n=670)

	P value	?
Having sense of responsibility towards the patients	<0.001	0.483
Being kind to the patients	<0.001	0.480
Being compassionate	<0.001	0.470
Respecting patients	<0.001	0.457
Being skilled	<0.001	0.450
Having interest in work	<0.001	0.430
Not being negligent	<0.001	0.416
Giving information to the patients	<0.001	0.304

Table 2: Correlation between eight items of physicians' care subscale and recommending the emergency department to others (n=670)

	P value	?
Having sense of responsibility towards the patients	<0.001	0.496
Being skilled	<0.001	0.493
Being kind to the patients	<0.001	0.461
Respecting patients	<0.001	0.444
Not being negligent	<0.001	0.442
Being compassionate	<0.001	0.441
Having interest in work	<0.001	0.421
Giving information to the patients	<0.001	0.328

TU.35) Patients' satisfaction with the emergency department: which nursing care items have the strongest correlation with patients' points of view? : **Sepideh Omidvari[1], Ali Azin[2], Ali Shahidzadeh Mahani[2], Farid Abolhasani[3], Ali Montazeri[1], Fatemeh Hoseini[3], Hajieh Jaafari[3], Fatemeh Goodarzi[4], Amir Mahmood Harirchi[1], Hamid Soori[1] : 1. Iranian Institute for Health Sciences Research, Mental Health Department, Tehran, Tehran, Iran. 2. Iranian Institute for Health Sciences Research, Social Medicine Department, Tehran, Tehran, Iran. 3. Tehran University of Medical Sciences, Tehran, Tehran, Iran. 4. Shahed University, Tehran, Tehran, Iran.**

INTRODUCTION: One of the important dimensions in patients' satisfaction is nursing care. This 12-month study examines the degree of correlation between different items included in nursing care subscale in a patient satisfaction questionnaire and the variables, namely willingness to choose the department to refer to in the future, recommending the emergency department to others, patients' opinion about the emergency department and patients' general satisfaction with the hospital. METHODS: A study using a valid (from a prior qualitative study) and reliable questionnaire (?=0.93) was carried out in the emergency department in 3 major teaching hospitals in Tehran, Iran by trained researchers. Patients (n=670) who had been in emergency department for at least 10 hours, who were able to answer the questions without a need for an interpreter, did not have significant cognitive problems, and were well enough to answer the questions were included in the study. The questionnaire was administered in confidential conditions. The questionnaire included 5 subscales, namely physicians' care, nursing care, behavioral aspects, physical comfort and hoteling, and being kept waiting. Nursing care included nurses' sense of responsibility towards the patients, being skilled, giving information to the patients, being kind, respecting patients, being compassionate, having interest in work and pain management.
RESULTS: All eight items of the subscale, nursing care, were found to have a significant relationship with the four mentioned variables. But it was found that the strongest correlation was between pain management and willingness to choose the department to refer to in future, patients' opinions about the emergency department and patients' general satisfaction with the hospital. Concerning recommending the emergency department to others, respectful behavior item had the strongest correlation. CONCLUSION: The findings of the study indicate that, from the points of view of the patients, human and behavioral aspects of nurses' profession are as important as clinical care.

Table 1: Correlation between eight items of nursing care subscale and patients' willingness to choose the department to refer to in future (n=670)

	P value	?
Pain management	<0.001	0.431
Respecting patients	<0.001	0.421
Having sense of responsibility towards the patients	<0.001	0.399
Having interest in work	<0.001	0.393
Being kind to the patients	<0.001	0.390
Being compassionate	<0.001	0.389
Being skilled	<0.001	0.383
Giving information to the patients	<0.001	0.295

Table 2: Correlation between eight items of nursing care subscale and recommending the

emergency department to others (n=670)

	P value	?
Respecting patients	<0.001	0.467
Pain management	<0.001	0.464
Having sense of responsibility towards the patients	<0.001	0.455
Having interest in work	<0.001	0.425
Being kind to the patients	<0.001	0.425
Being skilled	<0.001	0.400
Being compassionate	<0.001	0.399
Giving information to the patients	<0.001	0.336

TU.17) SENSITIVITY OF A NEW DIAGNOSTIC SCALE FOR PULMONARY THROMBOEMBOLISM IN TWO UNIVERSITY-AFFILIATED HOSPITALS : Oriol Pallás[1], María Teresa Martínez[1], Mónica Mariñosa[2], Mónica Payés[2], Francisco Del Baño[1], August Supervia[1], Elías Skaf[1], María Luisa Iglesias[2], José Luis Echarte[1] : 1. Emergency, Hospital del Mar, Barcelona, Catalunya, Spain. 2. Hospital Parc Taulí, Sabadell, Spain.

INTRODUCTION: Validated scales for grading the clinical suspicion of pulmonary thromboembolism (PT) are used in the Emergency Department setting. The Wells (WS) and the Ginebra (GS) scales have been prospectively validated but have limitations in our environment. OBJECTIVES: To compare the sensitivity of a new scale of clinical prediction of PT (Catalan scale) with WS and GS in two hospitals. METHODS: 194 patients were diagnosed with PT between 2004-2006. Diagnosis was confirmed by computerized chest angiotomography or high-probability ventilation-perfusion (V/P) lung scanning. Hospital discharge records and imaging studies were reviewed. The WS, GS, and the Catalan scale (CS) were applied. Data were analyzed with SPSS 13.0. RESULTS: The mean age was 70 (15) years. D-Dimer was recorded in 93% of patients. V/P lung scanning was performed in 29% and computerized chest angiotomography in 86.5%. Variables evaluated were: PT as the first diagnostic possibility 45.1%, previous history of PT or deep venous thrombosis 12.4%, active neoplasm 19%, previous surgery 6%, immobilization 41%, chest pain 40%, syncope 22%, hemoptysis 3%, signs of deep venous thrombosis 23%, tachycardia 57%, S1Q3T3 17.5%, right bundle branch block 17.5%, precordial negative T waves on ECG 15%, elevation of the hemidiaphragm 23%, and basal atelectasis 6%. The mean PaO2 was 73.6±28 mmHg, with PaO2<60 mmHg in 33%; mean PaCO2 was 35.4±7 mmHg, with PaCO2 ?35 mmHg in 57% of cases. The diagnostic sensitivity was 74% for GS, 69% for WS and 97% for CS. CS showed a significantly higher sensitivity than the other two scales (P<0.001). The combination of a scale and d-Dimer levels showed a sensitivity of 90% for the CS, which was significantly higher (P<0.001) than the combination for GS (67%) and WS (63%). CONCLUSIONS: In this study, the CS showed a higher sensitivity than either the GS or the WS as a clinical probability model for the diagnosis of PT. According to these findings and in our environment, the CS may be better than other scales. Prospective studies are warranted to assess the sensitivity, specificity,

and predictive values of the CS.

TU.18) A Regional Study of Emergency Department Visits for Acute Exacerbation of Chronic Obstructive Pulmonary Disease, 1996–2008 : Ofer Faig[1], John R. Allegra[1], Barnet Eskin[2] : 1. Morristown Memorial Hospital, Morristown, NJ, USA. 2. Emergency Medical Associates Research Foundation, Livingston, NJ, USA.

INTRODUCTION: Recent advances have been made in the treatment of COPD, including the use of corticosteroids and noninvasive positive pressure ventilation. However, a recent study using a national database demonstrated no change from 1993 to 2005 in the rates of visits to the emergency department (ED) for acute exacerbations of COPD, of hospital admission and of intubation. Our objective was to examine whether the trend in rates in our local region were similar to those found in the national database. METHODS: Design: Retrospective cohort. Setting: Consecutive patients seen by ED physicians in 28 hospitals in New Jersey and New York between January 1, 1996 and December 31, 2008. Protocol: We classified patients as having COPD exacerbations based on ICD9 codes. Data Analysis: We compared the annual COPD visits to total ED visits and, for the COPD visits, the annual hospital admission and intubation rates using regression analyses and the Student t test with alpha = 0.05. RESULTS: Of the 7,567,002 ED visits, there were 47,285 visits (0.6%) with an ED diagnosis of COPD. Mean age was 71 +/- 12 years and 54% were female. The mean age and percent female were similar for all years. There was no statistically significant correlation in percent of total ED visits for COPD versus year (R squared = 0.08, p = 0.35) and in the percent of COPD patients intubated versus year (R squared = 0.21, p = 0.11). The percent of COPD patient admitted to the hospital increased from 62% in 1996 to 76% in 2008 (difference = 14%, 95% CI: 11%, 16%, p <0.001). The correlation coefficient for this upward trend was R squared = 0.91 (p<0.0001). CONCLUSION: Similar to a previous study, we found no statistically significant change in the rate of visits to the emergency department (ED) for acute exacerbations of COPD or of intubation. However, contrary to that study, and despite availability of newer treatments, hospitalization rates for COPD patients in our area have increased.

TU.19) Epistaxis and Factors Affecting Return Visits: A Retrospective Study : David Salo[1], Chiraag Gupta[1], Hetal Patel[1] : 1. Emergency Medicine, Morristown Memorial Hospital, Morristown, NJ, USA.

INTRODUCTION: Several studies have examined seasonality and epidemiology of epistaxis in the ED setting though no study has examined factors related to return visits or the effect of anticoagulation on treatment and return visits. Proposal: To examine general ED treatment and factors related to return ED visits for patients with acute epistaxis. METHODS: Retrospective, case-controlled (IRB-approved). Setting: Community ED with ED residency and 85000 visits/year. Participants: Patients > 18 yrs presenting with acute epistaxis without trauma (ED ICD9 code) from 11/1/2005-7/31/2008. Protocol: ED records were reviewed and data was extracted consecutively onto standardized forms. Main outcome measurements: Differences between return vs did not return to ED within 2 weeks with regards to age, gender, season, and final ED treatment. Data was analyzed using appropriate statistical tests (p<0.05). RESULTS: 1285 patients had epistaxis. 654 were excluded <18 or related to trauma. Of the remaining

631, 347 (55%) were reviewed. Median age was 69.5 (IQR of 54-80.1), (45.7%) were female. 182 (53%) were on some form of anticoagulation: 112 ASA, 37 clopridogrel bilsulfate (CB)and 84 warfarin (W). 22 patients (6.3%) were admitted. 41 failed initial ED treatment and were seen within 2 weeks. Anticoagulation (OR 2.6 (95%CI 1.3-5.5)) as well as final ED treatment were identified as risks of return to ED while age (p=0.12), gender (p=0.51) and winter season (May-Sep vs Nov-Mar) (p=0.28) were not. CONCLUSION: Patients on anticoagulation are at an increased risk for return for epistaxis. While most patients receiving packing, cautery or pressure/observation do not return, patients who receive packing or cautery are at risk for return visits for bleeding.

Initial ED treatment (1st visit)(unequal no's due to missing values)	Any packing	Pressure Observation	Cautery	Other	
Did not rquire further ED Tx	122	135	52	17	
Required change or further Tx	0	3	10	2	
Final ED treatment	Any packing	Pressure Observation	Cautery	Other	Total
Did not return	108	126	34	17	286
Return in 2 weeks	23	7	10	1	41
% Returned	17.6%	5.2%	22.3%	5%	p=0.006

TU.20) Prevalence of undiagnosed hypoxia in an under-resourced district hospital in Zambia. : Mark Foran[1], Joseph Novik[2], Roy Ahn[1], Lynda Tyer-Viola[1], Kennedy Chilufya[3], Kasseba Katamba[3], Thomas Burke[1] : 1. Department of Emergency Medicine, Massachusetts General Hospital, Boston, MA, USA. 2. Jacobi & Montefiore Medical Centers, New York, NY, USA. 3. Kapiri District Hospital, Kapiri Mposhi, Zambia.

INTRODUCTION: Untreated hypoxia is a life-threatening condition. In adequately resourced clinical environments, diagnosis via pulse oximetry and treatment with supplemental oxygen are the universally accepted standard of care. Unfortunately, pulse oximetry is rarely utilized in under-resourced hospitals in low-income countries, despite high morbity and mortality due to respiratory illness. The prevalence of undiagnosed hypoxia in such environments is known to be high in pediatric populations with pneumonia, but is otherwise unknown in adults and children with other conditions. METHODS: This cross-sectional analysis of prevalence of undiagnosed hypoxia was conducted in Kapiri Mposhi, Zambia, at the 60-bed District Hospital, which serves a population of 320,000. The resting oxygen saturation of two consecutive samples of all adult and pediatric inpatients were measured in December 2008 and March 2009 using handheld pulse oximetry. Hypoxia was defined as SpO2 less than 90%. RESULTS: 192 patients were enrolled: 70 children (age <5 years) and 122 adults (5 years or older). 6 patients declined consent. 6 children (9%) and 9 adults (7%) were hypoxic, none of whom were receiving oxygen therapy. Pneumonia, tuberculosis, and malnutrition were the most common diagnoses among those with hypoxia. Oximetry data changed management in many cases, leading to application of supplemental oxygen, initiation of further diagnostic

testing, prolongation of inpatient stay, or expedited discharge home. CONCLUSIONS: Undiagnosed hypoxia is present with high prevalence in this under-resourced clinical environment in both children and adults. Diagnosis via pulse oximetry altered the management for a significant proportion of patients. Further investigation is warranted into the extent of undiagnosed hypoxia in other similar settings, the ability of pulse oximetry to allocate scarce resources efficiently, and the potential for impact on morbidity and mortality.

TU.21) Factors Affecting the Relapse Rate of COPD Exacerbations in Patients Presenting to Emergency Department : Erkan Goksu[1], Cem Oktay[1], Mutlu Kartal[1], Alten Oskay[1], A.Vefa Sayrac[1] : 1. Emergency Department, Akdeniz University School of Medicine, Antalya, Turkey.

INTRODUCTION: The primary purpose of this prospective cohort study was to characterize the use of the emergency department in patients with COPD exacerbations and determine the factors affecting the relapse rate of COPD. METHODS: This is a prospective cohort study on ambulatory patients with exacerbated chronic bronchitis in an ED setting. Patients included in the study were over 18 years of age, had a previous diagnosis of COPD, and presented to the ED for treatment of COPD exacerbation. All information relevant to the study was collected during the patient's visit to the ED. Relapse was defined as an unscheduled visit to an emergency department or primary physician within two weeks of initial ED visit for worsening COPD symptoms. Telephone follow up was done on all patients at the end of two weeks. RESULTS: Variables of 26 relapse cases versus 78 non relapse cases were compared. Home oxygen
therapy, intensive care admission, previous intubation, increased cough, and the number of ED visits in the previous year were associated with increased risk of relapse in univariate analysis. Increased cough and the number of ED visits in the previous year were still significant after multivariate analysis. CONCLUSION: The number of ED visits previous year and increased cough can predict the relapse of a COPD exacerbation within 14 days of an ED visit.

TU.01) Epidemiology of exposure to pesticides in ED : Frederik Staikowsky[1], Abdel Souab[1], Antoine Poupel[1], Hassen Dib[1], Annibal Hernandez[1], Thibault Adenis[1] : 1. Emergency, CHR Reunion Island, St Pierre, La Réunion, France.

INTRODUCTION: Pesticides (P) include mainly insecticides, rodenticides, herbicides, and various products. Their toxicity varies and morbidity is not negligible. METHODS: retrospective analysis of P-exposure treated at ED from 2001 to 2008. RESULTS: 509 P-exposures were reported: 53 accidental exposures (sex ratio MF 2.1, 20.1 ± 23.0 years, 58.5% ? 15 years), 454 suicide attempts (sex ratio MF 2.9, 37.7±14.8 years, 1.6% ? 15 years, 27.3% history of suicide attempts, alcohol addiction 26.7%), 2 homicides. Routes of exposure were ingestion (98.4%), inhalation and/or mucocutaneous contamination (1.8%). Insecticides represented 43.9% of P-exposures (n = 223), dominated by anticholinesterase organophosphates (42.2% of insecticides), carbamates (30.5%), pyrethrum and its derivatives (24.7%); substances most cited were: methomyl (Lannate), diazinon (Basudine®), deltamethrin (Decis), malathion (Joséol), cypermethrin (Cyperfor). Rodenticides represented 24.1% of P-exposures (n = 123) with 61% of cases relating to chloralose (Oxysouris) and 26%

related to anticoagulant rodenticide. Herbicides constituted 22.2% of P-exposures (n = 116), glyphosate (Glyfort), paraquat (Gramoxone), 2,4-D (Caliherb) were respectively 56.9, 19.0 and 6.0% of exposure to herbicide poisoning. The Emergency Medical Pre-hospital Team (SAMU) intervened initially to 302 patients (59.3%) whose 10 (1.96%) were in cardiac arrest occurred in 6 cases within one hour after ingestion, and in 9 cases the P was an insecticide (carbamate 8 times). The time lapse between ingestion and consultation was 127.3±165.0 min (range 15 and 1440 min, median 80 min). The treatments were adapted to symptoms and P suspected: gastric lavage (37.9%), proton pump inhibitors (25.3%), intubation (22.4%), activated charcoal, (20.0%), atropine (16.9%), epilepsy (9.4%), catecholamines (6.9%). 113 patients (22.2%) were hospitalized in intensive care unit. The overall mortality was 7.9% (n = 40): 16 with carbamates, 8 with anticholinesterase organophosphates, 8 with paraquat 8, 3 2,4-D, 2 with pyrethroid. CONCLUSION: P poisonings have a significant morbidity and mortality that justifies a medical pre-hospital intervention especially for insecticides.

TU.02) A case of accidental phosgene poisoning : Carlo A. Locatelli[1], Andrea Giampreti[1], Davide Lonati[1], Sarah Vecchio[1], Valeria Petrolini[1], Stefania Bigi[1], Moreno Agostini[2], Ernesto De Menis[2] : 1. Poison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), Pavia, Italy. 2. Intensive Care Unit and Internal Medicine, Montebelluna Hospital, Montebelluna (Italy), Montebelluna, Italy.

BACKGROUND: Phosgene (P) can cause life-threatening pulmonary oedema within 24 hours after exposure. P, originally manufactured as an agent for chemical warfare, is still widely used in the synthesis of chemicals and plastics. We describe a case with an accidental exposure to P during an attempt to defuse a bomb of World War I. CASE: A 33-year-old man was admitted to the emergency department (ED) seven hours after accidental exposure to P in an attempt to defuse a bomb illegally detained in his garage. He immediately manifested lacrimation, shortness of breath and coughing that promptly disappeared with cessation of exposure and reappeared a few hours later. At admission the patient presented with acute pulmonary oedema confirmed at chest X-ray and CT-scan. Blood gases demonstrated a progressive decrease in arterial PO2 (50 mmHg). Supportive ventilation with positive-end-expiratory pressure was performed and an adequate oxygenation was obtained. Symptomatic treatment with aerosolized N-acetylcysteine and beclomethasone was started, combined with intravenous N-acetylcysteine, methylprednisolone and aminophylline. Coughing, dysphonia and ocular irritation kept up for 4 days after exposure. A bronchoscopy performed at day 10 showed diffuse oedema and mild foamy exudates; the broncho-alveolar lavage revealed a decrease of alveolar macrophages and lymphoid cell, and an increase of polymorphonuclear leukocytes count. Pulmonary function tests performed on the 13th day revealed bronchostenosis, and beta2-adrenergic agonists were added to therapy. Currently, 19 days after exposure, the patient is still hospitalized, presents episodic dyspnoea, a decrease of arterial PO2 (68 mmHg) without oxygen administration, and a slight improvement on CT-scan. DISCUSSION: In the modern era P poisoning is uncommon except for accidental exposures. Acute P inhalation may cause immediate irritant effects, and severe pulmonary toxicity may be delayed 24 to 72 hours after exposure. In this accidental case, P was confirmed by fire department environmental analysis. The patient presented with a severe clinical course and a pulmonary cytological pattern compatible with the toxic effects of the substance.

TU.03) Imidacloprid poisoning: A case report of severe toxicity following inhalational and skin exposure to a commonly used insecticide : Adnan Agha[1], Abdulhaleem Bella[1], Barrak M. Aldosary[2], Ziad N. Kazzi[2] : 1. Armed Forces Hospital, Khamis Mushait, Saudi Arabia. 2. Emory University, Atlanta, GA, USA.

Background: Imidacloprid is a nicotinic acetylcholine receptor agonist (nAChR) which activates, then blocks the postsynaptic nAChR. The high specificity of imidacloprid to receptor subtypes found in insect tissues and poor penetration of the blood brain barrier in mammals results in a favorable toxicity profile. To date, there are no reports of severe intoxication or fatalities from exposure to this compound.
Case report: A 62-year old male patient presented with fever, drowsiness and emesis, 3 days after accidental inhalational exposure to imidacloprid while spraying it in his farm over half an hour. The patient developed altered mental status, respiratory distress and a macculopapular rash over his trunk and extremities. Laboratory findings included an elevated serum creatinine [357 micmol/l ( ), BUN (26.7 mmol/l), elevated alanine aminotransferase [272U/L ()], and total bilirubin [29umol/L()], as well as a low albumin [16G/L()]. Chest radiographs showed pulmonary infiltrates and a skin biopsy showed a leucoclastic vasculitis. The patient had a detectable imidacloprid levels even 8 days post exposure by gas chromatography and mass

spectrometry in the serum as well as urine. Following aggressive supportive care, the patient survived and recovered after 2 weeks, despite developing multiorgan failure.
Conclusion: To the best of our knowledge, this is the first case of toxicity with leucoclasctic vasculitis due to imidacloprid exposure.
Accidental imidacloprid toxicity can be life threatening and should be managed cautiously.

TU.04) CHARACTERISTICS OF INTOXICATIONS ACCORDING TO ORIGIN OF THE PATIENTS : **August Supervia[1], Carlos Clemente[1], María Teresa Martínez[1], María Jesús López[1], Isabel Campodarve[1], Oriol Pallàs[1], María Luisa Iglesias[1], Alfons Aguirre[1], José Luís Echarte[1] : 1. Emergency, Hospital del Mar, Barcelona, Catalunya, Spain.**

INTRODUCTION: To assess the differences between Spaniards and subjects of other nationalities. METHODS: Retrospective study of acute intoxication between 2003-04. Patients were divided as Spaniards and immigrants. Demographic data, type and place of intoxication, type of drug, history of previous intoxications and psychiatric disorders, and late on discharge were recorded. RESULTS: 1531 intoxications were recorded. Alcohol 395, drugs of abuse 626, drugs 425, combinations 13, and others 72. Twenty per cent were immigrants. Western Europe 105, Latin America 73, North Africa 51, Asia 27, Eastern Europe 11, North America 8, and Oceania 1. Spaniards were older (36(16) vs. 30(11) years, P<0.001). Differences according to gender were not found. Spaniards showed a higher percentage of suicidal attempts 30% vs 20% and lesser use of recreational drugs 62% vs. 72%; P=0.006, were more frequently intoxicated at home 44% vs. 28% and less frequently in public places 53% vs. 68%, P<0.001, showed a higher percentage of previous intoxications 51% vs. 29%, P<0.001 and history of psychiatric disorders 58% vs. 31%, P<0.001. Spaniards showed a higher percentage of pure alcohol intoxications 24% vs. 34%, P=0.001, drugs 2% vs. 5%, P<0.009, and domestic products 24% vs. 34%, P=0.001, although there was a higher association of alcohol and drugs 9% vs. 4%, P=0.017. Spanish patients showed a higher percentage of intoxications due to more than one drug 43% vs. 16%, P=0.023. Spaniards presented a higher number of admissions 11% vs. 5%, P=0.004 and showed a higher percentage of hospital stays of more than 12 hours 26% vs. 16.5%, P=0.009. Psychiatric consultation was more frequently requested in people from Spain 38% vs. 22.5%, P<0.001. CONCLUSIONS: Acute intoxications in immigrants accounted for one fifth of the total. These patients were younger, showed a more frequent use of drugs for recreational purposes, with a predominance of pure alcohol intoxications, lower percentage of history of previous intoxications, need of hospitalization less frequently, and shorter length of stay in the emergency department.

TU.05) Serum heart-type fatty acid-binding protein (H-FABP) in early management of carbon monoxide poisoning in rats : **Turker Yardan[1], Murat Meric[2], Ayhan Bozkurt[3], Sirri Bilge[4], Duygu B. Bas[4], Abdulkerim Bedir[5], Tulay Ozdemir[5], Ahmet Baydin[1] : 1. Ondokuz Mayis University, Faculty of Medicine, Department of Emergency Medicine, Samsun, Turkey. 2. Ondokuz Mayis University, Faculty of Medicine, Department of Cardiology, Samsun, Turkey. 3. Ondokuz Mayis University, Faculty of Medicine, Department of Physiology, Samsun, Turkey. 4. Ondokuz Mayis University, Faculty of Medicine, Department of Pharmacology, Samsun, Turkey. 5. Ondokuz Mayis University, Faculty of Medicine, Department of Biochemistry, Samsun, Turkey.**

INTRODUCTION: In case of carbon monoxide (CO) intoxications, it is difficult to predict the severity and outcomes from the clinical picture, and thus a quantitative biochemical marker is needed to manage the treatment of CO-poisoned patients. Our aim was to assess the possible use of H-FABP, a biochemical marker of myocardial and cerebral injury, as a prognostic indicator in acute CO poisoned-rats. METHODS: Male Sprague Dawley rats (250-300 g) were anesthetized and supplied with a jugular vein catheter for blood sampling. The rats were exposed to a mixture of either 3000 (Group A, n=12) or 5000 ppm CO in air (Group B, n=12), or to ambient air (Group C, control group, n=6) at a rate of 4 L/min for 30 mins. Blood samples were taken just before, immediately after and 6 h after the exposure of either CO or ambient air to measure the serum H-FABP and Troponin-I levels by enzyme-linked immunosorbent assay. In addition, blood carboxyhemoglobin (COHb) levels were determined just after the poisoning. The survival rate was monitored for 7 d. RESULTS: In Group B, two rats died during exposure and were excluded from further analysis. Immediately after exposure, blood COHb levels were higher in Group A and B than Group C ($p < 0.01$ for each). However, COHb level in Group B was higher than Group A ($p < 0.01$). Serum H-FABP levels were acutely increased just after the CO exposure in both Group A and B ($p < 0.001$ for each), compared to pre-exposure. At 6 h after exposure, although marked reduction, H-FABP levels were also high in Group A and B ($p < 0.05$ for each). Additionally, H-FABP level was higher in Group B than Group A ($p < 0.01$) immediately after exposure but not 6 h after exposure. Serum troponin-I levels were only increased 6 h after the CO exposure in Group A and B ($p < 0.05$ and $p < 0.01$, respectively), compared to pre-exposure. Survival rate in Group B (~30 %; 7 of 10 rats died) was lower than that of Group A (~83 %; 2 of 12 rats died) ($p < 0.05$). CONCLUSION: Our results suggest that H-FABP might have the potential to be an early and quantitative parameter of clinical severity and the prognosis in CO poisoning.

TU.06) Serum S100? protein and neuron-specific enolase levels in chlorpyrifos poisoned rats : Ayhan Bozkurt[1], Turker Yardan[2], Engin Ciftcioglu[3], Ahmet Baydin[2], Aylin Hakligor[4], Medine Bitigic[4], Sirri Bilge[5] : 1. Ondokuz Mayis University, Faculty of Medicine, Department of Physiology, Samsun, Turkey. 2. Ondokuz Mayis University, Faculty of Medicine, Department of Emergency Medicine, Samsun, Turkey. 3. Ondokuz Mayis University, Faculty of Medicine, Department of Anatomy, Samsun, Turkey. 4. Ankara Education and Research Hospital, Department of Biochemistry, Ankara, Turkey. 5. Ondokuz Mayis University, Faculty of Medicine, Department of Pharmacology, Samsun, Turkey.

INTRODUCTION: Organophosphate (OP) compounds are potent neurotoxic chemicals, many of which are used in the control of agricultural and household pests, and thus have a high potential for human exposure from various sources. It is suggested that, in addition to the inhibition of acetylcholinesterase activity, OPs specifically affect glia and neurons. METHODS: Effects of acute exposure to chlorpyrifos (CPF), which is a common organophosphorus pesticide used worldwide, on neuron-specific enolase (NSE) and S100? levels in rat blood during 7 d were assessed. Rats were evaluated either before (0 h) or 2, 12, 24, 48, and 168 h (7 d) after injection of CPF (279 mg/kg, s.c.) or vehicle (peanut oil, 2 ml/kg, s.c.) for clinical signs of toxicity. Immediately after the evaluation of toxicity, blood samples were taken for biochemical assays. RESULTS: CPF administration produced decrease in body weight and temperature, which was observed for the first time at 12 h after CPF administration and continued for 168 h ($p < 0.05$-0.001). Serum S100? and NSE levels were acutely increased

2 h after CPF administration and remained high at 12 h ($p < 0.01$-0.001). NSE and S100? levels were not different in either CPF or vehicle groups at following time points. Serum acetylcholinesterase activity was dramatically reduced at 2 h after CPF and remained low at each time points during 7 d ($p<0.01$-0.001). CONCLUSION: Our results suggests the usefulness of using these nerve- and glia-specific marker proteins (NSE and S100?, respectively) to assess the OP neurotoxicity.

TU.07) INTOXICATIONS IN THE EMERGENCY SETTING: DIFFERENCES BY GENDER : Carlos Clemente[1], August Supervia[1], José Luis Echarte[1], María Jesús López[1], María Teresa Martínez[1], Alfons Aguirre[1], Oriol Pallás[1], María Luisa Iglesias[1], Isabel Campodarve[1] : 1. Emergency, Hospital del Mar, Barcelona, Catalunya, Spain.

INTRODUCTION: The characteristics of intoxications registered in our center are reported and differences according to sex are analyzed. METHODS: Prospective data collection for the years 2003 and 2004. Data analysis with SPSS statistical package (version 15.0). RESULTS: A total of 1531 intoxications were recorded (alcohol 398, drugs of abuse 628, pharmaceutical drugs 437, other 68). 56.6% were men and the mean age was 34 years. Intoxications were recreational in 40.5%, suicidal attempt in 26.1%, alcohol abuse in 25.8%, and accidental in 7.5%. Women showed more accidental intoxications (36vs19%) and suicidal attempts (12vs4%;P<0.001). It occurred in a public place in 59% and at home in 38%. The first were more common in men (68vs47%;P<0.001), whereas the seconds were more common in women (51vs29%;P<0.001). History of previous intoxications was present in 65.6% of men and 45.5% of women (P<0.001) and history of psychiatric disorders in 50.3% of men and 52.3% of women (P=0.472). Regarding the type of drug, (n, %Mvs%W;P) cocaine (327, 29vs12%;P<0.001); heroin (146, 13vs5%;P<0.001); cannabis (120, 10vs5%;P<0.001); benzodiazepines (114, 29vs12%;P<0.001); and more than one drug (247, 43vs30%;P=0.002) were more frequent in men. Intoxications related to the use of alcohol, gamma-hydroxybutyrate, meta-amphetamine, amphetamines, methadone, and ketamine did not show significant differences by gender. In men, intoxication caused by the association of cocaine and heroin (86, 8vs2%;P<0.001) and alcohol and drugs of abuse (345, 26vs18%;P<0.001) were more frequent, and in women, the combination of alcohol and other drugs (109, 6vs8%;P=0.083). Psychiatric consultation was recorded in 27.7% of men and 40.2% of women (P<0.001). Differences regarding discharges (90.2%) and hospital admissions (9.8%) were not found (P=0.513). CONCLUSIONS: Intoxication related to the recreational use of drugs, including cocaine, heroin, cannabis, benzodiazepines and their associations, and occurring in public places predominated in men. Suicidal attempts and intoxications occurring at home predominated in women. Psychiatric consultations were more frequently requested in women.

TU.08) Preparedness for chemical emergencies: organizational and training needs in Italian emergency departments : Valeria Petrolini[1], Carlo A. Locatelli[1], Stefania Bigi[1], Davide Lonati[1], Andrea Giampreti[1], Sarah Vecchio[1], Luigi Manzo[1], Adriana Volpini[2] : 1. IPoison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), www.cavpavia.it, Pavia, Italy. 2. Italian Civil Protection Department, Rome, Rome, Italy.

INTRODUCTION: Medical response to major chemical emergencies (MCE), conventional and not, needs specifically organized emergency departments (EDs), with adequate equipment and appropriately trained medical staff. Italian EDs do not have a unique standard operating plan, and preparedness for MCE has not been investigated yet. In 2008 we conducted a survey to better identify the organizational and training needs in Italian EDs. We report some of the data collected. METHODS: All Italian EDs, comprehending general Intensive Care Units (ICU) and Emergency-Medical-Service-Centres (CO118), received a questionnaire. Availability of decontamination areas and of procedures for MCE, training (during the last 4 years) on toxicology and NBCR emergencies, chief's opinion on the adequacy of each ED to face a MCE were investigated. RESULTS: 1180 questionnaires were sent: 120 answers from EDs (16% of the existing EDs), 40 from CO118 (38.4% of total) and 36 from ICU were received. Among the emergency disciplines, the lower number of days of training in 2004-2008 were dedicated to NBCR emergencies and clinical toxicology: 51,6% of EDs, 72.2% of ICU, 20% of CO118 had no training on NBCR emergencies. Twenty-nine EDs have a written procedure for MCE, but only in a few cases (14, 48.2%) were medical staff aware, and 3 services (10%) also perform regular simulations. 67% of EDs have a written programme for a massive patient flow; in 82% medical staff is informed about the programme, and 18 services do training. 40% of CO118 have a written programme for MCE, that is known by 75% of medical staff, and 31.2% of the CO118 do regular simulations. 75% of chiefs of services consider their ED not appropriately equipped to attend to a MCE, and 68% think their medical staff wouldn't be adequately prepared for this kind of emergency; 83% agreed that a specific training program would be appropriate. CONCLUSIONS: The data collected show an important lack in the organization and training in all EDs concerning intervention in MCE. Acknowledgements: Study carried out with the support of Italian Civil Protection Department.

TU.09) Tramadol dispensing erogator and poisoning due to erroneous administration : Valeria Petrolini[1], Sarah Vecchio[1], Carlo A. Locatelli[1], Stefania Bigi[1], Davide Lonati[1], Andrea Giampreti[1], Luigi Manzo[1] : 1. Poison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), Pavia, Italy.

INTRODUCTION: Oral solution of Contramal® (Tramadol Hydrochloride) is marketed in Italy in two different 10% formulations: 10 ml with dropper and, since 01/2002, 30 ml with dispensing erogator (one erogation corresponds to 5 drops). The aim of this study is to evaluate all cases referred to Pavia Poison Centre in order to identify frequency and clinical manifestations of Tramadol (T) overdose due to erroneous use of dispensing erogator as if it was a dropper. METHODS: All cases involving T erroneously poisoned patients from 01/2002 to 10/2008 were included. Patients were evaluated for history, single or repeated ingested dose, clinical evaluation at ED-admission, time from ingestion, overall management and antidotic therapy. RESULTS: 106 cases (61 ± 18 years) were enrolled, representing 26% of all patients with T poisoning. The average quantity of drops ingested was 99 ± 43 (corresponding to an average of 20 erogations); in 20/106 cases a repeated dose was ingested. Clinical signs and symptoms registered were nausea/vomiting (41/106; 38%), sedation (31/106; 29,5%), asthenia and vertigo (19/106; 18%) and miosis (1/106; 1%). At first evaluation 32/106 (30,5%) were asymptomatic whereas 22/106 (21%) referred more than one symptom. The average time between ingestion and first call ranged from 10 minutes to 24 hours. The antidote (naloxone)

was administered in 25/106 cases (24%); the outcome was positive for all patients. CONCLUSION: The contemporary presence on the market of Contramal® new dispensing erogator and the pre-existing drops formulation resulted in many cases of accidental poisoning, especially in older patients. The hypothesized causes of erroneous use could be the lack of medical/pharmacist instruction to the patient concerning the proper drug administration, and the similarity of packages and leaflets of both formulations. All cases observed required an ED evaluation. Adverse drug reaction cards have been sent for pharmacovigilance: subsequently, the producer agreed to partially modify the Contramal® leaflet. Poison Control Centres can play a key role in toxicovigilance and in detection of newly emerging poisonings.

TU.10) ECG Analysis in Accidental Urban Hypothermia : Michael Urdang[1], Jan M. Shoenberger[1], Paul Triamarit[1], Mark Hollinger[1], William K. Mallon[1] : 1. Emergency Medicine, Los Angeles County and University of Southern California, Los Angeles, CA, USA.

INTRODUCTION: Accidental urban hypothermia disproportionately involves indigent, intoxicated and chronically ill patients. Traditional descriptions of ECG changes in hypothermia in healthy expedition members may not reflect the findings in urban accidental hypothermia. A detailed analysis of the ECG in 26 accidental urban hypothermia patients and correlation to outcome and arrest rhythm (if arrest occurred) was performed. METHODS: Between 1998-2006, thirty-six cases of severe hypothermia were identified and explicit chart reviews were performed. From 36 cases, 26 ECGs obtained at the time of ED presentation were available for analysis. ECGs were assessed by two academic emergency medicine faculty members to determine the following variables: rhythm, rate, intervals – PR, QRS, QTc (if HR<60, corrected with the Fridericia formula; if >60, corrected with the Bazett formula), Osborn J waves and shivering artifact. Other notable aspects of ECG interpretation were also recorded. RESULTS: Core temperatures upon presentation to the ED ranged from 21.6 – 28.1C (70.8 – 82.5F). ECG findings were broadly distributed and did not correlate well with core temperature. Shivering artifact, for example, was present in a patient with a core temperature of 21.6C (70.8F) but absent in a patient with a temperature 28.1C (82.5F). CONCLUSION: In accidental urban hypothermia, classic ECG findings are not as common as expected and wide rhythm variability exists. One in five patients with severe accidental urban hypothermia lacked an Osborn J wave. Conduction delay and slowing is best measured by QTc, not the presence of an Osborn J wave. QTc measurement is complicated by the presence of bradycardia which requires that the Fridericia formula be employed for measurement. While conduction defects were common, no patient had a VF arrest.

Table 1. ECG reading results

ECG finding	Present %	Absent %
Osborn J wave	80	20
Normal Sinus Rhythm	58	
Bradycardic	38	
Tachycardic	4	
Junctional	23	

Atrial Fibrillation	31	
PR prolongation	85	15
QTc prolongation	100	

TU.11) Trauma patients with detectable cocaethylene are more likely to require ICU admission : Shahriar Zehtabchi[1], Darrel Sutijono [1], Cynthia Moon[1], Arun Subramanian[1], Julie I. Rushbrook[1], Jim Calacay[1], Sage Wiener[1] : 1. Emergency Medicine, State University of New York, Downstate Medical Center, Brooklyn, NY, USA.

INTRODUCTION: Cocaethylene (CE) is a toxic metabolite that is formed after simultaneous consumption of cocaine and ethanol. This potent stimulant is more toxic than cocaine alone and has a longer half-life. The deleterious hemodynamic and cardiovascular effects of CE have been proven in animal models. Objective: To assess the impact of CE on clinical outcomes of trauma patients. METHODS: We prospectively enrolled adult (?13 years old) trauma patients with significant mechanisms of injury requiring admission. Predictor variables included age, gender, mechanism of injury, Injury Severity Score (ISS), base deficit, lactate, and toxicology groups (ethanol alone, cocaine alone, CE, cocaine + ethanol [no CE detected], and none). Outcome measures included mortality, intensive care unit (ICU) admission, and length of hospital stay. We used non-parametric tests (Man-Whitney-U and Kruskall-Wallis) to compare continuous variables when appropriate. The chi-square test was used to compare categorical data. We constructed a logistic regression to identify variables that could predict the dichotomous outcomes of mortality and ICU admission. RESULTS: We enrolled 417 patients (74% male, 70% blunt injury, median age of 40, age range: 13-95, overall mortality: 2.2%). Urine toxicology and serum ethanol level screens classified patients into the following groups: 13.4% ethanol only, 4.1% cocaine only, 8.9% CE, 1.2% ethanol + cocaine (no CE), and 46% none. Mortality and length of hospital stay were not statistically different among the groups. In logistic regression analysis none of the variables was statistically significant in predicting mortality, controlling for all the important covariates. When ICU admission was considered as the outcome, the presence of CE significantly increased the likelihood of ICU admission (odds ratio: 5.9; 95% confidence interval, 1.6 to 22). CONCLUSION: The presence of detectable CE in the urine does not increase the mortality or length of stay in trauma patients requiring admission, but does increase the likelihood of ICU admission.

Comparison of the outcome measures in cocaethylene positive and cocaethylene negative groups.

Outcome	CE Positive (n=37)	CE Negative (n= 380)	p
Mortality	1 (3%)	11 (2.9%)	1.00*
Length of Hospital Stay (days)	5 (3,13)**	5 (2,7)**	0.17+
ICU admission	16 (43%)	90 (24%)	0.01*

* Chi-square test
** Median and interquartile range (%25,%75)
+ Man-Whitney-U test

Abbreviations: CE, cocaethylene; ICU, intensive care unit

TU.12) Lactic acidosis associated with metformin treatment: a risk still underestimated : Sarah Vecchio[1], Carlo A. Locatelli[1], Stefania Bigi[1], Valeria Petrolini[1], Laura Rolandi[2], Andrea Giampreti[1], Loretta Rocchi[2], Davide Lonati[1], Antonella Valli[2], Luisa Baldi[2], Piero Papa[2], Luigi Manzo[1] : 1. Poison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), Pavia, Italy. 2. Laboratory of Analytical Toxicology, Clinical Chemistry Service, IRCCS Policlinico San Matteo Foundation, Pavia (Italy), Pavia, Italy.

INTRODUCTION: Metformin (M) may cause severe lactic acidosis (Lact-ac) especially in patients with dehydration, renal failure, severe cardiac or hepatic diseases, septicaemia. Objective: Evaluate the frequency and risk factors in cases of acute M poisoning due to accumulation referred to Pavia Poison Centre (PPC). METHODS: Cases of M intoxications referred to PPC between 01/2007-11/2008 were retrospectively analyzed for personal data, comorbidity and treatments, symptoms preceding admission, M plasma levels and blood-gas analysis at admission and during hospitalization, clinical evolution, treatment, and outcome. RESULTS: Of 24 patients (mean age 62 ± 12.6), 11 suffered the previous days from gastroenteric symptoms and general malaise, 5 from drowsiness and nausea, 2 from cerebrovascular accident, and 1 had already been hospitalized for pulmonary oedema and renal failure. All patients presented with severe Lact-ac and renal failure at admission. Eleven patients presented with coma or drowsiness, 4 hypoglycemia, 6 hypotension, brady- and tachyarrhythmias and shock and 3 cardiac arrest. 21 patients underwent dialysis or continuous-haemofiltration that successfully reduced M levels. 12 patients needed respiratory support and 4 had cardiac complications during hospitalization. 14 had favourable outcomes, 7 died (33%), 2 were lost at follow-up. Mean dosage of M ranged between 4.6-100 mcg/ml (average 59.6 mcg/ml ± 32.3 DS; therapeutic levels 0.18-1 mcg/ml). In 2 cases plasma M was not determined, while 3 revealed concomitant accumulation of atenolol, digoxin, acenocoumarol. 8 patients had at least one contraindication to M prescription (heart, hepatic, renal disease, chronic alcoholism, age over 80, digoxin therapy). CONCLUSION: M poisoning from accumulation is a severe and often lethal complication that must be suspected in diabetic patients with Lact-ac, renal failure, gastrointestinal symptoms, hypotension, and drowsiness. According to the literature, there is no correlation between M levels and severity of Lact-ac and intoxication. Risks of toxicity from M could be reduced if contraindications to prescription are respected.

TU.13) Home-canned baby food and fatal foodborne botulism in an infant : Davide Lonati[1], Carlo A. Locatelli[1], Stefania Bigi[1], Andrea Giampreti[1], Sarah Vecchio[1], Valeria Petrolini[1], Lucia Fenicia[2], Fabrizio Anniballi[2], Paolo Landri[3], Luigi Manzo[1] : 1. Poison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), Pavia, Italy. 2. National Reference Centre for Botulism, Istituto Superiore di Sanità, Rome, (Italy), Rome, Italy. 3. . Intensive Care Unit, S. Maria della Speranza Hospital, Battipaglia (Italy), Battipaglia, Italy.

BACKGROUND: Botulism is a neuroparalytic disease caused by the blockage of transmission

in the cholinergic synapses by botulinum neurotoxins (BonTs) produced by neurotoxigenic Clostridia. We describe the youngest European fatal case of foodborne-botulism (FBo) caused by ingestion of improperly home-canned baby food. CASE: An 8-month–old female (9 kg bw) was brought at about 8 a.m. by her parents to the emergency department (ED) for a progressive worsening of weakness and acute respiratory failure. At ED-admission, she presented with poor oral intake, weak cry, lethargy, and floppiness; hyperglycaemia (328 mg/dL), severe respiratory hypoxia and acidosis were present. Ab ingestis pneumonia was suspected and orotracheal intubation and continuous mechanical ventilation were applied. The child appeared lethargic, diffusely hypotonic and weak, mydriatic with non reactive pupils, presented poor gag and suck, absence of peristalsis and tendon reflexes. Chest radiograph, encephalic CT-scan, magnetic resonance imaging, and electroencephalography were normal, as well as biochemical tests, cerebrospinal fluid analysis, viral tests and muscular biopsy. The patient received fluids, corticosteroids, aerosol therapy, broad spectrum antibiotic and enteral nutrition. A further investigation revealed that the patient had eaten, the day before, a home-canned baby food. FBo was suspected and biological and food samples were analysed: BonTs type A was identified in the food leftover. Trivalent botulinum antitoxin (250 ml) was intravenously administered in 6 hours followed by activated charcoal (5 g) and prostigmine (0.05 mg/kg bid). The patient worsened with a clinical and laboratory (procalcitonin 37.34 ng/ml) picture of sepsis, and died on day twelve. DISCUSSION: Prevention of food's contamination remains the most relevant step to counteract foodborne botulism. Botulism poisoning should be suspected in any infant presenting with feeding difficulties, constipation, descendent paralysis or acute respiratory failure. Supportive treatment and antidotic therapy should be performed as soon as a clinical diagnosis is made.

WE.01) Decreasing Radiology Turn-Around Times in the ED: Does Limiting Oral Contrast Make a Difference? : **Erik Barton[1] : 1. Emergency Medicine, University of Utah, Salt Lake City, UT, USA.**

INTRODUCTION: Oral and intravenous contrast loads have often been required by many Departments of Radiology in patients needing non-trauma abdominal CT scans (excluding renal scans). The primary purpose for this has been to differentiate bowel loops from other fluid collections. Typically, there is a 2-3hr delay in obtaining abdominal CT scans due to the administration of oral contrast. A number of studies have demonstrated that oral contrast is not required in a significant number of ED patients needing emergent scans. Purpose: To evaluate the efficacy and TAT of limiting oral contrast loads to select patients by introducing an IV-only protocol for ED CT scans at a University Hospital. METHODS: On November 1st, 2008, a protocol was initiated that excluded patients from receiving oral contrast for suspected appendicitis, diverticulitis, bowel obstruction or free air. In these cases, IV contrast only was used. Patient times to study completion and times from completion to radiology readings were recorded and compared to the 3 prior months (SD). Data were evaluated using student's t-test. RESULTS: From November 1st to 30th there were 119 patients with nontrauma abdominal CT scans done in our ED. Fifty-seven (48%) were done without oral contrast. This compared to 627 studies done the prior 3 months. Average time from study order to completion before and after initiation of the protocol for all studies was 108min. (59min) compared to 77min. (60min), respectively ($p<0.001$). Average time for IV contrast only studies was 41min. (39min, $p<0.0001$). Average radiology reading times were 56 min. (33min) and 45min (46),

respectively (p=NS). There were 5 rescans (4%) done on patients who initially done without oral contrast with no change in the diagnosis. CONCLUSIONS: Initiation of a protocol that limits the use of oral contrast in patients requiring ED abdominal CT scans significantly decreases total TAT. This time is primarily due to reducing the waiting time for the procedure rather than radiologist read times. There was no difference in quality of care or missed diagnosis using this protocol.

WE.02) Gender, age and ethnic aspects of acute abdominal pain management: Do we treat without bias?

: Vanessa M. Banz[1], Brigitte Christen[2], Kathrin Paul[2], Luca Martinolli[2], Daniel Candinas[1], Heinz Zimmermann[2], Aristomenis K. Exadaktylos[2] : 1. Department of Visceral Surgery and Medicine, Inselspital, University Hospital Berne, Berne, Switzerland. 2. Department of Emergency Medicine, Inselspital, University Hospital Berne, Berne, Switzerland.

Introduction: Numerous studies have shown differences in pain perception between men and women, and different factors may affect pain management strategies. Our primary aim was to investigate whether there are gender-based differences in pain management in patients admitted to our emergency department (ED) with acute, non-specific abdominal pain (NSAP).
Methods: From June 2007 to June 2008, we carried out a retrospective, gender-based, frequency-matched control study based on a prospectively collected database with 150 patients (75 consecutive men and 75 women) who presented with NSAP at our ED. NSAP was clinically diagnosed by an experienced senior ED physician, if necessary in consultation with a specialist. Pain was documented using a numerical rating scale (NRS; “0” no pain, “10” most severe pain). A multinomial regression model was used to assess factors that might influence pain management. Results are expressed as p-values (level of significance: $p<0.05$) and odds ratios with 95% confidence intervals.
Results: Although women tended to be less likely than men to receive stronger pain medication, this was not statistically significant (p=0.085). Age however had a significant influence on pain management, with younger patients more likely to receive weaker (p=0.011) and fewer analgesics ($p<0.001$). Patients with a higher initial and maximum NRS score received stronger pain medication (both $p<0.001$), as did patients with previous abdominal surgery (p=0.012), known chronic pain conditions (p=0.029) or relevant comorbidities (p=0.048). Nationality (Swiss v. non-Swiss national, p= 0.244), employment status (p= 0.988), time of admission (p= 0.487) and known psychiatric illness (p= 0.579) did not influence pain management.
Conclusions: No statistically significant gender-dependent differences in pain management were observed. However, younger patients received less potent analgesic treatment. There is no reason for certain groups to receive suboptimal treatment, and greater efforts should be made to offer consistent treatment to all patients.

WE.03) Family History is a Predictor of Appendicitis in the Adult Emergency Department Patient :

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INTRODUCTION: A familial propensity for appendicitis has been reported. The literature suggests that family history of appendicitis triples the likelihood of the diagnosis as did a prospective pediatric study. Our goal was to relate positive family history to the diagnosis of acute appendicitis in a prospective sample of adults presenting to a large urban ED. METHODS: We enrolled 428 patients into a prospective, observational, IRB approved study. Patients were excluded if they were under 18, adopted, unaware of their family history, critically ill, or had a prior appendectomy. All patients answered questions about family history of appendicitis. Gender, age, and ethnicity were also noted. Patients were categorized by final diagnosis: those with appendicitis and those that were otherwise diagnosed. Non appendicitis patients were further categorized according to those presenting with abdominal pain and those with any other symptom. Odds ratio for the relationship between final diagnosis of appendicitis and family history was calculated. We further compared those with appendicitis vs those without, among those presenting with abdominal pain. RESULTS: Of the 428 patients, 116 were in the appendicitis group, 158 patients presented with abdominal pain and did not have appendicitis, and 154 patients presented with complaints other than abdominal pain. Of the 118 patients with a positive family history, 44 had appendicitis (37.3%); for those with no family history, 72 of 310 were so diagnosed (23.2%). Among those presenting with abdominal pain, the percentages were 44 of 85 (51.8%) vs. 72 of 189 (38.1%). Both comparisons were significant (p. = .003; OR = 1.97, 95% CI 1.2 – 3.1; and p.= .034; OR = 1.74 95% CI 1.04 – 2.9, respectively. In the full sample, family history was a significant independent predictor (p =.011; OR = 1.883 95% CI – 1.16 – 3.06).The result was not significant, however, for the subsample of only those presenting with abdominal pain (OR=1.612). CONCLUSION: ED patients with a family history of appendicitis are more likely to have this disease than those without a known family history.

WE.04) Patients discharged after diagnosis of non-specific abdominal pain: out of sight, out of mind? A 5-year follow-up : **Vanessa M. Banz[1], Oliver Sperisen[2], Heinz Zimmermann[2], Daniel Candinas[1], Aristomenis K. Exadaktylos[2] : 1. Department of Visceral Surgery and Medicine, Inselspital, University Hospital Berne, Berne, Switzerland. 2. Department of Emergency Medicine, Inselspital, University Hospital Berne, Berne, Switzerland.**

Introduction: Acute non-specific abdominal pain (NSAP) is prevalent in 6
to 25% of the general population and is a common cause of admission to the emergency department (ER). Despite involvement of substantial financial and human resources, there is little data on long-term outcome after initial diagnosis.Our aim was to carry out a follow-up on patients five years after ER discharge for suspected NSAP, to evaluate how many patients had been discharged with an incorrect diagnosis and to determine how many patients were still suffering from similar symptoms.
Methods: All patients (n=146) admitted to our ER in 2003 with NSAP were followed-up after 5 years. Primary endpoint of the study was clinical outcome, with symptom recurrence or persistence five years after initial ER admission. Predictive risk factors were assessed using a multinomial regression model. Results were expressed as p-values and odds ratios (OR) with corresponding 95% confidence intervals.

Results: 29 patients (27.9%) still had recurring NSAP 5 years after initial ER admission, even though 75.8% of these patients received (multiple) diagnostic examinations and 12.5% eventually required diagnostic (or therapeutic) surgery. Although approximately half of patients with recurring NSAP eventually received a definite diagnosis and adequate therapy, 29.8% of all patients still suffered from recurrent abdominal pain after 5 years. Receiving additional diagnostic examinations after discharge from the ER correlated with a higher risk of suffering from recurrent NSAP after 5 years (95% CI, 1.35-12.99, $p < 0.001$).
Conclusions: The long-term impact of admission for initially acute NSAP is significant, with 27.9% of patients still suffering from recurring NSAP after 5 years and 1/3 of all patients complaining of persistent, intermittent abdominal pain, some despite adequate diagnosis. NSAP therefore remains, despite more advanced diagnostic tools, a true and, as yet, unsolved problem.

WE.05) Do Patients With GI Bleeding On Clopidogrel Bisulfate Have Increased Morbidity And Mortality Compared To Controls: A Retrospective Study : David Salo[1], Stephen Coltharp [1], Fred Fiesseler[1], Paul Porter[1], Paul Szucs[1] : 1. Emergency Medicine, Morristown Memorial Hospital, Morristown, NJ, USA.

INTRODUCTION: Patients on anticoagulation therapy who develop GI bleeding are at increased risk for morbidity and mortality. While FFP is often used to reverse warfarin in patients with GI bleeds, little is know regarding outcomes of patients taking clopridogrel bisulfate (CB) (alone or in combination with other anti-coagulation) who develop GI bleeds. Proposal: To examine outcomes of patients with GI bleeding on CB versus other, combination or no anticoagulation. METHODS: Retrospective, case-controlled (IRB-approved). Setting: Community ED with ED residency and 85000 visits/year. Participants: Admitted patients > 55 yrs presenting with GI bleed (ED ICD9 code) from 7/1/2006-6/30/2008. Protocol: ED records and hospital charts were reviewed. Patients were categorized to: No anticoagulation (NA); CB; ASA; Warfarin (W); CB+ASA; ASA +W; all 3. Data was extracted consecutively onto standardized forms. Main outcome measurements: Differences between groups in age, medication no., severity of bleed(major=required rbc transfusion), initial ED Ht rt, SBP, Hg level, INR; pRBCs utilized during hospitalization and LOS. Data was analyzed using appropriate statistical tests ($p<0.05$). RESULTS: 1397 patients had GI bleeds. 598 were excluded by age, discharged, or predefined exclusion criteria. Of the remaining 799, 325 (40.7%) were reviewed. Median age was 78 (IQR of 69-84) 164 (51.4%) were female. Patients taking CB alone required fewest pRBCs and had the shortest LOS. Patients on W were not statistically difference in pRBC requirements ($p=0.29$) but had increased LOS (7.9 vs 5.7; $p=0.03$) compared to pts not on W. CONCLUSION: Our study suggests that patients on CB with GI bleeds may not require special treatment such as platelet transfusions while confirming that patients on warfarin require more intensive treatment. Further studies are warranted to support this.

	NA	CB	ASA	W	CB+ASA	ASA+W	All 3

n	114	11	89	51	40	12	8
Age	76	79	77	78	76	77	75
Major n/%	62/58%	3/27%	51/57%	35/68%	30/75%	10/83%	6/75%
No. of Meds	5.4	6.7	5.8	7.3	8.2	7.1	10.1
Ht rt	89	78	84	90	84	87	90
Sys BP	129	131	134	120	123	130	107
Hg	10.4	11.4	10.3	10.1	9.6	9.4	9.2
INR	1.2	1.1	1.2	3.0	1.5	3.9	1.63
pRBC's	2.2	0.7	1.7	2.4	2.7	2.3	2.9
95% CI	1.7-2.7	-0.2-1.6	1.3-2.2	1.2-3.6	1.8-3.5	1-3.5	0.4-5.4
LOS	6.3	3.9	5.1	8.78	6.35	5.3	6.8
95% CI	5.2-7.3	2.5-5.4	4.1-6.1	4.7-12.3	4.5-8.2	2.6-7.9	3.5-9.9

WE.06) Rise in Emergency Department Visits of Pediatric Patients for Renal Colic from 1999 to 2008
: Neeraja Kairam[1], John R. Allegra[1], Barnet Eskin[2] : 1. Morristown Memorial Hospital, Morristown, NJ, USA. 2. Emergency Medical Associates Research Foundation, Livingston, NJ, USA.

INTRODUCTION: Renal colic is predominantly a disease of adults with only occasional cases occurring in the pediatric population. A recent report from a single hospital showed a rise in the number of children with renal colic. Our objective was to confirm this in a large multihospital database of emergency department (ED) visits. METHODS: Design: Retrospective cohort. Setting: Consecutive pediatric patients (age less than 18 years) with the ICD-9 diagnosis of “renal colic, calculus kidney, calculus ureter, urinary calculus, or uretheral calculus” seen by ED physicians in 29 urban, suburban and rural EDs in New Jersey and New York between January 1, 1999 and December 31, 2008. We analyzed the number of renal colic visits as a percent of total ED pediatric visits in yearly intervals using the Student t test and performed a regression analysis. Alpha was set at 0.05. RESULTS: The database contained 6,497,458 total ED visits of which 1,312,487 (20%) were pediatric visits. Of these, 1028 (0.078%) were for renal colic. The median age was 16 years (inter quartile range: 13 years – 17 years) and 61% were female. The percentage of ED pediatric visits for renal colic increased from 0.050% in 1999 to 0.089% in 2008, an increase of 78% (95% CI: 31% to 224%, p <0.003). The correlation coefficient for this upward trend was R squared = 0.63 (p<0.007). CONCLUSION: We found a marked increase in ED pediatric visits for renal colic over the past decade. This may reflect a real increase in the incidence of renal colic in the pediatric population or an increased use of imaging modalities for abdominal and flank pain.

WE.07) Effect of Tamsulosin on Ureteral Stone Expulsion and Pain Resolution in ED Patients with Ureterolithiasis :
Marc Pollack[1], Priscilla Shogan[1], Jonathan Walker[1], Ronald Benenson[1] : 1. York Hospital, York, PA, USA.

INTRODUCTION: Tamsulosin is commonly used for the treatment of acute ureterolithiasis (UL). However, there are no prospective, double blinded, randomized, placebo-controlled studies. This study will assess the effectiveness of Tamsulosin on time to stone expulsion and pain relief in ED patients with acute UL. METHODS: This was a prospective, double blind, placebo controlled IRB-approved clinical trial of adult ED patients diagnosed by abdominal/pelvic CT scan with UL of less than or equal to 10mm. Patients were randomized to either placebo or tamsulosin 0.4mg for a maximum of 10 days. The first dose of study drug was given in the ED, and location of stone [ureterovesicular junction (UVJ), ureteropelvic junction (UPJ), and "other"] was recorded. Patients reported their worst daily pain on a 0-10 Likert pain scale during the study period, and the time of stone expulsion. Pain relief was described as a pain score of 0 or 1. Analysis was descriptive and by Mann-Whitney U tests. RESULTS: Fifty-three participants met inclusion criteria and were randomized to tamsulosin (n=28) or placebo (n=25). The tamsulosin group had 6 (21.4%) UVJ stones, 3 (10.7%) UPJ stones, and 19 (67.9%) other stones. The placebo group had 12 (48.0%) UVJ stones, 2 (8.0%) UPJ stones, and 11 (44.0%) other stones. The tamsulosin group had 21 (75%) participants report pain relief at a median time of 4.0 days (IQR 4.5) compared to 19 (76%) participants at a median time of 3.0 days (IQR 2.0) in the placebo group, p=0.128. Of the 53 participants, 19 (36%) were able to report the exact time of stone expulsion. 8 were in the tamsulosin group with a median time to stone expulsion of 68.8 hours (IQR 78), and the 11 in the placebo group had a median time of 19.0 hours (IQR 60), p=0.186. Both tamsulosin and placebo groups had similarly sized stones (4.0 vs. 3.8mm, p=0.27). CONCLUSION: There are no significant differences between tamsulosin and placebo when comparing time to pain relief and time to stone expulsion.

WE.08) Examining the Impact of a Sexual Assault Response Team (SART) on Delivery of Emergency Department Healthcare to Survivors of Sexual Assault

: Lisa Moreno-Walton[1], Mary T. Ryan[2], Michele Harper[2], Micelle J. Haydel[1] : 1. Emergency Medicine, Louisiana State University Health Sciences Center, New Orleans, LA, USA. 2. Lincoln Medical and Mental Health Center, Bronx, NY, USA.

INTRODUCTION: Although Sexual Assault Response Teams (SART) are commonly employed in many EDs to treat survivors of sexual assault (SSA), there is no scientific evidence in the literature for their efficacy. Objective: Examine the impact of the introduction of SART on care of SSA in the ED. METHODS: Retrospective chart review of 181 consecutive patients presenting to an urban academic ED with complaint of sexual assault, 2 years prior and 4 years after the initiation of SART. Charts were abstracted by 2 reviewers. Interobserver agreement was calculated (95%CI=0.79-0.98). Using SPSS, nominal data was analyzed using chi2 and continuous data using student's t-test. RESULTS: There was no statistically significant difference between the 2 groups for triage category; number of injuries detected; number of SSA refusing forensic exams, release of rape kits to police, or photography of injuries; or number of SSA to whom GC, chlamydia, HIV, pregnancy, and tetanus prophylaxis were offered. There was a statistically significant difference in the number of SSA who were offered the opportunity to complete a rape kit (99.2%v90.9%), have injuries

photographed (98.3% v 40%), and be tested for trichomonas (67.5% v 21.4%) or Hepatitis B (77.8% v 56.8%). Colposcopy was performed on 86% of SSA post-SART and 0 pre-SART. Mean time to examination was 54.23 minutes post-SART (SD47.420, SE4.258) and 77.13 minutes pre-(SD56.097, SE4.258). CONCLUSIONS: SART has shortened time to examination, improved the use of colposcopy, and improved compliance with offering CDC recommended prophylaxis for SSA. While the percentage of SSA refusing elements of the forensic exam has not changed, the percentage who are offered these procedures has improved, increasing the absolute number who undergo these procedures. These findings suggest that SART improves care of SSA. Future research will focus on whether there is a long term benefit to SSA treated by SART and whether convictions increase when forensic evidence collection is improved.

WE.15) Epidemiology and Outcomes from Out-of-Hospital Cardiac Arrest in Children: Based on a Single Tiered Emergency Medical Service System in Korea : Chang Bae Park[1], Sang Do Shin[1], Gil Joon Suh [1], Ki Ok Ahn[2] : 1. Department of Emergency Medicine, Seoul National University College of Medicine, Seoul, Korea, South. 2. Seoul Fire Academy education center for rescue and first aid, Seoul, Korea, South.

INTRODUCTION: Large scale and population-based data for pediatric out-of-hospital cardiac arrest (OHCA) are very rare. The real-world epidemiology of the younger patients' OHCA is still unknown. This study examined the characteristics and outcomes of pediatric OHCA. METHODS: This retrospective nationwide population-based cohort study included patients <20 years of age who experienced OHCA between January 2006 and December 2007. They were transported by emergency medical service providers who could provide only basic life support and might have underwent cardiopulmonary resuscitation and/or automatic external defibrillator shock. RESULTS: All patients were divided into 3 age groups: <1 year (infants: n=299), 1 to 11 years (children: n=305), and 12 to 19 years (adolescents: n=367). Survival for all pediatric OHCA was 4.9% (2.9% for infants, 4.7% for children, and 7.2% of adolescents) versus 2.6% for adults (p<0.0001). Unadjusted odds ratio for survival to discharge compared with adults was 1.11 (95% confidence interval, 0.89 to 1.72) for infants, 1.34 (95% confidence interval, 0.93 to 1.93) for children, 2.18 (95% confidence interval, 1.64 to 2.89) for adolescents, 1.58 (95% confidence interval, 1.31 to 1.90) for all pediatric patients. CONCLUSION: This study shows that the outcomes of OHCA in pediatric patients are not bad compared with those of adults. Survival to discharge was more common among adolescents than adults.

Patient and Event Characteristics

characteristic	infants(n=299)	children(n=305)	adolescents(n=367)	all pediatric (n=971)
Age, mean (SD),yr	0.3 (0.2)	5.3 (3.2)	15.9 (2.2)	7.8 (7.0)
Age, median (Q1, Q3), yr	0.3 (0.1, 0.4)	5.0 (2.6, 8.0)	16 (14, 18)	6 (0.5, 15)
Male, n(%)	169 (56.52)	180 (59.02)	264 (71.93)	613 (63.13)

Incidence/100,000 person-yr (95% CI)				
EMS treated†, n (%)	252 (84.28)	259 (84.92)	322 (87.74)	833 (85.79)
No EMS treated, n (%)	47 (15.72)	46 (15.08)	45 (12.26)	138 (14.21)
Nonpublic location	272 (90.97)	196 (64.26)	196 (53.41)	664 (68.38)
Witnessed*	80 (26.76)	114 (37.38)	133 (36.24)	327 (33.68)
Bystander CPR	10 (3.34)	9 (2.95)	9 (2.45)	28 (2.88)
Cause of arrest‡				
cardiac origin	85 (28.43)	86 (28.20)	128 (34.88)	299 (30.79)
drowning	2 (0.67)	73 (23.93)	80 (21.80)	155 (15.96)
drug poisoning	0 (0)	0 (0)	6 (1.63)	6 (0.62)
airway obstruction/mechanical suffocation	73 (24.41)	45 (14.75)	16 (4.36)	134 (13.80)
hanging	0 (0)	5 (1.64)	62 (16.89)	67 (6.9)
others	139 (46.49)	96 (31.48)	75 (20.43)	310 (31.92)

EMS Emergency Medical Services CI Confidence Interval CPR Cardiopulmonary Resuscitation
†Treatment means CPR or AED or iv drug use or airway management(LMA or ETI or BVM) by EMS
‡Described in hospital records

Survival Outcomes in Pediatric Patients with Known Outcomes

	infants	children	adolescents	all pediatric
All subjects, n	296	229	285	810
Survival to ED discharge				
n (%)	41 (13.85)	34 (14.85)	63 (22.11)	138 (17.04)
95% CI for rate	9.92-17.79	10.24-19.45	17.29-26.92	14.45-19.63
Odds ratio for survival (reference adult)	1.23	1.34	2.18	1.58
95% CI	0.89-1.72	0.93-1.93	1.64-2.89	1.31-1.90

All subjects, n	281	215	263	759
Survival to Admission discharge				
n (%)	8 (2.85)	10 (4.65)	19 (7.22)	37 (4.87)
95% CI for rate	0.90-4.79	1.84-7.47	4.10-10.35	3.34-6.41
Odds ratio for survival (reference adult)	1.11	1.85	2.96	1.95
95% CI	0.55-2.26	0.98-3.51	1.84-4.75	1.39-2.73
EMS-treated subjects, n	244	175	234	653
Survival to Admission discharge				
n (%)	8 (3.28)	8 (4.57)	18 (7.69)	34 (5.21)
95% CI for rate	1.04-5.51	1.48-7.67	4.28-11.11	3.50-6.91
Odds ratio for survival (reference adult)	1.07	1.51	2.63	1.73
95% CI	0.53-2.17	0.74-3.08	1.61-4.28	1.22-2.47
Initial rhythm VT/VF, n	1	2	15	18
Survival to Admission discharge				
n (%)	0 (0)	0 (0)	6 (40.00)	6 (33.33)
95% CI for rate			15.21-64.79	11.56-55.11
Initial rhythm asystole/PEA, n	224	178	194	596
Survival to Admission discharge				
n (%)	1 (0.45)	7 (3.93)	6 (3.09)	14 (2.35)
95% CI for rate	0.00-1.32	1.08-6.79	0.66-5.53	1.13-3.56

ED Emergency Department; CI Confidence Interval; EMS Emergency Medical Services; VT Ventricular Tachycardia; VF Ventricular Fibrillation; PEA Pulseless Electrical Activity

WE.16) Relationship between Hospital Outcome and Patient Volume in Out-of-Hospital Cardiac Arrest :
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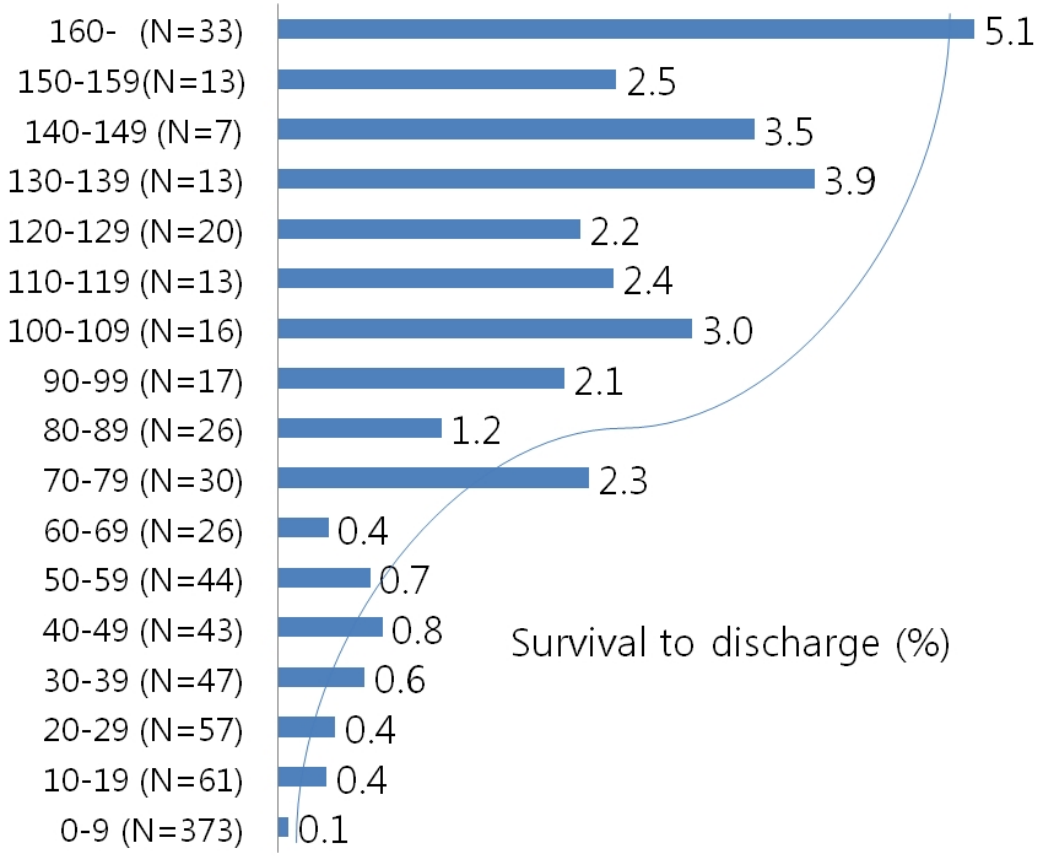
INTRODUCTION: We investigated the relationship between hospital outcome and patient volume in out-of-hospital cardiac arrest (OHCA). METHODS: We used a nationwide OHCA cohort (2006-2007) for analysis, which was from retrospective medical record review using ambulance run sheets (CAVAS project). Definition of OHCA was sudden arrest case with or without cardiopulmonary resuscitation in emergency medical service (EMS) and emergency department (ED). The survival to admission or transfer to other hospital from the ED (survival to admission), and survival to discharge from inpatient ward (survival to discharge) including demographic findings were recorded. We calculated patient volume by hospital and analyzed the correlation (coefficient=r) and calculated the effect of volume on the outcome using GLM model. RESULTS: Among 39,833 OHCA patients, 34,408 (86.4%) were successfully

reviewed and recorded except cases unable to review or incomplete medical record. Arrest details include: witnessed arrest (40.1%), bystander CPR (1.4%), mean response time (7.8 minutes), CPR rate by EMS (73.4%), CPR rate at ED (42.0%). The survival to admission and to discharge rate was 11.6% and 2.4%, respectively. The total number of hospitals involved and mean number of OHCA per hospital for two years was 839 and 41.0, respectively. Patient volume was moderately correlated with survival to admission ($r=0.31$, $p<0.001$), but fairly correlated with survival to discharge ($r=0.57$, $p<0.001$). When we analyzed the effect of patient volume on the outcome, the beta coefficient was 0.25 by 10-case increase in patient volume. 33 hospitals with high volume (>160 per 2 year) showed significantly higher survival discharge rate (mean=5.1%) compared with that of 373 hospitals with very low volume (<70 per 2 years)(mean=0.1%)(Fig 1.) CONCLUSION: There was a very strong positive correlation between patient volume and hospital outcome. To achieve better outcomes for OHCA, specialty care systems for OHCA including designated OHCA center should be considered.



Survival to discharge rate according to patient volume in out-of-hospital cardiac arrest

WE.17) Use of a Therapeutic Hypothermia Protocol in a Community Hospital Emergency Department : Christine E. Kulstad[1], Shannon Holt[1], Aaron Abrahamsen[1], Elise O. Lovell[1] : 1. Advocate Christ Medical

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INTRODUCTION: Therapeutic hypothermia (TH) has been shown to improve survival and neurological outcome in patients after ventricular fibrillation (VF) cardiac arrest. We sought to determine the effects of a TH protocol in a community hospital emergency department (ED) for all patients with neurological impairment after resuscitated cardiac arrest regardless of presenting rhythm, hypothesizing improved mortality and neurological outcome, and stable complication rates. METHODS: We performed a before-and-after study in a large community hospital ED from November 2006 to November 2008. All non-pregnant, unresponsive adult patients resuscitated from any initial rhythm were included. Exclusion criteria were initial hypotension or temperature less than 30 C, trauma, primary intracranial event, and coagulopathy. Historical controls for the preceding 12 months met the same inclusion and exclusion criteria. We recorded survival to hospital discharge, neurological status at discharge, and rates of bleeding, sepsis, pneumonia, renal failure, and dysrhythmias in the first 72 hours of treatment. RESULTS: During the study period 38 patients were treated with TH with a mortality rate of 71.1% (95% CI 56 - 86%), compared to a mortality rate of 72.3% (95% CI 59 - 86%) in 47 historical controls. In the TH group, 8% of patients (95% CI 0 - 17%) had a good neurological outcome (CPC score of 1 or 2) on discharge, compared to 0 (95% CI 0 - 8%) in the control group. In patients with VF, mortality was 47% (95% CI 21 - 74%) and good neurological outcome was 18% (95% CI 0 - 38%) in the TH group, compared to 67% (95% CI 28 - 100%) mortality and 0% (95% CI 0 - 30%) good neurological outcome in the control group. The groups were well-matched with respect to sex and age. Complications rates were similar or favored the TH group. CONCLUSIONS: Instituting a therapeutic hypothermia protocol for all presenting rhythms appears safe in a community hospital ED. A trend towards improved neurological outcome in TH patients was seen, but did not reach significance. Patients with VF seem to derive more benefit from TH.

WE.18) Diagnostic accuracy of stress echo in young and old subjects in the emergency department : Sonia Vicidomini[1], Francesca Innocenti[1], Alberto Conti[1], Maurizio Zanobetti[1], Marta Di Dio[1], Riccardo Pini[1] : 1. Dpt. Critical Care Medicine and Surgery, University of Florence, Florence, Italy.

INTRODUCTION: Chest pain is one of the more frequent symptoms among patients referring to the emergency department, but diagnostic assessment of a suspected coronary artery disease (CAD) was been predominantly validated in young subjects. METHODS: Between June 2008 and March 2009, 131 subjects with chest pain, no EKG changes and negative cardiac necrosis markers after at least 12 hours from the index event, underwent exercise stress echo (ESE) or dobutamine stress echo (DSE) if unable to perform an adequate physical stress, according to standard protocol. Using an age of 70 years as a cut-off value, patients were divided in two groups: 62 subjects younger than 70 years (G1) and 69 aged seventy or more (G2). Symptoms and characteristics were encoded according to Chest Pain Score (CPS, Table 1). Patients with inducible ischemia (Ii) were asked to undergo a coronary angiography (CA). Patients with a negative exam were discharged and recurrence of cardiovascular events was investigated by telephone interview. RESULTS: Clinical data, rest and stress echo (SE) results are shown in Table 2. SE was inconclusive in 10 patients (4 DSE and 1 ESE in G1, 5 DSE in G2, p=NS);

one DSE in G1 was stopped for hypotension. Forty (65%) patients in G1 and 17 (25%, p<0.001) in G2 performed an ESE (respectively 4 and 2 inconclusive tests for inadequate heart rate increase); total workload was significantly lower in old subjects. CA revealed significant coronary stenosis in 12/14 patients with a positive test in G1, and in 19/27 subjects in G2 (p=NS). After a negative test, during follow-up (1-11 months), symptoms occurred in 2 G1 and 1 G2 patients. SE sensitivity (86% in G1 vs 70% in G2), positive predictive value (86% in G1 vs 95% in G2), and test accuracy (92% in G1 vs 85% in G2) were similar in the two groups (all p=NS) while specificity (95% in G1 vs 79% in G2) and negative predictive value (95% in G1 vs 80% in G2) were higher in G1 (all p=0.0472). CONCLUSION: SE appears a feasible and accurate test in all age groups, with a preferable use of a pharmacological stressor in aged people; specificity results higher in younger subjects.

Chest pain score calculation

	Score
Pain localization	
Substernal, precordial	3
Left thorax, shoulder, lower neck, epigastrium	1
Pain characteristics	
Crushing, oppressive	3
Sticking, pleuritic	1
Irradiation	
Yes	1
No	0
Neurovegetative symptoms	
Yes	
No	0
Previous history of chest pain	3

Clinical, rest and stress echocardiographic data

	All patients(n=131)	G1< 70 years(n=62)	G2? 70 years(n=69)	p
Age (years)	70±12	60±9	79±5	<0.001
BMI (Kg/m2)	26±4	27±4	25±4	NS
Sex(male), n (%)	72 (55)	37 (60)	35 (50)	NS
Hypertension, n (%)	91 (70)	37 (60)	54 (78)	0.021
Diabetes, n (%)	27 (21)	14 (24)	13 (19)	0.031
Dyslipidaemia, n (%)	54 (41)	25 (40)	29(42)	NS

Smoking habitus, n (%)	68 (52)	36 (58)	32 (47)	NS
Occlusive arterial disease, n (%)	16 (12)	6 (10)	10 (14)	NS
Known CAD, n (%)	36 (28)	18 (29)	18 (26)	NS
?-Blockers' therapy, n (%)	41 (31)	25 (40)	16 (23)	0.035
Dobutamine stressor, n (%)	81 (62)	27 (43)	54 (78)	<0.01
Inducible ischemia, n (%)	51 (39)	18 (32)	33 (52)	0.026
CPS	7.4±3	7.5±2.5	7.2±3.2	NS
%MPHR	95±14	93±12	101±15	0.025
METS	6.3±1.6	6.6±1.6	5.3±1.1	0.008
LVDVI (ml/m2)	55±18	58±17	51±19	NS
LVSVI (ml/m2)	28±18	31±19	24±16	NS
EF (%)	55±14	53±16	56±12	NS
LVMI (g/m2)	93±30	87±24	98±33	NS
Baseline WMSI	1.3±0.5	1.3±0.5	1.3±0.5	NS
Low dose WMSI	1.3±0.5	1.3±0.5	1.3±0.5	NS
High dose WMSI	1.4±0.5	1.4±0.6	1.4±0.5	NS

CAD: coronary artery disease; CPS chest pain score; %MPHR: percent maximum predicted heart rate; LVDVI: left ventricular end-diastolic volume index; LVSVI: left ventricular end-systolic volume index; LVMI: left ventricular mass index; EF: ejection fraction; WMSI Wall Motion Score Index.

WE.19) Diagnostic-Therapeutic Impact of Integrated Ultrasound in Patients with Cardiac Arrest or Peri-arrest – EUCAP (Emergency Ultrasound in Cardiac Arrest and Peri-arrest) : Gian A. Cibinel[1], Giovanna Casoli[1], Ivan Scalvenzo[1], Sara Desiderio[1], Alessandro Martini[1], Alberto Goffi[1] : 1. ASL TO3 - SC Medicina e Chirurgia d'Urgenza, Pinerolo, Torino, Italy.

INTRODUCTION: Making the right diagnosis in patients with cardiac arrest or peri-arrest (shock and severe respiratory failure) is often difficult when based only on the clinical evaluation. Objective: To study the feasibility and the diagnostic-therapeutic impact of integrated ultrasound in patients with cardiac arrest or peri-arrest in the ED.
METHODS: We enrolled 30 patients admitted to the ED of the Pinerolo General Hospital (Turin, Italy), 14 with cardiac arrest (PEA 12, V-Fib 1, asystolia 1), and 16 in peri-arrest. All patients were managed according to ALS and ATLS guidelines; in addition, they underwent extensive ultrasonographic evaluation, primarily focused on heart or lungs, then extended to other body districts, if needed. We evaluated: feasibility, diagnostic-therapeutic impact and potential support in procedure execution. RESULTS: The integrated ultrasound approach was feasible in all patients, in a short time and without interfering with other procedures. Heart was evaluated in 30 patients (100%), lungs in 11 (37%), inferior vena cava (IVC) in 9 (30%), and

other districts in 11 (37%). In 19 out of 30 patients (63%) the diagnosis was defined based on ultrasound results: pulmonary embolism 7, cardiac tamponade 1, acute pulmonary oedema 2, myocardial infarction 1, aortic valve endocarditis 1, aortic dissection 1, pneumothorax 1, ARDS 1, hypovolemia 4. Ultrasound findings led to therapeutic changes in 13 out of 30 patients (43%): thrombolysis 6, discontinuation of chest compressions during pseudo-PEA 2, fluid resuscitation 1, pericardiocentesis 1, chest tube 1, antibiotics 1, anticoagulation 1. In 9 out of 30 patients (30%) invasive procedures were performed with ultrasound support. CONCLUSION: In patients with cardiac arrest or peri-arrest, integrated ultrasound is feasible in a short time and has high diagnostic-therapeutic impact, leading to better diagnostic definition and/or therapeutic variations in over a half of the patients.

WE.20) Nitroglycerin, Adrenaline and Vasopressin Offer No Advantage in Return of Spontaneous Circulation and Cerebral Ischaemia than Adrenaline and Vasopressin in Swine Cardiac Arrest :
Konstantinos Stroumpoulis[1], Theodoros Xanthos[1], George Rokas[1], Vasiliki Kitsou[1], Dimitrios Papadimitriou[1], Lila Papadimitriou[1], Evangelia Kouskouni[1] : 1. University of Athens Medical School, Laboratory of Experimental Surgery and Surgical Research, Athens, Greece.

INTRODUCTION: Adrenaline remains the drug of choice for cardiopulmonary resuscitation (CPR). However, its use has not increased survival. It has been shown that the use of 2 vasopressors result in further increases in coronary perfusion pressures resulting thus in higher rates of return of spontaneous circulation. On the other hand, the combination of two vasopressors may compromise neurological outcome. The aim of this study was to assess whether a combination of Adrenaline, Vasopressin and Nitroglycerin improves return of spontaneous circulation and biochemical markers of cerebral ischaemia than Adrenaline alone or Adrenaline and Vasopressin. METHODS: Thirty-three piglets were instrumented and ventilated. Ventricular fibrillation was electrically induced and the animals were left untreated for 8 min. CPR was initiated with chest compressions, mechanical ventilation and defibrillation. Animals were randomized with a sealed envelope into 3 groups: 11 animals who received Adrenaline (0.02mg/kg) (Group A), 11 animals who received Adrenaline (0.02mg/kg) + Vasopressin (0.4IU/kg) (Group AV), and 11 animals who received Adrenaline (0.02mg/kg) + Vasopressin (0.4IU/kg) + Nitroglycerin (50?g/kg) (Group AVN) during CPR. RESULTS: Ten of 11 animals in Group AV and 10 of 11 animals in Group AVN restored spontaneous circulation in contrast to 4 of 11 in group A (p=0.02 Group A versus Groups AV and AVN, p=NS Group AV versus AVN). Coronary perfusion pressure and aortic diastolic pressure were significantly increased in Groups AV and AVN versus Group A (p<0.05 Group A versus Groups AV and AVN, p=NS Group AV versus AVN). NSE and S-100 were significantly increased in Group A versus Groups AV and AVN. No statistical significance was demonstrated in these parameters between Groups AV and AVN. CONCLUSIONS: The combination of Adrenaline Vasopressin and Nitroglycerin in CPR offers no advantage over Adrenaline and Vasopressin in this swine model of ventricular fibrillation.

WE.21) Cardiac Arrest Survival After 2005 AHA CPR Recommendations: A Comparative Study :
Paloma C Rey Paterna[1], M Jose Garcia-Ochoa Blanco[1], Ester Moyano[1], Rosa María Suárez Bustamante[1], Jose Luis Moreno Martin[1], Oscar Esquilas Sánchez[1] : 1. SAMUR PC, Madrid, Spain.

INTRODUCTION: The 2005 ILCOR recommendations for CPR lead to a different way to manage out-of-hospital cardiac arrest (OHCA) for basic life support in order to increase survival. SAMUR-PC is an urban pre-hospital emergency service composed of basic life support (BLS) units crewed by Emergency Medical Technicians (EMT) trained in the use of AEDs included in the BLS units and advanced life support (ALS) units crewed by physicians, nurses and EMTs. Objectives: With this work we want to study the survival after 7 days of OHCA of patients treated by a BLS unit in the first place. We also want to determine if there are significant differences in the survival between the group of patients before applying the new recommendations and the group treated applying the new recommendations. METHODS: This was a prospective, observational study on patients who suffered OHCA between 2001-2008, receiving BLS with AED in the first place and ALS afterwards. Mean comparisons were analyzed with Student's T-test, survival range with X2. A probability value (P) <0.05 was considered significant. RESULTS: Between 2001 and 2008, 497 OHCAs were attended by BSL ambulances of SAMUR-PC as first responders. 220 patients were attended between 2001-2005 (period A) and 277 patients were attended between 2006-2008 (period B). 77,8% were male and 22,2% female. For period A the mean age was 63,5 (± 17,92; median 68) and for period B the mean age was 61,6 (± 17,453; median 65). There is no significant difference (p<0.05). The response time for the 50% was 7:13 min (mean 8:33 min) in period A, and 6:34 min (mean 7:59) in period B . There is no significant difference between both means (p<0.05). The survival after 7 days in period A was 11,9% and 25% in period B with a significant difference (P=0.001). CONCLUSIONS: In our study the proposed changes in the 2005 ILCOR recommendations for BLS resulted in a large increase in the 7 day survival of OHCA patients. We have considered others parameters like response time and patients age, but there are no differences between the two periods.

WE.22) The changing epidemiology of out-of-hospital cardiac arrest and bystander cardiopulmonary resuscitation in south east Scotland between 1992 and 2007 : Rajiv Ghose[1], Mhairi O'Hara[3], Stuart Cobbe[3], Gareth Clegg[2], Alasdair Gray[2], Richard M. Lyon[2] : 1. University of Edinburgh, Edinburgh, United Kingdom. 2. Emergency Department, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. 3. University of Glasgow, Glasgow, United Kingdom.

INTRODUCTION: Out-of-hospital cardiac arrest (OHCA) is a major cause of sudden death in all European countries. Targeted efforts have been made to increase the rates of bystander cardiopulmonary resuscitation (CPR) as part of the chain of survival. The changing epidemiology and rates of CPR have yet to be evaluated in the United Kingdom. Aim: To describe the changing epidemiology of OHCA and layperson CPR in south east Scotland between 1992 and 2007. METHODS: Retrospective cohort study of all adult non-traumatic OHCA in south east Scotland from 1 January 1992 to 31 December 2007 using the Heartstart Scotland database. RESULTS: 7928 OHCA were included. The proportion of patients receiving bystander CPR increased from 34% in 1992 to 52% in 2007 (p<0.0001). The rates of CPR from bystanders, spouses and from relatives increased significantly over the study period. Spouses perform CPR more commonly in younger patients, female OHCA and arrests occurring at home (p<0.05). Relatives perform CPR more commonly in older patients, female OHCA and arrests occurring at home (p<0.05). CPR from spouses and relatives is associated

with lower rates of survival to hospital discharge than CPR from other lay bystanders or health personnel ($p<0.05$). CONCLUSION: There has been a significant increase in bystander CPR in south east Scotland during the last 16 years. This is the first study to demonstrate the rates of CPR from spouses and relatives. Bystander CPR is associated with an increased rate of survival and targeted CPR training for relatives and spouses of high-risk cardiac patients may prove beneficial.

WE.23) Hypertonic-hyperoncotic solution in treatment of out-of-hospital cardiac arrest : Katja Lah[1], Miljenko Krizmaric[2], Stefek Grmec[3] : 1. Centre for Emergency Medicine Maribor, Maribor, Slovenia. 2. Faculty for Health Sciences University of Maribor, Maribor, Slovenia. 3. Medical Faculty University of Maribor, Maribor, Slovenia.

INTRODUCTION: In clinical and experimental studies it has been shown that hypertonic-hyperoncotic solution (HHS) reduces the myocardial and cerebral damage and increases the resuscitation success rate. The aim of our study was to investigate the safety of HHS and the short term survival rate. METHODS: Two treatment groups of resuscitated patients in cardiac arrest were compared: in the historic group (data collected in years 2005 and 2006) patients received 40 units of vasopressin only or followed by epinephrine 1 mg every 3 minutes until cessation of CPR and 0.9%NaCl; in the HHS group (2007/2008) patients first received hypertonic HHS and vasopressin 40 units IV only or followed by epinephrine 1 mg every 3 minutes until cessation of CPR. Medical care was provided according to the recommendations of the European Resuscitation Council 2005 guidelines. RESULTS: The study included 88 patients in the HHS group and 126 patients in the historic group. There were no significant demographic or clinical differences between the two groups. The average mean arterial pressure (94 +/- 22 mmHg vs 82 +/- 12 mmHg; $p<0.001$), end-tidal partial pressure of carbon dioxide (petCO2) at 5 min of CPR (40 +/- 20 mmHg vs. 29 +/-13 mmHg; $p<0.001$), petCO2 at 10 min of CPR (35+/-21 vs. 28 +/-9; $p=0.009$), final petCO2 at admission (41 +/- 15 mmHg vs. 28/ 13 mmHg; 0.001) were all higher in the HHS group. There were no differences between the groups in ROSC and hospital discharge. In the HHS group we observed higher plasma sodium concentrations (145 +/- 6 mmol/L vs 140 +/- 6 mmol/L ; <0.001) and lower concentrations of troponin I (1.2 +/. 2.9 ?g/L vs. 10.4 +/- 8.3 ?g/L; <0.001) after admission to a hospital. CONCLUSION: The results of our study suggest that admission of HHS after OHCA is safe and might lead to hemodynamically more effective CPR (higher petCO2 - an estimate of better blood flow during chest compression and MAP) and reduce the release of cardiac troponin I (facilitates myocardial protection after reperfusion injury?).

WE.24) Stress echo in the emergency department: diagnostic accuracy in subjects with known or suspected coronary artery disease : Francesca Innocenti[1], Sonia Vicidomini[1], Alberto Conti[1], Maurizio Zanobetti[1], Aurelia Guzzo[1], Riccardo Pini[1] : 1. Dpt. Critical Care Medicine and Surgery, University of Florence, Florence, Italy.

INTRODUCTION: Diagnostic assessment of patients presenting to the Emergency Department (ED) with spontaneous chest pain remains a challenging task for physicians. METHODS: From June 2008 to March 2009, 131 subjects with spontaneous chest pain, no

EKG changes and negative cardiac necrosis markers after at least 12 hours from the index event, underwent exercise stress echo (ESE) or dobutamine stress echo (DSE) if unable to perform an adequate physical stress, according to standard protocol. History of coronary artery disease (CAD) was absent in 95 subjects (G1) and present in 36 subjects (G2). Patients with inducible ischemia (Ii) were asked to undergo a coronary angiography (CA). Patients with a negative stress echo (SE) were discharged and recurrence of cardiovascular events was investigated by telephone interview. RESULTS: Clinical data and rest and stress echo (SE) results are shown in the Table. Stress echo (1 ESE and 9 DSE) was inconclusive in 10 patients (6 in G1 and 4 in G2, p=NS); only one DSE was stopped for hypotension (systolic blood pressure <90 mmHg). Among 51 patients with Ii, 10 refused CA; 31 subjects in G1 and 10 in G2 underwent CA, which revealed one or more coronary critical stenosis (>50%) in 21 (68%) in G1 and 8 (80%, p=NS) in G2. Among patients discharged after a negative test, 1 subjects in G1 (2%) and 2 in G2 (11%, p=NS) reported recurrence of symptoms at follow-up (1-11 months); in the last two patients, CA documented a critical coronary stenosis. As reported in Table 2, SE sensitivity, specificity, positive predictive power, negative predictive power, and test accuracy were similar in the 2 patient groups. No clinical or rest and stress echocardiographic data showed significant differences among true positive and false positive SE in patients without history of CAD.
CONCLUSION: SE showed an excellent feasibility in this non selected population who underwent an early evaluation of chest pain in ED; test accuracy was similar in patients with history of CAD and in subjects with a first episode of spontaneous chest pain.

Clinical characteristics and baseline and stress echocardiographic parameters

	All patients(n=131)	G1 CAD - (n=95)	G2 CAD +(n=36)	p
Age (years)	70±12	70±13	69±9	NS
BMI (Kg/m2)	26±4	26±4	27±4	NS
Sex (male), n (%)	72 (55)	46 (49)	26 (72)	0.015
Hypertension, n (%)	91 (70)	68 (72)	23 (64)	NS
Diabetes, n (%)	27 (21)	19 (20)	8 (22)	NS
Dyslipidaemia, n (%)	54 (41)	32 (34)	22 (61)	0.004
Smoking habitus, n (%)	68 (52)	43 (46)	25 (70)	0.020
Occlusive arterial disease, n (%)	16 (12)	9 (10)	7 (19)	NS
?-Blockers' therapy, n (%)	41 (31)	22 (23)	19 (53)	0.010
Dobutamine stressor, n (%)	81 (62)	54 (57)	27 (75)	0.056
Inducible ischemia, n (%)	51 (39)	38 (43)	13 (41)	NS
%MPHR	95±14	96±13	91±15	NS
METs	6.3±1.6	6.2±1.7	6.7±1.0	NS
LVDVI (ml/m2)	55±18	49±12	64±22	0.010
LVSVI (ml/m2)	28±18	21±9	40±23	0.002

EF (%)	55±14	60±9	46±16	0.001
LVMI (g/m2)	93±30	88±25	106±39	0.010
Baseline WMSI	1.3±0.5	1.1±0.3	1.7±06	<0.001
Low dose WMSI	1.3±0.5	1.1±0.3	1.7±06	<0.001
High dose WMSI	1.4±0.5	1.3±0.4	1.8±06	<0.001

CAD: coronary artery disease; %MPHR: percent maximum predicted heart rate; EF: ejection fraction; LVDVI: left ventricular end-diastolic volume index; LVSVI: left ventricular end-systolic volume index;; LVMI: left ventricular mass index; WMSI Wall Motion Score Index.

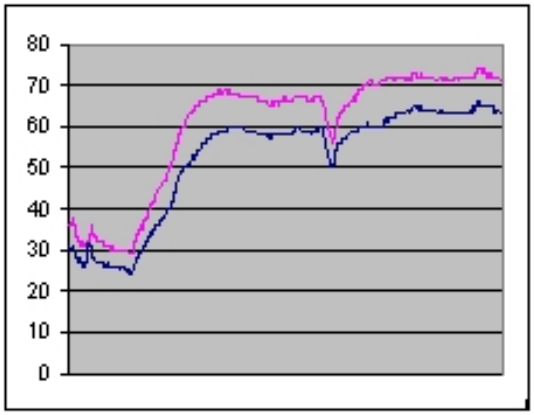
Comparison of stress echo diagnostic power in the 2 groups of patients

	G1 CAD-	G2CAD+	p
Sensitivity	95%	80%	NS
Specificity	83%	89%	NS
Positive Predictive Power	68%	80%	NS
Negative Predictive Power	98%	89%	NS
Test accuracy	80%	78%	NS

WE.25) New technology of non-invasive cerebral oximetry (Fore-Sight technology) to assess cerebral perfusion during resuscitation from cardiac arrest (CPR) : Kevin Lathouwers[1], Cathy S. De Deyne[2], Frank Jans[2], Tineke Crits[1], Guy Vundelinckx[1], René Heylen[1] : 1. Anaesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium. 2. Universiteit Hasselt, Hasselt, Belgium.

INTRODUCTION: Favorable neurological outcome after CPR may be influenced by the adequacy of cerebral perfusion during CPR. Near-infrared spectroscopy (NIRS) provides a non-invasive monitoring of cerebral perfusion. To date, limited data has been reported on NIRS during CPR, revealing no effect of CPR on cerebral oxygenation. Recently, new NIRS technology has become available, using four precise wavelengths to determine absolute cerebral tissue oxygen saturation (SctO2). Therefore, we want to report on the first ever experience with SctO2 monitoring during CPR. METHODS: With IRB approval, a protocol was implemented with ScO2 monitoring applied immediately, at arrival on the scene, by the emergency physician. While attending any further nursing/medical support, the ER physician immediately applied a forehead-band including bilateral SctO2 sensor. RESULTS: Until today, we monitored 3 pts suffering from cardiac arrest. In all 3 pts, CPR was already started (min 5 minutes) before arrival of the medical rescue team. First SctO2 values were about 30-40%, in all 3 pts. During further CPR (at restoration of spontaneous circulation) SctO2 increased to 50-60%. Unfortunately, in 2 pts, it was impossible to maintain normal circulation (electro-mechanical dysfunction), SctO2 never increased above 60%, and remained at 40-45% during the last resuscitational efforts. One pt (see figure) returned to normal circulation immediately after medical arrival, and SctO2 immediately increased from 30% to values above 70%. A single further episode of ventricular fibrillation resulted in an immediate decrease in SctO2 (below 30%) with return to values above 70% after mechanical defibrillation.

Spontaneous circulation was maintained and SctO2 remained above 70%. CONCLUSION: First preliminary data on the use of latest NIRS technology during CPR are most promising. Immediately after return of spontaneous circulation, cerebral oxygenation and adequacy of cerebral perfusion can be monitored by simple application of 2 forehead sensors.



WE.52) National Guidelines for Prehospital Therapeutic Mild Hypothermia after Cardiac Arrest : Jana Seblova[1], Roman Skulec[2], Anatolij Truhlar[3] : 1. EMS Central Bohemian Region, Ministry of Health, EMS, Kladno, Czech Republic. 2. EMS Central Bohemian Region, Kladno, Czech Republic. 3. EMS Hradec Králové, Hradec Králové, Czech Republic.

INTRODUCTION: Induction of therapeutic mild hypothermia (TH) has been recommended after out-of-hospital cardiac arrest. Following ERC Guidelines 2005, Consensual statement for the use of TH was created and accepted by Czech Society for Anaestehsiology, Resuscitation and Intensive Care, Czech Society for Intensive Medicine and by Czech Society for Emergency and Disaster Medicine. The Emergency and Disaster Medicine working group concentrated on the development of the prehospital treatment protocol. Its implementation as

national guidelines for prehospital care is ongoing. METHODS: Prehospital guidelines including the protocol were developed on the base of the published studies, recently completed local feasibility study PRE-COOL (Pre-hospital cooling in cardiac arrest patients) and local survey PRE-COOL 2: Hospital Survey 2008. PRE-COOL was a pilot multicentric (18 EMS stations and 23 hospital ICUs in two regions) prospective non-randomized clinical trial assessing cooling effectiveness and safety of rapid intravenous cold crystalloid infusion in the prehospital setting. PRE-COOL 2 analysed the availability of TH in hospital ICUs. RESULTS: PRE-COOL study confirmed effectiveness and safety of prehospital TH in the Czech Republic. In 35 treated patients, cooling rate of 1,4±0,9°C/ 40±18 min was achieved and 20% of them reached body temperature <34°C. The method was economically acceptable with initial cost of 350€ per one ambulance car. PRE-COOL 2 detected sufficient in-hospital implementation of TH and elicited major agreement of in-hospital intensivists with the prehospital use of TH. Therefore, we composed guidelines based on intravenous cold infusion cooling, with the emphasis on preexisting knowledge of regional in-hospital TH availability. CONCLUSIONS: Prehospital use of TH is feasible, safe and affords the opportunity to attenuate ischemic-reperfusion injury in its early origin. Protocol accordance and a sufficient network of co-operating hospital facilities are basic prerequisites for its routine use.

WE.53) Chest Pain and Triage evaluation: a critical step for choosing the priority track : Alessandra Revello[1], C. Cancrini[1], D. Livoli[1], F. R. Pugliese[1] : 1. ED, Sandro Pertini Hospital, Rome, Italy.

INTRODUCTION: Our triage system assigns the priority code according to the main presentation symptom and specific triage protocol. In 2008 in our ED (Sandro Pertini Hospital 300 bed - ED about 85.000 pts/yr) 2727 patients with “Chest Pain” as their main symptom were admitted. Aim: To verify triage sensibility in choosing a suitable priority code and track for patients with “Chest Pain” as main problem. METHODS: In our triage system “Chest Pain” includes any pain from jaw to navel and evaluation is based on symptom description, vital parameters, short patient history, CPS and ECG that must be done and taken for medical report within 10 minutes. The case reports have been evaluated with a retrospective study based on: priority code according to main symptom and risk factors, gathering of VP (BP, PR, O2Sat %), ECG in triage and final diagnosis. RESULTS: Priority code distribution was Red 10%, Yellow 37%, Green 53%, White 0, 3%. VP were determined as follow: BP 60%, PR 31% and 19% O2 sat, with highest prevalence for Yellow code; it was admitted a lower prevalence for Red code as they have immediate access to emergency room. The ECG, essential to identify those patients that require a therapeutic fast track (STEMI= Red code), occurred in 1554 patients (Yellow 79% - Green 57%). According to final diagnosis pathologies there were 53% cardiologic, 23% gastroenterological and 18% respiratory. MI was found in 176 patients with the following priority code: 48% Red, 43% Yellow, and 9% Green, none White. Green code (15 pts) were considered undertriage mistakes: 5 were transferred from other EDs, 5 missed risk factors, 4 missed ECG in triage and 1 ECG had a wrong medical report. CONCLUSIONS: A Chest Pain triage protocol that includes direct medical report for an ECG can identify in a rapid and effective way high progressive risk pathologies that require a fast diagnostic-therapeutic track, reduce undertriage mistakes, shorten the time of door-to-diagnostic-therapeutic-track and improve positive outcomes.

WE.54) How in-hospital triage protocols can influence triage reliability : Nicola Parenti[1], Diego Sangiorgi[2], Fabrizio Giostra[3], Umberto Valentino[4], Stefano Sau[5], Mario Cavazza[6], Tiziano Lenzi[7] : 1. ED, Hospital of Imola Italy, Bologna, Italy. 2. Policlinico Sant'Orsola , Bologna, Italy. 3. Policlinico Sant'Orsola , Bologna, Italy. 4. A. Cardarelli Hospital , Napoli, Italy. 5. Hospital S.Francesco, Nuoro, Italy. 6. Policlinico Sant'Orsola, Bologna, Italy. 7. Hospital of Imola, Bologna, Italy.

INTRODUCTION: Study Objectives: We compare triage reliability between Italian Emergency Departments (EDs) who use triage protocols and EDs who don't use them. Italian guidelines require a 4-level in-hospital triage (Urgency Category 1, immediate response; and UC 2, 3, 4, assessment within 20, 60, 120 min) based on an acuity scale measurement but don't suggest triage protocols. Therefore many hospitals haven't developed triage protocols. METHODS: This is an observational study conducted in 4 hospitals using a triage scenarios database. Two hospitals used triage protocols and two did not. Twenty nurses (5 per hospital) were randomly selected to assign a triage level to 189 paper scenarios, using their triage protocols or nothing. We used weighted kappa statistics to measure the interrater reliability of each group of nurses. RESULTS: Of the 189 patients in scenarios, 63% were women, mean age was 43.7 years (SD ±26.3). There were: 27 hospital admissions in non-intensive wards and 3 in ICU. There were no significant differences among the 4 groups of nurses with regards to experience in the ED, in nursing or triage practice and among the 4 EDs with regards to patient case-mix and volume per year. Interrater reliability was k=0.73 (95% CI: 0.60-0.86) for both EDs with protocols and k=0.43 (95%CI:0.30-0.57) for both EDs without protocols. The rate of complete disagreement (nurses of same group assigned to same scenario codes that differed in more than 2 priority levels) in assigning UC was higher in EDs without protocols: 17% vs 4%. The rate of complete agreement (all 5 nurses assigned same triage code) was lower in the 2 EDs without protocols: 2% vs 17%. The two nurse groups without triage protocols assigned less UC 1 and more UC 4: UC1 0.8% vs 1.2%; UC4 23.4% vs 16.7%. CONCLUSION: Our data suggest that triage protocols improve reliability for rating triage acuity. In this study nurses without protocols tend to have under-triage.

WE.55) Use of the Tuning Fork as a Diagnostic Tool in Ruling Out Ankle Fracture : Caroline H. Pospisil[1], Paul White[1], Iomhar O'Sullivan[2] : 1. School of Medicine, University College Cork, Cork, Ireland. 2. Department of Emergency Medicine, Cork University Hospital, Cork, Ireland.

INTRODUCTION: The Ottawa Ankle Rules (OAR) are a tool with high sensitivity, and low specificity. A previous study has assessed the tuning fork (TF) as a diagnostic aid; however, this used a small sample size, and involved only a single clinician. Objective: To evaluate whether use of the tuning fork increases the specificity of the OAR. METHODS: This prospective pilot study was done over a 2 month period in the Emergency Departments (EDs) of various Cork city hospitals by practitioners with a range of expertise. All OAR positive patients were assessed by application of a 128 Hz tuning fork to bony prominences. OAR positive patients received x-rays, which were interpreted both by ED staff and independently by radiologists. A positive x-ray as interpreted by a radiologist was defined as the gold standard. RESULTS: Of the 147 patients presenting with acute ankle injury, 59% were OAR positive. Of these 30% were TF positive, and 14.5% had a fracture. Sensitivity and specificity

of the TF applied to the lateral malleolus were 59% and 85.7%, respectively; when applied to all OAR bony prominence sites, values were 76.4% and 67%, respectively. Positive likelihood ratios and negative likelihood ratios were 4.13 and 0.81 for the lateral malleolus alone, and 2.32 and 0.35 for all sites measured. These values do not reach statistical significance. Qualitative comments made by assessing clinicians suggested an association between TF positive, x-ray negative patients and re-presentation with bone bruising seen on MRI. CONCLUSION: Use of the tuning fork, on the lateral malleolus alone, appears to increase the specificity of the OAR more so than when applied to all bony prominences. These findings are consistent irrespective of training level, or hospital location. A larger sample size is required to assess whether this difference will reach statistical significance. Considering patients who re-presented to the ED and had MRI, the apparent false-positive TF rate may represent bony injury not evident on X-ray.

WE.56) A Randomized Controlled Multi-Center Trial of the Point-Of-Care Chemistry Test for Reduction of Turnaround and Clinical Decision Time in the Emergency Department : **Sang Do Shin[1], Eui Jung Lee[1], Kyoung Jun Song[2], Seong Chun Kim[4], Jin Seong Cho[5], Ju Ok Park[3], Won Chul Cha[1] : 1. Emergency Medicine, Seoul National University Hospital, Seoul, Korea, South. 2. Seoul National University Boramae Medical Center, Seoul, Korea, South. 3. Jeju National University Hopsital, Cheju, Korea, South. 4. Gyeongsang National University Hopsital, Gyeongnam, Korea, South. 5. Dongkuk University Ilsan Hospital, Ilsan, Korea, South.**

INTRODUCTION: Our study compared the turnaround (TAT) and clinical decision time (door to decision=D2D) in patients managed with between a point-of-care chemistry test (POCT) versus the traditional central laboratory test (CLT). METHODS: This was a randomized controlled multi-center trial in five academic teaching hospital EDs. We randomly assigned patients to POCT or CLT stratified by the Emergency Severity Index. A POCT chemistry analyzer (Piccolo ®, Abaxis, Inc., Union City, CA) which was able to test comprehensive admission panel and electrolytes was used. Study coordinators drew blood and delivered it to a central laboratory room (CLT) or ran the test by themselves in ED (POCT). All results were notified to attending physicians as soon as possible. Coordinators asked physicians about new decision making (disposition, treatments, consultation, or lab/image tests). The Mann-Whitney-Wilcoxon test was used for comparisons of TAT and D2D times. RESULTS: The 2,323 patients except 127 cases due to incomplete data, were randomly assigned to POCT (n=1,167) or to CLT (n=1,156). All basic characteristics were very similar between two groups. The TAT (median, inter-quartile range [IQR]) of POCT was significantly shorter than that of CLT (13, IQR 12-19 vs. 55, IQR 45-69 minutes; $p<0.0001$). The median D2D time was also significantly shorter in POCT compared to CLT (46, IQR 33-61, vs. 86, IQR 68-107 minutes; $p<0.0001$). New decisions were made in 67.8% of POCT and 68.1% of CLT. The D2D time was significantly shorter in POCT vs. CLT (disposition; 47.0 vs. 87.0 min., treatments; 45.0 vs. 86.0 min., laboratory tests; 42.0 vs. 84.0 min., or image; 49.5 vs. 85.5 min.). Patients with LOS less than 6 hours in POCT (66.5%) and CLT (67.2%) had new decisions at 44.0 min. and 84.0 min. after arrival ($p<0.001$). The proportion of patients who had new decisions within 60 min. was 72.8% for POCT and 12.5% for CLT ($p<0.001$). CONCLUSION: A POCT chemistry analyzer significantly shortens the test turnaround and ED clinical decision times compared to central laboratory testing.

WE.57) A randomized, blinded, controlled clinical trial of 1000 cc versus 500 cc oral contrast in adults undergoing abdominal CT scans

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INTRODUCTION: Objective: To determine if reducing oral contrast volume to 500 cc results in more rapid oral contrast administration without increasing the percentage of technically inadequate CT scans of the abdomen. METHODS: Prospective randomized blinded study at an urban Level I trauma center. We enrolled subjects>18 years of age presenting to the emergency department (ED) who had an abdominal CT scan ordered. Subjects were excluded if they were pregnant or unstable. They were randomized into 2 groups using numbered envelopes. We diluted 30 cc of oral contrast (diatrizoate meglumine and diatrizoate sodium) in 500 cc (study group) or 1000 cc water (control group). Data was collected by physician questionnaire. Radiologists were blinded to study allocation. Analysis was by chi-square for categorical and Kruskal-Wallis for non-parametric data. RESULTS: 139 patients were randomized to each group. 160 (58%) were males. There was no statistical significance between the control and study groups in the median patient age (45 vs 41, p=0.12); number of CTs which answered the clinical question (94% v 91%, p=0.41), number read as acceptable by radiology (87% v 85%, p=0.55), number who required subsequent studies (14% v 16%, p=0.74), total time from beginning contrast to completing CT (146 v 140 min, p=0.70), number of patients who vomited (9.5% v 5.7%, p=0.26), and number who underwent surgery (8.7% v 10.4%, p=0.64). The time to consume the 500cc was significantly less (20 min) than time to consume the 1000cc (30 min) p=0.0001. Patients were more likely to complete the 500 cc volume than the 1000 cc volume (91.2% v 73.6%) p<0.001; OR 1.41 (95%CI [1.2, 1.7]) even after adjusting for gender and age. CONCLUSIONS: Patients consume the 500 cc solution faster and the resulting CT scans have similar technical acceptability compared with the 1000 cc solution. Future studies should focus on even smaller amounts of oral contrast volume for abdominal CT scans.

WE.58) Fear of Brain Herniation From Lumbar Puncture: Do History and Physical Exam Indicate Abnormalities on Head Computed Tomography? : Kelli N. O'Laughlin[1], Steven Go[2], Gelareh Gabayan[3], Erum Iqbal[3], Guy Merchant[4], Roberto Lopez Freeman[5], Michael Zucker[4], Jerome Hoffman[4], William Mower[4] : 1. Department of Emergency Medicine, Brigham & Women's Hospital, Jamaica Plain, MA, USA. 2. University of Missouri- Kansas City, Kansas City, MO, USA. 3. UCLA David Geffen School of Medicine, Los Angeles, CA, USA. 4. UCLA & Olive-View/UCLA Medical Center, Los Angeles, CA, USA. 5. University of Cincinnati, Cincinnati, OH, USA.

INTRODUCTION: Fear that lumbar puncture (LP) performed on patients with increased intracranial pressure (ICP) may lead to tonsillar herniation leads many physicians to first check a screening head computed tomography (CT) to look for abnormalities. This practice is time consuming, costly, and exposes patients to significant radiation. Our goal was to define clinically significant head CT abnormalities and then to analyze the ability of certain history

and physical exam findings to predict those radiographic findings. METHODS: This was a secondary analysis of a prospectively maintained head CT database of patients presenting to the UCLA Emergency Department between April 2006 and February 2007. The Delphi method was used to define radiographic head CT abnormalities and history and physical exam findings were analyzed for their ability to predict head CT abnormalities. RESULTS: When analyzed individually, the history and physical exam findings did not predict significant head CT abnormalities well. The most sensitive were: neurological deficit, sensitivity 68.9% (CI 53.4, 81.8) and NPV 93.4% (CI 89.1, 96.3); altered level of consciousness, sensitivity 67.39% (CI 52.0, 80.5) and NPV 91.8% (CI 86.8, 95.3); and lack of proper orientation, sensitivity 65.1% (CI 49.1, 79.0) and NPV 92.1 (CI 87.3, 95.5). The sensitivity of the combined criteria of the history and physical exam findings together was good but not perfect; the sensitivity was 95.7% (CI 85.5, 99.5) and the NPV was 96.1% (86.5, 99.5). CONCLUSIONS: History and physical exam alone may be inadequate to detect subtle head CT changes that could indicate potential for brain herniation as defined by the Delphi criteria. Despite that finding, the limitation of this study was that our outcome measure was radiographic abnormalities and not brain herniation, making it difficult to extrapolate concrete conclusions regarding the clinical relevance of this information. We suspect the likelihood of herniation is much lower than the Delphi criteria caution and that because of this the head CT criteria we used are too sensitive.

WE.59) Regional analysis of acute coronary syndromes in emergency departments: prospective study of 2000 patients (RESUR-1 study) : **Nathalie Flacke[1], Mahmut Gündesli[2], Christophe Rothmann[3], Mohamed Zerguine[4], Marc de Talance[5], Francis Claussner[4], Mouaffak Kosayyer[6], Philippe Sattonet[7], François Braun[8], Francis Guillemin[2], Abdelouahab Bellou[2, 9] : 1. Institut National Polytechnique de Lorraine INPL, Ecole nationale supérieure en Génie des systèmes industriels ENSGSI, Equipe de Recherche en Processus Innovatifs ERPI, Nancy, France. 2. Centre Hospitalier Universitaire et Régional Nancy, Nancy, France. 3. Centre Hospitalier Régional Metz, Metz, France. 4. Centre Hospitalier "Marie Madeleine" Forbach, Forbach, France. 5. Centre Hospitalier Général "Jean Monnet" Epinal, Epinal, France. 6. Centre Hospitalier Général Sarreguemines, Sarreguemines, France. 7. Centre Hospitalier Thionville, Thionville, France. 8. Centre Hospitalier Général Verdun, Verdun, France.**
9. UAE University, FMHS, Al-Ain, United Arab Emirates.

INTRODUCTION: Progress has been made in France in the management of acute coronary syndromes (ACS) as it remains frequent and serious. The implementation of the recommendations of the European Society of Cardiology is still incomplete. METHODS: The objective was to describe the care of ACS in 19 emergency services belonging to the Network for the Study of Emergency Coronary Syndromes (RESUR). The inclusion lasted 1 year (from 12/2003 to 12/2004, follow-up 12/2005). RESULTS: 2000 patients were included (mean age 59 ± 16.6 years, 62.4% were men) and diagnosed as 263 STE-ACS, 500 NSTE-ACS; 323 as stable angina and 893 as other causes. NSTE-ACS and STE-ACS arrived by their own means in 47.5% and 42.3%. They were referred by a GP in 52% and 42.7%, by the medical emergency call center in 27.2% and 34%. The interval between the beginning of pain and arrival at ED was: for STE-ACS 16.8 ± 66.7 hours (median interval 4 hours, 56.2% arrived in the first 6 hours), for NSTE-ACS 12.3 ± 31.6 hours (median interval 3 hours, 65% in the first 6 hours). The ECG was performed in 13 ± 26.7 min for STE-ACS and 14.5 ± 43.5 min for NSTE-ACS. Troponin was determined in 95.6% with a return of results in 1.55 hours. The

time between arrival at the ED and starting treatment was 48.3 ± 63.8 min for STE-ACS and 57.9 ± 82.6 min for NSTE-ACS. Thrombolysis and angioplasty were performed respectively in 18% and 19.7% of STE-ACS. 73.5% of STE-ACS and 31% of NSTE-ACS were treated with aspirin + heparin. The diagnosis of STE-ACS was confirmed in 86.3% (n = 223), and NSTE-ACS in 38.5% (n = 192). CONCLUSION: ACS represents 1/3 of the causes of chest pain. There is an overestimation of the diagnosis of NSTE-ACS. In this study, recommendations were insufficiently followed. Prehospital care can be improved by focusing on education of patients, general practitioners and emergency physicians to save time and decrease delays until start of treatment, as well as inappropriate referrals to the ED.

WE.60) Analysis of guidelines impact on mortality and morbidity in a population of suspected acute coronary syndromes in emergency departments : Nathalie Flacke[1], Mahmut Gündesli[2], Christophe Rothmann[3], Mohamed Zerguine[4], Marc De Talance[5], Francis Claussner[4], Mouaffak Kosayyer[6], Philippe Sattonet[7], François Braun[8], Francis Guillemin[2], Abdelouahab Bellou[2, 9] : 1. Institut National Polytechnique de Lorraine INPL, Ecole nationale supérieure en Génie des systèmes industriels ENSGSI, Equipe de Recherche en Processus Innovatifs ERPI, Nancy, France. 2. Centre Hospitalier Universitaire et Régional Nancy, Nancy, France. 3. Centre Hospitalier Régional Metz, Metz, France. 4. Centre Hospitalier "Marie Madeleine" Forbach, Forbach, France. 5. Centre Hospitalier Général "Jean Monnet" Epinal, Epinal, France. 6. Centre Hospitalier Général Sarreguemines, Sarreguemines, France. 7. Centre Hospitalier Thionville, Thionville, France. 8. Centre Hospitalier Général Verdun, Verdun, France.
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METHODS: Study design: A bibliographical research of Guidelines applicable during the RESUR-1 study was conducted and the impact of adherence on morbidity and mortality was observed for obtaining the electrocardiogram ECG within 10 min, administering acetylsalicylic acid, heparin, and a thrombolytic agent, as well as referral to percutaneous intervention PCI. The study was conducted in 19 emergency departments belonging to the Network for the Study of Emergency Coronary Syndromes (RESUR) from 12/2003 to 12/2004 (follow-up 12/2005). RESULTS: Among 1995 included patients 223 had a final diagnosis of STE-ACS, 362 patients NSTE-ACS, 194 stable angina, 1108 other cardiovascular causes, 108 other pathologies. Subpopulations mortality is described in table 1. 4 European and 5 American guidelines were harvested. 69.1% of STE-ACS patients benefited from ECG <10 min, 76.2% from acetylsalicylic acid ASA treatment, 73.5% from heparin, 15.2% from thrombolysis, and 18.8% from PCI. Among NSTE-ACS patients, only 6.7% benefited from ECG <10 min, 50.3% from ASA, 43.9% from heparin. Adherence to one recommendation leads to a decreased morbidity and mortality for STE-ACS patients; and with adherence to the five recommendations these events decrease even more (table 2). Similarly, application of one recommendation in NSTE-ACS will reduce risks, the more so with application of three recommendations (ECG <10 min, ASA, heparin) as seen in the decrease of mortality at 48 hours, 1 month and of nonfatal events at 48 hours, 1 month and 1 year. CONCLUSIONS: Application of guidelines in the RESUR-1 population was inconsistent and recalled results of other publications. We observe that adherence to guidelines reduces risks, and that the number of guidelines adhered to leads to a decrease in fatal and nonfatal events. There is a need to implement an appropriate strategy related to risk and knowledge management to avoid unnecessary risks for the population in each sector.

	STE-ACS	NSTE-ACS	Stable angina	Other Cardiovascular causes	Other
Mortality at 48 hours	7 (3.1%)	5 (1.4%)	0 (0.0%)	3 (0.3%)	1 (0.9%)
Mortality at 1 month	0 (0.0%)	1 (0.3%)	3 (1.5%)	11 (1.0%)	4 (3.7%)
Mortality at 1 year	12 (5.38%)	19 (5.2%)	10 (5.2%)	43 (3.9%)	4 (3.7%)

Table 1 : Mortality rates in Resur-1 population

	ACS population	One major recommendation is adhered to	All five recommendations are adhered to
Mortality and Morbidity of STE-ACS at 48 hours			
Mortality Other Events	7 (3.14%) 5. (23.8%)	0 (0.0%) 9 (22.5%, RR 0.95, OR 0.96)	0 (0.0%) 4 (66,8%, RR 2.82, OR 1.23)
at 1 month			
Mortality Other Events	0 (0.0%) 14 (6.3%)	0 (0.0%) 3 (7.5%, RR 1.19, OR 1.18)	0 (0.0%) 0 (0.0%)
at 1 year			
Mortality Other Events	12 (5.4%) 10 (4.5%)	2 (5.0%, RR 0.93, OR 0.93) 3 (7.5%, RR 1.67, OR 1.62)	0 (0.0%) 0 (0.0%)
	ACS population	One major recommendation is adhered to	All three recommendations are adhered to
Mortality and Morbidity of NSTE-ACS at 48 hours			
Mortality Other Events	5 (1.4%) 96 (26.5%)	3 (2.4%, RR 1.77, OR 1.75) 18 (14.6%, RR 0.55, OR 0.64)	1 (1.2%, RR 0.88, OR 0.88) 13 (15.9%, RR 0.60, OR 0.68)
at 1 month			
Mortality Other Events	1 (0.3%) 2. (0.8%)	1 (0.0%, RR 0.0, OR 0.0) 0 (0.0%)	0 (0.0%) 5 (6.1%, RR°0.76, OR 0.78)
at 1 year			
Mortality Other Events	19 (5.2%) 2. (7.7%)	6 (4.9%, RR 0.93, OR 0.93) 6 (4.9%, RR 0.63, OR 0.69)	5 (0.61%, RR 1.16, OR 1.15) 3 (3.7%, RR 0.47, OR 0.49)

Table 2 : Influence on prognosis by adherence to 1 versus 5 professional recommendations in

STE-ACS patients of Resur-1 study and 1 versus 3 in NSTE-ACS patients

WE.61) Human Anti-Tetanus Immunoglobulin (HATI) in the Emergency Department. : Sarah Boxall[1], Fiona M. Burton[1], Iain Young[1] : 1. Royal Alexandra Hospital, Paisley, United Kingdom.

INTRODUCTION: Human anti-tetanus immunoglobulin (HATI) is indicated for patients with tetanus prone wounds if they are inadequately immunised or have sustained an especially high risk wound. As it is an immunoglobulin and administered intramuscularly it is not risk free. Guidelines have existed in the UK and other countries for over 45 years. Evidence suggests that HATI is commonly over prescribed and that immunisation status and wound risk is poorly assessed in Emergency Departments. This results in patients being needlessly exposed to risk. AIM: To audit medical staff compliance with national guidelines when prescribing HATI in a busy district general hospital (60000-70000 patients per annum) Emergency Department. METHODS: Data was collected retrospectively from case notes for a 1 year period. Patients were identified from the blood transfusion database. A data collection sheet was used. RESULTS: 68 patients were identified. 57 (84%) of notes were obtained from records. 27 (47%) patients, HATI was not indicated but administered. 16 (28%) patients, HATI was indicated and administered correctly. 14 (25%) patients could not be commented on as there was no documentation of immunisation status in notes despite HATI being given. CONCLUSION: We are not currently following the national guideline for prescription of HATI and documentation is poor. We have developed a sticker to put in all patient files that will prompt people to document immunisation status and assess wound risk correctly.

WE.62) Electronic Health Record (EHR) Implementation Impact Upon A Large Tertiary Care Center Emergency Department : Peter J. Park[1], Stephen S. Tantama[1], Kiva Fallgatter[1], RObert Riffenburgh[1] : 1. Emergency Medicine, Naval Medical Center San Diego, La Jolla, CA, USA.

INTRODUCTION: Because of the current drive to adopt Electronic Health Records (EHRs), it is of paramount concern to consider their effect upon the ED workspace. We investigated the impact of implementing an EHR upon staffing and space requirements and business performance through standardized metrics. METHODS: The study site (a tertiary care ED with an annual volume of 65,000 patients) implemented a new EHR in a series of four phases (Clerks, Data Tools, Nurses, and Physicians) over 8 months to minimize disruption. A prospective registry was established prior to the June 2008 EHR implementation. Retrospective chart reviews were performed for the preceding 48 months to establish historical baselines. The data were normalized for ED volume and analyzed for differences in: 1. Length of Stay (LOS) derived from registry to discharge time, 2. Left Without Being Seen (LWBS) rate, and 3. Relative Value Units (RVUs) calculated by coders blinded to the study. RESULTS: The LOS for the patients rose upon initial implementation of the EHR and remained elevated during all study phases (+7.4%, +5.8%, +5.9%, +7.3%, $p<0.001$ for all). The LWBS rates increased significantly with the introduction of the nursing documentation (3.0% baseline versus 4.3% during the fourth phase, $p<0.001$). However, an overall improvement was demonstrated in the final phase of the program (4.7% baseline versus 3.6%,

p=0.001). RVU analysis was limited by healthcare system changes in calculation methodology. Comparison with the preceding year's baseline yielded a 1.7% increase in RVU capture. CONCLUSION: EHR adoption resulted in increases in both LOS and LWBS rates with minimal increases in RVU capture. Health care facilities considering EHR adoption may require bed capacity expansion and/or staffing augmentation to cope. Any planning for future EHR implementations should take into account these considerations. Further investigation is needed to better characterize the long-term impact of EHRs and define software and workflow enhancements necessary to alleviate current shortcomings.

WE.63) The Validity and Quality of a Novel National Emergency Department Diagnosis Coding System : Ron Berant[1], Yael Simon[1], Lisa D. Amir[1], Pinchas Halpern[2], Marc Mimouni[1], Yehezkel (. Waisman[1] : 1. Emergency Medicine, Schneider Children's Medical Center of Israel, Petah Tikva, Israel. 2. Sourasky Tel Aviv Medical Center, Tel Aviv, Israel.

Introduction: For medical and administrative research as well as for syndromic surveillance purposes, a national registry of ED diagnoses was established (2004) by the Israeli Ministry of Health using a novel ED diagnosis coding system. The aim of our study was to investigate the validity and quality of this coding system. Methods: Study Design: Retrospective. Setting: The EDs of a paediatric (SCMCI) and a general (RMC) tertiary care facilities. The model: Based on the ICD-9-CM, a table of ~100 medical diagnoses codes (MDC) was created for important or frequent ED diagnoses in each discipline, and grouped by body system. MDCs reflected either symptoms or diseases. For trauma, type of injury and body region were coded. Physicians are required to code the main ED diagnosis and fever, if existed, using the MDC table. The procedure: During July, 2008, ~4000 ED charts were reviewed at each medical center, and the ED diagnosis was compared to the MDC marked. The degree of accordance was rated using a 0-10 scale (0 for not coded, and 10 for exact match). A median score of 6 for all files was defined to reflect high validity. Quality of coding was also analyzed by level of training and specialty of physician, shift of the day, day of the week, and patients' age group. Percentages and the Kruskal –Wallis test were used for group comparisons. Results: Four thousand and three and 4018 charts were reviewed at SCMCI and RMC, respectively. Of them, 2522 (63%) in SCMCI, and 3054 (76%) in RMC were coded. In both EDs the median coding score was 10. Compared to residents and internal medicine specialists or pediatricians, ED specialists' and surgeons' quality of coding was significantly higher ($p<0.01$). Quality of coding was significantly poorer at evening shifts, on Thursday's, and for extreme patients' ages ($p<0.05$ for all). Conclusions: The implemented MDC system for the ED diagnoses registry was found to be accurate, with a very high validity and quality, and therefore can be reliably used for its purposes. Factors found to contribute to poor coding quality should be addressed in order to further improve its quality and reliability.

WE.64) Clinical Decision Support: Saving Time and Improving Care through Successful System-Wide Implementation : Nicolas Elazhary[1], Geneviève Bécotte[1] : 1. Association des Medecins D'Urgence Du Quebec (AMUQ) , Quebec, QC, Canada.

INTRODUCTION: The Canadian Adverse Events Study released in 2004, reported 24,000

preventable deaths per year in Canadian hospitals. In attempt to improve quality of care in their province, the Association des Medecins D'Urgence Du Quebec (AMUQ) and the Quebec Ministry of Health wanted to improve the practice of emergency medicine in the 107 emergency departments in Quebec, which range from rural clinics to urban hospital centres. The goal was to implement decision support that would provide quick access to critical data and protocols for emergency physicians, nurses and EMTs at the emergent scene. METHODS: The organisations decided to implement an existing point of care decision support resource, rather than build their own database. PEPID Emergency Physician Suite (ED) was selected for its comprehensive resources that provide instant access to trauma and emergency medicine protocols, drug interactions, calculators, evidence-based medicine and more. RESULTS: PEPID ED was integrated system-wide, enabling all emergency rooms across the province to be linked to the same clinical decision support resources. Every physician was able to access the same information, such as stabilization, evidence-based assessment and treatment, pathophysiology, and lab analysis, and to calculate dosages and check for drug interactions. The institutions were also able to add and share notes on hospital protocols through the product's built-in notes feature. The solution proved valuable at the point of care. It helped standardise care across the entire province of Quebec, by uniting all emergency facilities and aiding them in providing consistent levels of care. CONCLUSIONS: Quebec's experience with system-wide integration of clinical support resources further validates what studies have shown — that access to medical information to support clinical decisions reinforces best practice methods, improves accuracy, reduces errors and adverse drug events, and improves productivity and workflow. The international practice of emergency medicine presents an additional challenge of delivering critical information to venues that vary greatly in geography, patient acuity, and in availability of resources. As shown in Quebec, a solution, such as PEPID ED, can be used to easily standardise emergency medicine in diverse environments and locations. The global accessibility of this point of care information can help educate emergency physicians and advance the practice of emergency medicine by connecting physicians and by providing practical solutions and best practice information.

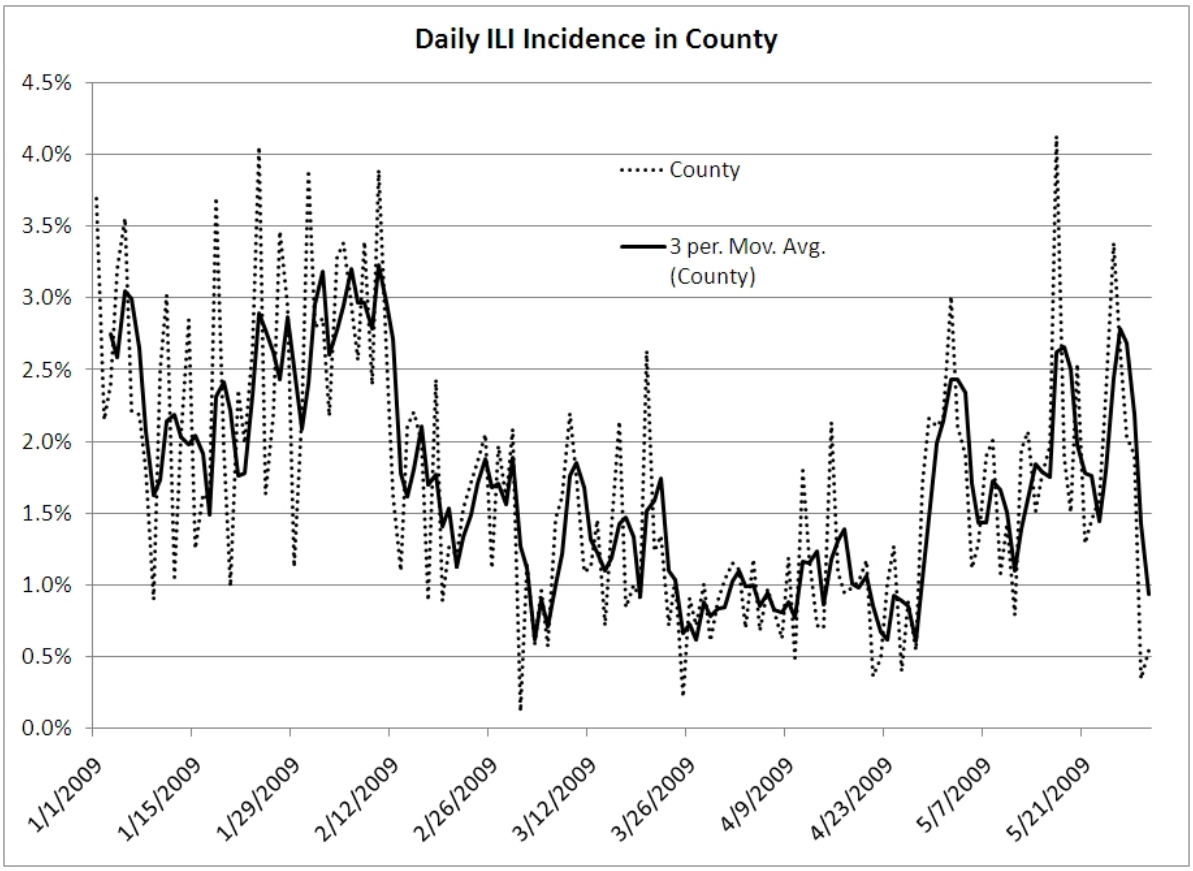
WE.43) Preparedness of Belgian civil hospitals for chemical biological radiation and nuclear (CBRN) disasters: are we there yet? : Luc J. Mortelmans[1], Sam Van Boxstael[1], Harald G. De Cauwer[1], Marc B. Sabbe[2] : 1. Emergency Medicine, AZ KLINA, Brasschaat, Belgium. 2. Univ Hospital Gasthuisberg, Leuven, Belgium.

INTRODUCTION: Brussels, the Belgian capital, hosts chairs of organisations such as NATO and the European Community. Antwerp has the world 2nd largest petrochemical harbour and hosts an important Jewish community. To complete the list our country, having one of the worlds largest density of inhabitants, has 7 nuclear reactors. Any CBRN incident, deliberate or incidental, could easily become a large scale disaster. METHODS: A questionnaire was sent to the heads of 137 Belgian emergency departments (ED) containing topics such as decontamination facilities and equipment, antidote stocks, protective and diagnostic equipment, training of personnel for CRBN incidents and disaster planning. RESULTS: 96 ED's (70%) completed the questionnaire, 7% of them university hospitals. Although 71% of the hospitals feel at risk for a CBRN incident, only 53% include these scenarios in their hospital disaster planning. Only 36% has any contacts or arrangements with the source of the

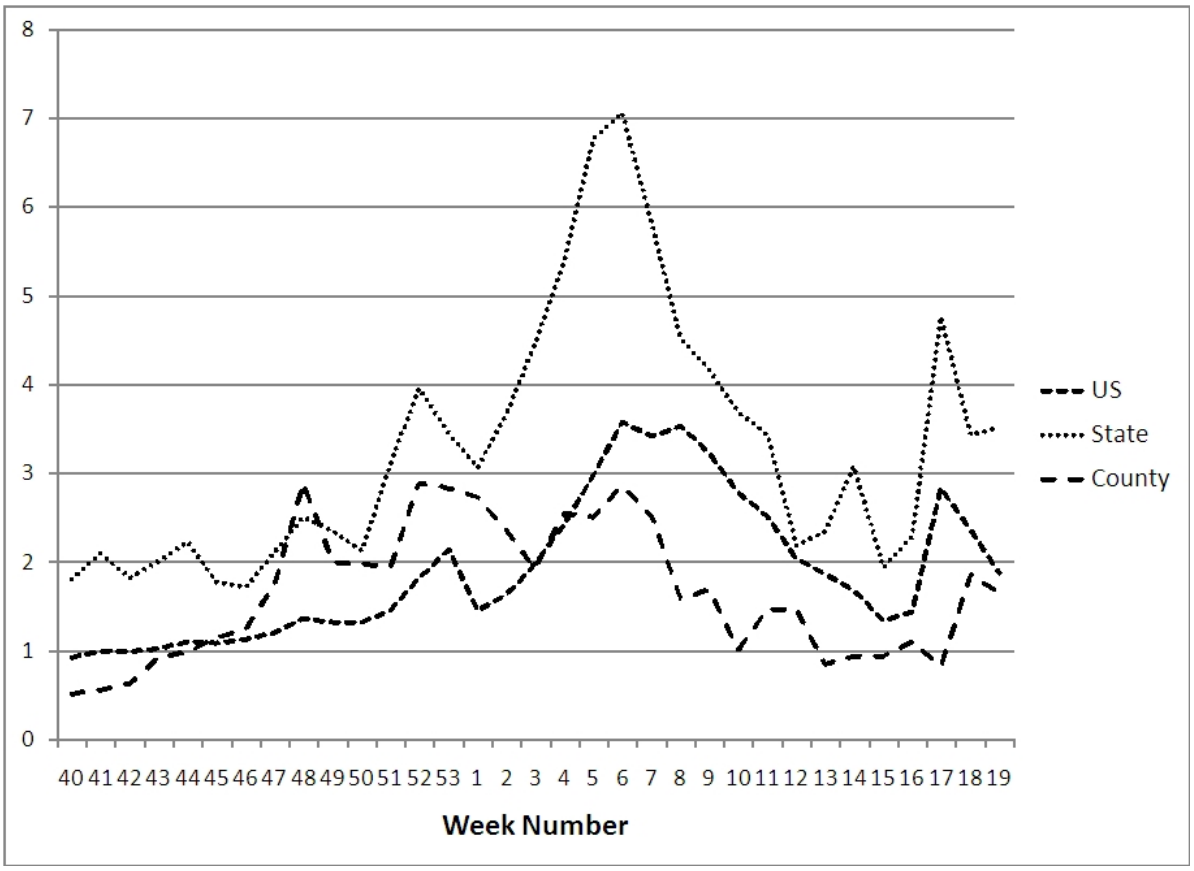
risk. Disaster training, if present, is limited. 41% claim to have decontamination possibilities but in many cases it's only a shower somewhere on the service. If decontamination would be feasible, only 7% have PPE's! Although 32% feels a nuclear risk exists, only 16% have radiodetection possibilities. Antidote stocks, regulations in case of biological incidents and isolation measures also are limited. Looking at surge capacity, figures are better: 82% can easily mobilise necessary personnel, even with special know-how in 43%. 70% state that they can create extra bed capacity if necessary. CONCLUSION: We would state that, despite a clear risk awareness, Belgian ED preparedness for CBRN risks is rather poor. Financial aspects are probably the major drawback.

WE.44) A Real-Time, Passive Syndromic Surveillance System Detects Influenza Outbreaks : Richard N. Bradley[1], Parsa Mirhaji[2] : 1. Emergency Medicine, The University of Texas Health Science Center at Houston, Houston, TX, USA. 2. The University of Texas Health Science Center at Houston, Houston, TX, USA.

INTRODUCTION: Syndromic surveillance systems can be useful in detecting naturally occurring illness. Most surveillance systems, however, report data no more frequently than daily, and require human review of the data to detect the presence of a syndrome. We developed a real-time, passive syndromic surveillance system that reviews all electronic nurses' notes from the emergency departments (ED) of nine hospitals in our county. Our hypothesis was that the influenza-like (ILI) incidence rate reported by our system would be similar to the rate reported by both the state and national sentinel provider network. METHODS: We prospectively collected all ED nursing notes from the nine hospitals from October 1, 2008 through May 9, 2009. Using an on-line analytical processing engine, we evaluated these visits for ILI, which we defined as fever of > 37.7° C and either cough or sore throat. We compared this data to the ILI incidence rate reported by both state and national sentinel providers. We also reviewed the daily ILI incidence in our county to see how our system responded to the April-May outbreak of H1N1 influenza. RESULTS: During the study period, our system detected 3,665 cases of ILI in 218,740 patient visits, for an overall ILI incidence of 1.68%. This compares to an ILI incidence of 3.39% from sentinel providers in our state and 1.90% nationally. Graphical data show that our system identified a blunted seasonal influenza outbreak that started earlier but was less severe than both the state and U.S. experience. Our system detected the H1N1 outbreak on April 30. We noted that our county had cases similar in magnitude to the state and national reports. CONCLUSION: Our new system detected the H1N1 outbreak when our county (population at risk = 4,000,000) was only reporting one confirmed case and no hospitalizations. This was four days before the confirmed case count in our county reached six. This study provides evidence that our real-time, passive surveillance system may provide an early warning of an outbreak several days before laboratory confirmation is possible.



2009 ILI Incidence in County (%)



2008-9 ILI Incidence by Week (%)

WE.45) Surge capacity: reversed triage, a pilot study in Belgian hospitals. : Luc J. Mortelmans[1], Olivier Hoogmartens[2], Sven Leys[2], Marc Sabbe[2] : 1. Emergency Medicine, AZ KLINA, Brasschaat, Belgium. 2. Univ Hosp Gasthuisberg, Leuven, Belgium.

INTRODUCTION: In case of disasters, hospitals have to cope with a sudden influx of patients. One solution is reversed triage of hospitalized patients not suffering from serious complications due to premature discharge. Hospital disaster planners should have an idea of the fraction of beds that can be freed and should have parameters to identify those patients for safe early discharge. METHODS: An observational cross-sectional prevalence study was performed on 16 specific wards (orthopaedics, abdominal surgery, geriatrics and pneumology) in 4 Belgian hospitals. Patients eligible for early discharge were identified by the head nurse. Two independent Emergency Physicians (EP), trained in Disaster medicine, also evaluated the patient records and separately evaluated their eligibility for premature discharge. These records were based on a list of 28 critical interventions developed by Kelen et al. For interobserver agreement, crude agreement (in %) and change-corrected agreement (Cohen's kappa ?) were calculated. RESULTS: 400 patients were included. Mean occupation rate was

83.5%. By the head nurse, 256 patients (64%) were scored eligible for early discharge. For both EPs, respectively 157 and 137 patients could be dismissed. Interobserver variability between head nurse and EPs was poor (crude agreement: 68 and 65%; ? = 0.372 (95% CI 0.288-0.457) and 0.339 (95% CI 0.26-0.418)). Between both EPs, however, crude agreement was 86%, with a ? of 0.716 (95% CI 0.648-0.784). All reached an agreement on 126 patients (32%), mainly patients from a surgical ward were selected (52%). Reason for stay, length of stay, mobility, need for care and isolation were significant decision parameters. CONCLUSION: The number of eligible patients for reversed triage is, in Belgium, significantly higher compared with the guidelines of the US National Disaster Medical System. However, this study was limited in number of patients. The developed record with parameters, readily available from the patient files, suggests that this reversed triage tool is feasible. Nevertheless, further research on a National and European level is warranted.

WE.46) The Effect of a Disaster Drill on Knowledge and Attitudes about the Field Emergency Care Center : Chu Hyun Kim[1], Sang Do Shin[2], Ju Ok Park[3] : 1. Department of Emergency Medicine, Incheon Medical Center, Incheon, Korea, South. 2. Department of Emergency Medicine, Seoul National University College of Medicine, Seoul, Korea, South. 3. Department of Emergency Medicine, Jeju National University College of Medicine, Jeju, Korea, South.

INTRODUCTION: It is important for participants of a disaster drill to have not only exact knowledge but also appropriate attitude about the establishment and operation of the Field Emergency Care Center (FECC) using regional available resources. We evaluated the effect of a disaster drill on the knowledge and the attitude of eligible members to participate in the FECC. METHODS: All participants recruited from health care centers, regional and local emergency centers, EMT training center, and information center were trained using a designed program including two lectures containing; ‘concept of disaster preparedness’ and ‘pre-hospital trauma care’, one table simulation based on the scenario, and one field simulation. We tested changes in knowledge and attitudes using developed questionnaires pre- and post-drill. Each correct response on five items about knowledge was scored with summation (knowledge score range; 0~5). Attitude was estimated from one point (most passive) to five point (most active) and all points were added (attitude score range; 5~25). Questions about attitude included 5 items: individual decision, institutional role, education and training, the FECC, and individual role in disaster. Paired t tests and repeated measure ANOVA were used to assess the statistical differences and compare the two scores of the pre- and post-drill. RESULTS: 281 were enrolled in two drills. Of them, 48% were male and mean age was 26.1 years. Knowledge score was significantly increased from 3.84±0.99 in pre-drill to 4.25±0.93 in post-drill ($p=0.0001$). Positive attitudes were also significantly increased from 21.42±3.62 to 22.35±3.40 ($p<0.001$). The healthcare professional group showed significant changes in both knowledge and attitudes. However, in the non-professional group there was only a significant increase in attitude without meaningful change in knowledge. Those results were similarly observed in the comparison between members from the health institute and from the administrative institute. CONCLUSION: A disaster drill may affect positively on both knowledge and attitude.

WE.47) ARE BELGIAN SENIOR MEDICAL STUDENTS READY TO DELIVER BASIC MEDICAL

CARE IN CASE OF AN INFLUENZA PANDEMIC? : Luc J. Mortelmans[1], Harald G. De Cauwer[1] : 1. Emergency Medicine, AZ KLINA, Brasschaat, Belgium.

INTRODUCTION: Medical care systems will be seriously overwhelmed if an influenza pandemic should occur. Several national disaster plans (as in Belgium) focus on maximal treatment at home with support of the first line care by senior medical students. METHODS: To evaluate the common knowledge and preparedness of Belgian senior medical students (2 last years of education) we performed an e-mail based survey of the Flemish universities at the occasion of the H5N1 threat. RESULTS: 243 students (30%) replied. Only 21.8% of them were aware of the possibility of being involved in this planning. 77.4% estimated H5N1 to be a possible threat for national health. 70% reacted positively towards the idea of being implemented in primary care, and 9.5% were absolutely opposed to the idea. 82.3% would care for pandemic patients if necessary but only 41.2% would do so if these patients were children. Only 18.9% estimated they were sufficiently educated about H5N1. 91% were convinced that the care for H5N1-influenza patients should be incorporated in their regular curriculum. Several antiviral products were reported by the students to be efficient for treating H5N1, only 34.6% chose oseltamivir and/or zanamavir (recommended therapy at the time) and 35.4% replied "I don't know". 95.5% answered that the regular influenza vaccination doesn't protect against H5N1. The risk for human-to-human transmission was rated small in 50.6% (none 21%, high 27.6%). The human infection risk was rated small in 74.1% (none 1.6%, high 23%). CONCLUSION: There is a high willingness to participate amongst the senior medical students. In case of paediatric patients however they're more reserved. It would be useful to incorporate a focused session on this preparedness in the regular teaching program. A legal base for their actions should also be provided. Ethical guidelines on rights and duties in case of a pandemic should be prepared by an international multidisciplinary group of experts.

W103) Implementation of a newly designed method for evaluation and assessment of medical management in mass casualties: functional full-scale exercises : Federico Prato[1], Davide Colombo[1], Pier Luigi Ingrassia[1], Marco Tengattini[1], Luca Ragazzoni[1], Federico Barra[1], Luca Carenzo[1], Federico Merlo[1], Francesco Della Corte[1] : 1. Dpt of Emergency Medicine – University Hospital School of Medicine "Maggiore della Carità", Novara, NO, Italy.

BACKGROUND: We demonstrate the implementation of a standardized method for evaluating medical management during full-scale exercises by applying a new web-based information technology. 83 smart victims were prepared to act in a simulated building collapse in a specific course. Each casualty was given a set of dynamic cards which reported vital signs that changed over time and in response to medical manouvers. Time schedules concerning triage, evacuation procedures, medical treatment performed were uploaded in a mySQL® Database in real time during the exercise using Palm Phones and PocketPC with UMTS Internet Connection by trained observers. In-Hospital phase of rescues was played in Borgomanero Hospital (Italy) Emergency Department where patient data were merged with data provided by Power ECE software. Other data was collected by smart victims such as timing of evacuation. Medical care quality was evaluated, analyzing and comparing triage timing and treatment accuracy. "After action review" was done at the end of the exercise

downloading data from the database in MS Excel® format. Power ECE simulated diagnostic labs and imaging procedures inside ED, according to the treatment performed on the field in the Advanced Medical Post and updated clinical findings. Quantitative evaluation of the performance was delivered at the end of the exercise to participants. DISCUSSION: The purpose of every functional exercise should be to supply data which can be assessed and used to draw precise indications to improve the protocols in use. Collecting a series of useful key points to set up a full-scale exercise can radically modify the educational impact of this kind of didactic activity. The integration of data with a rapidly accessible, user-friendly technology allows the combination of qualitative and quantitative data to link treatment and outcomes to management, giving precise indications to improve protocols in use sharing it with all the agencies involved. We confirm that no exercise could be set up without considering a valuable evaluation tool to provide reproducible data.

Input interface of Database

W104) Full-scale exercise triage evaluation: comparison between on field and in-hospital operations : Marco Tengattini[1], Federico Prato[1], Davide Colombo[1], Pier Luigi Ingrassia[1], Federico Barra[1], Luca Carenzo[1], Federico Merlo[1], Francesco Della Corte[1] : 1. Dpt of Emergency Medicine – University Hospital School of Medicine "Maggiore della Carità" , Novara, Italy.

INTRODUCTION: This study aims to evaluate the accuracy of triage operations performed during the full scale exercise held as a final activity of the European Master in Disaster Medicine in Novara (IT). METHODS: 83 mock victims, specifically trained with a course on Disaster Medicine, were taught to play their specific role in a mass casualty incident (building collapse) according to physical parameters that could change upon medical treatment. Each victim was provided with a “dynamic data card” composed by an identification number and basic vital parameters edited with PowerECE®, a “tailor made” software powered by our group. Casualties were divided in: 3 black, 9 red, 23 yellow and 43 green codes. The triage system used was the START. According to Incident Commander’s evacuation order, 41 casualties were transferred to the Emergency Department of the nearest hospital where they received further triage and final treatment. Data has been collected in real time during the drill in a web-based mySQL® Database using Palm Phones and PocketPC with Internet Connection by trained observers. Triage codes assigned during the exercise were compared to the expected ones. The percentage of over/under triage was then calculated. RESULTS: Triage procedures on the crash area were completed in 50 minutes. “On the field” black and green causalities were all correctly triaged. The correct triage rate for red codes was 80% (20% overtriaged) and 70,8% for yellow codes (12,5% undertriaged, 10,7% overtriaged). At the ED, 41 casualties were admitted; 4 were triaged as red, 17 as yellow and 19 as green codes. The percentage of correct triage was 100% for green and yellow code. Fifty per cent of red codes had been correctly triaged while 50% were overtriaged. No differences were shown for the time delay from triage until first medical treatment between yellow and red code. CONCLUSION: The on-field and in-hospital correct triage rate was correctly performed in relation to the complexity of the full scale exercise. The in-hospital red code overtriage did not influence the expected time for final treatment both for red and yellow codes. Time to complete triage was considered as good.

WE.50) Challenges in pre-landfall evacuation of medical special needs patients before Hurricane Ike :
Richard N. Bradley[1] : 1. Emergency Medicine, The University of Texas Health Science Center at Houston, Houston, TX, USA.

INTRODUCTION: On September 11, 2008 at 2200 hours GMT, Hurricane Ike was 33 hours from making landfall on the upper Texas coast. As usually happens with tropical cyclones, Hurricane Ike’s projected path shifted slightly to the east, and the forecast for the storm surge affecting some of the municipalities in east Texas increased, prompting a decision to order evacuations. This area contained a large number of medical special needs patients who required assistance in evacuating. Evacuation operations started at 1600 hours local, with the criteria that all evacuations had to be completed by 0200 hrs local, when the wind velocity was forecast to increase above the level at which aircraft could safely takeoff. METHODS: A task force comprised of local fire and emergency medical services, State Urban Search and Rescue personnel and several dozens of contracted ambulances and United Sates Air Force and Air National Guard aeromedical evacuation personnel effected the evacuation of 293 medical special needs patients. The task force evacuated these patients to one of several medical special needs hubs located in and around Texas. RESULTS: Evacuations were challenging

because representatives from all of the necessary emergency support functions (transportation, mass care, health and medical and search and rescue) were not all present in the same command post. As a result, there were often delays in arranging transportation for both ambulatory and non-ambulatory medical special needs patients. A separate central control for the ambulances, not appreciating the extreme risks caused by this event, refused to allow individual ambulances to transport patients to adjacent counties, and insisted ambulances transport patients to state evacuation hubs, despite dangerous levels of crew fatigue and the amount of time that a resource would be lost. CONCLUSION: We can improve future responses if individuals with decision-making authority from all four of the emergency support functions involved with evacuation (transportation, mass care, health and medical, search and rescue) are collocated in a single command post and operate under a single, unified incident command.

WE.51) Presentation of the WHO generic health systems crisis preparedness (HSCP) assessment tool and its application in the Ukraine : Corinna Reinicke[1], Gerald Rockenschaub[1], Christophe P. Bayer[1] : 1. WHO Regional Office for Europe, Copenhagen, Denmark.

Introduction

The WHO Regional Office for Europe with support from international experts has developed a generic assessment tool, and adapted versions were so far tested in four countries of the WHO European Region (most recently in the Ukraine in May 2009). **Methods** Multi-disciplinary expert teams jointly with national authorities conducted a country assessment in the Ukraine in 2009 to identify strengths, weaknesses and gaps of the crisis management arrangements of the health system. The assessment adopted an all-hazard, multi-sectoral approach using a standardized health system crisis preparedness assessment tool. The tool defines components that are considered essential to ensure a functioning health system during crises, using the WHO health systems framework. The four core functions of the health systems framework are sub-categorized into main components, and key elements with essential attributes considered crucial for the health system crisis preparedness planning process. Expert teams conducted semi-structured and/or informal interviews with key stakeholders during on-site visits, and triangulated the information into a country report. Based on the practical experiences from this, and 3 previous assessments, the assessment tool will be further revised with amendments and adaptations to be incorporated into the final version. **Results** The overall health system crisis preparedness capacities of the Ukraine were evaluated against benchmarks and indicators based on the WHO HSCP assessment tool. Strengths and weaknesses were identified and technical recommendations, with a particular focus on preparing the systems of Ukraine for health aspects of mass gatherings in view of the Euro 2012 were shared with responsible officials. The applicability of the tool was tested and further modifications introduced after each mission. **Conclusions** The practical application of the WHO standardized HSCP assessment tool demonstrated its added value as a practical reference to conduct standardized country assessments to evaluate generic national health systems preparedness.

WE.99) Risk factors in snowsports: a prospective controlled multicenter survey in 1088 patients : Rebecca M. Hasler[1], Lorin Benneker[1], Simon Dubler[1], Jonathan Spycher[2], Dominik Heim[3], Heinz Zimmermann[1],

Aristomenis K. Exadaktylos[1] : 1. Emergency Medicine, Inselspital Bern, University Hospital, Bern, Switzerland. 2. Spital Interlaken, Spitaeler fmi AG, Interlaken, Switzerland. 3. Spital Frutigen, Spitaeler fmi AG, Frutigen, Switzerland.

INTRODUCTION: Objective: To analyze risk factors leading to accidents in alpine skiing and snowboarding. METHODS: Study design was a prospective controlled multicenter survey of injured and non-injured alpine skiers and snowboarders during the season 2007/2008. A tertiary and two secondary trauma centers in Switzerland participated. All injured alpine skiers and snowboarders (children and adults) admitted between November 2007 and April 2008 were analyzed by filling out a questionnaire incorporating 15 parameters (age, gender, assessment of risky riding and speeding on VAS scale, skiing experience, warm-up, weather/visibility, slope and snow conditions, age of skiing/boarding material, seasonal checking of material, protectors, experience of aggressive behavior on slopes, abstinence from alcohol and drugs). The same questionnaire was given to non-injured controls the same day. 1088 patients (782 alpine skiers, 306 snowboarders) and 749 controls (495 alpine skiers, 253 snowboarders) were included. Multiple logistic regression was performed. Most significant combinations of risk factors were calculated by inference trees. RESULTS: Alpine skiers: The following parameters were significant: risky skiing ($p=0.0365$), slow speed ($p=0.0008$), no experience with aggressive behavior on slopes ($p<0.0001$), new skiing/boarding material ($p=0.0228$), warm-up ($p=0.0015$), old snow ($p=0.0037$), powder snow ($p=0.0035$), drug consumption ($p=0.0044$), abstinence from alcohol ($p<0.0001$). The most significant risk factor combination in alpine skiers was: skiing with speed between 4 and 7 VAS, on icy slopes and not wearing a helmet. Snowboarders: The following parameters were significant: old snow ($p=0.0323$), bad weather/visibility ($p=0.0031$), slow speed ($p=0.0073$). The most significant risk factor combination in snowboarders was: snowboarding on icy slopes and not wearing a helmet. CONCLUSIONS: We conclude that several risk factors exist for sustaining a skiing or snowboarding injury. Being aware of the heterogeneity of the skiers and boarders population the reasons for accidents might - similar to road traffic - not be attributable to a single factor.

WE.100) CHILD CAR SEAT SAFETY LAWS AND KNOWLEDGE OF THE CAREGIVER: IS MORE EDUCATION NEEDED? : **Carmen J. Martinez-Martinez[1], Caroline M. Molins[1], Salvador E. Villanueva[1] : 1. Hospital de la UPR, Carolina, PR, USA.**

INTRODUCTION: As studies have shown, the majority of pediatric deaths could be prevented by appropriate use and knowledge of child car seat safety. By determining the level of knowledge amongst caregivers, more education can help minimize the mortality and morbidity of children due to car accidents. The objective of the study was to determine caregivers' level of child car seat safety knowledge in subjects presenting to the Emergency Department (ED) in Puerto Rico. METHODS: A cross-sectional survey was performed to determine caregivers' knowledge of child car safety seats presenting to an academic ED in Puerto Rico (PR). The recruitment of subjects took place at the ED in UPR hospital in Carolina, as a convenience sample. Self-administered questionnaires were given to all caregivers. It consisted of 21 questions that included knowledge of car seat safety guidelines, transportation state laws knowledge and source of education. Statistical analysis was performed using SPSS version

16.0. RESULTS: Two hundred and three subjects were enrolled in our study. The range of ages amongst subjects was 14 to 62. The mean score of correctly answered knowledge questions was 5.96 out of 12. When asked about the state law limit for a child to be in a car safety seat 85% were incorrect. Ninety percent of these subjects knew that children under the age of 12 should be seated in rear seat. The majority of the subjects correctly identified that children less than 1 year of age should be rear facing (83%) and that, children one year or older should be facing the front (83%). Subjects were unable to identify the safest place for a child in the rear middle seat. Statistically significant differences were obtained when analysis of variance was performed to determine the association of knowledge to the level of education ($p=0.042$) and income ($p=0.012$). CONCLUSION: We concluded that there is a low level of knowledge among caregivers of children less than 13 years old in reference to child car seat safety laws and guidelines in PR. Future efforts should be directed towards improving population knowledge about the correct use of child car safety seats.

WE.101) Trampoline related injuries: A review : **Sreejib Das[1] : 1. Emergency department, Ipswich Hospital UK, Ipswich, United Kingdom.**

INTRODUCTION: Trampoline related injuries have long been a topic of discussion since its first reporting by Zimmerman in 1956. Since then various authors have tried to study the various aspect of injury, including the type of equipment used, the body parts injured and the nature of fall causing the injury. Aims: To study the epidemiological features of trampoline related injuries among patients attending the emergency department of a busy district general hospital and its impact on resources. METHODS: A prospective study was done on consecutive series of patients attending emergency department. The period between 1st of June and 31st of July 2007 was chosen. All patients who attended the emergency department with trampoline related injury in the above mentioned period were included in the study. RESULTS: A total of 65 patients were treated for trampoline related injuries, 34 female and 31 males. The average age was 11.38 with a range from 2 yrs to 42 yrs. The mode was 9 yrs. The area of the body most commonly injured was the lower extremity 38% (25/65), followed by an upper extremity injury 36% (24/65), head and neck injury 12.3% (8/65), injuries to the trunk 7.6% (5/65) and facial injury 6% (4/65). The most common type of injury was soft tissue injury 66% (43/65) followed by fracture dislocations accounting for 24.6% (16/65) and laceration 3% (2/65). Nine percent (6/65) of patients were admitted either for head injury observation or for management of bony injuries.
16 patients fell off the trampoline causing the injury, while 26 patients sustained the injury as a result of direct collision. Flip or handstand was associated with head and neck injuries, or injuries to the trunk. Only 16 (24%) patients said that their trampoline was guarded by a net. CONCLUSION: Trampolining has been a popular sports among young children, however it seems that increasing number of adults and older children enjoy this sport. On comparing data from similar studies the number of patients admitted acutely with trampoline related injuries has remained steady over the last couple of years, despite warnings from ROSPA and AAOS.

WE.92) The Utility of Urine Ketones as a Screen for Diabetic Ketoacidosis in Hyperglycemic Patients : **Matthew N. Graber[1], Susan Watts[1] : 1. Texas Tech Health Science Center, El Paso, TX, USA.**

INTRODUCTION: Previous retrospective studies suggest that the assay for urine ketones (UK) is approximately 99% sensitive for the diagnosis of diabetic ketoacidosis (DKA) in hyperglycemic patients; thus a negative UK result obviates the need for further testing. However, as the chemistry of ketoacidosis has become clearer, concerns have been raised over whether UK assays are sensitive for the ketone species most commonly found in DKA. The objective of this study is to gauge whether this commonly used screening method is valid. METHODS: This prospective study was performed at a large, urban, university-affiliated hospital serving a mostly Hispanic and medically underserved population. Our institution's triage protocol allows for all diabetics and patients with signs of acute neurologic abnormality to have a stat glucose level (GLU) performed. Further, any patient with a GLU ? 250 mg/dl has a urinalysis and blood chemistry requested; venous gases are sent as necessary. To ensure that no eligible patients were missed, all ED triage GLU readings ? 250 mg/dl were forwarded to this study's authors on a regular basis. The diagnosis of DKA required two of three of the following: bicarbonate < 18 mEq/L; anion gap > 15 mEq/L; venous pH < 7.30. Patients missing essential data were not included in the final data set. RESULTS and CONCLUSION: Prior, retrospective studies evaluating UK as a screen for DKA suggest an excellent sensitivity implying that hyperglycemic patients with no UK require no further testing. However, our prospective study involving 254 patients suggested that in stable, hyperglycemic patients, UK is only 50% (95% CI 23-76) sensitive for DKA. Unfortunately, this is the very group that most needs a sensitive screen; ill appearing patients are more likely to receive a laboratory workup regardless of their UK findings. Using such an insensitive screen in the majority of our hyperglycemic patients risks missing the diagnosis of DKA and the consequent greater morbidity and mortality that accompanies a late or missed diagnosis. Therefore, we believe that UK has no role as a screening exam for DKA.

WE.93) Routine Chest Radiography for Febrile Solid Organ Transplant Patients (SOT): Is It Really Necessary? : Firat Bektas[1], Secgin Soyuncu[1], Ozlem Yigit[1], Gokhan Arslan[2], Murat Tuncer[3], Vefa Sayrac[1] : 1. Akdeniz University Emergency Department, Antalya, Turkey. 2. Akdeniz University Radiology Department, Antalya, Turkey. 3. Akdeniz University Nephrology Department, Antalya, Turkey.

Objective: Chest X-Ray has been a part of this evaluation for a long time, despite little data about its necessity. The goal of the study is to determine the necessity of routine chest radiography in SOT patients with fever in the ED settings.
Methods: This prospective, cross sectional study was performed in an ED. All SOT patients presenting to the ED with fever as a chief complaint were enrolled into the study. Fever was defined as having a single oral temperature of ?380C. Posterior-anterior chest X-Ray was taken from all study patients. All chest x-rays were evaluated by a professor of radiology. Chest x-ray reports were classified into three groups: normal, pneumonia (having pulmonary infiltrates diagnostic and suggestive of pneumonia), abnormal but not pneumonia. Primary outcome measure was to determine the necessity of routine chest radiography in transplant patients with fever in the ED settings.
Results: A total of 103 transplanted patients were assessed for eligibility during the two years study period and 77 patients were included in the study. Twenty six patients were excluded

from the study because of the following reasons: 8 patients did not give consent, 12 patients had previous enrollment during the study period and we were unable to obtain follow up data of six patients. Of the 77 study patients, 10 (13 %) patients were diagnosed as pneumonia. Existing patient anamnesis suggesting pneumonia (cough, sputum, dyspnea, chest pain and wheezing) was significantly different between two groups; n (%): 7 (70 %) (p=0.031), 5 (50 %) (p=0.037), 4 (40 %) (p=0.002), 4 (40 %) (p=0.004), 4 (40 %) (p=0.014) respectively. Patient's physical examination suggesting pneumonia was statistically different between two groups; n (%): 4 (40 %) (p=0.014), 2 (20 %) (p=0.043), 6 (60 %) (p=0.000), 3 (30 %) (p=0.002) respectively.
Conclusion: Routine chest X-Ray may be unnecessary in the initial diagnostic evaluation of the ambulatory SOT patients with fever. Among these patients, ordering the chest X-Ray may be limited to patients with fever and historical and physical examination findings suggesting pneumonia.

WE.94) Diagnosing pulmonary embolism – when do we do it : Ulf Martin Schilling[1] : 1. Accidents and emergencies, Linköpings university hospital, Linköping, Sweden.

Background: Pulmonary embolism still poses major problems in diagnosis. Final diagnosis often is made by pulmonary CT-investigation. The aim of this study was to analyze if emergent investigation rates were affected by daytime and day of the week.
Methods: During the years 2003 till 2008, all pulmonary CT performed between march and may at our university hospital were analyzed by the day of the week and the time of the investigation. Statistical analysis included the Chi-square and the paired Student's T-test, regarding probability levels <0.05 as significant.
Results: A total of 1228 pulmonary CT-scans were counted. The expected distribution of the scans was 1/7 on every day of the week, i.e. 873 during Monday to Friday and 349 from Saturday to Sunday. Between Monday and Friday 996 of 1228 CT-scans were performed, and from Saturday till Sunday 226 (?<0.001, p<0.01). For the emergency department, a total of 514 CT-scans were performed (407 between Monday and Friday, 107 Saturday and Sunday, expected 367 resp. 147, ns). Assuming an equal distribution of the number of attending patients and a continuous performance of CT-scans, it was expected that a 4.17% of CT-scans were performed every hour of the day. 702 (57.17%) of the investigations were performed between 0800 and 1630, 302 (31.78%) between 1630 and 2100, and 136 (11.07%) between 2100 and 0800. On an hourly base, a 6.72% of all investigations are performed each hour between 0800 and 1630, 7.05% between 1630 and 2100, and 1% between 2100 and 0800 (p0800-1630 vs 2100-0800 <0.001, p1630-2100 vs 2100-0800 <0.001).
Conclusion: There is a highly significant difference between the numbers of pulmonary CT scans performed between working days and weekends. As the number of scans ordered by the emergency department is relatively constant during all week, this difference seems to be caused by different diagnostic behaviour at the different wards. There was even found a highly significant difference between the ratio of pulmonary CT-scans performed during daytime and night time. The reasons for this remain uncertain. The impact of daytime dependent diagnostic patterns on patient safety remains speculative.

WE.95) Lactate is a Confirmatory Test in Aiding the Diagnosis of Epilepsy : M. Termizi Hassan[1], Collier Jim[1], John Ryan[1] : 1. Anaesthesiology Department, St. Vincent Hospital, Dublin 4, Ireland.

INTRODUCTION: Epilepsy is a common neurological condition affecting about 50 million people worldwide. Patients with depressed Glasgow Coma Scores (GCS) and suspected seizure activity present frequently to Emergency Departments (ED). Currently there is no confirmatory laboratory test that can be reliably used to diagnose a suspected seizure or differentiate it from non epileptogenic seizure activity. Aims: The aim of this study was to determine if serum lactate levels could be used to predict the likelihood of seizure activity as the cause of collapse in patients who present with a low Glasgow Coma Score, and to study the natural progression of an elevated lactate following suspected seizure activity. RESULTS: 34 patients were studied. Multiple logistic regressions displayed no significant association (p 0.166, 95% C.I. 0.29, 1.24) between lactate levels and seizures activity in epileptic patients. Data from the multiple sets of lactate levels showed a significant drop of lactate in the first hour and normalized within few hours. CONCLUSIONS: Lactate is frequently measured as a component of arterial and venous blood gases as part of the investigation for sick patients presenting to Emergency Department. In this study, we found no significant association between lactate level and seizure activity. However the normalisation of an elevated lactate after seizure like activity is more suggestive of anaerobic metabolism from seizure activity than an elevated lactate due to shock and poor tissue oxygenation.

WE.96) The Incidence of Contrast Induced Nephropathy in Patients With Normal Renal Function Receiving An Abdominal CT Scan : Antonia C. Quinn[1], Meir Dashevsky[1], Arun Subramanian[1], Richard Sinert[1] : 1. Emergency Medicine, SUNY Downstate , Brooklyn, NY, USA.

INTRODUCTION: Contrast induced nephropathy (CIN) is the third leading cause of acute renal failure in hospitalized patients. We measured the incidence and risk factors for CIN in Emergency Department (ED) patients with normal renal function who had a clinical indication for an intravenous (IV) contrast enhanced abdominal CT Scan (CT). METHODS: We conducted a prospective convenience sample of patients who had an IV contrast enhanced CT. We studied patients presenting to a university-based urban ED from 1/08-5/09. Inclusion criteria: ED patients 18 years of age or older with an initial normal creatinine (Cr) (Cr<1.5 mg/dL) who received a contrast-enhanced CT in the ED and had a repeat Cr in 48 hours. Exclusion criteria: Chronic dialysis patients, pregnant patients and those refusing consent for study. CIN was defined as a rise in serum Cr of 25% or an increase in Cr ? 0.5 mg/dL from baseline 48 hours after contrast. Data were reported as means ± standard deviations. Group comparisons were made by Students t-test (?=0.05, 2 tails). RESULTS: 83 patients (average age 54±18 (18-88 years)) (57% female) were studied. The incidence of CIN was 9.8% (95% CI, 4.8% to 18.3%). There was no significant (p=0.31) difference in age between CIN + (48.4±17.8 yrs.) and CIN - patients (55.1±18.4 yrs.). Patients with CIN had significantly (p=0.01) lower initial Cr (0.71 ±0.14 mg/dl) than those without CIN (1.01 ±0.31 mg/dl). GFR was significantly (p=0.004) higher in CIN + (133.1±55.0 ml/min/1.73m2) than in CIN– patients (94.0±32.4 ml/min/1.73m2). Patients with CIN compared to those without did not differ significantly (p>0.05) for baseline BUN, White Blood Cell Count (WBC), Hematocrit

(HCT), Bicarbonate (HCO3), systolic or diastolic blood pressure. No patients required renal replacement therapy or died. CONCLUSION: We found a significant incidence of CIN (9.8%) in patients with an initial normal renal function exposed to intravenous contrast that could not be predicted by age, lower GFR, elevated creatinine or any differences in BUN, HCT, HCO3, systolic or diastolic blood pressures.

WE.97) Hypoglycemia, an Uncommon but Real Complication of Standard Hyperkalmia Treatment. : Ying C. Huang[1] : 1. Department of Emergency Medicine, Chiayi Christian Hospital, Chiayi City, Taiwan.

Introduction: Hyperkalemia is life-threatening and requires immediate treatment. Mix 25 g glucose and 10 units regular insulin to give intravenously over 15-30 minutes are suggested as part of the standard treatment for hyperkalemia in the Advanced Cardiac Life Support (ACLS); however, no precaution has been mentioned for potential side effect. Some patients became hypoglycemic after treatment. We thus investigated our hyperkalemic patients and their response to treatment with insulin and glucose.

Methods: This is a tertiary transfer hospital serving over 90K emergency visits annually. We treat hyperkalemic patients based on the ACLS's recommendation. A cross-sectional, cohort, observation study was undertaken from May 2004 to April 2009. We collected hyperkalemic patients treated to review their demographics and co-morbidities that may predispose to hypoglycemia. We used multivariable analysis to check potential risks that may predispose to hypoglycemia.

Results: There were 160 patients treated for hyperkalemia. Seven cases were excluded and 153 patients were enrolled. There were 76 male and 77 female with age ranging from 41 to 96 years (median: 74, IQR 65~82). About their hyperkalemia, 56(36.6%) were mild, 63(41.2%) were moderate, and 34(22.2%) were severe. Most of them had multiple systemic illnesses while renal diseases were the leading co-morbidity: 21(13.7%) received replacemental dialysis, another 86(56.2%) had documented chronic kidney diseases. ED studies revealed elevated serum creatinine in 133(86.9%) patients, including 4(2.6%) acute renal failure. Seven(4.6%) patients were hypoglycemic 49 to 240 (median 79) minutes after insulin treatment and 5/7 were symptomatic. No risk factor could be identified that predisposed to the hypoglycemia after insulin and glucose treatment.

Conclusion: The risk of hypoglycemia is real after standard ACLS treatment of hyperkalemia with insulin and glucose. Most of them happened 1-2 hours after insulin treatment and were symptomatic. We should pay attention to potential hypoglycemia in hyperkalemic patients who receives insulin treatment, especially when their sensorium is impaired.

WE.98) Sickle Cell Disease in the Emergency Department
Predictors of Adverse Outcomes: A Prospective Cohort Study : Abdullah Alreesi[1], Ian Stiell[2], Nabil Alzadjali[1], George Wells[2], Alan Tinmouth[2], Asma Al-Belooshi[1], Amal Al-Shibli[1] : 1. Emergency, Sultan Qaboos University Hospital, Muscat, Oman. 2. The Ottawa Hospital Research Institute, Ottawa, ON, Canada.

INTRODUCTION: Current evidence does not provide a clear risk stratification strategy for sickle cell disease patients in the emergency department (ED). The goal of this study was to develop a better understanding of the clinical features among patients with sickle cell disease and to determine the risk factors for short term adverse events.
METHODS: We conducted a prospective cohort study of sickle cell disease patients presenting to a tertiary care ED over six consecutive months. All patients were assessed by emergency physicians during the ED visit. All the patients had a 2 week structured telephone follow-up or a chart review if they had a repeat ED visit within 2 weeks or admitted. The adverse outcomes were classified as a clinically significant outcome (death, cerebrovascular accidents, acute chest syndrome, sepsis, hyperhemolytic crisis and exchange blood transfusion) or not. We analyzed the predictors of adverse outcomes using descriptive statistics and multiple logistic regression.
RESULTS: Over six consecutive months, we enrolled 732 patients. Seventy-five patients had a clinically significant outcome and 42 had acute chest syndrome. Using multivariate analysis, we found nine statistically significant predictors of a clinically significant adverse outcome: a prolonged painful episode (OR 10.1; 95%CI 5.3-19.3), age less than 8 years (OR 2.4; 95%CI 1.001 -5.9), oxygen saturation less than 96% (OR 3.9; 95%CI 1.6-10.9), patient appearing toxic (OR 7.8; 95%CI 2.2-27.2), presence of chest crackles (OR 6.5; 95%CI 2.3-18.6), splenomegaly (OR 2.6; 95%CI 1.2-5.5), local limb tenderness (OR 0.2; 95%CI 0.08-0.7), hemoglobin less than 7 g/dL (OR 3.6; 95%CI 1.1-11.6), reticulocyte count more than 15% (OR 4.0; 95%CI 1.4-11.5).
CONCLUSION: Our study of a tertiary hospital emergency department found nine identifiable variables which can help to predict the possibility of developing a clinically significant outcome. This might be used in the future to risk stratify the sickle cell disease patients who presents to the emergency department and develop strategies to prevent those adverse outcomes.

WE.85) Emergency Resident Perceptions Regarding Competence, Adverse Events and Reporting to Supervisors: A Nationwide Survey : **Steven M. Friedman[1], Robert J. Sowerby[1], Ray Guo[1], Glen Bandiera[1] : 1. Emergency Medicine, University of Toronto, Toronto, ON, Canada.**

INTRODUCTION: Objectives: To characterize residents' perceptions of their clinical and procedural competence, and their attitudes, practices and perceived barriers to reporting these perceptions to their supervisors. METHODS: A web-based survey was distributed to residents via Canadian EM residency directors (excluding Quebec) by forwarding them a weblink with two weekly reminders. RESULTS: Of 220 residents contacted in 9/10 Canadian Royal College (FRCP)and 12/13 Canadian College of Family Physicians (CCFP-EM) EM programs, 82 (37.3%) completed all or part of the survey. Of these, 25 (30.5%, [19.9%, 41.1%]) agreed with, "I sometimes feel unsafe or unqualified with undertaking unsupervised responsibilities or procedures, but I do not report this to my senior physician" and 32/81 (39.5%, [28.2%, 50.8%]) had felt this within the past six months. Moreover, 34/82 (41.5%, [30.2%, 52.7%]) disclosed feeling not competent half the time or less. Residents worry about loss of trust,

autonomy or respect (n=38/80, 47.5%, [35.9%, 59.1%]) or reputation (32/80, 40.0 %, [28.6%, 51.4%]). Nights on-call (30/79, 38%, [26.6%, 49.3%]), admission decisions (13/79, 16.5% [7.6%, 25.3%]) and central line insertion (13/79, 16.5% [7.6%, 25.3%]) were frequently undertaken despite not feeling competent. Inexperience (n=40/77, 51.9%, [40.1%, 63.8%]) and feeling too busy (n=24/76, 31.6%, [20.5%, 42.7%]) were major contributors to adverse events for which residents felt some responsibility. Suggestions to improve reporting included encouragement to report without penalty (n =41/82, 50.0%, [38.6%, 61.4%]) and a less judgmental environment (n=32), (39.0%, [27.9%, 50.2%]). CONCLUSIONS: Residents frequently don't feel competent when undertaking unsupervised responsibilities. Barriers to reporting not feeling competent or adverse events relate to social pressures and authority gradients. Modification of the training culture might improve patient safety.

WE.86) Impact of the Four-Hour Emergency Department Throughput Target on Physician Training in England – and vice versa. : Ellen J. Weber[1], Suzanne Mason[2], Angela Carter[3] : 1. Emergency Medicine, University of California San Francisco, San Francisco, CA, USA. 2. School for Health and Related Research, University of Sheffield, Sheffield, United Kingdom. 3. Institute for Work Psychology, University of Sheffield, Sheffield, United Kingdom.

INTRODUCTION: The four-hour target for 98% of Emergency Department (ED) patients in England was implemented during the same year as changes to junior doctor training introduced through Modernising Medical Careers (MMC). Objective: To determine advantages and disadvantages of the four-hour target for training of doctors, and how MMC impacts the target. METHODS: Observational, cross-sectional, qualitative study. Between June-August 2008, we conducted 32 semi-structured face-to-face interviews with Lead Clinicians, Head Nurses, Business Managers, ED staff and trainees in nine acute Trusts in England (36,000-91,000 visits/yr) with different performances on the target. Themes were reflected back to interviewees for validation. One researcher coded interviews for all sites; for 25% of interviews, coding was reviewed by a second researcher. Using grounded theory, themes were considered salient if mentioned by multiple respondents at one ED or across sites. RESULTS: The majority of clinicians thought the target resulted in more negative than positive effects on training, most commonly citing: less time for one to one teaching; a focus on service delivery and management rather than using the patient as a teaching case; less independent decision making by trainees; and fewer procedures performed by junior doctors. A minority of clinicians felt the target had either no effect on training or was positive, because it forced junior doctors to synthesise cases earlier, and increased consultant presence on the shop floor. This group thought junior doctors received sufficient exposure to complex procedures. Respondents in all staff positions felt the new training model hampered the ED's ability to meet the target due to frequent turnover of junior doctors who were less experienced and also less aware of – and concerned about – the target. CONCLUSION: The four-hour target is perceived to have mainly negative effects on junior doctor training, and highlights areas for improvement in the MMC curriculum.

WE.87) Use of web log: a novel approach to enhance the educational environment of the emergency department : Mohammad Jalili[1], Gholamreza Sadeghipour Roudsari[1], Zia Hejripour[1], Amir Nejati[1] : 1. Emergency Medicine, Tehran University of Medical Sciences, Tehran, Tehran, Iran.

INTRODUCTION: Highly demanding circumstances of the emergency department (ED) sometimes affects interactions between the people who work there. Busy work hours may make it difficult for people to communicate effectively, which in turn can lead to misunderstanding and adversely influence the educational environment. We have launched a web log in order to provide a virtual space for communication of our residents with each other and with the faculty. Aim: The purpose of this study was to determine the opinions and attitudes of the residents regarding the web log and how it has affected the educational environment of our ED. METHODS: A self administered questionnaire was distributed among all 36 residents of our department. Six questions regarding their use of the web log and 3 questions regarding their perception of the impact of the web log on the educational environment were asked.
RESULTS: Eighty-three percent of the respondents knew the address of the web log. Of the 64% of the residents who visited the web log, 37% did so at least every other day. Thirty percent of the residents stated that they had posted a new topic and 44% had commented on an already posted topic. Fifty-eight percent stated that they had benefited from the information provided through the web log. Only 14% disagreed with the idea that use of this web log has positively affected the relationship between residents and between residents and faculty. About 80% contended that the web log has positively influenced the educational environment.
CONCLUSION: Providing novel media for communication of the residents and faculty can improve the atmosphere of the emergency department.

WE.88) Development of a Multidisciplinary Emergency Medicine Simulation Course in Tuscany via International Collaboration: Measurements of Quality and Effectiveness : Stefania Nelli[2], Paola Gioachin[2], Peter Weinstock[4], Laura Galli[1], Liana Kappus[3], Gian Franco Gensini[1], Riccardo Pini[1] : 1. University of Florence, Florence, Italy. 2. Careggi University Hospital, Florence, Italy. 3. Children's Hospital Boston Simulator Program, Boston, MA, USA. 4. Harvard Medical School, Boston, MA, USA.

INTRODUCTION: High fidelity simulation (HFS) has become a popular teaching technique to improve diagnostic and technical skills of physicians working within stressful clinical environments such as the Emergency Department (ED) while avoiding harm to real patients. More recently, HFS is being used to provide opportunities for practice of collaborative teamwork (Crisis Resource Management, CRM) among acute care teams. Aim: To implement and measure effectiveness of an HFS ED CRM course taught by instructors formally trained in simulation and debriefing. METHODS: A multidisciplinary HFS ED CRM course was developed at the Florence Medical School Simulation Center. Course facilitators (23 physicians and 10 nurses) completed comprehensive workshop training in simulation and debriefing on-site in Florence by the Children’s Hospital Boston Simulator Program. The HFS CRM course was designed as three 4-hour sessions including a total of 8 HFS scenarios. 2 physicians and 3 nurses who typically comprise a native team managed each scenario. Post-course questionnaires scored each scenario and the course as a whole as well as course impact on the staff’s daily teamwork activities; answers were coded with a Likert scale 1 to 5.
RESULTS: Over a 6 month period, 68 physicians and 104 nurses participated in the HFS ED CRM course. Of 172 post-course questionnaires, all were >95% completed. HFS quality and

authenticity were ranked highly by both physicians (4.5 and 4.4) and nurses (4.6 and 4.5). Physicians and nurses felt that the scenarios were relevant to Emergency Medicine (4.8 and 4.6, $p<0.0001$) and that simulation and debriefings were managed well by the trained facilitators. Greater than 70% of respondents answered “much” or “very much” regarding the amount that simulation improved their daily work activities. CONCLUSIONS: A high quality emergency medicine CRM program can be developed within a relatively short period of time via international collaboration. The course is well received and is deemed useful to everyday individual and team practice by ED clinicians.

WE.89) Content prioritisation of the College of Emergency Medicine specialty curriculum: an exploratory study using a modified Delphi approach : **Darren A. Kilroy[1], Michael Clancy[1] : 1. College of Emergency Medicine, London, United Kingdom.**

INTRODUCTION: Our aim was to determine the opinion in relation to the educational utility of topic prioritisation within the clinical postgraduate curriculum of the College of Emergency Medicine. METHODS: A modified, iterated three-round Delphi technique was administered to a participant panel of 40 randomly selected consultants in Emergency Medicine from across the United Kingdom. Free text was used in order to generate issues for opinion. Likert scales were then employed to refine this opinion into a series of key position statements in relation to the prioritisation of curricular materials. RESULTS: The overall response rate was 50%. Group opinion favoured a strategy of curricular prioritisation. The preferred basis of this prioritisation was one founded upon a range of clinical indicators, primarily reflecting the importance of curricular knowledge when applied to high-acuity pathology. Applying a prioritisation based upon likely postgraduate exit examination content, or upon potential litigation ensuing from a poorly-managed case, was not supported. CONCLUSION: Application of a structured consensus methodology, incorporating free text and Likert scales, allowed expert opinion to be generated in relation to postgraduate curricular prioritisation. A similar approach can usefully be employed to determine other high-level strategic educational challenges.

WE.90) A Comparison of Resident Productivity: Patients per Hour and Relative Value Units per Hour for EM and EM/IM Residents : **Neil Jasani[1], Brian Levine[1] : 1. Emergency Medicine, Christiana Care Health System, Newark, DE, USA.**

INTRODUCTION: Emergency Medicine (EM) and Emergency Medicine/Internal Medicine (EM/IM) residency programs track the number of patients treated by residents as a gauge of resident experience and productivity. This data has been reported as patients per hour (Pts/Hr) and relative value units per hour (Rvus/Hr). Objectives: It has been assumed that resident productivity and clinical experience for EM and EM/IM residents is comparable. Recent reports in the literature have cited resident productivity for EM residents. No one to date has reported on a comparison of productivity between the EM and EM/IM residents. METHODS: This was a retrospective observational study conducted from 1/1/06 to 1/1/07 and involved 28,892 patient encounters at a PGY 1-3 EM and PGY 1-5 EM/IM programs with an annual census of 140,000 visits. There are 12 EM and 3 EM/IM residents per year. The number of

Pts/Hr and Rvus/Hr was tabulated for the groups (EM 1 vs. EM/IM 1 and 2; EM 2 vs. EM/IM 3 and 4; and EM 3 vs. EM/IM 5) and is reported as mean with standard deviation (SD).
RESULTS:
Pts/Hr Rvus/Hr
EM 3 1.16 + 0.12 3.10 + 0.24
EM/IM 5 0.96 + 0.07 2.50 + 0.09
p value 0.015 0.001

EM2 0.90 + 0.12 2.65 + 0.31
EM/IM 3and 4 1.00 + 0.12 2.65 + 0.30
p value 0.141 0.991

EM 1 0.87 + 0.14 2.06 + 0.33
EM/IM 1 and 2 0.89 + 0.11 2.27 + 0.47
p value 0.887 0.263
CONCLUSIONS: There was no statistically significant difference with respect to Pts/Hr and Rvus/Hr when EM 1 group was compared to EM/IM 1 and 2 as well as EM 2 group compared to EM/IM 3 and 4. There however was an observed difference in both Pts/Hr and Rvus/Hr when the EM 3 group was compared to the EM/IM 5 group.

WE.91) An Analysis of Resident Productivity: Correlation Between Patients per Hour and Relative Value Units per Hour : **Neil Jasani[1], Brian Levine[1] : 1. Emergency Medicine, Christiana Care Health System, Newark, DE, USA.**

INTRODUCTION: Emergency Medicine (EM) and Emergency Medicine/Internal Medicine (EM/IM) residency programs track the number of patients treated by residents as a gauge of resident experience and productivity. Often this data has been reported as patients per hour (Pts/Hr) and relative value units per hour (Rvus/Hr). Objectives: It has been proposed that relative value units reflect patient acuity and therefore allow for better assessment of resident experience than the total number of patients seen. Recent reports in the literature cite resident productivity both in terms of Pts/Hr and Rvus/Hr. No one to date has reported on a correlation between these two parameters. METHODS: This was a retrospective observational study conducted form 1/1/06 to 1/1/07 and involved 28,892 patient encounters at a PGY 1-3 EM and PGY 1-5 EM/IM programs with an annual census of 140,000 visits. There are 12 EM and 3 EM/IM residents per year. The number of Pts/Hr and Rvus/Hr was tabulated for the groups and is reported as mean with standard deviation (SD). Data was analyzed using Pearson Correlation coefficient (r). RESULTS:
Pts/Hr (SD) Rvus/Hr (SD) Correlation (r)
EM 1-3 0.98 + 0.18 2.60+0.53 0.88*;
EM/IM 1-5 0.95 + 0.11 2.47 + 0.38 0.84*;
Combined 0.97 + 0.17 2.56 + 0.49 0.87*; (EM and EM/IM)
* Correlation is significant at $p < 0.01$ level
CONCLUSIONS: There was a significant correlation between Pts/Hr and Rvus/Hr. Therefore, Pts/Hr is an as equally effective method as Rvus/Hr in tracking resident productivity.

WE.26) Analysis of Emergency Medicine Incidents and Completed Closed Medical Negligence Claims. : Anne Marie Oglesby[1] : 1. Clinical Indemnity Scheme, Dublin , Ireland.

INTRODUCTION: Within the public health service in the Republic of Ireland, the specialty of emergency medicine accounts for 4.7% of all adverse patient events reported onto the national clinical incident reporting system. However, emergency medicine is responsible for 15% of all medical negligence claims. METHODS: The focus of this study was to review those claims that were settled by clinical claims managers in the Clinical Indemnity Scheme. Settled claims are those claims that were settled out of court and as such may offer opportunities for learning. RESULTS: Of all the closed claims (n=203), 53.6% did not proceed to claim. 25% were settled out of court. Of these, 59% were as a result of a diagnosis event; 94% as a result of failure to diagnose. The in-depth analysis of these claims indicates that 74.2% were fracture and musculo-skeletal related. Closed claims analysis revealed that the SHO grade was most likely to be involved in a claim at 74% versus registrar at 14% and consultant at 8%. Failure to diagnose fractures occurred most commonly in the SHO grade at 32%. 57% of these errors in the SHO grade had a primary root cause specifically related to staff skill / knowledge / competence. CONCLUSIONS: In the specialty of emergency medicine missed diagnosis is the most common type of claim. SHO's were most likely to be involved in a claim. The predominant type of claim was due to missed fractures, therefore an increased emphasis on-going education and feedback regarding accurate radiological interpretation is essential for all emergency medicine rotations. Follow up with more senior colleagues, timely radiologist reviews and comprehensive reporting and follow up mechanisms need to be developed between radiology and emergency medicine. A standardised reporting system is crucial so that missed fractures identified by other personnel (i.e. radiology consultant) are immediately alerted to the relevant emergency department physician for immediate action and follow up.

WE.27) Inter-rater agreement comparison between two emergency department triage scales : Katarina E. Göransson[1], Anette von Rosen[1] : 1. Department of Emergency Medicine, Karolinska University Hospital Solna, Stockholm, Sweden.

INTRODUCTION: Emergency department (ED) triage scales are being developed throughout the world. In many European countries, including Sweden, there are few mandatory triage scales on in use on a national basis, in contrast to other countries. During the last three years, two newly developed triage scales have emerged in Sweden, of which the Adaptive Process Triage (ADAPT), is one. ADAPT is a five level triage scale where the triage nurse allocates the acuity rating based on chief complaints and vital signs. ADAPT contains 74 chief complaint algorithms and cut off levels for vital signs. The triage level is determined by the parameter (vital sign or chief complaint) that receive the highest urgency. Aim: This prospective, comparative study examined the inter-rater agreement in two Swedish ED triage scales. METHODS: The study was carried out at a level one trauma centre in Sweden. Data was collected twice, 2006 and 2008, using the ED's locally developed triage scale and ADAPT respectively. Registered nurses performing triage at the ED individually triaged 19 patient scenarios using the two scales (45 and 30 nurses respectively). Data were analyzed using percentage agreement, unweighted ? values and modal (the most common) triage level.

Comparison of level of overall exact agreement between the scales was made using Sign test. RESULTS: The overall exact agreement among the nurses was 64% (? value 0.529) and 59% (? value 0.472) using the locally developed scale and ADAPT respectively. Modal outcome for the locally developed scale ranged from 53.3 to 95.6% and when using ADAPT ranged from 61.5 to 100%. There was no significant difference (p=0.65) of level of overall exact agreement between the two triage scales. Dispersion of the nurses' triage decisions across several triage levels decreased when using ADAPT, and exact agreement (100%) was reached for two scenarios. CONCLUSION: The two triage scales showed moderate agreement. When using ADAPT, the nurses' dispersion of triage decisions decreased, indicating that ADAPT generates more reliable triage decisions.

WE.28) A Best Practices Model for International Volunteer Selection by Non-Governmental Organizations : Amy H. Cheng[1], Lisa Puchalski Ritchie[2], David Zakus[3] : 1. Division of Emergency Medicine, University of Toronto, Toronto, ON, Canada. 2. Department of Medicine, Division of Emergency Medicine, University Health Network, Toronto, ON, Canada. 3. Dalla Lana School of Public Health & Department of Health Policy, Management and Evaluation, Faculty of Medicine, University of Toronto, Toronto, ON, Canada.

INTRODUCTION: As International Emergency Medicine becomes increasingly popular, the number of emergency physicians who volunteer on international academic exchanges and humanitarian assistance programs will increase. It is thus important to ensure that such international initiatives, the majority of which are organized by non-governmental organizations (NGOs), are effective. Research suggests that a volunteer's motivation and skills are critical for an initiative's success, but it's unclear what other traits are also important. Furthermore, there are no current guidelines on effective methods that can be used by NGOs to select for quality volunteers to ensure program success. OBJECTIVE: To develop a best practices model for effective selection of volunteers for work on international projects organized by NGOs. METHODS: Semi-structured telephone interviews were conducted with staff volunteer managers with a major role in volunteer selection from international NGOs. Twenty-nine staff from 25 NGOs was interviewed. Subjects were asked to identify volunteer traits that predicted a project's success and to describe their organizations' volunteer selection process, particularly how traits are assessed. Interview data were reviewed and common themes extracted. Resultant themes were compared, descriptive labels agreed on and a general selection model was developed. RESULTS: Seven common desirable volunteer characteristics were found: flexibility, motivation, commitment, cultural competence, professional experience, group behavior and maturity. Based on our analysis of the subjects' responses, we propose the following volunteer selection model: An initial screen consisting of a standard application form, CV, references, medical and police clearance, and proof of technical competencies; a second stage consisting of an interview and skill testing questions; and a final stage to match the volunteers' motivations and skills with their job responsibilities and the working culture of the overseas partner. CONCLUSIONS: The proposed model will help NGOs to select quality overseas volunteers to ensure optimal program effectiveness.

WE.77) Mortality in an Emergency Department : Maria Jesus Lopez[1], Silvia Minguez[1], Alfons Aguirre[1], August Supervia[1], Francisco del Baño[1], Carlos Clemente[1], Susana Sanchez[1], Isabel Campodarve[1] : 1. Emergency Department, Hospital del Mar, Barcelona, Barcelona, Spain.

INTRODUCTION: OBJECTIVE: To assess the most common disorders leading to death in our emergency department (ED) and whether or not these were expected deaths. METHODS: Retrospective descriptive study of patients who died in ED between January-December, 2008. We attended 70168 patients, with 193 deaths. Main and secondary causes of death were analyzed as well as whether a fatal outcome was expected or not. Variables recorded included age, age interval, sex, main cause of death (IDC-10), and whether death was expected or not. RESULTS: The 193 patients who died in the ED accounted for a mortality rate of 0.27% of all patients attended. 96 patients were women (49.7%) and 97 (50.2%) men, with a mean age of 78.6 (range 26–97) years. Age group 65–84 years accounted for the highest number of deaths. The diagnostic ICD-10 group causing death more frequently was IX (cardiovascular diseases) with 26.9% followed by group X (respiratory diseases) 19.1%, group V (mental disorders) 10.8%, group I (infectious diseases) 8.8%, and group II (neoplasms) 6.7%. These percentages varied according to ages of the subjects. In patients aged 40-65 years, neoplasms and infectious diseases were the most frequent causes, accounting for 15% of the cases each. In patients aged 65-84 years, cardiovascular disorders were the most frequent (21.4%). In patients older than 85 years, diseases of the respiratory system were the most frequent. In 17 cases judicial necropsy was performed. In 146 cases (74%), deaths were expected, 52 (26.9%) were caused by a life-threatening clinical course of the main disorder despite treatment prescribed. Terminal diseases, in most cases due a non-neoplastic condition, were recorded in 57 (19.8%) cases. CONCLUSIONS: The majority of patients who died in the ED were in the oldest segment of the population, which is consistent with the current trend of institutionalization of terminal or very ill patients.
Cardiovascular diseases were the most frequent cause of death. Malignant tumors accounted for the third cause (second cause in other ED services and statistics in our community), which may be in relation to our circuits of oncological care. The majority of deaths were predictable.

WE.65) The Myth of the Inappropriate Attender : Andrew D. Smith[1], Daniel Tallon[1], Alister McIlwee[1] : 1. ED, Ulster Hospital, Dundonald, Belfast, United Kingdom.

INTRODUCTION:Emergency Department (ED) staff often feel that a large proportion of time is spent dealing with non-emergency attendances. "Inappropriate attenders" are patients who could have been appropriately managed by another healthcare provider. Reasons for such attendances include perceived General Practitioner unavailability, ED waiting time targets and patient difficulty ascertaining the severity of their illness. We hypothesise that the actual number of "inappropriate attendances" to our department is relatively small. METHODS: Patient notes from all attendances to an urban ED from 19th to 25th April 2009 were reviewed. The following details were logged for any patient deemed to be an "inappropriate attender"- presenting complaint, gender, time of presentation,
method of referral, investigations performed/if appropriate, final diagnosis and disposal. RESULTS: 43 (2.7%) of 1579 patients were felt to be inappropriate attenders by the investigating team. Most of these patients had either ENT problems (25.6%) or back pain (14%). The average number of previous attendances to the department for this group of patients was 11 (range 0-171). 48.8% of the patients were male and 51.2% were female. 39.5%

patients presented outside the hours of 9am-5pm. Most inappropriate attenders self-referred (58.1%) and of the remainder 18.6% were accompanied by a parental guardian, 16.3% were referred by their GP and 7% attended via emergency ambulance. 20.9% patients had investigations carried out in the ED: blood tests, an x-ray or an ECG. All of these investigations were considered inappropriate. 86% of patients were discharged from the ED, 14% were referred to their GP and one patient was referred to gynaecology. CONCLUSION: EDs provide appropriate and popular healthcare provision. Inappropriate attendance is often cited as a reason for overcrowding in the ED. However given the low rate of inappropriate attendance demonstrated in this study health promotion campaigns which attempt to divert patients from the ED are unlikely to be economically viable at present.

WE.66) Correlation between triage acuity and measures of crowding in a pediatric emergency department : James Graham[1], Steve Shirm[1] : 1. Pediatrics, Univ of Arkansas, Little Rock, AR, USA.

INTRODUCTION: Emergency department crowding is an increasingly serious problem. It has been theorized that too many nonurgent patients seeking care in the emergency department is an important cause. More recent evidence suggests that increases in the number of sicker patients, and particularly admission boarding, is a more important root cause. The purpose of this study was to examine possible correlations between numbers of nonurgent and emergent patients seeking care in a pediatric emergency department with measures of crowding. METHODS: Using historical census data (1998-2006) from the emergency department at Arkansas Children's Hospital derived from the hospital information system, scatter plots were prepared of number and percent of emergent patients (based on triage acuity) vs. ED length of stay (LOS) and left without being seen (LWBS) rates; as well as number and percent of nonurgent patients vs. LOS and LWBS. Correlation coefficients were calculated on the scatter plots. RESULTS: Strong correlations were found between the number of emergent patients and LOS (R2=0.78) and LWBS (R2=0.90) with increased LOS and LWBS with increased numbers of emergent patients. Good correlations were found between the number of nonurgent patients with both LOS (R2=0.75) and LWBS (R2=0.71) with lower LOS and LWBS in years with increased number of nonurgent patients. CONCLUSION: Strong correlations were found between increasing number of emergent patients with measure of crowding, such as LOS and LWBS. This data would suggest that crowding is more strongly associated with increased numbers of sicker patients rather than nonurgent patients.

WE.67) Consultation Patterns in an Emergency Department of a Tertiary Care Hospital : Nadeem U. Qureshi[1] : 1. Emergency Medicine, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.

INTRODUCTION: Consultation is an important aspect of ED practice. Consultation frequency, timelines, admission rates contribute to ED dynamics significantly. Limited data is available on this subject. We conducted this study to evaluate consultation patterns and admission rates in a tertiary care hospital setting in Saudi Arabia. METHODS: A prospective study was performed at KFSHRC DEM in 2009. Data was collected from the emergency physician and nursing charts. Every patient's visit details were recorded from the time of

arrival to discharge. RESULTS: Figure 1. Illustrates consultation patterns and admission rates with relation to Canadian Triage Acuity Scale Category (CTAS) of the patients. Using Chi-square there was significant association noted between consultation patterns and CTAS category ($P < 0.0001$). Average length of stay between the CTAS categories was significant where category 1 had the highest average length of stay and category 5 the lowest ($p<.0001$). Admission rates were noted to be 46.05% in the consulted group. CONCLUSION: Consultation patterns and admission rates correlated with CTAS category. CTAS 1, 2, 3 witnessed a high consultation rate (37%-72%) compared to 4%-9% for CTAS 4 and 5 category. This translates to increase length of stay for ED patients where proportion of CTAS (1,2,3) patients is high. This data can be used to improve patient flow in ED, shorten duration of stay and reduce overcrowding.

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		4259 Patients		
CTAS 1 7 (0.16%)	CTAS 2 175 (4.11%)	CTAS 3 1111(26%)	CTAS 4 2552(59.92%)	CTAS 5 414(9.72%)
5 (71.43%)	90 (52.02%)	413 (37.61%)	232 (9.22%)	15 (3.69%)
4 (57.14%)	50 (28.57%)	186 (16.76%)	54 (2.12%)3	3 (0.72%)

Figure1: Consultation Patterns with relation to Canadian Triage Acuity Scale Category (CTAS) of the patients. 1st row shows the total number of patients in each CTAS category; 2nd row shows the number of consultations in each group; 3rd row shows the number of admission in each category.

WE.68) Assessment of the Appropriateness Evaluation Protocol (AEP) as a predictor of severity for inpatient admission through an Emergency Department : **Eric Revue[1], Virginie Papillon[2], Agnes Carnet[1], Pascal Leclerc[1], François Delefosse[1], Jorge Miranda[1], Jean Marie Brunet[1], Boussaad Djerroud[1] : 1. Emergency Department Victor Jousselin's Hospital, Dreux, France. 2. Quality Department Victor Jousselin's Hospital, Dreux, France.**

INTRODUCTION: Bed management is a daily problem in many Emergency Departments, particularly with overcrowding. The Appropriateness Evaluation Protocol (AEP) is composed of descriptive, physiologic variables that provide a probability of hospital admission as an index of severity. Objectives: To evaluate the predictive ability of AEP as a valid, reliable and clinical instrument to identify patients at risk for acute medical illness and hospitalization through the ED. METHODS: Prospective observational cohort study of 711 consecutive adult patients who visited our ED (42000 visits/year), during 2 months. Clinical and social data, age, sex, pathological variations of vital parameters, rate of readmission to the hospital within 7 days of discharge from the ED, early ED revisit, and hospital admission were analyzed. We provided a recalibration of the AEP score (scale A-G). Patients defined as high-risk (score A or B) require subsequent ED use and hospital admission. For scores D-E-F-G inpatient admission was not necessary and was analyzed. RESULTS: Out of the 711 patients, 128

(18%) patients aged 15 to 98 (mean age 62,1) were admitted to the hospital. A majority (90%) was relevant and adequate. 84 (65,6%) had A or B criteria. 9% had criteria C/D: General Practitioner's demand (3%) or social context (6%). Readmission rates in the 7 following days were <1%. Discussion: Several authors have chosen existing physiologic scoring systems, originally designed for application in the non-ED setting: hospital length of stay, inappropriate hospital days, need for post-discharge services, hospital readmissions. We evaluated the AEP's parameters to assess patient's characteristics admitted after the ED visits and validated a useful and reproducible score predicting hospitalization through the ED. CONCLUSION: The AEP can be used as a screening test to identify patients who have an increased risk of hospitalization and could be a helpful tool to ED overcrowding. An additional survey on the length of stay, unscheduled readmissions, admittance in medicine wards and is in progress.

WE.69) Emergency Department Crowding is Associated with Reduced Patient Satisfaction Scores : Karis Tekwani[1], Brian Sayger[1], Chintan Mistry[1], Erik Kulstad[1] : 1. Advocate Christ Medical Center, Chicago, IL, USA.

INTRODUCTION: Emergency department (ED) crowding has been shown to negatively impact patient outcomes; however, few studies have addressed the effect on patient satisfaction. We sought to determine associations between patient satisfaction and crowding, as measured by ED occupancy rate, EDWIN scores (a commonly used ED crowding measure), and hospital diversion status. We hypothesized that there would be an inverse relationship between patient satisfaction and crowding. METHODS: We reviewed all patient satisfaction surveys returned by patients visiting our ED over an 8 month period. We recorded all mean satisfaction scores, and obtained ED occupancy rate, EDWIN score, and hospital diversion status over each 8-hour shift from data archived from our electronic tracking board. We performed univariate and multivariate logistic regression analysis to determine the effects of crowding and diversion on the odds of achieving hospital goals in satisfaction score (mean ?85). RESULTS: A total of 1591 surveys were returned over the study period, which included a total of 497 8-hour shifts. Mean satisfaction score was 78, (SD ± 16), and mean occupancy rate was 123%, (SD ± 31%). Lower satisfaction scores were associated with both increased average ED occupancy rate (OR 0.32, 95% CI 0.17 to 0.59, p<0.001) and with increased EDWIN score (OR 0.05, 95% CI 0.004 to 0.55, p=0.015). Hospital diversion resulted in slightly lower mean satisfaction scores that were not significant (OR 0.62, 95% CI 0.36 to 1.05). In multivariable analysis controlling for hospital diversion status, ED occupancy rate remained a significant predictor of poor patient satisfaction (OR 0.37, 95% CI 0.18 to 0.77, p=0.008). CONCLUSIONS: Increased crowding as measured by ED occupancy rate and EDWIN scores was significantly associated with reduced patient satisfaction. Our study suggests yet another negative impact resulting from ED crowding.

WE.70) Individual Case Management to Reduce the Impact of Frequently Attending Patients in the Emergency Department : Alastair Newton[1], Shah Jalal Sarker[3], Nicola Drake[2] : 1. Emergency Department, Royal Alexandra Hospital, Paisley, United Kingdom. 2. St Thomas' Hospital, London, United Kingdom. 3. King's College, London, United Kingdom.

INTRODUCTION: Aim: to investigate the impact of individual case management of frequently attending patients in the emergency department. METHODS: A prospective cohort study was carried out in the emergency department (ED) of a large inner-city hospital. 32 adult patients were identified by medical or nursing staff as suitable for inclusion in the project. There was no prerequisite minimum number of attendances for inclusion. After extensive review of both the ED records and hospital case records an individual care plan was devised for future attendances. Number of ED attendances, number of hospital admissions and number of investigations (radiology and blood tests) were collected from the electronic patient record system and recorded for the 12 months prior to and the 12 months after the introduction of the care plan. The primary outcome measure was a reduction in the number of hospital admissions. As this would be affected by number of ED attendances we compared the percentage hospital admission per ED attendance. Secondary outcome measures were a reduction in number of investigations and number of ED attendances. Data were analysed using Wilcoxon signed ranks test. RESULTS: In the 12 months prior to introduction of the individual care plans the 32 patients studied accounted for a total of 858 ED attendances and 209 admissions to hospital. In the 12 months after introduction of the care plans the total number of ED attendances fell to 517 with only 77 hospital admissions. The median number of hospital admissions (as a percentage of ED attendances) fell from 18.8% to 7.1% (p=0.014) after introduction of the care plan. There were also reductions in the median number of ED attendances (19 v 5, p=0.001), median number of radiological investigations (4 v 1, p=0.001) and median number of blood investigations (55 v 12, p<0.001). Results are summarised in table 1.
CONCLUSIONS: Individual case management for a carefully selected group of patients who frequently attend the emergency department can result in a decrease in the number of hospital admissions, number of ED attendances and number of investigations.

Table 1 Outcome measures before and after introduction of management plan

Characteristics	Pre-management plan	Post-management plan	P-value
	Median (IQR)	Median (IQR)	
Emergency Department Attendance (EDA)	19 (23.5)	5 (16)	0.001
Hospital Admission (HA)	4 (8)	1 (3)	<0.001
% of HA in terms of EDA	18.8 (37.8)	7.1 (31.4)	0.014
Number of radiology tests	4 (10)	1 (5)	0.001
Number of blood tests	55 (105)	12 (27)	<0.001

WE.71) Emergency department crowding prolongs time to antibiotics in febrile neonates : Steve Shirm[1], Steven Bowman[1], David McLario[1], James Graham[1] : 1. Pediatrics, Univ of Arkansas, Little Rock, AR, USA.

INTRODUCTION: Emergency department (ED) crowding (EDC) is an increasingly common

problem and has been called a crisis by the Institute of Medicine. EDC results in lower satisfaction, but there is also evidence that EDC may increase morbidity for certain time sensitive emergency conditions. Evaluation of febrile neonates is commonly performed in the ED to identify those with serious bacterial infections and the timeliness of that evaluation and subsequent administration of antibiotics is considered clinically important. Objective: The purpose of this study was to examine whether EDC is associated with increased time to antibiotic administration for febrile neonates presenting to the ED. METHODS: The ED of Arkansas Children's Hospital installed a computerized tracking board system in October, 2007. We searched the information system to identify all patients aged 30 days and under who had either a dose of ampicillin or a charge for a lumbar puncture tray. Febrile neonates who presented to the ED between October, 2006 and May, 2008 were included. The emergency department chart was reviewed for additional information. The study was reviewed and approved by the institutional IRB. RESULTS: There were 108 neonates who presented to the ED with fever during the study period. Neonates presenting to the ED when the ED was 20% over capacity had longer time from arrival until antibiotics were administered (255 vs. 218 minutes, $p<0.02$). When the ED was at 50% overcapacity, the neonates had an even longer time to antibiotics (265 vs. 225 min, $p=0.038$). There was no difference in hospital length of stay between those who presented during EDC and those who presented when there was not EDC. Hospital charges were higher in the 20% EDC group, but the difference was not statistically significant ($8908 vs. 24,966). CONCLUSIONS: Emergency department crowding is associated with increased time for febrile neonates to have their possible sepsis evaluation and have antibiotics administered. EDC is not only a satisfaction issue, but may also affect factors related to patient safety or outcome, such as timeliness of antibiotic administration.

WE.72) Prospective Validation of Access Block Occupancy ("Boarder Count") as a measure of Overcrowding : **Drew B. Richardson[1] : 1. Emergency Department, Australian National University, Garran, ACT, Australia.**

INTRODUCTION: Previous study has shown that a count of patients in ED for prolonged periods waiting for inpatient beds (“boarders” in North America, “access block patients” in Australasia) is associated with measures of ED dysfunction and thus may represent overcrowding. This study aimed to validate such a count as an overcrowding measure. METHODS: Prospective descriptive study over 20 weeks from 23-Jun-2008 in a mixed tertiary ED with 52000 annual census. The number of patients in ED awaiting inpatient beds who already had total ED time in excess of 8 hours (“access block occupancy”, ABO) at the start of each hour was derived from the ED information system and each hour was assigned to 1 of 4 ABO groups based on quartiles for that hour of the day in a previous derivation study. The ABO group was assessed as an overcrowding measure by comparing it to standard measures of ED function. RESULTS: The validation study had higher ABO than the derivation study (11% of hours in lowest group, 48% in highest). There were marginally more presentations during hours of higher ABO group (6.0/hr in lower two groups, 6.2/hr in higher) but no difference in admission rate (34.2% in lowest group, 34.2% in highest), or triage category distribution. ABO group at the start of the hour of patient arrival was directly related to subsequent waiting time (1:07 (95%CI 1:03-1:11) in lowest group, 1:34 (1:32-1:37) in

highest), did-not-wait rate (8.0% in lowest group, 12.5% in highest, P<10E-10), and probability of spending 8 hours or more in ED when needing an inpatient bed ("access block", 48% in lowest group, 58% in highest, P<0.0003). CONCLUSIONS: Access Block Occupancy ("Boarder Count") is a simple real-time figure which represents overcrowding. The causes of an increased ABO lie largely outside the ED but it is weakly associated with increased demand and strongly associated with recognized measures of dysfunction. It should be validated in other settings.

WE.73) Development and Validation of the Excess Mortality Ratio-Based Emergency Severity Index : Sang Do Shin[1], Ki Jeong Hong[1], Kyoung Jun Song[1], Chang Bae Park[1] : 1. Emergency Medicine, Seoul National University Hospital, Seoul, Korea, South.

INTRODUCTION: Noting the lack of a feasible and objective method to compare the severity of emergency patients, we developed and validated the Excess Mortality Ratio-based Emergency Severity Index (EMR-ESI). METHODS: We used 3 datasets; 1) Derivation DB (The National Emergency Department Information System (NEDIS) database between JAN 2005 and DEC 2007 for derivation of EMR-ESI), 2) External DB (NEDIS database between JAN to JUN 2008), and 3) Comparison DB (Single Adult ED database from JUL to DEC 2008 using Emergency Severity Index(ESI)). We obtained hospital mortality corresponding to the initial chief complaint codes on the basis of Unified Medical Library System. The EMR-ESI was determined by the ratio between the sex-age standardized hospital mortality for each chief complaint code versus the sex-age standardized mortality of the entire 2006 population of Korea. We tested the discrimination power to predict mortality using the area under the receiver operating characteristic curve(AUC) from a multivariate logistic regression model adjusted for five clinical parameters(AVPU, systolic blood pressure, respiratory rate, ambulance use, age) using Derivation DB. We validated the EMR-ESI externally using External DB and compared its performance with that of ESI using Comparison DB. RESULTS: Total 2,444,214 patients with 5,425 chief complaint codes were enrolled in the Derivation DB. The EMR-ESI distributed from 0 to 1,866 (Mean: 1.25±2.95; median 0.94). The adjusted odds ratio of the EMR-ESI for hospital mortality was 1.151(95% confidence interval: 1.147 to 1.154). The AUC to predict hospital, ED, and ward mortality was 0.944, 0.983, 0.882, respectively, in the same dataset. Total 1,441,351 patients in the External DB showed also very good performance (AUC=0.938 for hospital, 0.981 for ED, and 0.884 for ward mortality). When comparing EMR-ISS with ESI, The AUC of EMR-ESI was significantly larger than those of ESI for hospital (0.840 vs. 0.548) and ED mortality (0.984 vs. 0.780). CONCLUSION: The EMR-ESI, a new severity measuring tool, showed very good performance for prediction of hospital outcome in a nationwide ED database.

WE.74) CT KUB versus IVP - has it made a difference? : Michael Quirke[1], Fearghall Divilly[1], Peadar Gilligan[1] : 1. Emergency Department, Beaumont Hospital, Dublin, Ireland.

INTRODUCTION: Low dose, non-contrast CT of kidney/ureters/bladder (CTKUB) superseded intravenous pyelography (IVP) for imaging suspected urolithiasis in our hospital in 2008. We examined the impact of CT KUB on emergency department waiting times, its

usefulness in making alternate diagnoses and the sensitivity of microhaematuria for urolithiasis. METHODS: A retrospective case series of patients attending the ED with suspected urolithiasis was performed. 110 patients who had CT KUB in 2008 were compared with 95 patients who had IVP in 2007. The length of time from the time of scan ordering to discharge directly from the ED or referral to an on-take team was recorded. The presence of urolithiasis, microhaematuria and incidental / alternate diagnoses was documented. RESULTS: Patients who had CT KUB performed for suspected urolithiasis had a similar length of stay in the ED to those who had IVP before being either discharged or referred to urology services [CTKUB median 4.15 hrs (range 0.11-13.03) versus IVP median 3.63 hrs (range 1.06-13.90); p value 0.3299]. This trend was independent of the time of day or night a patient attended the department (p = 0.2980). Patients diagnosed with urolithiasis using either imaging modality waited the same amount of time as those who had normal studies [3.98 hours versus 3.80 hours; p value = 0.7879]. In those patients who had no stone visible on CTKUB, 34% had an alternate diagnosis seen on imaging. 33% had incidental pathology diagnosed. Microhaematuria as a test for urolithiasis in patients presenting to the ED had a specificity, sensitivity, positive predictive value and negative predictive value of 77.9%, 57.5%, 75.7% and 60.5% for CTKUB and 71.4%, 71.4%, 74.5%, 68.2% for IVP. CONCLUSION: CT KUB is useful for identifying incidental and alternate diagnoses that may not be suspected on clinical examination or seen with IVP. However, it has not improved ED waiting times in our hospital when compared to IVP, irrespective of the time of day a patient attends or whether they were subsequently diagnosed with urolithiasis. Microhaematuria has a poor sensitivity for urolithiasis, a finding supported by other published results.

WE.75) Emergency Medicine in Paarl, South-Africa: A Cross-Sectional Descriptive Study : Terrence Mulligan[1], R. Hanewinckel[2], H. P. Jongman[2], Lee Wallis[3] : 1. Emergency Medicine, Erasmus Medical Center, Rotterdam, Netherlands. 2. Erasmus University School of Medicine, Rotterdam, Netherlands. 3. Univ of Cape Town & Stellenbosch Univ, Cape Town, South Africa.

INTRODUCTION: Emergency Medicine in South Africa is in its earliest stages of development. There is a paucity of data about emergency department demographics, epidemiology and other characteristics. This information is absolutely necessary to properly guide the development of appropriate emergency care systems. In order to provide this information, we performed a research study in a rural hospital in Paarl, 60 kilometers outside Cape Town. METHODS: All patients who were seen in the ED between the 1st of January 2008 until the end of May 2008 were eligible for our research. We designed a cross-sectional descriptive study and retrieved information from patient charts using a 40-item questionnaire. RESULTS: We investigated a total number of 2446 charts of which 2134 were suitable for our research. The majority (88.2%) of these patients were self-referred. Ambulance use was reported in 26.9% of all presentations. In our sample, 24.1% were children under 12 years old. Of particular importance, our study revealed that 36.0% of all presentations were trauma-related. Beside trauma-related problems, gastro-intestinal and the respiratory tract problems were most common in the ED. 16.5% of the patients was admitted to a ward. CONCLUSION: This research provides important information to properly guide the ED in its development. More research is necessary in order to help the development of Emergency Medicine in South

Africa.

WE.76) Low Dose Prochlorperazine Is Not Only More Effective than Ondansetron for Toxigenic or Infectious Nausea and Vomiting; Prochlorperazine Use Also Improves ED Throughput : **Gary M. Gaddis[1], Mark Woods[2], Beth Hetterman[2] : 1. St.Luke's Hospital of Kansas City and the University of Missouri-Kansas City School of Medicine, Kansas City, MO, USA. 2. St. Luke's Hospital of Kansas City, Kansas City, MO, USA.**

INTRODUCTION: ~7% of USA ED patients have a chief complaint of nausea and vomiting (N/V). The etiology is toxigenic or infectious (Tox/Inf) in ~70% of these ED patients at our hospital. In 2008, we showed low intravenous (IV) dose of prochlorperazine (CompazineTM in the United States) (PROCHLOR), 2.5-5 mg is superior to 4 mg IV of ondansetron (ZofranTM in the United States) (ONDAN), for Tox/Inf N/V. (Number Needed to Treat = 5.4). However, only ONDAN therapy cannot cause somnolence or extrapyramidal effects (EPE); which might delay ED throughput. OBJECTIVE: To test the hypothesis that PROCHLOR 2.5-5 mg IV decreases ED throughput time, compared to non-algorithmic ONDAN treatment. METHODS: Retrospective, non-blinded, 2 month observational trial at an urban, community, university-affiliated ED (~36K census). The apparent etiology of N/V was categorized (Tox/Inf; Pregnancy-related; Migraine; Diabetic Gastroparesis; Opioid & Drug-Induced; Vestibular and Other). One physician plus 2 PharmDs judged whether the algorithm (previously presented elsewhere, and to which reference will be made at the Congress), in which antiemetic medication is targeted to the probable underlying mechanism for each cause of N/V, was correctly followed. ED throughput time (minutes from ED triage to dismissal) was compared for Tox/Inf patients only (due to low subject numbers in other groups), between the PROCHLOR and ONDAN groups (Student t-test). RESULTS: Throughput was 95.9 + 38.4 min for PROCHLOR and 154.5 + 72.8 min for ONDAN ($p<.0001$). ONDAN patients resulted from a 52.5% failure rate of algorithm adherence for Tox/Inf N/V. CONCLUSION: PROCHLOR for treatment of Tox/Inf N/V decreases ED throughput time, despite that PROCHLOR can cause somnolence and EPS. Prospective confirmation is indicated, but mechanistic treatment of Tox/Inf N/V may help ameliorate ED crowding by decreasing ED throughput time for this chief complaint. Improved nurse and doctor education will be needed to optimize favorable effects of the N/V treatment algorithm.

WE.29) Published literature does not support using the bag-valve-mask resuscitator for basic life support : **Richard N. Bradley[1], Paul M. Gannon[2] : 1. Emergency Medicine, The University of Texas Health Science Center at Houston, Houston, TX, USA. 2. American Red Cross Advisory Council on First Aid, Safety, and Preparedness, Washington, DC, USA.**

INTRODUCTION: Despite the ubiquitousness of the bag-valve-mask resuscitator (BVM), some researchers have criticized it, pointing out that successful ventilation is harder to achieve than is generally appreciated. The challenge is that the user of a BVM must accomplish three distinct tasks simultaneously. First, the rescuer needs to seal the mask to the victim’s face. Then, the rescuer must open and maintain the airway. Finally, the rescuer must squeeze the bag sufficiently to deliver the necessary volume. We conducted this study to determine if the

BVM was as safe and effective as mouth-to-mask ventilation for both one- and two-rescuers while providing basic life support. METHODS: We performed a structured literature review using the format of the American Red Cross Advisory Council on First Aid, Safety and Preparedness (ACFASP). We performed PubMed and MEDLINE searches using the MeSH terms “CPR AND Heart Arrest AND Respiration, artificial”. Next, we searched these databases using the keywords “bag-valve-mask”, “pocket mask”, and “mouth-to-mask ventilation”. RESULTS: We retrieved 644 abstracts, screened for duplications, and obtained and reviewed 23 papers for evaluation for this study. Four additional papers were located and obtained from other sources, along with two books containing pertinent information. We also obtained data from the websites of two device manufacturers. The majority of the papers offered ACFASP Level 4 evidence (animal or mechanical model studies). CONCLUSIONS: There is insufficient evidence to support a treatment standard or guideline. A single rescuer performing CPR should use the mouth-to-mask rather than the bag-valve-mask technique until assistance arrives. Multiple rescuers providing ventilations may use the two-person bag-valve-mask technique if properly trained and experienced in this method.

WE.30) Paramedic Utilization of Airtraq® Optical Laryngoscope for Difficult Intubations : Alberto Perez[1], Douglas Hull[1], Sean Trainor[1], Ryan Monahan[1] : 1. Emergency Medicine, Windham Hospital, Willimantic, CT, USA.

INTRODUCTION: Paramedics often encounter patients with difficult airways requiring emergent endotracheal intubation. The Airtraq® was shown to be equal or superior to direct laryngoscopy with the Mac #3 blade for easy and difficult airway scenarios in paramedic hands. We incorporated the Airtraq in our airway algorithm after training and demonstration of competency.
METHODS AND RESULTS: Since the introduction of the Airtraq® in November 2007 our services have responded to 3700 calls for service. 68 patients required endotracheal intubation. 87% of intubations were successful on the first attempt. 94% of patients were successfully intubated on the second and third attempts. The Airtraq® was utilized in 8 patients with difficult airways with a successful intubation in half the patients. A total of three patients had failed airways. Of the 4 failed Airtraq® attempts: 1 patient required surgical airway in the emergency department given significant anatomic defects secondary to previous surgeries; in 2 patients the vocal cords were visualized however the paramedics were unable to slide the endotracheal tube off the device and in 1 attempt the paramedic could not visualize cords however was able to intubate using a gum bougie. The two failures in passing the tube through the Airtraq® were technical failures due to improper lubrication of the apparatus. The failed attempt that was successfully intubated with a gum bougie is considered a protocol violation since the use of the gum bougie is considered first line. CONCLUSIONS: The use of the Airtraq® in the pre-hospital arena requires further investigation. Current data indicates that it may have a role in pre-hospital airway management.

WE.31) Incidence and usage of prehospital peripheral catheters : Katarina E. Göransson[1], Eva Johansson[2] : 1. Department of Emergency Medicine, Karolinska University Hospital Solna, Stockholm, Sweden. 2. Division of Hematology, Karolinska University Hospital Solna, Stockholm, Sweden.

INTRODUCTION: Peripheral venous catheters (PVC) in the prehospital setting are common in many countries, but previous studies suggest varying degree of usage of such PVCs. In addition, usage of PVCs inserted in the prehospital setting is reported to be used to a limited extent in the hospital setting. Aim: This explorative study explored the incidence of prehospital PVCs, and the use of such catheters during prehospital and hospital care. METHODS: A total of 358 patients arriving to the emergency department at a level one trauma centre in Sweden by ambulance in October 2008 were included in the study. The ambulance crew filled out a 19 item questionnaire specifically designed for the study. In addition, patient records were used for collecting data on intravenous (IV) therapy in the hospital. RESULTS: In total 144 (41.4%) patients received a PVC by the prehospital staff. The most common reason for PVC insertion was pain relief (15.3%), followed by security action (13.9%), i.e. in case the patient's condition would deteriorate. The size of the catheters ranged from 0.9 mm (15.3%) – 2.2 mm (2.1%), while 1.1 mm was most commonly inserted (49.3%), followed by 1.3 mm (27.1%). Of the 144 catheters inserted in the prehospital setting, 79 (54.9%) were used for IV therapy during the prehospital care while 88 (61%) were used for IV therapy within 24 hours after arrival to the ED. CONCLUSION: In conclusion, around one third of the patients transported to the emergency department received a PVC during prehospital care, of which more than half were used during prehospital care. These PVCs were most commonly used for pain relief, and the most common size of PVCs was 1.1 mm.

WE.32) Prehospital Endotracheal Intubation : Ester Moyano[1], M. José Garcia-Ochoa[1], Arturo A. De Blas de Blas[1], Paloma C Rey Paterna[1], M. Luz Sabin Gómez[1] : 1. SAMUR PC, Madrid, Madrid, Spain.

INTRODUCTION: In 2006, SAMUR-PC (Prehospital Emergency Medical Service in Madrid) published an update of its emergency procedures. Our service has an average of 429 PEIs per year, always performed by an emergency physician.
With this study we attempted to identify the incidence of successful PEIs, the hospital complications, and the correct indications for performing a PEI. METHODS: This is a prospective, observational study of patients who needed
advanced prehospital airway management and were treated with PEI between Feb-Sep 2008. Correct endotracheal tube (ETT) positioning was verified by clinical findings and end-tidal capnography detection. We followed-up the patients in hospital during 1 week in order to check: late complications related with PEI, time to extubation, and survival. RESULTS: During 8 months we have 242 PEI: 78% were men, and 22% women. The mean age was 49 years (range 3-9). 28,9% were out of hospital cardiac arrest (OHCA), 40,8% trauma patients, and 7,4% drug intoxications. The first GCS was 3 in 50,8% (mean 6/median 3). In all cases the hospital was warned before arrival and they were waiting for the patient in ER. Upon arrival to the hospital, 240 ETTs were determined to be correctly placed (99,2%). 2 cases were incorrectly placed: 1 combitube® was in the hypopharynx, and 1 ETT was in the left main bronchus.
64% continued to be intubated after 24 hours in hospital, 2.5% died in the ER, 12,8% were extubated before 6 hours, and 15,7% between 6 and 24 hours in hospital. 10 patients (4%) were included in our "Asytolic Organ Donor Program", and due to this the extubation was determined by the time of organ removal. Complications: 10 cases (4,1%) of anoxia, 6 cases

(2,5%) of aspiration pneumonia, and 1 case of atelectasis (ETT placed in left bronchus). The one week survival rate was 76,4%. CONCLUSION: Our results indicate that the overall rate of complications and correctly placed ETTs performed by prehospital physicians was similar to that obtained in hospital ERs. PEIs, following standardised operating procedures, can be safely performed in the prehospital environment.

WE.33) Pre-hospital Use Of Continuous Positive Airway Pressure (CPAP) For Acute Severe Congestive Heart Failure (CHF) : Joe E. Dib[1], Scott A. Matin[2] : 1. Emergency Medicine, Clara Maass Medical Center, Belleville, NJ, USA. 2. MONOC Emergency Medical Services, Neptune, NJ, USA.

INTRODUCTION: The study objective is to describe the pre-hospital use of CPAP for patients presenting with acute severe CHF in a large Emergency Medical Services (EMS) system. METHODS: This study utilized a retrospective design of pre-hospital charts of patients treated by paramedics in the Monmouth and Ocean County (MONOC) EMS system for acute CHF. Inclusion criteria were placement of CPAP therapy by Mobile Intensive Care Unit protocol, respiratory rate (RR) greater than 25, labored and shallow breathing, bilateral rales, history of CHF, intact mental status and pre-hospital diagnosis of CHF. Data collected included patient demographics, vital signs, oxygen saturation by pulse oximetry (SaO2), need for endotracheal intubation, and complications. All patients meeting inclusion criteria from 1/1/2005 to 12/31/2006 were included in this study. RESULTS: A total of 1306 charts were reviewed. 387 patients met inclusion criteria. Of the 387, 149 patients had placement of CPAP (38.5%). When comparing patients that received CPAP to ones that did not, the out of hospital treatment times did not differ (CPAP=30 min; Non-CPAP= 31 min; P value <0.01); Adjunctive CHF treatment such as use of nitrates, diuretics, morphine were similar between the two groups. The increase in post treatment SaO2 was statistically significant (CPAP group [9%] vs. Non-CPAP [5%], P <0.01). This was also true for Systolic Blood Pressure (BP) reduction (CPAP [27.1 mmHg], non-CPAP [19.9 mmHg], P <0.01), Diastolic BP reduction (CPAP [14.1 mmHg], non-CPAP [7.4 mmHg], P <0.01), Heart Rate reduction (CPAP [17.2 bpm], non-CPAP [9.6 bpm], P <0.01), as well as RR reduction (CPAP [5.63], non-CPAP [4.09], P <0.01). Rate of pre-hospital intubation was higher in the non-CPAP group vs. the CPAP group (CPAP [2.6%], non-CPAP [5.46%], P <0.01). CONCLUSION: The use of CPAP for eligible patients with acute severe CHF appears to be feasible and beneficial. Its use appears to result in improvement in oxygen saturation, improvement of vital signs and decreased rates of pre-hospital intubation. Randomized prospective pre-hospital studies are needed to validate these results.

WE.34) Frequency and Predictors of Emergency Medical Services Utilization by Patients with Acute Coronary Syndromes in the Arab Gulf States : Saleh Fares[1], Mohammed Zubaid[2], Wael Al-Mahmeed[3], Gregory R. Ciottone[1], Assaad Sayah[4], Jassim Al Suwaidi[2], Haitham Amin[2], Mustafa Ridha[2], Kadhim Sulaiman[2], Alawi A. Alsheikh-Ali[5] : 1. Emergency Department, Harvard Medical Faculty Physicians, Disaster Medicine Section, Harvard Medical School, Boston, MA, USA. 2. Department of Medicine, Faculty of Medicine, Kuwait University, Safat 13110, Kuwait, Kuwait. 3. Sheikh Khalifa Medical City, Abu Dhabi, Abu Dhabi, United Arab Emirates. 4. Cambridge Health Alliance, Disaster Medicine Section, Harvard Medical School, Cambridge, MA, USA. 5. Institute for Clinical Research and Health Policy Studies and Molecular Cardiology Research Institute, Department of Medicine, Tufts-New England Medical Center and Tufts University School of Medicine, Boston, MA, USA.

INTRODUCTION: Emergency Medical Services (EMS) play a central role in the care of patients with Acute Coronary Syndromes (ACS). International guidelines strongly recommend early activation of EMS in patients with signs and symptoms of ACS. To date, there is no data on the utilization of EMS systems in the Arab Gulf States. Objective: We examined the utilization of EMS by patients with ACS in the Gulf Registry of Acute Coronary Events (Gulf RACE), the largest multinational registry of ACS in the Middle East. METHODS: Gulf RACE is a prospective, multi-national study conducted in 2007 of all patients hospitalized with the final diagnosis of ACS in 65 centers in 6 Arab countries. Data were analyzed based on mode of presentation to the Emergency Departments (EMS vs. other). RESULTS: Of 7,859 patients hospitalized through the ED with ACS, only 1,336 (17%) presented by EMS, with the remaining patients arriving by private car. The rate of EMS utilization was similarly low in patients with ST elevation (18%) and non-ST elevation ACS (17%, P=0.12). Patients presenting by EMS were slightly older (58±13 vs. 56±12, P<0.001), more likely to have been female (27% vs. 23%, P<0.01), and less likely to have had a prior myocardial infarction (MI) (18% vs. 25%, p<0.001). Patients whose predominant symptom was chest pain were less likely to utilize EMS compared to patients with chief complaints other than chest pain (16% vs. 25%, p < 0.001). Independent predictors for patients not using EMS were younger age (OR 1.09 [1.03-1.15] per 10-years), presence of chest pain (OR 1.74 [1.48-2.04]), prior MI (OR 1.69 [1.45-1.97]) and family history of premature MI (OR 1.26 [1.04-1.53]). There was significant variation among countries ranging from 2% in Yemen to 37% in Oman. CONCLUSION: Despite recommendations, less than 1 in 5 patients with ACS use EMS in the Arab Gulf States, highlighting a significant opportunity to improve prehospital care for patients with ACS. Whether the observed underutilization reflects lack of service availability, patient awareness, or distrust, requires further investigation.

WE.35) Is There A Seasonal Pattern Of Out-of-Hospital Cardiac Arrests In An Equatorial Climate? :
Marcus E. Ong[1], Faith Ng[2], Susan Yap[1], David Yong[1], Mary A. Peberdy[3], Joseph P. Ornato[3] : 1. Dept of Emergency Medicine, Singapore General Hospital, Singapore, Singapore. 2. Clinical Trials and Epidemiology Research Unit, Singapore, Singapore. 3. Virginia Commonwealth University-Medical College of Virginia, Richmond, VA, USA.

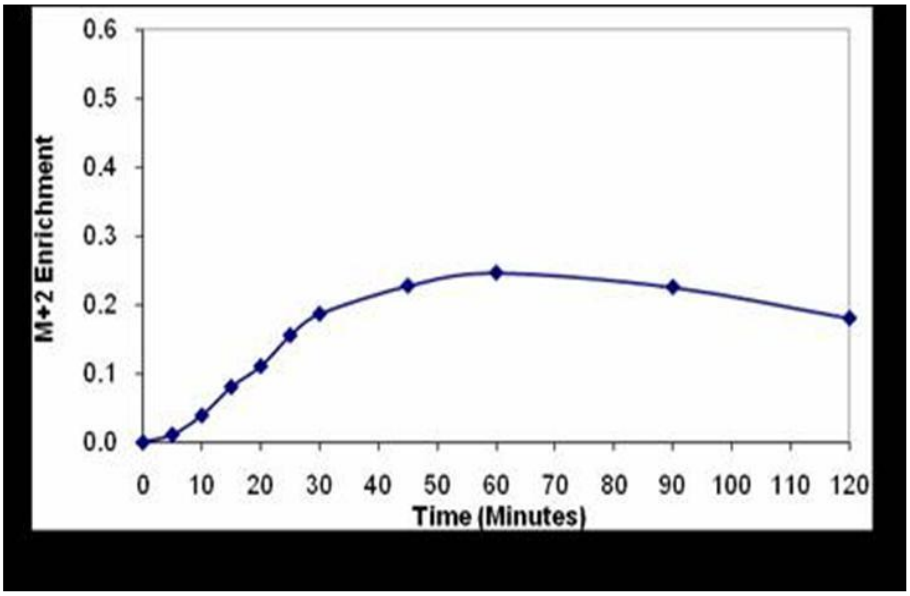
INTRODUCTION: Seasonal patterns have been observed for acute myocardial infarction and sudden death in temperate climates. However it is currently unclear if this is a climatic effect or due to other factors. Aim: We aimed to determine whether there is a seasonal variation of out-of-hospital cardiac arrests (OHCA) in an equatorial climate, which does not experience seasonal environmental change. METHODS: We conducted an observational prospective study looking at the occurrence of OHCA in Singapore. Included were all patients with OHCA presented to Emergency Departments across the country. We examined the adjusted monthly number of cases over a 3 year period. Data was analyzed using general linear modeling and analysis of variance. RESULTS: From 1 October 2001 to 14 October 2004, 2428 patients were enrolled into the study. Mean age for arrests was 60.6 years with 68.0% male. Ethnic distribution was 69.5% Chinese, 15.0% Malay, 11.0% Indian and 4.4% others. There was no significant seasonal variation (spring/summer/fall/winter) of events (ANOVA p=0.71),

monthly variation (p = 0.88) or yearly variation (p = 0.26).We did find weekly peaks on Mondays and a circadian pattern with daily peaks at 9-10am. CONCLUSION: We did not find any discernable seasonal pattern of cardiac arrest. This contrasts with findings from temperate countries and suggests a climatic influence on cardiac arrest occurrence. We also found that sudden cardiac arrests follow a circadian pattern.

WE.36) Enzymatically Assisted Subcutaneous Infusion by EMT-B: The EASI II Trial : Olan Soremekun[1], Melissa Shear[2], Stephen Thomas[2] : 1. Harvard Affiliated EM Residency Program, Brigham & Women's Hospital & Massachusetts General Hospital, Boston, MA, USA. 2. Department of Emergency Services, Massachusetts General Hospital & Harvard Medical School, Boston, MA, USA.

INTRODUCTION: Our initial study (EASI I) demonstrated that paramedics are able to establish EASI access fast and intravascular absorption of EASI-administered fluids begins within minutes. Objectives: This study‘s goals were to assess the feasibility of EMT-B (Emergency Medical Technician – Basic) provider placement of EASI lines, better characterize intravascular absorption of EASI infusate, and subject comfort levels with EASI infusion.
METHODS: Eighteen adult subjects trained as EMT-B underwent a ten minute training session on placement on EASI access and infusion of HRH. Next, subjects were paired into groups of 2 with each placing EASI access in the other's upper back followed by a 1mL injection of HRH and a 250mL infusion of D5W (12.5g isotopic glucose [6,6D2-glucose]) at maximal gravity-assisted rates. Blood draws via 20-gauge IV at time 0, 5, 10, 15, 20, 25, 30, 45, 60, 90, 120 minutes were done to allow for GCMS analysis of intravascular isotopic uptake. Infusion time, ease of placement, and maximal pain rating during the initial 5 minutes of infusion were recorded. 24-hour follow-up was achieved via telephone. Data were analyzed with median and interquartile range. RESULTS: EASI access lines were successfully placed in all 18 cases. In nearly all cases (16/18) the placement rating was the lowest on the 1-to-10 scale. The overall median of maximum pain during the initial 5 minutes infusion was 1 on a 0-to-10 scale (IQR 1-2). For the 250 mL infusate, the median infusion time was 38.5 minutes (IQR 29-55). When expressed in terms of infusion rate per hour, the median was 393 mL/hour (IQR 273-517). Figure 1 represents the average enrichment at each time point of all subjects. Using the trapezoid area-under-curve methodology, the average enrichment over the study duration was 18.56% with average time to maximum enrichment of 59 minutes. There were no complications of EASI access sites. CONCLUSIONS: EMT-B with minimal training can easily establish EASI access; high rates of infusion can be achieved with minimal discomfort; rapid intravascular absorption begins within minutes with peak enrichment occurring in less than an hour.

Figure 1: Summary Curve – All Subjects 6,6D2-glucose Enrichment



WE.37) Out-of-Hospital Cardiac Arrest in Ireland:
Moving Towards a Comprehensive Model of Immediate Care
: Kieran Henry[2], Adrian P. Murphy[1], Iomhar O' Sullivan[1], Stephen P. Cusack[1] : 1. Emergency Medicine, Cork University Hospital, Cork, Ireland. 2. Ambulance Service Headquarters, Cork, Ireland.

INTRODUCTION:
Survival from out-of-hospital cardiac arrest (OHCA) is dependent on a multiplicity of factors. International survival rates vary significantly. Pre-hospital care in Ireland has evolved greatly over the last number of years with much emphasis on improving outcome from OHCA. The introduction of community-based first responders' (CFR's), training of advanced paramedics (A.P.'s), and utilisation of immediate care doctors has not been subject to formal audit and so little has been published on the impact of such change on patient outcome.

Aims:
The aim of this study was to describe OHCA characteristics and outcomes in Cork, Ireland over a one year period(September 1st 2008 – August 31st 2009), in the context of enhanced

delivery of emergency pre-hospital cardiac care.

METHODS:
All OHCA's in Cork between September 1st 2007 and August 31st 2008 are included in this study. There were three sources of data used to collect information for this study: Patient Care Reports (PCR's), Ambulance Control call information and patient medical notes from Emergency Departments at the receiving hospitals. Data was collected onto a modified Utstein collection tool which included additional information such as type of airway used and Advanced Life Support (ALS) provider.

RESULTS:
256 OHCA's were responded to over the study period. Two thirds were male and the median age was 63 years. 170 (66.4%) of OHCA occurred in the home and 55(28.9 %) had Cardiopulmonary Resuscitation (CPR) before the arrival of the Ambulance Service. There was resuscitation attempted on 190 of these cases and 111 of these were transported to hospital. Of that cohort 31 (16.3%) patients survived > 24 hrs and 13 (6.8%) people were discharged from hospital. Just fewer than 60% of cases where there was a resuscitation attempt, received Advanced Life Support (ALS).

WE.38) PREDICTIVE FACTORS OF FAILURE OF PERIPHERAL VENOUS ACCESS (PVA) BY OUT OF HOSPITAL EMERGENCY MEDICAL STAFF (EMS) : Amira Jaafar[1], Sana Dridi[1], Slim Jedidi[1], Abdelaziz Zouari[1], Hajer Belakhdar[1], Sonia Karma[1], Mounir Daghfous[1] : 1. SAMU 01 of Tunis, Tunis, Tunisia.

INTRODUCTION: The placement of peripheral vein access is a procedure commonly performed by the teams SMUR. This act requires particular technical skill in the pre hospital setting. The aim of our study was to determine predictive factors of difficulty of peripheral vein access by the SMUR teams. METHODS: We conducted a prospective collection using standardized data collection forms including patient demographics, indications for PVA, operator characteristics, and environment characteristics. The failure of the installation of a PVA was defined by one of the following events: change of site of puncture or involving another operator. We compared the two groups "fail" and "success" of PVA. For the univariate analysis, we used the Student's t-test to compare quantitative variables and the X2 test to compare qualitative variables. We then used logistic regression for multivariate analysis. The significance level was set at 0.05. RESULTS: We analyzed records of 107 pre hospital PVA cases. The mean age of patients was 45 ± 23 years. The proportion pediatric (0 - 14 years) was 8.4%. Indications for PVA were injecting drugs in 58% of cases; injection drugs in 29% of cases and vascular filling in 13% of patients. The overall failure rate was 19.6%. A central vein catheter was necessary in one case. In univariate analysis, the function of the operator (22% of nurses vs. 6.5% of physicians in the "failure" group) and experience of the operator (seniority) (9 ± 1.1 years for the "failure" versus 13 ± 7 years for the "success") were found to be significant predictors of PVA failure. In multivariate analysis, only seniority of the operator was identified as an independent factor of failure of pre hospital PVA. CONCLUSION: Experience is a factor in the success of the installation of PVA in pre hospital emergency care.

Indeed, the environmental conditions during pre hospital intervention of SMUR medical teams influence the achievement of actions despite the skill of the operator.

WE.39) Tuition of emergency medical dispatchers in the recognition of agonal respiration increases the use of telephone assisted CPR : Katarina Bohm[1], Britt Stålhandske[2], Mårten Rosenqvist[3], Johanna Ulfvarson[4], Jacob Hollenberg[5], Leif Svensson[6] : 1. Karolinska Institutet, Department of clinical science and education, Section ov Cardiology, Stockholm, Sweden. 2. SOS Alarm Sverige AB, Stockholm, Sweden. 3. Karolinska Institutet, Department of clinical science and education, Section ov Cardiology, Stockholm, Sweden. 4. Karolinska Institutet, Department of clinical science and education, Stockholm, Sweden. 5. Karolinska Institutet, Department of clinical science and education, Section ov Cardiology, Stockholm, Sweden. 6. Karolinska Institutet, Department of clinical science and education, Section of Prehospital Centre, Stockholm, Sweden.

INTRODUCTION: Bystanders cardiopulmonary resuscitation (CPR) increases survival in out-of-hospital cardiac arrest (OHCA). Emergency medical dispatchers (EMDs) can provide even totally inexperienced bystanders with instructions by telephone on how to resuscitate victims (T-CPR) until the emergency medical services (EMS) arrive. Agonal respiration makes it difficult for EMDs to identify cardiac arrests (CA) which will prevent or delay initiation of T-CPR. The aim of this investigation was to study if tuition of EMDs can improve their ability to identify agonal respiration in OHCA to allow for more frequent offers of T-CPR. METHODS: An observational study was performed in 2004 and subsequently, a repeat study conducted in 2006. All OHCA (n=315 in 2004, n=255 in 2006) in the Stockholm region reported to the Swedish Cardiac Arrest Register were included and all corresponding EMS reports were reviewed. Emergency calls were recorded during the event. Witnessed cases of OHCA (n=76 in both 2004 and 2006) were analysed using a structured data collection tool. RESULTS: The frequency of offered T-CPR to all bystanders of OHCA in 2004 was 47%. After special tuition on agonal respiration in OHCA it rose to 68% in 2006 (p=0.01). An even more marked rise was observed in OHCA cases with agonal respiration. In 2004 T-CPR was offered in 23% of these situations whereas the corresponding figures in 2006 had risen to 56% (p=0.006). CONCLUSIONS: Teaching EMDs to understand and recognize bystander descriptions of agonal respiration in patients with OHCA has resulted in a significant increase in offers of T-CPR in these situations.

WE.40) The EMS Impact of the Pre-hospital Physician: A Two Year Analysis of an Emergency Medical Response Unit (EMRU) in Ireland : Adrian P. Murphy[1], Iomhar O' Sullivan[1], Kieran Henry[2], Stephen P. Cusack[1] : 1. Emergency Medicine, Cork University Hospital, Cork, Ireland. 2. Ambulance Service Headquarters, Cork, Ireland.

INTRODUCTION: Aims: To describe the emergency call activity of a physician-staffed rapid response vehicle based in Cork city over a two-year period and to examine the overall emergency medical system impact of such a resource. METHODS: A registrar in emergency medicine from the Cork University Hospital (CUH) E.D. conducted this study and acted as a solo responder in a Health Service Executive funded rapid response vehicle (RRV) over a two-year period (1st of January 2007 to 1st of January 2009). There were no pre-determined hours of operational duty but the service was delivered on an ad-hoc basis, typically amounting to

approximately 60 hours of RRV availability per week. RRV activation was through the Regional Ambulance Control Centre for Cork city and county. This centre utilises a “criteria based dispatch” system for “999” emergency calls. Automatic RRV activation occurred in all cases of:
1. Cardiac / Respiratory Arrest2. Road Traffic Collisions (RTC’s) with associated fatality or persons reported trapped3. Falls > 4 meters4. Major Burns5. Penetrating trauma to the head, neck, or trunk
RESULTS:The RRV was tasked to 242 AS1 (“999” emergency calls) during the study period. Road traffic collisions accounted for 86 calls which represented 35% of the total call volume. Traumatic injury accounted for 64% of all calls. October and November were the busiest months for the RRV but there was no statistical difference in day of week. 2pm till 10pm were the busiest periods of the day for RRV activation. Average response time was 10 minutes (Range: 4 – 45minutes). Of all non-trauma calls cardiac / respiratory arrest was the most frequent nature of call. 34% of patients seen by the RRV physician were discharged on scene. CONCLUSIONS: This pilot study has demonstrated a multiplicity of benefits in the use of an emergency medical response unit supporting regional ambulance service. Broadly speaking these benefits can be summarised as:1. Offering an alternative care pathway to patients 2. Performing advanced time-critical patient interventions.

WE.41) DONORS AFTER CARDIAC ARREST PROGRAM: OUR EXPERIENCE OVER FOUR YEARS

: Alonso Mateos Rodriguez[1], Mihaela Manescu[2], Jose Maria Navalpotro Pascual[1], Carlos Barba Alonso[1], Maria Eugenia Martin Maldonado[1], Pardillos Luis[1], Vicente Sanchez-Brunete Ingelmo[1] : 1. Servicio de Urgencias Medicas de Madrid SUMMA112, Madrid, Madrid, Spain. 2. AREA 7 ATENCION PRIMARIA, MADRID, Spain.

INTRODUCTION: Madrid`s Emergency Medical Service (SUMMA112) in conjunction with hospitals 12 de Octubre and Clínico San Carlos carry out a collaborative program of organ donation in patients with out-of-hospital cardiac arrest not responding to advanced life support (ALS) known as Code 0 Protocol. Patients meeting the inclusion criteria (i.e., standard conditions regarding to neoplastic, systemic or infectious diseases; absence of suspected traumatic injuries in thorax or abdomen; accurate time of cardiac arrest onset; less than 15 minutes from cardiac arrest onset to the start of ALS, and time of arrival at the hospital of less than 90 minutes) are transferred on ALS by emergency mobile units (EMUs) to hospitals with prior notice to the Transplantation Unit. This study was designed to determine the compliance of time periods established by the protocol, donors' proportion, features of nondonor cases and number of organs retrieved. METHODS: We performed a descriptive, retrospective study based on data collection from the clinical records of all the cases in which the asystolic donor protocol (Code 0 Protocol) was activated. Data was analyzed by using the statistical package SPSS 16.0 ©. RESULTS: A total of 132 cases (91.3% men and 8.7% women) were included. The mean age was 40 years (range, 14-55). The average time of arrival at scene was 14 minutes and 55 seconds. The average time from the entry of alert phone call to arrival at the hospital was 92 minutes. In total, 356 organs were retrieved (liver, lungs, kidneys, bones and eye tissue), about 2 or 3 per patient as an average. In 21.7% they were not viable donors. The reasons for nondonor were a failure of entry into extracorporeal pump in 25% of cases,

relatives` refusal in 8.3% and biological reasons in 66% (active neoplastic disease, positive serology, etc). CONCLUSION: With this program about 3 or 4 organs per donor were retrieved and nearly 400 patients gained some benefit. This program allows us to retrieve a significant number of viable organs and make them available to transplantation units and, therefore, improves the quality of life and morbidity/mortality of expecting recipients.

WE.42) Early identification of skiers and snowboarders who need tertiary trauma care: What are the "key injury patterns" and their implications? : Rebecca M. Hasler[1], Dimitrios Evangelopoulos[1], Heinz Zimmermann[1], Aristomenis K. Exadaktylos[1] : 1. Emergency Medicine, Inselspital Bern, University Hospital, Bern, Switzerland.

INTRODUCTION: On-slope triage is an extremely difficult task. Many patients with severe pelvic, thoracic, head and spinal injuries are transferred to minor trauma centers before being referred to definitive tertiary care. Delays in appropriate care result in morbidity, mortality and costs. We evaluated injury patterns of severely injured alpine skiers and snowboarders and defined “key injury patterns” as a tool for more effective on-slope triage. METHODS: A six year review of all patients (age >16years) with severe injuries sustained from alpine skiing and snowboarding admitted to a tertiary trauma center from July 1, 2000 through June 30, 2006. 728 patients were identified. Relevant trauma, defined as 1) head, 2) thoracic, 3) abdominal, 4) pelvic or 5) spinal trauma, was found in 328 patients. We calculated the most risky combinations of injuries. RESULTS: 78% (n=256) were single-site injuries with only one part of the body being hurt. In 22% we identified combinations of two sites of injury at least. Thoracic injuries revealed in 63% and pelvic lesion in 48% to coincide with further trauma, particularly with head and spine. Abdominal trauma appeared in 72% as multi-site injury, especially associated with head lesions (22%). Overall the most common combination was head and spine: 13% of spinal trauma patients at the same time suffered from head trauma (CI 7.69-19.29). We defined 5 “key injury patterns”: 1) head associated with spine (11%, CI 6.36 – 16.13), 2) spine associated with head (13%, CI 7.69-19.29), 2) thorax associated with head (24%, CI 14.09-35.38), 3) pelvis associated with spine (12%, CI 2.55-31-22) and 4) abdomen associated with head (22% CI 6.41-47.64). CONCLUSIONS: With advances in technology and slope maintenance, skiers and boarders progress to higher skills and risky riding more rapidly than ever before. Patients with either head, spine, thorax, pelvis or abdomen injuries, bear a high risk of other severe associated injuries. Being aware of the "key injury patterns” in skiers and boarders could lead to faster referral to the most appropriate trauma center.

WE.78) Telebation: A Novel Use of Videolaryngoscopy and Telemedicine for Prehospital Tracheal Intubations. : John C. Sakles[1], Jarrod M. Mosier[1], Michael Hudson[2], Terence Valenzuela[2] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA. 2. Tucson Fire Department, Tucson, AZ, USA.

INTRODUCTION: Objective: To describe a novel system developed at the University of Arizona for assistance with difficult airway management in the prehospital setting, using the Glidescope Videolaryngoscope system and a telemedicine network. METHODS: Difficult airways often arise that prevent successful tracheal intubation by prehospital providers. At the

University of Arizona we have developed a novel system to help provide prehospital guidance for these situations. With a GlideScope Ranger, modified with a video out feed and wireless transmitter, audio and video feedback can be transmitted via a two-way communication system through the existing citywide telemedicine network. This allows a video feed from the GlideScope and an overhead camera with audio/video feed to be transmitted to the provider in the emergency department. A return audio/video feed is sent back to the ambulance allowing real-time communication. RESULTS: This system has been tested successfully several times using a simulator in various clinical settings. The audio/video quality has been excellent with only slight delays in transmission. CONCLUSION: We have termed this system of telemedicine-assisted prehospital intubation "Telebation" and believe it has the potential to greatly improve prehospital airway management practices. We are planning on testing this "Telebation" system on actual patients in the very near future.

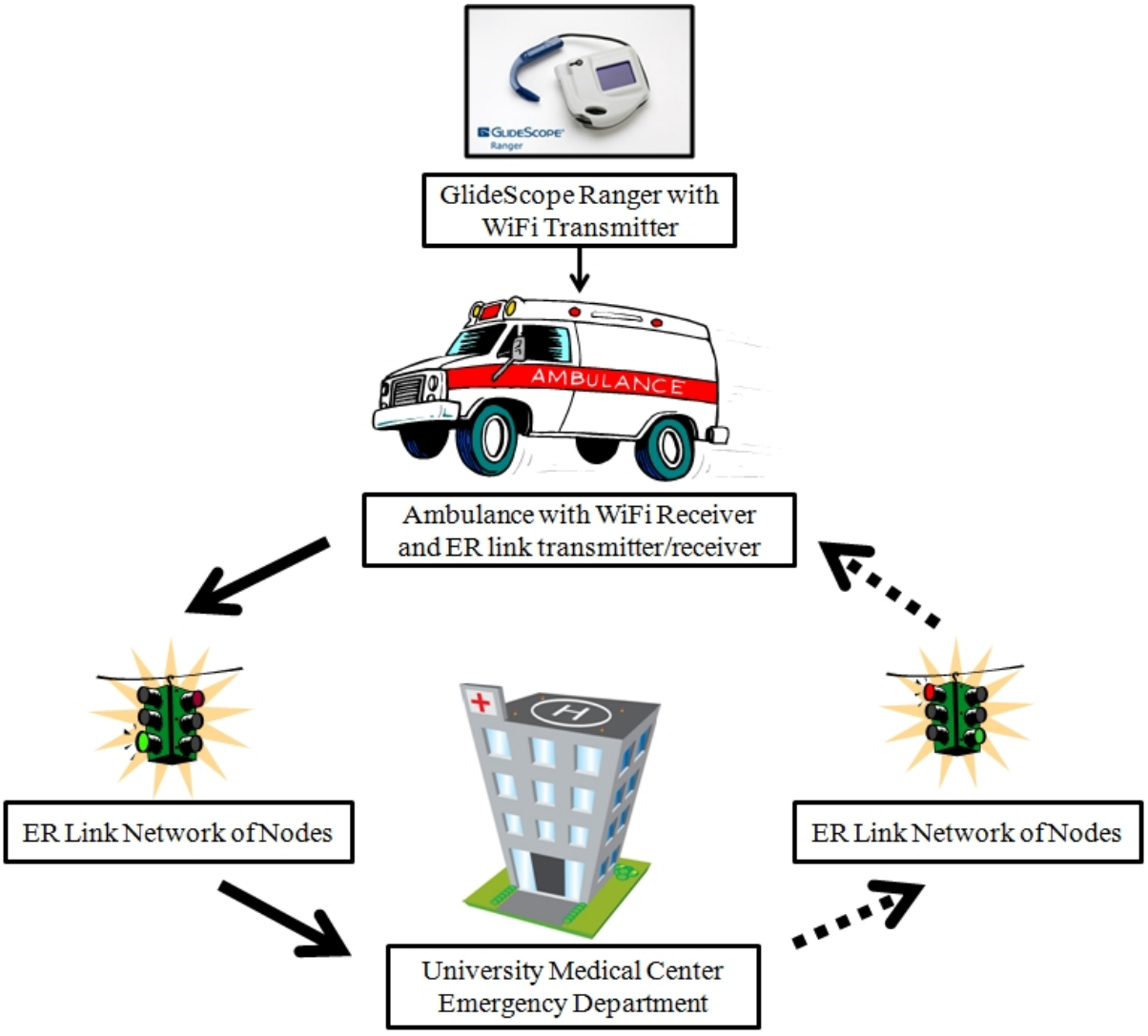
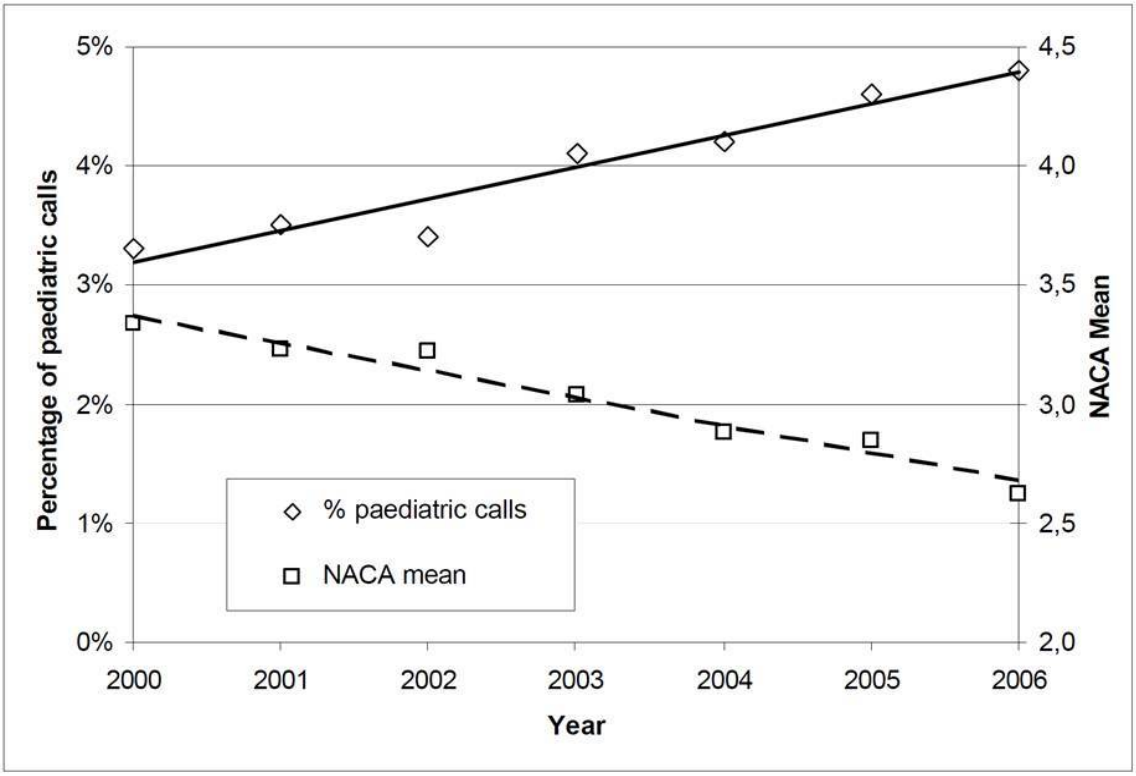


Figure 1: Model of Telebation Network. Tucson, AZ, USA.

WE.79) Preschool emergencies in an Austrian pre-hospital physician staffed emergency system : Lukas Drabauer[1], Hans Gombotz[1], Peter Rehak[2], Walter Mitterndorfer[1], Werner Lang[3] : 1. Linz General Hospital, Linz, Austria. 2. Department of Surgery, Medical University of Graz, Graz, Austria. 3. Austrian Red Cross, Regional Association Upper Austria, Linz, Austria.

INTRODUCTION: The aim of this study was to investigate incidence, common disease patterns and treatment of emergencies in pre-school children. METHODS: Setting: Ground and air based units in an Austrian pre-hospital emergency medical system staffed by anesthesiologists. Subjects: 1383 pre-school emergencies were analyzed over a 7 year period. RESULTS: The total annual number of emergency calls increased from 2704 in 2000 to 6128 in 2006, whereas NACA score fell from 3.78±0.91 to 3.35±1.05 ($p<0.001$). Simultaneously, pre-school emergencies rose from 3.3% to 4.6% ($p<0.001$) annually while NACA score decreased (3.4±0.89 to 2.6±1.05, $p<0.001$) [Figure 1]. The highest number of calls was found for 1 to 3 years olds whereby the traumatic emergencies increased from 17.2% below 1 year to 46.5% between 5 and 6 years. Significantly fewer patients in the pre-school group were left at home (0.6% vs 3.6%, $p<0.001$). Despite a lower average NACA score more pre-school children were transported by helicopter (15.2% vs. 11.9%, $p<0.001$). Physicians accompanied more pre-school patients on their transport to hospital (72.4% vs 57.8%, $p<0.001$). 96 children (7%) were treated as outpatients. 99.3% of pre-hospital diagnoses in the preschool group were confirmed by the hospital. The percentage of severe pre-hospital emergencies (NACA ? 4) in the preschool-group was 19% versus 38.9% in the control group. 38 children had cardiovascular arrest. 4 children had return of spontaneous circulation, 1 with submersion survived (without neurologic deficit). On scene fewer intravenous lines (22.6% vs. 54.2%, $p<0.001$) and fewer endotracheal intubations were performed (2.6% vs. 6.5%, $p<0.001$) than in the control group. In 2006, the average rate for intravenous access per physician was 1, and for endotracheal intubation 0.1 in the pre-school group. CONCLUSION: The number of pre-school emergency calls is increasing, their severity is decreasing. The frequency of life-saving interventions in pre-school children is insufficient to maintain adequate training.



WE.80) Reducing Ambulance Response Times Using Geospatial-Time Analysis Of Ambulance Deployment : Marcus E. Ong[1], Tut Fu Chiam[2], Faith Ng[3], Swee Han Lim[1], Benjamin SH Leong[4], Victor YK Ong[4], Elaine Tan[5], Lai Peng Tham[6], Susan Yap[1], Venkataraman Anantharaman[1] : 1. Dept of Emergency Medicine, Singapore General Hospital, Singapore, Singapore. 2. Singapore Civil Defence Force, Singapore, Singapore. 3. Clinical Trials and Epidemiology Research Unit , Singapore, Singapore. 4. National University Hospital, Singapore, Singapore. 5. Changi General Hospital, Singapore, Singapore. 6. KK Women's & Children's Hospital, Singapore, Singapore.

INTRODUCTION: Geographic Information Systems (GIS) technology is able to portray geospatial-time information in a graphical manner and can aid in planning ambulance deployment. Reducing response times has been shown to improve survival in cardiac arrests.
Objectives:
To determine if a deployment strategy based on geospatial-time analysis is able to reduce ambulance response times for out-of-hospital cardiac arrests (OHCA) in an urban Emergency Medical Services (EMS) system. METHODS: We conducted an interventional prospective study looking at the geographic location of all OHCA in Singapore. Location of cardiac arrests was spot-mapped using GIS. A progressive strategy of satellite ambulance deployment was

implemented, increasing ambulance bases from 17 to 32 locations. Variation in ambulance deployment according to demand on time-of-day was also implemented. The total number of ambulances and crews remained constant over the study period. RESULTS: From 1 October 2001 to 14 October 2004, 2428 patients were enrolled into the study. Mean age for arrests was 60.6 years with 68.0% male. Overall return of spontaneous circulation (ROSC) rate was 17.2% and survival to discharge rate was 1.6%. The monthly mean response time decreased significantly as the number of fire stations/fire posts increased (Spearman's rank correlation coefficient, r: -0.405, p=0.013). Response times for OHCA decreased from a monthly mean of 10.3 mins at the beginning to 7.5 mins at the end of the study. CONCLUSION: Based on geospatial-time analysis, we implemented an ambulance deployment strategy that was able to significantly reduce response times for OHCA.

WE.81) Hospital emergency department management of patients referred from the family medicine center : Angel Estella[1], Luis Perez Fontaiña[1], Elvira Moreno[1], Manuel Gracia[1] : 1. Emergency Department. Hospital SAS Jerez, Jerez, Spain.

INTRODUCTION: An emergency is unexpected and may be brought to a family practice center, the initial management of an emergency should not be delayed pending transportation to hospital. OBJECTIVE: To describe clinical characteristics and outcome of patients initially treated in the family practice setting and subsequently referred to the hospital emergency department. METHODS: Design: Observational prospective study. Setting: Family Medicine centers and reference hospital of the sanitary area of Jerez de la Frontera (Spain). Subjects: Consecutive patients referred to the hospital emergency department from the family practice center by an emergency ambulance transportation (EPES-061) from January 2007 to December 2008 were registered. Patients who were less than 18 years of age were excluded. Statistical analysis: Data were analyzed by SPSS 15 and expressed as a mean ± standard deviation.
Main variables of interest: Age, gender, vascular risk factors, and hospital diagnosis were collected. RESULTS: During the study period, 80 consecutive patients were included, although, 6 were excluded for not having all the data to analyze. Mean age was 62,9 ± 15,3 years, 47 (63,5%) patients were male and 27 (36,5%) female, 79,7% of patients had vascular risk factor: 67,6% of patients presented history of arterial hypertension, 43,2% dyslipidemia, 45,9% cardiopathy and 35,1% diabetes. Acute coronary syndrome (31 patients/41,9%), arrhythmia (14/18,9%) and respiratory failure(6/8,1%) were the most common hospital diagnoses.2. patients, 29,7%, were admitted to medical wards and 9, 12,2% to the intensive care unit, 43 patients were discharged from the hospital after an hours admitted in the observation unit. CONCLUSIONS: Family medicine centers attend a significant number of emergencies. Acute coronary syndrome and arrhythmias were the most common admissions in the emergency department. Most of patients in the study had vascular risk factors.

WE.82) A Prehospital Triage tool can safely steer geriatric patients to optimal level of care - a randomized study. : Veronica Vicente[1], Leif Svensson[1], Fredrik Sjöstrand[1], Birgitta Wireklint-Sundström[2], Maaret Castren[1] : 1. Departmen of clinical sience and education Södersjuhuset Karolinska Institut, Stockholm, Sweden. 2. School of Health Sciences, University of Borås, The Prehospital Research Centre in Western Sweden, Borås , Sweden.

Background
Today, by routine, patients calling for an ambulance regardless of medical needs are transported by EMS directly to the hospital ED.

There is a clear link between increased mortality and overburdened emergency room. Many of the geriatric patients with chronic and/or minor medical conditions could be treated better in a geriatric unit.

Aim
To study if an EMS nurse, with the help of a simple triage tool safely can steer and transport a geriatric patient directly to a more adequate level of health care.

Material/ Method
Patients (? 65 years) with priority grade II (delayed) and III (minimal) were included.

A triage tool was designed from previously identified medical conditions suited for care in a geriatric or primary care unit instead for an ED. All EMS personnel were educated in the method before the start. Patients were randomized by a dispatcher to an intervention (triage tool) group or control. The intervention unit transported the patients to an alternative health care unit with the help of the designed triage tool. We hypothesized that 20% of this patient group could be steered to alternative care.

Results
Of the first 110 randomised patients 42 % was steered to a more adequate level of health care i.e. a geriatric unit or primary health care. No medical inaccuracies or secondary transports from alternative care to the hospital ED were identified.

Conclusion
Almost half of all geriatric patients with chronic or minor conditions could be safely steered to geriatric or primary health care.

WE.83) Development and validation of a computer assessed feedback system in dispatch centre and ambulances in Stockholm, Sweden. : Veronica Lindström[1], Rolf Karlsten[2], Maaret Castrén[1] : 1. Institution of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, Stockholm, Sweden. 2. Department of Anaesthesiology and Intensiv Care, Uppsala University Hospital, Uppsala, Sweden.

Introduction:
Emergency medical services (EMS) are not easy to evaluate, the thru efficiency is difficult to determine and there are few validated indicators of effectiveness and quality. For that reason an evaluation of what takes place in the daily activity is needed. Studies show that feedback is a possible tool for this purpose. There are studies that elucidate need of feedback to emergency medical dispatcher (EMD). In Sweden the dispatcher use the Swedish medical index as a

decision support system, which is based on the level of care required. The Swedish medical index was implemented in 1998 and no known studies have evaluated the support system and the assessment made by the EMD. The aim of this study was to develop and validate a computer-assisted feedback system based on a Finnish model.

Methods:

The system was built around a technical support system used by the Swedish medical dispatch centre and the ambulance organisation in Stockholm: Chenit and Paratus Pocket. The feedback codes were derived from the medical index and assessment categories used in the ambulance. A seven step approach including literature review and an expert group was used to validate the feedback codes. The goal in the adaptation was to create a conceptual equivalence feedback system, not translate the system word by word. This first version of the feedback system was piloted in 2008 and some changes for greater clarity were made. Finally 42 codes were selected to be used in the feedback system.

Results:

The feedback codes are divided in three categories, the level of priority (four codes).No transport by the ambulance or transport to other level of care than dispatch (nine codes) and the ambulance nurse assessment of patients primary condition when ambulance arrives at the scene (29 codes).

Conclusion:

The computer-assisted feedback system can serve as a tool for evidence based approach to dispatching. Both the individual work of a dispatcher and the Swedish Medical Index can greatly be improved using this simple tool.

WE.84) INTERHOSPITAL TRANSPORT OF TRAUMA PATIENTS: A STRONG LINK IN THE CHAIN OF TRAUMA CARE : **Antonio Requena[1], Fermin Suberviola[1], Rosario López[1], Lourdes Palacios[1], José M. Porquet[2], Gracia García[1] : 1. 061 Aragón, Zaragoza, Zaragoza, Spain. 2. Ambuibérica, Zaragoza, Zaragoza, Spain.**

INTRODUCTION: Trauma patients in outlying hospitals are frequently transferred to regional trauma centers for evaluation and management of potentially life-threatening injuries. In Aragon (Spain), approximately 3.500 patients per year are transferred from one to another hospital in mobile intensive care units (MICU). There are two Level I trauma centers located in the capital, Zaragoza. OBJECTIVE: To analyse the profile of interhospital transport of trauma patients in our region. METHODS: A descriptive, retrospective study was conducted analyzing all interhospital transfer of trauma patients, over a 6 month span (February to July 2007) by 8 ground MICU and 2 Sanitary Helicopter. Data were collected from transport service records. Variables: Referring and receiving hospitals and services, criteria for transfer, diagnosis, patient's clinical status. Statistical analysis: Data were reported as counts and percentages. RESULTS: Of 1.406 patients transferred during the study period, 249 (17.7%) were trauma patients. 30 patients (12%) required transport by helicopter. 199 patients (80%) were sent to Level I Trauma centers: 83 from Level III centers, 97 from Level II and 19 were referred from the other Level I hospital. The most frequently receiving services include: Emergency Department (33.7%), Intensive Care Unit (28.1%) and Surgical services- mainly Neurosurgery and Traumatology (27.7%). Among the reasons to transfer trauma patients were

the following: specialist consultation (58.6%), intensive care (25.3%) and diagnostic test (7.6%). The most common diagnoses were traumatic brain injury (20%) and major trauma (10.4%). About patient's status: 16.5% were intubated, 5.2% were hemodynamically unstable (systolic blood pressure <90 mmHg) and 21.3% suffered any complication during transport. CONCLUSIONS: In regions with geographical dispersion as Aragon, interfacility transport services must be a strong link in the chain of trauma care, in order to ensure quality of care during transfer. It is necessary to better coordinate among referring and receiving centers to agree on trauma transfer criteria, reduce times and optimize resources.

WE.09) The performance of prognostic scores in predicting outcome for critically-ill patients in the emergency department (ED) : Elizabeth Liow[2], Giles N. Cattermole[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: The Prince of Wales Emergency Department score (PEDS) was developed to predict likelihood of mortality and evaluate the intensive-care needs of undifferentiated patients presenting to the resuscitation room. PEDS is specific for critically-ill ED patients and could aid in triage for intensive-care unit admission. Objectives: To validate and refine PEDS, and compare its performance with six previously-published scores for risk-stratifying critically-ill ED patients: MEDS (Mortality in the Emergency Department Sepsis), MEES (Mainz Emergency Evaluation Score), MEWS (Modified Early Warning Score), Simple Clinical Score (SCS), WPSS (Worthing Physiological Scoring System), and REMS (Rapid Emergency Medicine Score). METHODS: Design: Prospective observational study with ethical approval from The Chinese University of Hong Kong. Setting: The ED of the Prince of Wales Hospital in Hong Kong. Participants: 239 consecutive adult patients of triage category 1 and 2, presenting to the resuscitation room from 9am—5pm, Monday—Friday, September 2008—February 2009. Interventions: Physiological, point-of-care, laboratory, radiological, and demographic data to calculate all scores were collected. Main outcome measures: Composite primary outcome of 7-day mortality and/or intensive care admission. RESULTS: Area under receiver operating characteristic curve (AUROC) for PEDS validation cohort: 0.784 (95%CI 0.726—0.834); refined PEDS: 0.795 (95%CI 0.734—0.844); MEDS: 0.585 (95%CI 0.520—0.648) p<0.001; MEES: 0.731 (95%CI 0.670—0.786) p=0.202; MEWS: 0.744 (95%CI 0.684—0.798) p=0.328; SCS: 0.721 (95%CI 0.660—0.777) p=0.133, WPSS: 0.749 (95%CI 0.689—0.802) p=0.328, REMS: 0.721 (95%CI 0.660—0.770) p=0.176. (p-values for significance-of-difference from refined PEDS). CONCLUSION: The performance of all scores deteriorated when prospectively validated. Refined PEDS performed best; but was not significantly better than the other scores, except MEDS. Refined PEDS appears promising as a helpful adjunct to subjective clinical opinion.

Table 1: Refined PEDS score

Variable		Score
Glasgow coma score	Moderate (9-12)	4
	Severe (<9)	11

Serum bicarbonate	Low (<22)	5
Highest systolic blood pressure	Low (<100)	8
Range of score		0-24

Based on odds ratios for variables found to be independently significantly associated with worse outcome on multivariate logistic regression.

WE.10) Interobserver variability in grading capillary refill time by nurses and nurses-assistants : Mikkel Brabrand[1], Susanne Hosbond[2], Lars Folkestad[1] : 1. Sydvetjysk Sygehus, Esbjerg, Denmark. 2. Odense University Hospital, Odense, Denmark.

INTRODUCTION: Capillary refill time (CRT) is influenced by many factors. The interobserver variability has been questioned and no definition of normality has been accepted. Previous studies of interobserver variability of CRT have been on large numbers of patients but few observers. We decided to investigate how a large group of nurses and nurses-assistants would grade CRT. METHODS: For this prospective study, we recorded (with oral consent from the patients) a video of the index finger of six medical patients. We recorded the last second of a five second compression of the pulpa and ten seconds after release using one of the authors as an example. The videos were shown to nurses and nurses-assistants during an educational session with the example video shown as an introduction. The participants were blinded to the answers from the other participants and asked to record the CRT and whether or not they found this value to be normal or not without any predefined limit of normality. The data was analysed using the Fleiss Kappa Coefficient Analysis and graded according to the Landis and Koch grading system and are presented descriptively. RESULTS: Thirty-seven nurses and nine nurses-assistants participated in the study with a mean of 137 (SD +/- 111) months of experience. The patients were between 44 and 80 years old. All but one patient had a systolic blood pressure above 130 mmHg. All had an arterial blood oxygen saturation above 92 percent and all but one had a normal body temperature. The participants recorded the CRT (mean (SD)) for the patients as 1.8 (0.7), 3.6 (1.7), 2.7 (1.3), 5.8 (1.9), 7.1 (2.2) and 2.8 (1.5) seconds. As for whether the CRT was within the normal range 97.8%, 52.2%, 80.4%, 8.7%, 4.3% and 89.1% found the CRT as normal. When analyzing the data for CRT we found a ? of 0.12 and 0.52 for normality. CONCLUSION: This is the largest interobserver study of CRT when looking at the number of observers. We found only a slight agreement for the exact value of CRT but a moderate agreement for normality (with no predefined level of normality). CRT, therefore, should be used with caution in clinical practice.

WE.11) Early administration of antibiotics and hemodynamic resuscitation in the management of sepsis and
septic shock: Changes after the implementation of severe code sepsis : Alfons Aguirre[1], Jose Luis Echarte[1], Carlos Clemente[1], Francesc Del Baño[1], Silvia Minguez[1], Oriol Pallas[1], Maria Jesus Lopez[1], Isabel Campodarve[1] : 1. Hospital del Mar - IMAS, Barcelona, Spain.

INTRODUCTION: A Severe Code Sepsis (SCS) was designed in our Emergency Department

for the management of severe sepsis and septic shock (S/SS). Objective: To assess changes in the management of S/SS in relation to administration of antibiotics within the first 3 hours after triage (AB < 3) and sufficient volume load after implementation of SCS. METHODS: Prospective study of patients with S/SS in which the SCS was activated (activation code group (ACG)) (October 2006-2007) and retrospective study of all patients in which SCS was not activated (non-activation code group (non-ACG)) for the same period of time and for the period January-July 2006 (historic group (HG)). Patients with limitation of therapeutic effort were excluded. Compliance with AB<3, time from triage until administration of antibiotics, volume of crystalloids/colloids, adequacy of the fluid volume and lack of fluid infusion in the first hour were analyzed. RESULTS: ACG included 73 patients, non-ACG group 38, and HG 34. AB<3 was given to 88%, 60% and 56% of patients respectively (significant differences between ACG and HG). Median (range) time for antimicrobial therapy in the three groups was 72 (0–680), 63 (0–630) and 129 (0–405) min without significant differences. Sufficient volume load, crystalloids, colloids administration and lack of fluid infusion in the first hour were 82%, 97%, 67% and 1% in the ACG. For the non-ACG were 42%, 71%, 39% and 14%; for the HG 32%,47%,29%,and 44%. Differences (P<0.001) between the ACG and the HG were found for sufficient volume load, use of crystalloids, and use of colloids. Differences between the non-ACG and the HG were only significant (P<0.05) for the use of crystalloids. CONCLUSIONS: Use of SCS has improved the mean of AB<3 h and has decreased median time in use of antibiotics. SCS activation also improved the administration of sufficient fluid volumes for hemodynamic resuscitation.

WE.12) Traditional Anion-Gap Compared to Strong-Ion Gap in Critically Ill Emergency Department Patients : **Richard Sinert[1], Leah Bright[1], Nichlesh Patel[1], Arun Subramanian[1], Andrew Miller[1] : 1. Emergency Medicine, SUNY-Downstate , Brooklyn, NY, USA.**

INTRODUCTION: The presence of unmeasured anions in an Emergency Department (ED) patient points to potentially life-threatening metabolic derangements such as sepsis, diabetic or alcoholic ketosis, and numerous toxins. Traditional calculations of the Anion-Gap (AG) are confounded by changes in other cations (calcium, magnesium) and anions (albumin, phosphorous) commonly altered in critically ill patients. The calculation of Strong-Ion Gap (SIG) maybe a superior marker for unmeasured anions than AG because it corrects for alterations in cations and anions not included in the traditional AG calculation. Objective: To determine the prevalence of unmeasured anions by SIG in critically ill patients not identified by traditional measurements of lactate (LAC) and AG. METHODS: Inclusion Criteria – Patients triaged or transferred to our emergency department's Critical Care and Trauma Area because of impending respiratory or circulatory collapse. Exclusion Criteria: Patients dead-on-arrival or died before obtaining blood work, or transferred from other institutions. Patients were divided into 3 groups: Group 1 (AG, LAC and SIG all Normal); Group 2 (AG and/or LAC Elevated); Group 3 (AG and LAC Normal and SIG Elevated) Calculations: AG mEq/L = [Na+] – [Cl-] – [HCO3-]; SIG mEq/L = SIG (apparent) – SIG (effective); SIG mEq/L (apparent) = [Na+] + [K+] + [iCa++] + [iMg++] - [Cl-] – [LAC-]; SIG mEq/L (effective) = ((1000 x 2.46 x 10^-11 x PCO2 (mmHg)) / 10^-pH) + [Alb-] + [PO4--] Cutoffs: SIG > 2.0 mEq/L (literature-based), and AG > 15.0 mEq/L (hospital-norms) and lactate > 2.2 mEq/L (hospital-norms). Data were reported as means ± standard deviations or ratios with 95%

confidence intervals. RESULTS: 80 patients were studied, 55.8 yrs. ± 17.8 yrs; 62.5% male. Group I n=13, 16% (95% CI, 10%-25%); Group 2 n=47, 59% (95% CI, 48% - 69%); Group 3 n=20, 25% (95% CI, 17% - 36%). CONCLUSIONS: SIG identified a significant percentage (25%) of critically ill patients with unmeasured anions missed by AG and Lactate.

WE.13) SEPSIS AND SEPTIC SHOCK MANAGEMENT: EDUCATION IS NOT ENOUGH : Alfons Aguirre[1], Jose Luis Echarte[1], Silvia Minguez[1], Oriol Pallas[1], Francesc Del Baño[1], Maria Jesus Lopez[1], August Supervia[1], Isabel Campodarve[1] : 1. Hospital del Mar - IMAS, Barcelona, Spain.

INTRODUCTION: The “Survive Sepsis Campaign” recommends different measures aimed to achieve hemodynamic objectives within the first 6 hours in the management of patients with severe sepsis and septic shock (S/SS). Objective: To assess differences in the management of S/SS according to whether or not the sepsis code was activated and to compare the results obtained with a group of historic controls. METHODS: Prospective study between October 2006-2007 of patients with severe S/SS activation code group (ACG). Retrospective study (Jan-Jul 2006) based on discharge forms in all patients in which the code was not activated: non-activation code group (non-ACG) as well as a historic control group (HG) was carried out. Measures, objectives within the first 6 hours, and 28-day mortality rate were evaluated. RESULTS: ACG:73 patients, non-ACG: 38, HG. 34. ACG versus HG showed significant differences in performing blood cultures before antimicrobial use (87.7% vs. 55.9%), use of antimicrobials within the first 3h (ATB<3 h) (91.8% vs. 61.8%), lactate measurement (98.6% vs. 58.8%), hemodynamic resuscitation with sufficient volume infusion (82.2% vs. 32.4%), central venous pressure (CVP) (54.8% vs. 26.5%), and target mean arterial pressure achievement of (83.6% vs. 54.5%), diuresis (80.8% vs. 43.8%) and CVP (40.7% vs. 6.7%). There were no significant differences in the remaining variables. Non-ACG versus HG showed significant differences only in lactate measurement (89.5% vs. 58.8%). There were no significant differences in the remaining variables. The 28-day mortality rate was ACG: 13.7%; non-ACG: 10.5%, HG: 26.4%. The sample size did not allow us to detect significant differences in the mortality rate. CONCLUSIONS: Management of S/SS improved significantly following implementation of the sepsis code. Only assessment of serum lactate levels improved significantly when the code was not activated. Knowledge of practical guidelines is not enough if these measures are not systematically applied by means of activation of a severe sepsis code.

WE.14) Physician judgment is better than prognostic scores in predicting outcome for critically-ill patients in the emergency department : Elizabeth Liow[2], Giles N. Cattermole[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: The Prince of Wales Emergency Department Score (PEDS) was developed as an objective tool to guide management and intensive care referral from the emergency department (ED). PEDS has been shown locally to be at least as good as several other scoring systems. It is not known whether this score is better than ED physician judgment. Objective: To compare PEDS with physician judgment in the evaluation of critically-ill

patients. METHODS: Design: Prospective observational study with ethical approval from The Chinese University of Hong Kong. Setting: The ED of the Prince of Wales Hospital in Hong Kong. Participants: 115 patients presenting to the resuscitation room from 9am—5pm, Monday—Friday, September 2008 to February 2009. Interventions: Clinical data to calculate the PEDS score were collected. The attending ED physician was asked to make binary predictions and percentage estimates of patient 7-day mortality and need for intensive-care. Outcome measures: Composite outcome of 7-day mortality and/or intensive care unit (ICU) admission; single outcome of 7-day mortality; single outcome of ICU admission. RESULTS: (Tables 1 and 2): Physician judgment was more specific but less sensitive, and overall more accurate than PEDS for composite outcomes. Physician judgment was more accurate than PEDS for ICU admission, but similar for 7-day mortality. CONCLUSION: Physician judgment that a patient is critically ill and in need of ICU referral should not be overruled by the result of a prognostic scoring system. However, the scoring system would help to identify patients in need of critical care whose severity of illness might otherwise be unrecognised.

Table 1: Comparison of PED and physician judgment expressed as binary (yes/no) composite outcome of 7 day mortality or ICU admission

	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Accuracy
Physician judgment	69%	81%	46%	94%	79%
PEDS score >4	82%	71%	39%	95%	66%

PEDS score >4 was chosen as the most accurate point on the ROC curve.

Table 2: Comparison of PED and physician judgment expressed as percentage likelihood of single outcome

	Area under the ROC curve (95% CI)	
Outcome	7 day mortality	ICU admission
Physician judgment	0.82 (0.72-0.89)	0.94 (0.87-0.98)
PEDS	0.83 (0.77-0.87)	0.73 (0.67-0.78)

TH.61) Access to emergency services for those in rural areas:
Trends in rural emergency departments in the U.S. : Renee Y. Hsia[1], Yu-Chu Shen[2] : 1. Emergency Medicine, UCSF, San Francisco, CA, USA. 2. Naval Postgraduate School, Monterey, CA, USA.

INTRODUCTION: The Institute of Medicine and other public health institutions have voiced growing unease that there could be systemic disparities in access to traditionally underserved patients. One important indicator is the availability of critical services, such as those of emergency services, especially in rural areas. Objective: The objective of this study is to

determine if access to emergency departments, as defined by geographic proximity, has increased or decreased in rural areas for specific sub-populations over time from 2001-2005. METHODS: We obtained characteristics of communities using zip code level data from the 2000 Census and further supplemented this dataset with longitude and latitude coordinates of each zip code and hospital, and calculated the distance between each community to the nearest ED. We extracted data regarding ED availability between 2001-2005 from the American Hospital Association (AHA) Annual Surveys. Our unit of analysis was community as defined by zip code. Our key variables of interest were race/ethnicity, economically disadvantaged, and elderly. We used multivariable regression to determine the likelihood of increased distance compared to the reference population. RESULTS: A total of 9,754 zip codes were included in our sample, with an estimated population size of 37.8 million. Between 2001 and 2005, access to the nearest ED deteriorated for 7% of zip codes, equivalent to 3.1 million people. Two groups experienced a deterioration in access: areas with high shares of Hispanic population (2.72 times more likely to have decreased access to ED, $p<0.01$), and those with medium and high shares of families below poverty (1.81 and 1.8 times more likely to face decreased access to ED, $p<0.01$, $p<0.05$, respectively). CONCLUSIONS: We find that there has been a decline in proximity to the nearest ED for rural communities, and that this decline in access is not evenly distributed. These findings of this study have serious implications regarding the continued evolution of access to emergency departments for certain populations.

TH.62) Capacity planning of ambulances during large scale public events : Jan C. Christiaanse[1], Joost Bierens[1], Johan De Cock[1], Leo Verhoog[1] : 1. Safety Region Rotterdam, Rotterdam, ZH, Netherlands.

INTRODUCTION: The number of ambulance patient contacts (NAPC) in Rotterdam is 1 per 10.000 inhabitants. For the preparation of large scale public events (LSPE) a weighted estimate of the additional NAPC is necessary to provide adequate medical care to the participants. Underestimation of the NAPC will not only result in inadequate care for participants, but will also affect the regular health care system for the inhabitants of the city. For optimal planning, factors that might influence the NAPC of events (LSPE) were studied with a particularly interest in the effect of weather circumstances on NCA. METHODS: We prospectively studied the NAPC and NCA during 3 events in Rotterdam between 2002 and 2008. The Summer Carnival in July (900.000 participants), the Marathon in April (100.000 participants), the Dance Parade in Augustus (350.000 participants). All ambulance forms of 18 events were collected and studied according to temperature and relative humidity. RESULTS: During The Summer Carnival between 0,3 and 1,3 NAPC occurred per 10.000 participants. This was 0,9 to 2,8 for the marathon and 1,1 to 2,0 for the Dance Parade. There was no significant difference ($p >0,5$) between the NAPC within the types of events during the study period. There was a significant difference in the type of illness/injury (TII). The temperature and relative humidity varied from 12 to 32 Celsius and 20 -100% respectively. There was no relation between NAPC and weather circumstances except for one Marathon with an maximum temperature 32°C. CONCLUSION: There was no significant difference of NAPC per 10.000 for the summer carnival with the average NAPC for the City of Rotterdam. The higher number of NAPC during the marathons and the Dance Parade were within the common fluctuations of NAPC and do not need special planning.We were unable to compare our data with the international literature because of inconsistencies in data registration and reporting. It

is concluded that from a planning point of view participants of LSPE only need to be considered as a temporary extension of the population and that extra ambulances can be calculated accordingly.

TH.63) Impact of Consultation on Patients Length of Stay in Emergency Department : **Nadeem U. Qureshi[1] : 1. Emergency Medicine, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.**

INTRODUCTION: Consultation is an important aspect of Emergency medicine practice. Appropriate use results in improved quality of care. Limited data is available about the frequency of consultation and there is no study to date mentioning how consultation affects flow of patients through an emergency department. In this study we prospectively evaluated the impact of consultation on patient's length of stay in our emergency department. METHODS: A prospective study was conducted over a 30 day period in 2009 at the KFSHRC DEM in Riyadh, KSA. DEM is staffed by full time certified emergency physicians with 50,000 annual patient visits. Data was collected from the emergency physician and nursing chart for all ED patients. RESULTS: 4541 patient visits to the ED were recorded. 4259 patients were included in the study. 282 were excluded due to incomplete data. 755 consultations were made; 18% of the total ED visits. The consultation group was subdivided into phone consultation (Group A) and ED assessment group (Group B). There were 182 (28%) in Group A and 463 (72%) in Group B. Student's T Test was used for statistical analysis. The average length of stay for non consulted patients was 1:48 + 3:31 hours compared to 7:39+ 6:06 hrs for consultation group ($p<0.0001$). Subgroup analysis showed Group A patients LOS was 4:04 + 4:24 and Group B 9:07 + 6:15 hours. CONCLUSION: Consultation resulted in significantly increased length of stay for ED patients. ED assessment (group B) had a longer duration of stay compared to phone consultation (group A). To our knowledge this is the first study which discusses the impact of consultation on patients length of stay in the ED. Compared to other studies our consultation rates were lower at 18% of ED visits. This study provides an insight to one of the most critical factors associated with ED practice "Overcrowding". Developing consultation guidelines may help reduce length of stay of ED patients.

TH.64) The impact of price lists on the cost development at the emergency department : **Ulf Martin Schilling[1] : 1. Accidents and emergencies, Linköpings university hospital, Linköping, Sweden.**

Background: In a recent study it was shown that physicians working at the Swedish emergency department often are unaware of the real costs for analyses and investigations performed. In this study, the possible impact of price-lists as visual instruments on the overall laboratory and radiology costs at the emergency department of Linköpings university hospital (LUH) was evaluated. Method: Price lists including the most common laboratory radiological investigations performed at the emergency department of LUH were created. The lists were distributed to all physicians on-call in internal medicin by the internal email-provider in april 2008. Further lists were exposed above the working stations at the ER continually. The mean costs for laboratory and radiologic investigations for all medical and orthopaedic patients

during the months of june and july 2007 and 2008 were calculated. Neither clinical nor admission procedures were changed during the period investigated. The physicians were blinded towards the study. Statistical analysis was performed using the Student's T-test. Results: A total of 1442 orthopaedic and 1585 medical patients were attended to during june and july 2007. In june and july 2008, 1467 orthopaedic and 1637 medical patients required emergency service (a total increase of 1,7% of orthopaedic and 3,3% of medical patients). The mean costs per patient were 980,27SKR for orthopaedic and 1081,36 SKR for medical patients in 2007, and in 2008 999,41SKR (+1,95%) and 877,3SKR (-18,8%) respectively. In orthopaedic patients, laboratory costs decreased by 9% whilst the costs for radiological examination increased by 5,4%. In medical patients, the costs for laboratory analysis decreased by 21,4% and for radiological examination by 20,59%. Conclusion: The distribution and promotion of price lists as a tool to increase cost awareness at the emergency department resulted in a significant decrease in the investigation costs in the line investigated. It can be concluded that generally available price lists are an effective tool to cut costs in public health care.

TH.65) Prescription Errors Detected and Corrected by Pharmacy Service in the Emergency Department :
Marc Afilalo[1], Philip Stasiak[2], Xiaoqing Xue[1], Tanya Castelino[2], Antoinette Colacone[1], Nathalie Soucy[1], Jerrald Dankoff[1] : 1. Emergency Department, Jewish General Hospital, Montreal, QC, Canada. 2. McGill University, Montreal, QC, Canada.

INTRODUCTION: Emergency departments (ED) have been recognized as a high risk setting for prescription errors. Pharmacy involvement in the ED is an important resource that provides assistance in reviewing, identifying and correcting prescribing errors. The objective of this study is to describe the frequency and type of prescription errors detected and corrected by the pharmacy service in the ED, and to identify factors related to prescription errors. METHODS: Prospective observational study conducted in a tertiary teaching hospital ED in Montreal for 25 consecutive weekdays (Nov 17 – Dec 19 2008). The average ED visits was 180/day. All ED prescriptions were reviewed and validated by the pharmacy service (one pharmacist + one technician) operating weekday day shift (8:00 – 16:00). The pharmacy service practice is to flag and correct prescription errors for patients in the ED. Data collection involved the extraction of all errors and their correction from the ED prescription sheets. Patient demographic information was obtained through the ED administrative database. RESULTS: In total, 3105 prescriptions (containing 11,541 medications) were collected, of which 103 (3.3%) errors were identified. The most frequent type of error is wrong dose (n=28; 27%), followed by incomplete prescription (n=21; 20%), wrong drug (n=16; 16%) and wrong frequency (n=16; 16%). According to different shifts (day?evening?night), the percentages of prescriptions prescribed are 33%?40%?27%, errors identified are 21%?51%?28%, and errors corrected are 69%?88%?50%. Multiple variable analysis showed (OR; 95%CI) that elderly age 65+ (2.9; 1.3-6.4), emergency residents (3.0; 1.6-5.3) and number of medications prescribed (1.19; 1.14-1.24 for each additional drug) are associated with increased risk of prescription errors. CONCLUSIONS: The ED Pharmacy Service operating only during the day shift identified and corrected the majority of prescription errors. More prescription errors

occurred with older patients, when prescribed by emergency residents and when many medications were prescribed.

TH.66) Effect of Increasing Emergency Department Bed Capacity on Patient Flow Variables : Eric Anderson[1] : 1. Emergency Medicine, Cleveland Clinic, Cleveland, OH, USA.

INTRODUCTION: The objective of our study was to assess the effect of increasing bed capacity on various patient flow parameters in an emergency department. METHODS: This is a controlled before and after intervention study of the effect of increasing the bed capacity in an urban tertiary care teaching emergency department. The Cleveland clinic emergency department includes a 20 bed acute care side and a 14 bed fast track had an additional 12 acute care beds added, (relative 35.3% increase in capacity). RESULTS: There were 16,790 patient visits before and 17,467 patient visits after the intervention, each period was 4 months in length. Time to physician or physician extender (time to physician) decreased from an avg of 38.5 min to an avg of 37.5 min after the intervention. Average length of stay (LOS) for admitted patients was 381 min before and 357 after intervention, net -24 min. Avg LOS Discharged patients 205 min before and 208 min after admission, net + 3 min. Number of elopements (AMA + AWOLs) before the intervention was 558 and 444 after, (20% reduction). CONCLUSION: Adding beds to this urban tertiary care teaching emergency department resulted in a 24 min decrease in the LOS for admitted patients and a 20% drop in total elopements. There was no change in LOS for discharged patients or time to physician. When there are no other changes in the emergency department or hospital operations, simply adding beds does little to improve time to physician or total ED throughput time, however decreased elopements poses a possible area for revenue recovery for hospitals.

TH.67) A Physician in Triage – A Key to an Efficient ED : Hasan Al Shabanah[1], Khalid Abu Haimed[1], Tawfeek Al Abdullah[1], David Smith[1] : 1. Department of Emergency Medicine, King Faisal Specialist Hospital and Research Centre, Riyadh 11211 , Saudi Arabia.

INTRODUCTION: Overcrowding in the ED significantly impedes the delivery of quality care and diminishes patient satisfaction. Any intervention that reduces time to physician contact and total stay in the ED should favorably impact this universal problem. Objective: Evaluate the effect of placing a physician in triage (Triage Physician-TP) with regard to time to physician contact and length of stay in the ED. METHODS: The was a pre-post chart review analysis of data collected at our tertiary care hospital in February-May 2008, before and after placing an emergency physician in triage. In May 2008, from 8:00 AM-4:00 PM, weekdays, the TP performed the initial evaluation on Canadian Taskforce Acuity Scale (CTAS) 4 & 5 patients, ordered tests if necessary, recommended treatment and/or discharged the patient. We collected data on door-to-doctor time, total time in the ED, and 72 hour returns. This data was compared with similar time periods from February and April, 2008.
RESULTS: Door-to-doctor time decreased from over 2 hours to less than 15 minutes (adults) and less than 30 minutes (pediatrics). Total time in the ED for both groups dropped from 3.5 hours to 1.5 hours. There was no significant change in the rate of 72 hour returns.
CONCLUSION: Utilizing a triage physician had a profound affect on the door-to-doctor time

and total time in the ED for CTAS 4 & 5 patients with no apparent decrease in quality of care, as measured by the 72 hour return rate.

TH.68) Emptying the "Corridors of Shame" – Organisational Challenges in Meeting the Imposed Four-Hour Target for Emergency Departments in the UK : Ellen J. Weber[1], Suzanne Mason[2], Angela Carter[3] : 1. Emergency Medicine, University of California San Francisco, San Francisco, CA, USA. 2. School for Health and Related Research, University of Sheffield, Sheffield, United Kingdom. 3. Institute for Work Psychology, University of Sheffield, Sheffield, United Kingdom.

INTRODUCTION: Since 2005 Emergency Departments (EDs) in England must meet a throughput target of ? 4 hours for 98% of patients. Challenges to meeting the target have not been previously described. Objective: Identify organisational challenges in meeting the 4-hour target. METHODS: Design: Observational, cross-sectional, qualitative. Setting, Participants and Interventions: 32 semi-structured face-to-face interviews undertaken between June-August 2008 with Lead Clinicians, Head Nurses, Business Managers and ED staff in nine acute Trusts in England (36,000-91,000 visits/yr) with different performances on the target. Themes were reflected back to interviewees for validation. One researcher coded interviews for all sites; for 25% of interviews, coding was reviewed by a second researcher. Analysis: Using grounded theory, themes were considered salient if mentioned by multiple respondents at one ED or across sites. RESULTS: Three EDs reported meeting the target from an early date; three reported recent, sustained success; three were still struggling to meet the target consistently. Salient themes were: Flow improvements within EDs, most commonly ‘streaming’, ‘see and treat’, labs/x-rays ordered on patient arrival, senior decision makers involved earlier in care, and clinical decision units. Inpatient bed availability impacted on consistency in meeting the target. Involvement of the wider Trust in meeting the target, particularly with regard to bed availability, was delayed; EDs described change in Trust leadership, and/or the response of the Chief Executive to a crisis, as turning points. The burden of the target was perceived to fall most heavily on nurses, causing both greater perceived stress and authority. CONCLUSION: Meeting a time-related target requires major process redesign driven by the desire to achieve change within and beyond the ED. A collaborative effort involving the entire hospital and its workforce is necessary at the outset and in order to achieve sustainability.

TH.69) Challenges in Implementing a Continuous Quality Improvement System in Developing Emergency Medicine Systems : J. Stekelenburg[1], J. C. Berends[1], C. M. Houser[1] : 1. Academic Medical Center, Amsterdam, Netherlands.

INTRODUCTION: Emergency Medicine is a growing specialty in the Netherlands. An important component of a developed Emergency Medicine system is the implementation of a continuous quality improvement (CQI) program within each department, as one way to ensure that international standards for the delivery of Emergency Medicine care are being met. Our goal was to pilot this process and create a standard form on which measurements of quality indicators could be scored, as a starting point for data collection by individual hospitals. METHODS: Options for data collection were manual chart review, ICT records and billing codes. Indicators were selected from recognized Emergency Medicine quality systems used in

other countries. Two sets of indicators with a focus on specific and measurable areas were selected. One set was developed for monthly evaluation and a second set for a rotating pattern of evaluation. RESULTS: A standard form was developed on which measurements could be scored for departmental feedback (see appendix). Implementation of quality indicators in our Emergency Department was more difficult than anticipated. The required data for each indicator could not be retrieved by pre-selection of billing codes because the registration of these codes was often not reliable. The lack of an electronic patient chart meant that manual review of all paper charts was required, which was time consuming. Charting was often incomplete on the topics of interest. Documentation of time intervals, repeated measurements of vital signs and time of medication administration were areas identified for special attention. CONCLUSION: Implementation of a system for continuous quality improvement in the Emergency Department is a basis for higher standards in Dutch Emergency Medicine and improved patient care. Each Emergency Department will encounter challenges in implementing such a system. Awareness of the likely difficulties to be encountered allows proactive interventions in charting and ICT development, and a ready-made tool facilitates CQI program implementation for other departments that would like to begin such a system.

Monthly indicators

General information					
Date ED visit					
Patient identification number					
Date of birth					
Chief complaint noted by triage/registration					
Diagnosis/conclusion (as noted by doctor)					
Time intervals ED visit (in 24 hr clock format)					
Triage category (Manchester Triage System)	red	orange	yellow	green	blue
Time at administration					
Time at triage					
Time seen by doctor					

Time of disposition by doctor					
Vital signs (predefined age-related normal values)		**Abnormal?**		**Value:**	
Pulsoximetry – SO2	not measured	yes	no		
Respiratory rate	not measured	yes	no		
Heart rate	not measured	yes	no		regular/irregular
Blood pressure	not measured	yes	no		
Temperature	not measured	yes	no		rectal/ear/other
Pain score	not measured	yes	no		
Action taken if abnormal vital signs/pain score?	no	repeat measure	O2	fluids	medication
	admission	policlinic	GP check up	other:	
If medication given, which?	analgesics	antipyretics	antibiotics	nebulizer	
	antiarrhytmics	antihypertensives	steroids	other:	
Vital signs normalised after action taken?	yes	no			
Return ED visit within 48 hrs (with same complaint)					
Different diagnosis/conclusion than at prior ED visit?	yes	no			
Final diagnosis/conclusion					
Consequences for treatment?	yes	no			
Specify					

Consequences for the patient?	yes	no			
Specify					

Rotating two-monthly indicators

Tetanusprohylaxis (Toxoid / TIG)					
Type of wound	laceration	abrasion	corneal abrasion	burn	
Tetanus prophylaxis given?	yes	no			
Toxoid or TIG?	Toxoid	TIG	both		
If none given, state reason	clean minor wound	<10 yr last shot	allergy	patient refuses	other:
Aspirin and / or EKG in chestpain					
Aspirin given?	yes	no			
If none given, state reason	active gastric ulcer	aspirin allergy	given in ambulance	already uses it & took it	other:
Dose (mg)	<160	?160			
EKG ordered?	yes	no			
If no, state reason					
EKG in syncope					
EKG ordered?	yes	no			
If no, state reason	clearly reflex syncope	other:			
Abdominal pain in women of child-bearing age					
Urine pregnancy test ordered?	yes	no			
If no, state reason	proven IU pregnancy	other:			
Time to antibiotics in sepsis* (hrs)					

Time antibiotics ordered by doctor					
Time antibiotics given by nurse/doctor					
Antibiotics given < 1 hr after registration?	yes	no			
Antibiotics given < 1 hr after triage?	yes	no			
Antibiotics given < 1 hr after seen by doctor?	yes	no			

*** (infection and 2 or more of: Temp > 38 or < 36°C, HF > 90/min, RF > 20/min, L > 12 or < 4 x 10^9/L)**

TH.70) Validity of the Canadian Triage and Acuity Scale at a Tertiary Care Center in Saudi Arabia : Ayad Aldarrab[1], Ghada Bakhedher[1], Khalid AbuHaimed[1], Mobarak Almulhim[1], Nadeem Qurashi[1] : 1. KFSH&RC, Riyadh, Saudi Arabia.

INTRODUCTION: The Canadian Triage and Acuity Scale (CTAS) is a 5-level triage tool, with 1 being the most acute. It has been shown to be a reliable and valid triage tool in Canada. In 2002, CTAS was first instituted at our tertiary care center in Saudi Arabia. However, it has never been evaluated in our population. Objective: We seek to evaluate the validity of CTAS in predicting hospital admission at our tertiary care center in Saudi Arabia. METHODS: Our emergency department (ED) sees 45000 visit per year with an overall admission rate of 9%. A retrospective study of all patients presenting to our ED from September 1st until September 30th 2007 was performed. The CTAS category and ultimate disposition for each patient was recorded. For this study ED death and hospital transfer were considered as admissions. RESULTS: During the study period 4108 patients visited the ED and 3636 were included in the final data analysis. Four hundred seventy two patients were excluded due to missing or incomplete data. The total number in each triage category were: 18 (CTAS1), 150 (CTAS2), 896 (CTAS3), 2098 (CTAS4), 474 (CTAS5). Hospital admission rates were: 67% (CTAS 1), 47% (CTAS2), 18% (CTAS3), 3% (CTAS4), 1% (CTAS5). CONCLUSION: At our tertiary care center in Saudi Arabia, CTAS appears to be a valid triage tool that predicts patient's disposition from the ED.

TH.33) Plasma Vasopressin and Norepinephrine Profiles Predict Outcome in Septic Patients with Impaired Compensatory Mechanisms : Tzong-Luen Wang[2], Kuo-Chih Chen[1], Shih-Wen Hung[1] : 1. Shin-Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan. 2. Medical School, Fu-Jen Catholic University, Taipei, Taiwan.

INTRODUCTION: Objective: To evaluate the role of plasma vasopressin/norepinephrine ratios in disclosing masked septic shock. METHODS: A prospective sample of consecutive patients visiting the emergent department of a university teaching hospital and meeting the

criteria of sepsis was enrolled. Besides sepsis work-up, we measured plasma vasopressin and norepinephrine concentrations and their ratios to detect the occurrence of septic shock in those without compensatory mechanisms. RESULTS: Of 284 patients with sepsis, 45 aged from 45 to 92 years old met the inclusive criteria from January 2007 to December 2007. They were classified as those with septic shock (n=12), those with severe sepsis (n=22) and those with only sepsis (n=11) according to 6-hour outcome. The plasma vasopressin level measured before the final outcome was significantly lower for those with septic shock (septic shock group, 3.8+/-0.9 pg/mL [95% CI 3.2 – 4.4 pg/mL]; severe sepsis group, 19.3+/-3.5 pg/mL [95% CI 17.5 – 20.8 pg/mL]; sepsis group 10.2+/-3.2 pg/mL [95% CI 8.2 – 12.2 pg/mL], P<0.001) whereas the norepinephrine level highest for the same group (septic shock group, 3,490+/-410 pg/mL [95% CI 3,215 – 3,765 pg/mL]; severe sepsis group, 3,290+/-558 pg/mL [95% CI 3,043 – 3,537 pg/mL]; and sepsis group, 1,854+/-427 pg/mL [95% CI 1,562 – 2,146 pg/mL]). At a cut-off value of 5 pg/mL, the sensitivity and specificity of plasma vasopressin in diagnosing septic shock are 100% (95% CI [71%-100%]) and 97 (95% CI [85%-99%])%, respectively. At a cut-off value of 2,750 pg/mL, the sensitivity and specificity of plasma norepinephrine in diagnosing septic shock are 100% (95% CI [71%-100%]) and 47% (95% CI [30%-65%]), respectively. The vasopressin/norepinephrine ratio had a sensitivity of 97% (95% CI [91%-100%]) and a specificity of 82% (95% CI [76%-88%]) at a cut-off value of vasopressin/norepinephrine of 1.0 x 10-3. CONCLUSIONS: Plasma vasopressin/norepinephrine profiles can provide accurate prediction of impending septic shock and outcome for the patients with impaired compensatory mechanisms.

TH.34) Inappropriate antibiotic use: are ED physicians different than primary care? : James E. Svenson[1], Nasia Safdar[1], Barry C. Fox[1], Robert S. Wigton[2] : 1. Section of Emergency Medicine, University of Wisconsin, Madison, WI, USA. 2. University of Nebraska, Omaha, NE, USA.

INTRODUCTION: Antibiotic resistance due to use and misuse of antibiotics is growing. The CDC has published guidelines for the appropriate use of antibiotics for acute respiratory infections (ARI) in the hope of decreasing inappropriate use. Despite this, antimicrobials continue to be frequently prescribed for these conditions. Emergency Department providers (EDP) are often cited as the worst offenders. Reasons given for these cited differences include;patients may be more ill in the ED,be less likely to have insurance,lack access to good follow-up,and have differing patient expectations regarding need and desire for antibiotic. Previous studies of antibiotic use for respiratory infections have predominantly focused on primary care providers (PCP). The purpose of our study was to compare antibiotic prescribing practices of EDP to PCP using the same case scenarios. METHODS: We recruited EDP from members of the Wisconsin ACEP. A paper case vignette study was sent to all 272 members. The paper case vignettes were the same as previously used in studying the antibiotic prescribing patterns of 101 community practitioners. Each practitioner was given 20 case vignettes describing patients with ARI symptoms. After reading each case, respondents were asked whether or not they would prescribe antibiotics. Variables of interest had previously been selected through previously reported clinical and patient factors. Judgment analysis was used to determine overall antibiotic use and the variables most important in decision making. RESULTS: 104 surveys were completed. Antibiotics would have been prescribed in 51% of the cases. This compares to 44% in PCP responses to the same cases. Most weight was given

to duration of illness,followed by temperature and cough. For PCP most weight was given to duration,followed by temperature and sinus symptoms. CONCLUSIONS: EDP tend to prescribe antibiotics more frequently than PCP even for the same case scenarios. Duration of illness,rather than patient expectation or other illness parameters was the most important factor in this decision. This is an important area for practitioner education.

TH.35) IMPLEMENTATION OF A SEPSIS CODE FROM TRIAGE IN THE EMERGENCY DEPARTMENTS. RESEARCH PROJECT OF THE CATALAN SOCIETY OF EMERGENCY MEDICINE IN THE FRAMEWORK OF THE ALLIANCE FOR THE SAFETY OF PATIENTS IN CATALONIA : **Manuel R. Chanovas-Borràs[1], Jose L. Echarte-Pazos[2], Gemma Olivé-Olivé[3], Dolors Garcia[4], Carola Orrego[5], Nuria León-Bertrán[6], Mariona Secanell[5], Montserrat Pech-Solà[1], the Working Group Sepsis Code SoCMUE In representation[7] : 1. Urgencias, Hospital Verge de la Cinta, Tortosa, Tarragona, Spain. 2. Hospital del Mar, Barcelona, Barcelona, Spain. 3. Consorci Parc Taulí, Sabadell, Barcelona, Spain. 4. Fundació Althaia, Manresa, Barcelona, Spain. 5. Fundació Universitària Avedis Donabedian, Barcelona, Barcelona, Spain. 6. Centro Peracamps. Hospital del Mar, Barcelona, Barcelona, Spain. 7. Catalan Society of Emergency Medicine (SoCMUE), Catalonia, Spain.**

INTRODUCTION: Objective: To assess the level of compliance with a Severe Sepsis Activation Code and the achievement of hemodynamic objectives in the first 6 hours in comparison with a group of historic controls. METHODS: To compare data from a historic control group with a discharge diagnosis of severe sepsis/septic shock and a group of patients in which the sepsis code was activated in four acute-care teaching hospitals. Clinical variables, adherence to therapeutic measures and hemodynamic objectives in the first 6 hours, and in-hospital mortality were collected. RESULTS: The code was activated in 171 patients (mean age 65 years, 56% men) and the historic group included 84 patients (mean age of 72 years, 58% men). The code activation group as compared with controls showed a higher level of compliance with the following measures: sufficient intravenous volume in the first hour (71 vs 24%), determination of serum lactate (97 vs 45%), blood culture prior to antimicrobial treatment (96 vs 62%), administration of antimicrobials within the first 3 hours (93% vs 54%), and all measures (34 vs 2%). There were significant differences in the achievement of hemodynamic objectives regarding diuresis > 0.5 mL/kg/h (79 vs 45%), central venous pressure of 8–12 mm Hg (72 vs 14%), mean arterial pressure > 65 mm Hg (90 vs 65%), central venous saturation > 70% (58 vs 10%), and achievement of all objectives (54 vs 2%). A decrease in the length of hospital stay, with a median of 14 vs 15 days was observed. The in-hospital mortality in the activation code was 16% and in the control group 38% ($P < 0.001$). CONCLUSIONS: 1- The implementation of a sepsis activation code improved significantly the process of care of patients with severe sepsis/septic shock. 2- A decrease in the mortality of patients with severe sepsis/septic shock was observed. 3- Patients with severe sepsis/septic shock benefit from early antibiotic administration, sufficient intravenous volume as well as strict hemodynamic monitoring during the first 6 hours.

TH.36) Sensitivity of Erythrocyte Sedimentation Rate and C-Reactive Protein in Emergency Department Patients with Septic Arthritis : **Praveen Hariharan[1], James K. Takayesu[1], Christopher Kabrhel[1] : 1. Emergency Medicine, Massachusetts General Hospital, Boston, MA, USA.**

INTRODUCTION: Septic arthritis (SA) is a life threatening and disabling disease which requires a high level of suspicion to diagnose. Prior studies of post-operative orthopedic patients suggest that erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) may be sensitive indicators of SA, though data in undifferentiated Emergency Department (ED) patients are lacking. The objective of this study was to determine the sensitivity of ESR and CRP in the diagnosis of SA. METHODS: Retrospective analysis of ED patients diagnosed with of SA between Jan. 2003 to Dec. 2008. Eligible patients had an ICD-9 diagnosis of pyogenic arthritis (711.0x) and one of the following: 1) positive synovial fluid culture; 2) positive synovial gram stain for bacteria or; 3) operative irrigation for SA. Patients were excluded if no ESR or CRP were performed within 24 hours of ED visit. Descriptive statistics and univariate analysis were performed. Sensitivity was calculated with 95% CI. The Partners Healthcare Human Research Committee approved the study. RESULTS: We identified 143 patients with SA. The mean age was 49 (±22) years and 85 (59%) were male. Race was: 125 (87%) white, 4 (3%) black and 12 (8%) Hispanic. Thirty-five (24%) had infection of prosthetic joints. Synovial cultures were positive in 102 (71%). ESR was done in 140 (98%), CRP in 96 (67%), and both tests in 93 (65%) patients. Sensitivity of ESR was: 97% (95%CI = 92%-99%) using a cutoff of >10mm/h, 86% (95%CI = 79%-91%) using >20mm/h and 78% (95%CI = 70%-84%) using >30mm/h. Sensitivity of CRP was 92% (95%CI = 84%-96%) using a cutoff of >20mg/L, 80% (95%CI = 71%-87%) using >40mg/L and 73% (95%CI = 63% -81%) using >60mg/L. Using a combination of ESR and CRP, the sensitivity was: 99% (95%CI = 94%-100%) using ESR >10mm/h or CRP >20mg/L; 96% (95%CI = 90%-98%) using ESR >20mm/h or CRP >40mg/L and; 89% (95%CI = 82%-93%) using ESR >30mm/h or CRP >60mg/L. CONCLUSION: ESR and CRP are sensitive tests for SA, but only when very low cutoffs are used. At such low cutoffs, these tests are unlikely to have sufficient specificity to be clinically useful.

TH.37) The incidence, recognition and treatment of severe septic patients in a Dutch teaching Hospital :
Maro Sandel[1], Eline Moyaart[1], Christine Evertse[1], Piet H. Melief[1] : 1. Emergency department, Haga Hospital, The Hague, Netherlands.

INTRODUCTION: The ‘surviving-sepsis-campaign’ (SSC) guidelines promote the early recognition and treatment of severe septic patients in order to achieve lower morbidity and mortality. There is little data available on the incidence, recognition and initial treatment of severe septic patients on Dutch emergency departments and nursing wards. The purpose of the present study was to measure the incidence, recognition and treatment of patients with severe sepsis in the emergency department (ED) and nursing wards before hospital-wide implementation of the SSC guidelines. METHODS: We performed a hospital-based retrospective observational study using prospectively collected electronic databases, in a large teaching hospital in The Hague, The Netherlands. We conducted an outcome-blinded electronic screening of patients admitted with an infectious disease combined with clinical or laboratory evidence of organ failure from 1 April 2007 to 31 December 2007. We obtained data on demographics, laboratory and clinical features on admission. We used paper records to confirm electronic identification of severe septic patients and to study their treatment. We followed up all patients until hospital discharge or death. Of 1,553 admissions with an infectious disease, comprising 1,355 patients, 63 patients were identified as having severe

sepsis. 41 (65%) of these patients were admitted via the ED. All patients received antibiotics after performing blood cultures. Lactate was measured in a minority of patients. 19 severe septic patients died during hospital admission, leaving an overall mortality of 30.2%. In 26 patients (41.3%) we noticed a significant time delay in diagnosing severe sepsis between retrospectively identified and clinically confirmed septic patients. In about 15% of retrospectively identified septic patients, the diagnosis was not found in the medical records. CONCLUSION: Severe sepsis is difficult to recognize and under-diagnosed in a Dutch teaching hospital population. An information campaign about the surviving sepsis guidelines is likely to improve the early recognition and treatment of severe septic patients.

TH.38) Performance of a Chief Complaint Classifier for Syndromic Surveillance for Three Gastrointestinal Sub-syndromes

: Dennis G. Cochrane[2], John R. Allegra[1], Hwa-Gan Chang [3], Jian-Hua Chen [3] : 1. Morristown Memorial Hospital, Morristown, NJ, USA. 2. Emergency Medical Associates of New Jersey Research Foundation, Livingston, NJ, USA. 3. New York State Department of Health, Albany, NY, USA.

INTRODUCTION: Syndromic surveillance for disease outbreaks is performed in emergency departments (EDs) by examining patient chief complaints (CC). Visits are grouped into broad syndromes such as the gastrointestinal (GI). It may be useful to break these broad groupings into smaller ones called sub-syndromes. The Centers for Disease Control (CDC) has developed CC and ICD9 sub-syndrome classifiers for the major syndromes for early detection. Our objective in this study was to examine reasons for false-negative (FN) and false-positive (FP) classifications and determine whether they were due to correctible deficiencies in the computerized CC classifiers or due to a lack of information in the CC. METHODS: Design: retrospective chart review. Setting: four EDs with electronic medical records for the 24 month period from May 1, 2005 to April 30, 2007. We restricted our study to the three GI sub-syndromes with highest prevalence: abdominal pain, nausea/vomiting and diarrhea. We assigned the visits to the sub-syndromes if there was an acute (< 2 weeks) episode that was possibly infectious in origin. We did not count the visit into a GI sub-syndrome if another specific etiology was present; e.g. migraine, acute MI, etc. We also classified visits using sub-syndrome computerized classifiers. We then categorized the reasons for discordance between the two methods. RESULTS: Of 3000 charts randomly chosen from a total of 238,519 ED visits, 2448 had complete records. For the three sub-syndromes, the “correctible” false negatives (FNs) and false positives (FPs) ranged from 1-5% and 0-6% respectively. The “uncorrectable” FNs were due to inadequate information in the CC. The “uncorrectable” FPs were due to “CC refuted in chart” 4-8%, “unlikely contagious” 21-50% , “symptoms > 2 weeks” 10-25%, and “patient not GI” 17-56%. CONCLUSION: We found discrepancies in classifications were almost entirely due to lack of information in the CC rather than correctible deficiencies in the computerized CC classifier.

TH.39) Emergency department origin prior to ICU admission of septic shock patients: impact on mortality

: Angel Estella[1], Luis Pérez Fontaiña[1], Jose Ignacio Sanchez Angulo[1] : 1. Emergency Department. Hospital SAS Jerez, Jerez, Spain.

INTRODUCTION: Frequently the initial management of septic patients occurs outside of the ICU. OBJECTIVE: To describe clinical characteristics and outcome of septic shock patients admitted to the ICU and to compare mortality according to origin prior to admission to the ICU (emergency department versus medical or surgical wards). METHODS: Consecutive patients with septic shock admitted to the ICU from July 2007 to November 2008 were enrolled. Age, ICU length of stay, source of infection, isolated bacteria, blood lactate concentration, APACHE II score and mortality were collected. Patients were classified according to the origin prior to admission in ICU. RESULTS: 97 consecutive septic patients were admitted to the ICU during the time of the study, global mortality was 34%. 58 patients were admitted from medical or surgical wards and 39 patients from the emergency department. In the group of patients from the emergency department, mean age was 63,4 years, ICU length of stay was 8,2 ± 5,7 days, the mean APACHE II score at admission in ICU was 18,7 ± 7. Abdominal infection, 13 cases (33,3%), and urinary infection, 13 cases (33,3%) were the most common source of infection. 13 patients (33,3%) had a positive bacterial culture, the mean baseline lactate level was 4,1 ± 2,5. There were no differences in clinical characteristics according to origin prior to admission to the ICU except for lactate level (4,1± 2,5 vs 3,6± 4,1 $p<0,05$) , and mortality, 56,9% in the medical and surgical wards group and 17.9% in the emergency department group ($p<0.05$). CONCLUSIONS: According to the origin prior to admission to the ICU of septic patients there were no differences in clinical characteristics, ICU length of stay, source of infection, isolated bacteria and APACHE II score. Mortality was lower in the group of patients admitted to ICU from the emergency department than the group admitted from medical and surgical wards.

TH.01) Title: Do parents use the Emergency Medicine Department as a Primary Care Center?

Yemal Calderón, Fernando Soto, Rafael Colon, Salvador Villanueva, Luis Serrano : Yemal C. Amezquita[1], Luis A. Serrano[1], Fernando Soto[1] : 1. University of Puerto Rico, San Juan, PR, USA.
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Introduction
Emergency Departments' expenses have increased enormously nationwide. Several factors are contributing to this including access to primary care services (PCC), health insurance coverage or lack thereof; as well as misinformation about the structure of the health services
Objectives
To determine if parents from pediatric patients consider the emergency department as their PCC.
Methods
This was a prospective cohort study of a convenience sample of patients aged 28 days to 18 years presenting to an academic community hospital with fever and discharged home. Follow up at 10 days after their original visit was performed using a structured data collection form. Demographic information was obtained from a retrospective chart review of recruited patients.
Results
A total of 115 patients were enrolled. Thirty-four (39.5%) patients were excluded due lost to follow up. The median age was 2 years (range 1 month-13 years) and 45% were male. Thirty-three (40.7%) patients considered the ED as their PCC. Reasons cited by the caretakers included: easier access (closer to home and lack of primary care physician) 12(36.4%), better

care 9 (27.2%), and faster medical evaluation 6 (18.2%). Thirteen (16%) patients returned to the ED after their initial visit. No difference was found between type of medical insurance (p=0.752), sex (p=0.150), and obtaining primary care physician evaluation after the initial evaluation (p= 0.077) between those considering the ED as their PCC and those who did not. The children of those parents who considered the ED as their PCC were younger (median age 1 year vs. 4 years, p=0.0036).

Conclusion

Parents of younger patients are more likely to consider the ED as their PCC. There was no difference in ED use as PCC between sex, follow up, or whether or not the patient had a private health plan vs government insurance.

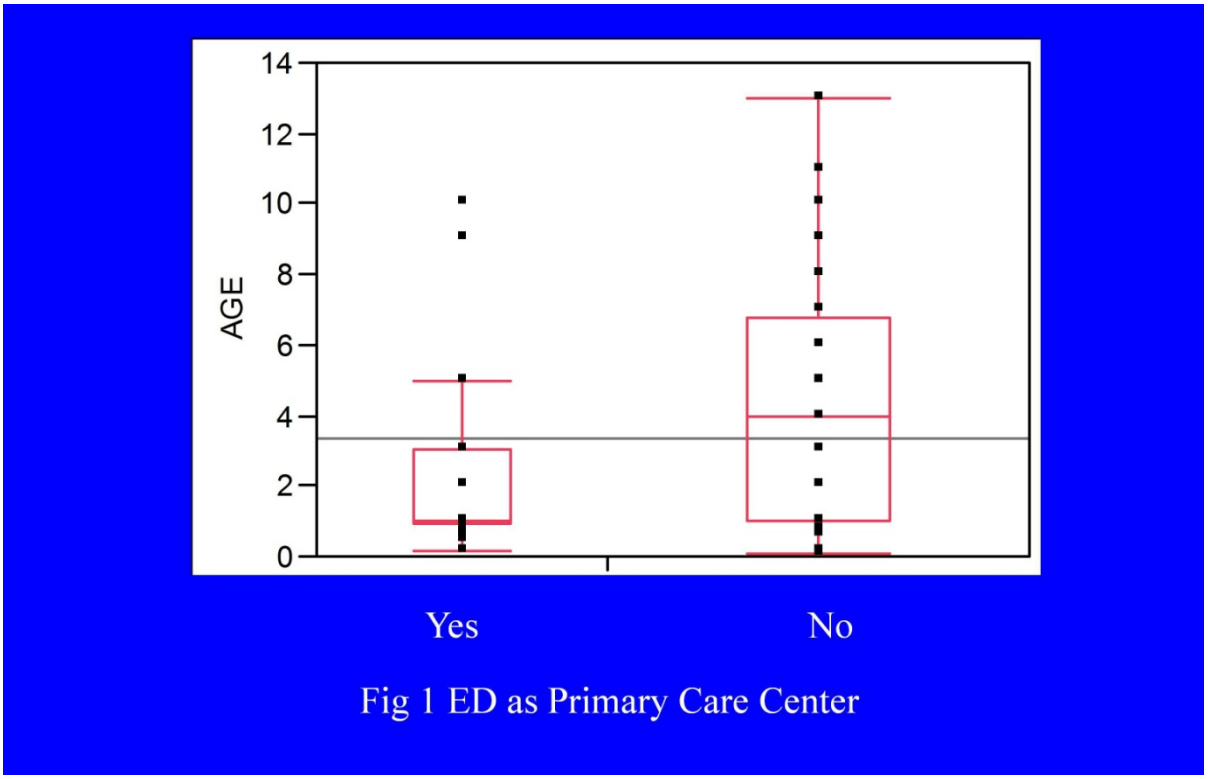


Fig 1 ED as Primary Care Center

TH.02) Children's Discomfort During Ultrasound Cardiac Output Monitoring (USCOM) is Similar to that During Blood Pressure Measurement. : Giles N. Cattermole[1], Mia Leung[2], Paulina Mak[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: The Ultrasound Cardiac Output Monitor (USCOM) provides a non-invasive Doppler ultrasound measure of cardiac output and other cardiovascular parameters. USCOM involves placing a probe in the suprasternal notch with some pressure, and this could

potentially cause children some distress. Objective: To compare the degree of discomfort experienced by children during an USCOM scan with that experienced during standard non-invasive oscillometric blood pressure measurement. METHODS: Design: Prospective observational comparative study; part of the “Healthy Children’s Vital Signs and USCOM Values” study for which ethical approval was obtained from the Chinese University of Hong Kong. Setting: Primary schools and kindergartens in Hong Kong. Participants: 254 Chinese children (131 boys, 123 girls), aged 3-12 years old (mean 7.9, SD 2.4). Interventions: The Wong-Baker faces 5-point pain scale (0=no pain, 5=hurts worst) was used to assess discomfort following blood pressure and USCOM measurements. Main outcome measures: Pain scores were compared using the Wilcoxon signed rank test, 95% confidence intervals with the t-test. A pain score difference of 1 was considered clinically relevant. RESULTS: (Table 1): USCOM was associated with a clinically significant ($p<0.0001$) but clinically irrelevant difference in pain scores (0.36). This difference was larger but still clinically irrelevant in children over 7 years old (0.49). In younger children there was no difference between USCOM and BP pain scores. There were no significant differences between boys and girls. CONCLUSION: There is no clinically relevant difference in the discomfort experienced by children, between USCOM and blood pressure measurement.

Table 1

	n		Median pain score (IQR)	p value	Mean pain score ± SD	Mean difference (95% CI)
Overall	254	USCOM	1 (1-2)	<0.0001	1.49 ± 1.18	0.36 (0.21 to 0.51)
		BP	1 (0-2)		1.13 ± 1.02	
Children over 7 years old	171	USCOM	2 (1-3)	<0.0001	1.65 ± 1.21	0.49 (0.32 to 0.66)
		BP	1 (0-2)		1.16 ± 0.92	
Children under 7 years old	83	USCOM	1 (0-2)	0.58	1.16 ± 1.07	0.08 (-0.21 to 0.39)
		BP	1 (0-2)		1.07 ± 1.20	

TH.03) Paediatric back pain in the Emergency Department : Fiona M. Burton[1], Neil Howie[1], Will Christian[1] : 1. Royal Hospital for Sick Children, Glasgow , United Kingdom.

INTRODUCTION: Unlike in the adult population, back pain is an unusual presenting feature in pre-pubertal children. It should always prompt a detailed history and examination with appropriate investigations to exclude serious underlying pathology. We present 10 cases of paediatric back pain that presented to our Emergency Department (ED) over a 3 month period from January to March 2008 and go on to discuss the more serious causes of paediatric back pain. METHODS: Design: A descriptive study of a consecutive series of patients. Our Emergency Department is in an urban, tertiary children’s hospital. Patients were retrospectively identified from a review of the hospital database from January to March 2008 using the keyword “back pain”. Cases were examined in detail and followed up to confirm the final diagnosis. RESULTS: 10 cases were identified: i) Langerhan’s Cell Histiocytosis; ii) Discitis & Epidural Abscess; iii) Sickle Cell Crisis; iv) Discitis; v) Disc Prolapse; vi)Psychogenic Back Pain – incidental syrinx seen on MRI; vii) Chronic back pain undergoing

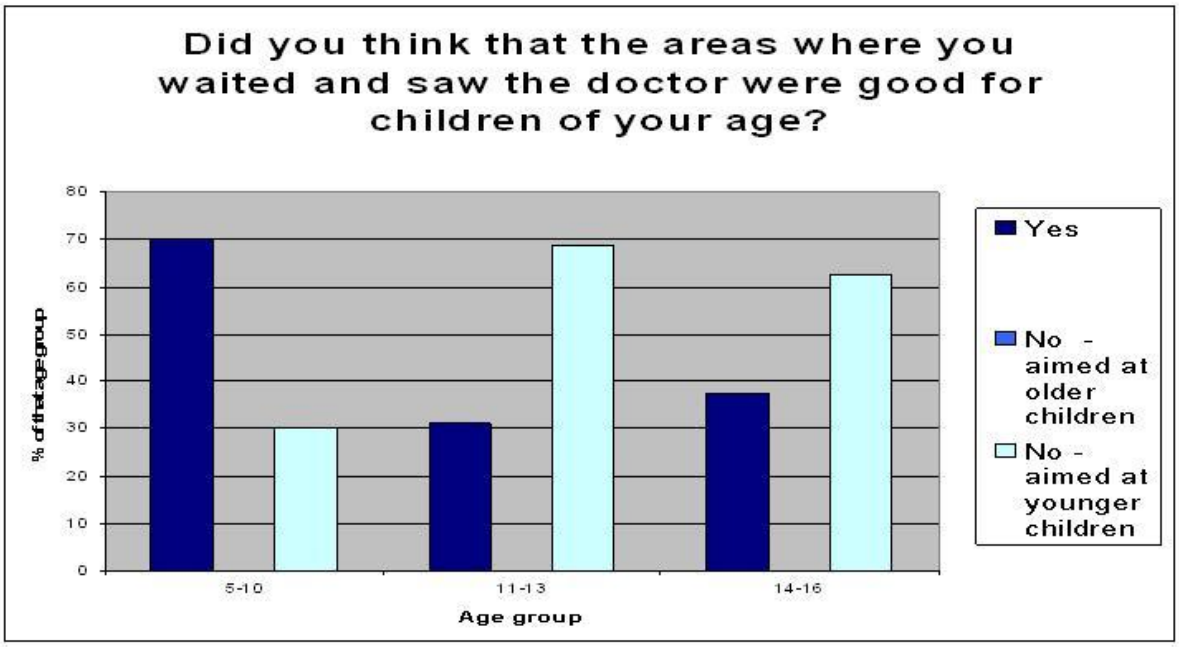
further investigation; viii) Musculoskeletal; ix) Musculoskeletal; x) Musculoskeletal. CONCLUSION: Back pain should never be discounted as an incidental or minor finding in children. Our small case series has revealed serious pathology in at least 5 out of 10 patients. Children presenting with back pain require careful evaluation with appropriate investigations and imaging.

TH.04) Paediatric emergency departments: design for toddlers or teens? : Peter Heinz[1], Catherine Taylor[1] : 1. Paediatric Emergency Department, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom.

INTRODUCTION: In April 2007 the Royal College of Paediatrics and Child Health and the College of Emergency Medicine jointly published recommendations on provision for children by emergency departments (ED). METHODS: On self assessment, our paediatric ED was considered fully compliant with all recommendations; however, we decided to conduct a survey amongst our paediatric patients and parents exploring their views on the following items: Pain management, communication and satisfaction with facilities. Two different questionnaires (qu.)were designed – one for parents, one for patients. Local ethics approval was sought and granted. The patient qu. was deemed suitable for children from 5 years onwards. RESULTS: Over a period of 3 days qu. were given to all patients and their guardians, if appropriate, shortly before they were to leave the ED. Exclusions were children too unwell to participate. 107 qu. were returned. Table 1 shows age categories according to school key stages as a reflection of intellectual maturity. There was a high level of satisfaction for pain relief throughout age groups. In children over ten years, when asked about whether they had understood the information given to them by ED staff, there was a discrepancy between the children's understanding and what the parents thought; the parents frequently overestimating their child's understanding. This constellation was reversed for children under ten. Satisfaction levels on a 5 item Likert scale for treatment and waiting areas were similar and consistent for all age groups and parents. The most striking finding was that children over 5 years felt that the paediatric ED was designed for younger children as shown in graph 1. This sentiment was shared by parents. CONCLUSION: Despite very positive answers to questions about pain, and levels of understanding, the majority of patients over ten and their parents felt provisions were not age appropriate. Consideration needs to be given to the needs of older children when designing paediatric EDs. Efforts should concentrate on waiting areas, as here patients spend most of their time.

Tab 1

Age group	Parent	Patient
0-4	33	-
5-10	15	11
11-13	17	16
14-16	7	8



TH.05) Assessing febrile illness in children under five: NICE and easy? : Peter Heinz[1], Elisabeth Cleave[1] : 1. Paediatric Emergency Department, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom.

INTRODUCTION: NICE (National Institute for Clinical Excellence) guidelines on feverish illness in children were published in May 2007. These provide evidence-based guidance on best practice developed by a multi-professional and lay working group from the National Collaborating Centre for Women's and Children's Health. The guidelines aim to set out the gold standard for assessment and initial management of children younger than five years who present with feverish illness. They focus on identification of children at serious risk of serious infection (using a 'traffic light' system), use of antipyretics and instigating appropriate investigations, as well as providing suitable information for parents and carers. METHODS: Our department uses a NICE compliant guideline and a retrospective review of the Emergency Department records of 40 consecutive patients presenting with a temperature over 37.50 Celsius, of which 29 were under the age of five years, was conducted in September 2008 in order to monitor compliance with the guideline and to identify any practical issues with its

implementation. Criteria and standards were used as per NICE audit recommendation. In addition, re-assessment of children's observations in the amber and red category was added as a standard. RESULTS: It was not documented in any of the records that the traffic light system was used to assess the risk of serious illness. This is most likely because the traffic light system is difficult and time-consuming to use. It combines a wide range of different symptoms and signs together and is difficult to remember. CONCLUSION: Complete use of the traffic light system could possibly override appropriate clinical method and clinical judgment. Within our review children were appropriately managed despite not using the traffic light system and therefore we do not feel that there would be any additional benefit from increasing the use of the traffic light system for children presenting with fever to a secondary care setting with paediatric expertise at the point of assessment.

Tab 1

Standard	Percentage achieved
1) Children are assessed using the 'traffic light' system to predict their risk of serious illness.	0%
2) Children should have temperature, heart rate, respiratory rate and CRT (capillary refill time) measured and recorded.	86 -100%
3) Children in hospital with amber' or 'red' features who are given anti-pyretics should be re-assessed after 1–2 hours.	69%
4) Children with amber features are referred for specialist paediatric care, if not referred, the child should be provided with a 'safety net' of one or more of: verbal or written information on warning symptoms and accessing further healthcare, an arranged follow-up appointment, or direct access for further assessment.	73%
5) Children should not be prescribed oral antibiotics for fever without apparent source.	97%
6) Children presenting with fever with no apparent source and one or more red features should have: full blood count, blood culture, CRP and urine testing for UTI. It may also be appropriate to perform: lumbar puncture, CXR, serum electrolytes, blood gas.	83%

TH.06) Emergency Department Availability of Pediatric Equipment in Manila, Philippines : David M. Walker[1], Victorio R. Tolentino[2], Vicotria C. Ribaya[3], James M. Chamberlain[4] : 1. Pediatric Emergency Medicine, Yale University, New Haven, CT, USA. 2. Yale University School of Nursing, New Haven, CT, USA. 3. St. Luke's Medical Center, Quezon City, Philippines. 4. Children's National Medical Center, Washington, DC, USA.

INTRODUCTION: A lack of equipment has been identified as a reason for inadequate pediatric emergency care in developing countries. Access to these essential tools ensures that children in emergency departments (EDs) receive adequate care and helps to prevent the occurrence of avoidable adverse clinical outcomes. Objective: We sought to characterize the

availability of pediatric emergency equipment in EDs in Manila, Philippines. METHODS: A survey was administered to the medical directors at a sample of tertiary care EDs. In addition to demographic data, the presence or absence of 140 pediatric emergency-related medications and equipment was solicited. Equipment guidelines by the American Academy of Pediatrics (AAP) and American College of Emergency Physicians (ACEP) were used as a standard. An interview was also performed to obtain qualitative information regarding equipment availability. RESULTS: The 9 EDs surveyed had a mean census of 15,392 pediatric patients per year. EDs possessed an average of 77% of the 140 items on the equipment list. No EDs possessed CO2 detection methods to monitor endotracheal tube placement and 5 of 7 sizes of laryngeal mask airways. 40% of items on the survey were possessed by all EDs. 27 items were possessed by less than 50% of EDs. One third of respondents were previously aware of the AAP/ACEP guidelines. Perceived barriers to equipment unavailability included limited resources, length of procurement process, lack of manpower to use equipment, rarity of usage of equipment, shelf life of certain medications and varying budgetary priorities. At several hospitals, improvisation and substitution were used to compensate for missing equipment. CONCLUSIONS: EDs possessed the majority of items listed by the guidelines. This result is comparable to that of a study applying the same guidelines to US hospitals. Items found to be absent at most hospitals were expensive and/or utilized only in rare situations. Resource constraints were the most important barrier to equipment availability. Improvisation and substitution played larger roles in the setting of limited pediatric equipment availability.

TH.07) DOES FEVER INDEED CAUSE MICROSCOPIC HEMATURIA?

: Rama Schwartz[1], Rotem Distal[1], Arthur Shapiro[1], Oded Poznanski[1], Marc Mimouni[1], Yehezkel Waisman[1] : 1. Schneider Children's Medical Center , Petah Tikva, N/A, Israel.

INTRODUCTION: Fever is mentioned as one of the factors causing microscopic hematuria (MH), however, we were unable to find a scientific basis for this claim. We therefore sought to investigate the correlation between body temperature and MH. METHODS: A prospective observational study was conducted. A convenience sample of children aged 4-18 years presenting to the emergency department (ED) of a tertiary care pediatric facility during a 12 month period were included. For each participant a relevant history was taken, exclusion criteria applied, and the temperature was measured. Fever was defined as a temperature of 38°C or more, measured either at home or at the ED. A midstream clean-catch urine specimen was obtained and tested by blinded lab workers, using a COMBUR-10-TEST dipstick. All heme positive specimens were also examined microscopically. Hematuria was defined as more than 5 red blood cells per high power field. Children with MH were asked to repeat the test after 3 weeks and at least a week after the fever subsided, when relevant. Statistical analysis: ANOVA test was used for comparisons of ordinal parameters, and Fisher's exact test (2-tail) for dichotomal parameters. P value < 0.05 was considered significant. RESULTS: A total of 678 patients were enrolled. Fever was found in 162 children (mean temperature +/SD = 39.2°C +/-0.8) and 516 were found afebrile (36.7°C +/-0.4). There was no significant difference in gender between the groups. Compared to the afebrile group, children in the febrile group were younger (mean age in years +/-SD = 9.8+/-3.6 vs. 8+/-3.6 ,p<0.001). MH was found in 10 (6.2%) children of the febrile group and 6 (1.2%) children of the afebrile group (p=0.001). All repeated urinalyses were negative for MH. CONCLUSIONS: Our study supports the claim

that fever is a causative factor of microscopic hematuria.

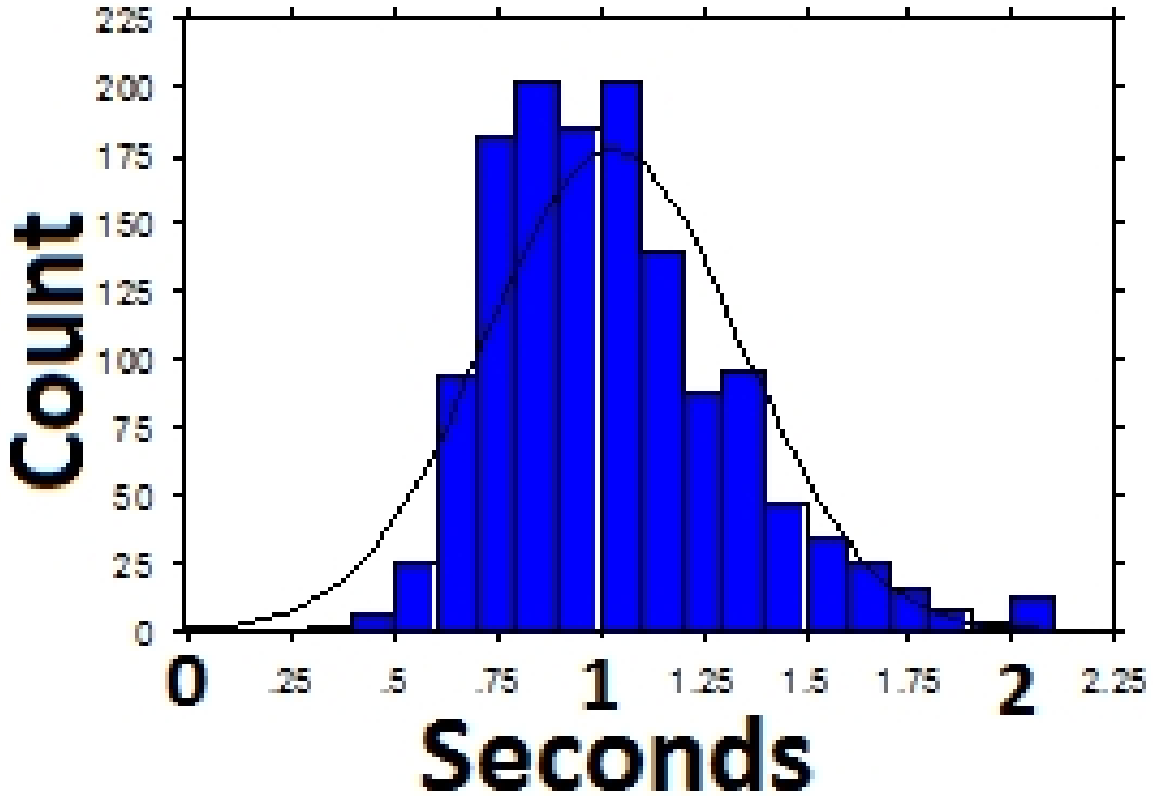
TH.08) Capillary refill time in healthy Chinese children : Giles N. Cattermole[1], Mia Leung[2], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: Capillary refill time (CRT) is often used in the assessment of sick children, peripherally (eg, finger-tip) or centrally (eg, forehead). Two seconds is considered the limit of normal. The test has been criticised for poor inter-observer reliability. However, it is not known whether this is true in Chinese children, nor what the normal range is. Objectives: To determine the normal range of CRT in healthy Chinese children. To compare centrally and peripherally measured CRT. To determine inter-observer reliability. METHODS: Design: Population-based observational study with ethical approval from the Chinese University of Hong Kong. Participants: 1374 Chinese children, 0-12 years old, in schools and kindergartens in Hong Kong. Interventions: Forehead and right index fingertip CRT were measured in all children using a digital stopwatch. The observer applied digital pressure for five seconds, and started the stopwatch as pressure was removed. The stopwatch was stopped as soon as the observer considered skin colour to have returned to normal. In 185 subjects a second blinded observer repeated the test immediately. Body temperature, and routine physiological and anthropometric measurements were also performed. Main outcome measures: Standard descriptive statistics for CRT. Central-peripheral and inter-observer variability using Bland Altman plots. Kappa for agreement of CRT “<2 seconds” vs “>2 seconds”. RESULTS: (Table 1, Figure 1): CRT was distributed about a mean of 1 second; fewer than 2% of CRTs were longer than 2 seconds. However, Bland Altman plots demonstrated wide inter-observer, and intra-observer central-peripheral, variability. Using a cut-off of 2 seconds, fingertip inter-observer agreement was fair (kappa=0.27). There was no agreement for inter-observer forehead CRT (kappa=0.0) nor for central-peripheral intra-observer CRT (kappa=-0.01). There was no significant association with CRT and body temperature, nor with any other physiological or anthropometric measurements. CONCLUSION: Two seconds is a reasonable practical limit for CRT in healthy Chinese children. However, the test shows marked variability between observers.

Table 1: Comparison of CRT

	n	Mean ± SD (seconds)	Difference (seconds)	p value (paired t-test)	Bland Altman limits of agreement (seconds)	Percentage <= 2 seconds	Kappa for agreement <=2 seconds
Forehead	1374	1.03 ± 0.31	0.10	<0.0001	-0.67 to 0.87	99.3%	-0.01
Fingertip		0.93 ± 0.40				98.2%	
First observer,	185	1.03 ± 0.25	-0.016	0.52	-0.69 to 0.65	100%	0.0

forehead							
Second observer, forehead		1.04 ± 0.28				99.5%	
First observer, fingertip		0.98 ± 0.40	0.035	0.17	-0.64 to 0.71	98.4%	0.27
Second observer, fingertip		0.95 ± 0.43				97.8%	



TH.09) Impact of Immunization Registry Program On Children Aged 6-24 Months Who Present to ED with Fever without a Source

: Cristina M. Zeretzke[1], Mark McIntosh[2], Todd Wylie[2], Colleen Kalynych[1], David Wood[3] : 1. University of Florida- Dept. of Pediatric Emergency Medicine, Jacksonville, FL, USA. 2. University of Florida- Dept. of Emergency Medicine, Jacksonville, FL, USA. 3. University of Florida- Dept. of Pediatrics, Jacksonville, FL, USA.

INTRODUCTION: Immunization status among children under 24 months is vital to ED physicians who evaluate children presenting with fever without a source (FWS). Children who have received the primary series for H. Influenza B (Hib) and Pneumococcus warrant less extensive lab work for FWS. On-line immunization registries are a potential source of easily accessible and reliable records. We evaluated the impact on decision-making when ED physicians accessed immunization status in the Florida state immunization registry when children presented with FWS. METHODS: Children (6-24 mos) with FWS (>39 C) were enrolled per an IRB-approved protocol from Jan 1-June 30, 2008. ED physicians accessed the immunization registry to collect immunization information. Parents were asked about the child's up-to-date (UTD) status and hand-held immunization cards were reviewed if present. Children were considered UTD if 3 prevnar and 3 Hib vaccines had been received prior to the ED visit. For those without a vaccine card, if the primary series could be validated by FL Shots, then a CBC and blood culture were withheld from the workup. RESULTS: Data was collected on 97 patients with FWS aged 6-24 months. Per ED protocol, 94% of these patients would have received a "work-up" resulting in a CBC and blood culture. While 89% of parents reported (CI 81-94%) that their child was UTD, only 16 presented a hand-held immunization card, and only 6 of those cards had UTD immunizations. Therefore, 91 patient immunization records were accessed in FL Shots. After accessing FL Shots, we confirmed 57% (CI 46-57%) were UTD, 42% were not confirmed as UTD, and only 1% were not found in the registry. The number of children requiring lab tests after review was significantly less than when not including this information (42% vs. 94%; $p<0.0001$, McNemar's $S= 53.0$). CONCLUSION: Immunization status of children in the ED is available in our state's registry and can be utilized to assist clinicians with decision-making. This information reduced the number of blood culture and CBC lab tests required to evaluate children presenting to the ED with FWS.

TH.10) Continuous intravenous salbutamol infusion for severe pediatric asthma: a single centre experience : Evelyn Dhont[1], Patrick Van de Voorde[1], Jef Willems[1] : 1. Pediatric intensive care and emergencies, UH Ghent, Ghent, Belgium.

INTRODUCTION: Continuous intravenous salbutamol infusion [CISI] is commonly recommended in severe acute paediatric asthma unresponsive to inhaled beta2-agonists. Recently studies have shown that a single intravenous bolus of salbutamol provokes fewer adverse effects and might be as effective as CISI. Aims: We wanted to determine the incidence of adverse drug reactions in children with asthma that received CISI in our paediatric intensive care unit [PICU] in a tertiary care university hospital. METHODS: A retrospective review of all children admitted to our PICU with severe status asthmaticus from December 2006 through December 2008 and who received CISI. Clinical data were abstracted from electronic and paper medical records.
RESULTS: During the study period 29 children with severe status asthmaticus were admitted to our unit. Eight children, aged 9 months to 11 years, were treated with CISI at a dose ranging from 0,5 µg/kg/min to 2,5 µg/kg/min. Seven of them needed mechanical ventilation prior to the start of CISI. During CISI 7 patients (87%) developed hypokalemia (<3.5 mmol/L) requiring intravenous potassium; 7 patients (87%) developed significant tachycardia

(>170/min) that was obviously salbutamol dose-related; lactic acidosis (lactate>25 mg/dL), with a subsequent decrease in lactate level after dose reduction or discontinuation of salbutamol, was reported in 3 children (37,5%); 4 patients (50%) showed new hemodynamic instability and/or hypotension (MAP < 5th percentile for age) and one patient (12,5%) had a rise in creatine kinase levels (CK 2148 IU/L) associated with the onset of CISI.
In all patients the reported adverse effects forced us to reduce the dose (5/8) or to discontinue (3/8) CISI.
CONCLUSIONS: This retrospective review confirms our experience that CISI is associated with a high incidence of important adverse reactions, even at relatively low doses. We should rethink the place of CISI in severe acute paediatric asthma. A single intravenous bolus of salbutamol might be a better option, as suggested by recent studies.

TH.11) The Broselow tape is not suitable for use in Chinese children over 10 years old : **Giles N. Cattermole[1], Mia Leung[2], Paulina Mak[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.**

INTRODUCTION: In paediatric resuscitation when rapid and accurate estimation of children's weight is necessary, the Broselow tape can be used for children of 46-144cm in height. The Broselow tape has previously been found to provide the most accurate estimate of children's weight in Hong Kong, but it is not known how many fall outside the range of the tape, nor whether such children can be assumed to be of adult weight, nor how otherwise to estimate the weight of children in the "Broselow-unsuitable" group. Aim: To determine what proportion of children in different age groups falls outside the limits of the Broselow tape, how their weight compares with adults, and what correlates most strongly with weight in these children. METHODS: Design: Population-based observational study, with ethical approval from the Chinese University of Hong Kong. Participants: 1377 Chinese children (55% boys), 0-11.9 years old, from schools and kindergartens in Hong Kong. Interventions: Weight was measured to the nearest 0.2kg; height, foot-length and mid-arm circumference to the nearest 0.1cm. Main outcome measures: Proportions of children outside the height range of the Broselow tape. Comparison with recently published data for 759 Hong Kong 18-year-olds using one-sided t-test. Correlation co-efficients (r) to determine the relationship with weight for each of the other parameters. RESULTS: (Tables 1,2): A large proportion of children aged over 10 years old was too tall for the tape. In these 172 children, mean (SD) weight was 43.1 (8.5)kg. Mean weight of 18-year-olds was 56.7kg; mean difference 13.6kg ($p<0.0001$), or 32%. The strongest correlate with weight was mid-arm circumference. CONCLUSION: The Broselow tape is inappropriate for use in children over 10 years old. Children too tall for the tape cannot be assumed to be of adult weight; using adult doses of drugs and fluids could imply an average overdose of 32%.The parameter correlating most strongly with weight in these children is mid-arm circumference; weight estimates should therefore be based on mid-arm circumference in older children.

Table 1: Numbers of children too tall for the Broselow tape, according to age

	All subjects	Subjects too tall for the tape

Age in years	n	n (%)	Median (IQR) weight in kg
<7	598	0 (0%)	-
7	163	1 (0.6%)	41.3 (-)
8	158	0 (0%)	-
9	185	16 (8.6%)	43.5 (36.8 - 48.7)
10	132	56 (42.4%)	41.7 (36.0 - 48.5)
11	141	99 (70.2%)	41.4 (37.1 - 46.9)
Total	1377	172	41.8 (36.7 - 47.2)

Table 2: Correlation of weight with other parameters in children too tall for the Broselow tape

Parameter	Correlation with weight, r (95% CI)
Age	-0.158 (-0.326 - 0.021)
Height	0.432 (0.276 - 0.566)
Foot length	0.419 (0.261 - 0.555)
Mid-arm circumference	0.912 (0.899 - 0.949)

TH.12) Nebulized 3% hypertonic saline in the treatment of acute bronchiolitis : Gemma Claret Teruel[1], Marta Simó Nebot[1], Xavier Rodríguez Fanjul[1], Sergio Fernández Ureña[1], Carles Luaces Cubells[1], Jordi Pou Fernández[1] : 1. Hospital Sant Joan de Déu, Esplugues De Llobregat, Spain.

INTRODUCTION: Despite the high prevalence and morbidity of bronchiolitis, therapy remains controversial. In infants with bronchiolitis, the administration of nebulized 3% hypertonic saline (HS) combined with epinephrine decreased length of stay (LOS) compared with epinephrine mixed in 0.9% normal saline (NS). Objectives: The aim of the present study was to evaluate response to the addition of 3% HS to standard therapy of bronchodilators and to compare the response with that of a historical cohort of patients treated with bronchodilators combined with NS. METHODS: We recruited a random sample of patients that were diagnosed with acute bronchiolitis in the emergency department from September 2008 to March 2009 and that received nebulized treatment. Guidelines in our center recommend considering bronchodilators only for those with moderate or severe illness. Only if a favorable response to nebulized therapy is achieved, treatment was administered during admision, every

6 to 12 hours. All inhaled therapies were nebulized in 4 ml of 3% HS. This group of patients were compared with a historical cohort of infants prospectively recruited before the implementation of the new guidelines, from September 2007 to March 2008. The inclusion and exclusion criteria were the same as for the first group but this group of patients received inhaled therapies nebulized in 4 ml of NS. Outcomes of the 3% HS group were compared with outcomes of the NS group. RESULTS: Sixty-five patients were included in the 3% HS group and 69 in the NS. At baseline, the two groups had similar clinical characteristics, except for the respiratory distress clinical score (Table 1). LOS and hospital admission rate did not differ significantly between the two groups (Table 2) but there was a trend to reduced PICU admission rates in the 3% HS group (p=0.073).
CONCLUSIONS: We conclude that in our group of patients with acute bronchiolitis, treatment with nebulized 3% HS plus bronchodilators, instead of bronchodilators with NS, does not reduce LOS or hospital admission rate. PICU admission rate seems to be lower, but this difference is not statistically significant.

Epidemiological and clinical data and clinical evolution from infants included in the study. All figures are median (range), except where stated otherwise.

Characteristic	Normal saline (n = 69)	3% Hypertonic saline (n = 65)	p
Age, months	3 (0 to 11)	2 (0 to 22)	NS
Female gender (n, %)	24 (35)	27 (41)	NS
Infants with chronic cardiopulmonary disease or immunodeficiency (n, %)	0	4 (4.1)	0.053
Infants with gestational age < 37 weeks (n, %)	6 (8.7)	9 (13.8)	NS
Duration of illness before presentation in the emergency room, hours	48 (3 to 240)	48 (3 to 360)	NS
Respiratory distress clinical score	6 (1 to 14)	7 (3 to 16)	0.036
Infants tested for RSV (n, %)	36 (52.2)	42 (64.6)	NS
RSV positive (n, %)	26 (72.2)	27 (64.3)	NS
Infants treated with salbutamol (n, %)	54 (78)	41 (63)	NS
Infants treated with epinephrine (n, %)	21 (30)	29 (45)	NS

NS: not significant, RSV: Respiratory sincitial virus.

Clinical evolution of patients included in the study. All figures are median (range), except where stated otherwise.

Characteristic	Normal saline (n = 69)	3% Hypertonic saline (n = 65)	p
Infants admited to hospital (n, %)	35 (51)	40 (61)	NS

Hospital LOS, days	4 (1 to 26)	4 (1 to 18)	NS
Infants admited to PICU (n, %)	5 (7.2)	1 (1.5)	0.073

PICU: Pediatric intensive care unit, LOS: length of stay, NS: not significant.

TH.13) The range of normal vital signs in Chinese children is significantly different from the values in APLS : **Giles N. Cattermole[1], Mia Leung[2], Paulina Mak[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.**

INTRODUCTION: Children's vital signs vary with age. Life support courses include tables of normal values for heart rate (HR), systolic blood pressure (BP) and respiratory rate (RR) by age, for assessment of acutely ill children. Such tables have not yet been published for Chinese children. Objective: To describe normal ranges for HR, BP and RR in Chinese children, and to compare them with the tables published in Advanced Paediatric Life Support (APLS), Advanced Trauma Life Support (ATLS) and on the Broselow tape. METHODS: Design: Population-based observational study, with ethical approval from the Chinese University of Hong Kong. Setting: Primary schools and kindergartens in Hong Kong. Participants: 1393 children (55% boys), 1-11.9 years old. Interventions: HR and BP measured by standard oscillometry. RR measured visually over one minute. 10% of observations were repeated blindly by an independent observer to assess reliability. Main outcome measures: Derived normal ranges were calculated for each parameter, defined as lying within 2 standard deviations of the mean. One-sample t-test was used for comparison with APLS means. RESULTS: (Tables 1,2):
For HR, BP and RR respectively, 33%, 55% and 56% of measurements were outside the normal ranges described by APLS. Upper limits of RR and HR, and lower limits of BP were comparable to ATLS, APLS and Broselow tables. Lower limits of RR and HR were lower, and the upper limit of BP higher, than in the other tables. In preschool and school groups, the mean difference between Chinese subjects and APLS ranges was highly statistically significant ($p<0.0001$). CONCLUSION: Normal vital signs in Hong Kong Chinese children are significantly different from those described in APLS. Tables of normal ranges derived from Chinese children would be more appropriate for use in Chinese emergency departments, and may also better reflect normal values in other Asian countries.

Table 1: Normal ranges of vital signs

Advanced Paediatric Life Support				Advanced Trauma Life Support				Broselow Tape				Hong Kong Chinese Children			
Age group (years)	HR	BP	RR	Age group (years)	HR	BP	RR	Age group	HR	BP	RR	Age group	HR	BP	RR
Infant (0-0.9)	110 - 160	70-90	30 - 40	Infant (0.0.9)	<160	>60	<60	Infant	<160	>60	<40	Infant (0.0.9)	95-180	65-105	30 - 45

Toddler (1-1.9)	100-150	80-95	25-35	Toddler (1-2.9)	<150	>70	<40	Toddler	<140	>75	<30	Toddler (1-2.9)	80-145	75-110	15-40
Pre-school (2-4.9)	95-140	80-100	25-30	Pre-school (3-5.9)	<140	>75	<35	School	<120	>85	<25	Pre-school (3-5.9)	70-120	80-125	15-30
School (5-11.9)	80-120	100-120	20-25	School (6-11.9)	<120	>90	<30					School (6-11.9)	60-115	90-140	15-30

Table 2: Comparison with APLS

	Heart Rate							Systolic Blood Pressure							Respiratory Rate						
Age group (years)	n	APLS mean	Chinese mean	Mean difference (p value)	%Chinese outside APLS range	%Chinese lower than APLS range	%Chinese higher than APLS range	n	APLS mean	Chinese mean	Mean difference (p value)	%Chinese outside APLS range	%Chinese lower than APLS range	%Chinese higher than APLS range	n	APLS mean	Chinese mean	Mean difference (p value)	%Chinese outside APLS range	%Chinese lower than APLS range	%Chinese higher than APLS range
Infant (0.0.9)	8	135	137	+2 (0.84)	33.3%	31.9%	1.5%	8	80	83	+3 (0.42)	55.3%	3.7%	51.6%	7	35	36	+1 (0.52)	55.5%	47.1%	8.4%
Toddler (1-1.9)	24	130	124	-6 (0.05)				24	88	90	+2 (0.23)				24	30	33	+3 (0.01)			
Pre-school (2-4.9)	270	118	100	-18 (<0.00001)				270	90	101	+11 (<0.00001)				279	28	23	-5(<0.00001)			

School (5-11.9)	107 1	100	87	-13 (<0.0001)				107 1	100	111	+11 (<0.0001)				107 5	23	20	-3 (<0.0001)			

TH.14) Characteristics of Pediatric Injury in Mass Casualty Events: The Israeli Experience : Yehezkel (. Waisman[1], Sharon Goldman[2], Oded Poznanski[1], Meirav Mor[1], Kobi Peleg[2] : 1. Emergency Medicine, Schneider Children's Medical Center of Israel, Petah Tikva, Israel. 2. The Gertner Institute for Epidemiology and Health Services Research, Ramat Gan, Israel.

Background: Children are the most vulnerable sub-population in Mass Casualty Events (MCE), however, characteristics of MCE-related injuries among children have not been well described. The aim of our study was to characterize childhood injuries resulting from a MCE in Israel. Methods: A retrospective case study of MCE-related injuries among hospitalized children (0-17 years) between the years 1998-2007 and recorded in the Israel Trauma Registry (ITR). Main outcome measures were Injury Severity Score (ISS) and mortality. Results: A total of 267 children (mean age 11.3, 52% girls) were hospitalized for injuries caused by 75 (47%) out of the 158 MCEs recorded during the study period. Mechanism of MCE-related injury were as follows: terror-related (63.4%); motor vehicle crash (buses or train) (32%); a collapsed building (2.6%); and other mechanisms (2%). Older children (ages 10-17) were injured twice that of younger children (ages 0-9), (67% and 33%, respectively (p=0.05). Head and neck (67%) were the most common body region to be injured, followed by upper and lower extremities. Most children sustained mild injuries (55% ISS 1-8), however, a significant percentage had severe to fatal injuries (29% ISS > 16). Severe injuries were significantly more frequent among children injured in MCEs compared to non-MCE injuries: ISS > 16 (29% vs. 8%, respectively p<0.0001), in-hospital mortality (3.4% vs. 0.4%, respectively, p<0.0001), underwent surgical procedures (50% vs.20%, respectively, p<0.05), ICU admission rate (31% vs. 6%, p< 0.0001), and longer hospital stay (median LOS 8.9 vs. 3.5 days, respectively p<0.0001). Conclusions: Morbidity and mortality are significantly higher among children who are injured in MCEs than by other mechanisms. Improved pediatric pre-hospital care as well as increased and improved hospital care and resources as well as of medical care may improve future pediatric MCE-related injury outcomes.

TH.41) Hydration Therapy in Infants and Children: Recombinant Human Hyaluronidase-Facilitated Subcutaneous Versus Intravenous Administration : Sharon E. Mace[1], Barry Hahn[2], George Maher[3], George Harb[4] : 1. Cleveland Clinic, Cleveland, OH, USA. 2. Staten Island University Hospital, Staten Island, NY, USA. 3. Memorial Children's Hospital, South Bend, IN, USA. 4. Baxter Healthcare Corporation, New Providence, NJ, USA.

INTRODUCTION: The Increased Flow Utilizing Subcutaneously Enabled Pediatric Rehydration Study II (INFUSE II) evaluates whether recombinant human hyaluronidase (rHuPH20)-facilitated subcutaneous (SC) fluids are safe and effective in volumes no less than delivered via the intravenous (IV) route in mildly to moderately dehydrated infants and

children. METHODS: In this ongoing phase 4, open-label, randomized, stratified study, patients are children aged 1 month to <3 years in emergency or pediatric inpatient departments with mild to moderate dehydration. Stratified based on body weight and dehydration severity, patients are randomly assigned to rehydration therapy (20 mL/kg isotonic fluid over 1 hr and additional fluid as needed until deemed clinically rehydrated up to 72 hrs) via rHuPH20-facilitated SC or IV. One mL rHuPH20 (150 U) is administered SC followed by SC isotonic fluids. Total fluid volume administered at a single infusion site is the primary study endpoint. Secondary endpoints include percentage successfully hydrated; time to urine output; total volume infused; and safety and health care provider ease of use assessments. RESULTS: Interim data analysis was conducted on 41 patients (20 SC; 21 IV); mean age 1.6 years. Baseline Gorelick score indicated mild dehydration in 45% vs 71%, and moderate in 55% vs 29% in SC vs IV groups, respectively. The primary efficacy outcome—mean total volume (standard deviation [SD]) infused at a single site—was 329 (216.7) mL SC vs 560 (799.4) mL IV (Table 1). Least squares mean (LSM) (SD) for total volume infused, adjusted for infusion duration, was 466 (176.1) mL SC vs 429 (175.9) mL IV. Mean volume/body weight (SD) was 28 (17.2) mL/kg SC vs 52 (77.2) mL/kg IV; LSM (SD), adjusted for infusion duration, was 42 (11.9) mL/kg SC vs 39 (11.9) mL/kg IV. Table 2 summarizes secondary endpoint results. CONCLUSIONS: Interim results suggest rHuPH20-facilitated SC infusion is safe and effective; duration-adjusted mean fluid volume infused was comparable for both routes, and a higher percentage of patients were successfully rehydrated via SC vs IV.

Table 1. Mean Total Fluid Volume Administered at a Single Site by Duration of Infusion

Infusion Route		?4 hrs	>4-8 hrs	>8-24 hrs	>24-72 hrs	All Subjects
rHuPH20-facilitated SC (mL)	mean	270.3	-	846.0	-	329.4
	n	18	-	2	-	20
IV (mL)	mean	133.9	552.0	1460.0	2258.3	560.2
	n	14	3	1	3	21

Abbreviations: IV, intravenous; rHuPH20, recombinant human hyaluronidase; SC, subcutaneous.

Table 2. Secondary Efficacy and Safety Outcomes

Outcome	rHuPH20-facilitated SC	IV
Successfully hydrated patients (%)*	95	67
Mean time to urine output (min)	196	238
Mean (SD) total volume infused over all infusion sites (mL)	329.4 (216.7)	560.2 (799.4)
Percent (%) of health care providers who considered easy to use	100	67
Most common treatment-related AEs	8.	9.

Infusion-site pain (%) Infusion-site swelling (%) Erythema (%)	75 55	29 33
Serious AEs (n)†	1	3

*According to investigators' clinical evaluation.
†None were considered treatment related.
Abbreviations: AEs, adverse events; IV, intravenous; rHuPH20, recombinant human hyaluronidase; SC, subcutaneous.

TH.42) Children's weights correlate more strongly with mid-arm circumference (MAC) than with age, height or foot-length. : Giles N. Cattermole[1], Mia Leung[2], Paulina Mak[1], Hung-Kwan So[1], Colin A. Graham[1], Timothy H. Rainer[1] : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: Rapid and accurate estimation of a child's weight is often necessary when time is limited, to provide appropriate drug and fluid doses. Commonly used methods of weight estimation use height or age-based calculations. It is not known which method is most accurate in Chinese children. Aim: To determine which of the following parameters most strongly correlates with weight: age, height, foot-length, mid-arm circumference (MAC) and to derive new weight estimation formulae. METHODS: Design: Population-based observational study. Ethical approval was obtained from the Chinese University of Hong Kong. Participants: 1368 Chinese children (752 boys, 616 girls), 1-11.9 years old, in schools and kindergartens in Hong Kong. Interventions: Height, foot-length and MAC were measured to 0.1cm, weight to 0.2kg. Main outcome measures:
Correlation coefficients (r) for weight with each parameter. Subgroups were analysed according to the age groups in ATLS: toddler (1-2.9 years), preschool (3-5.9 years), school-age (6-11.9 years). Linear regression was used to derive formulae for weight estimation. Bland Altman plots were used to assess the precision of age-based, height-based and MAC-based weight estimations. RESULTS: (Table 1, Figure 1): Overall, and in pre-school and school-age children, weight was correlated more strongly with MAC than with any of the other parameters. In toddlers, weight did not correlate with any parameter significantly more strongly than with any other. Age was related to weight according to the formula: Weight in kg = (Age x 3) + 5. MAC was related according to the formula: Weight = (MAC – 10) x 3. Although Broselow was superior to MAC-based estimation in younger children, there was no difference in bias or precision in school age children. CONCLUSION: Weight correlates with MAC more strongly than with age, height or foot-length. Estimates of children's weight could be based on mid-arm circumference: W=(MAC-10)x3. We propose using a purpose-made arm tape which could be used in conjunction with the Broselow colour-coded system. This would be especially useful for older children.

Correlation of weight with age, height, foot-length and mid-arm circumference

	Total	Toddlers	Preschool	School

	(1-11.9 years)	(1-2.9 years)	(3-5.9 years)	(6-11.9 years)
n	1368	59	373	936
	Correlation coefficient, r (95% CI)			
Age	0.80 (0.78-0.81)	0.67 (0.50-0.79)	0.44 (0.36-0.52)	0.65 (0.61-0.69)
Height	0.88 (0.87-0.89)	0.72 (0.56-0.82)	0.70 (0.64-0.74)	0.84 (0.82-0.86)
Foot-length	0.86 (0.85-0.88)	0.78 (0.65-0.86)	0.73 (0.68-0.77)	0.80 (0.77-0.82)
MAC	0.91 (0.90-0.92)	0.47 (0.25-0.65)	0.85 (0.82-0.87)	0.91 (0.90-0.92)

Bias and precision (from Bland Altman plots)

	Overall		School-age	
	Bias (%)	Limits of agreement (%)	Bias (%)	Limits of agreement (%)
APLS age-rule: W=(age+4)x2	-12.7	-53.4 to 28.0	-14.7	-57.3 to 27.9
Broselow tape weight estimation	-1.9	-29.6 to 25.8	-2.5	-30.7 to 25.6
MAC-rule: W=(MAC-10)x3	-2.9	-32.9 to 38.7	-2.5	-31.5 to 26.5

TH.43) Emergency Paediatric weight estimation: Does the APLS formula hold true? : Raj Paw[1], Muhammad A. Majeed[1] : 1. ED, nhs, Dudley, United Kingdom.

INTRODUCTION: The objective of this paper is to see if the APLS formula is accurate for estimating the weights of children who present to an inner city UK Emergency Department. METHODS: Consecutive children attending a UK inner city ED between October 2003 and December 2003, whilst the paediatric area was open were weighed, their height measured and their age and ethnic origin recorded. The children were asked to remove shoes, coats, jumpers and other items of clothing so that they were weighed wearing only trousers/skirts and a single item of upper body clothing. The children's estimated weights and BMI were calculated. RESULTS: 791 children were recruited during the study period. The results are summarised in the table and graphs below.

Age Actual Wt (95% CI) (Kg) Estimated APLS Wt (Kg)
1 11.41 (11.04 - 11.78) 10;
2 14.19 (13.61 - 14.77) 12;
3 16.38 (15.81 - 16.95) 14;

4 18.16 (17.44 - 18.88) 16;
5 21.03 (19.65 - 22.41) 18;
6 24.63 (23.03 - 26.23) 20;
7 27.63 (26.00 - 29.27) 22;
8 32.21 (30.17 - 34.25) 24;
9 35.84 (33.54 - 38.14) 26;
10 40.33 (37.21 - 43.45) 28;
11 44.27 (40.61 - 47.93) 30;
12 47.93 (44.33 - 51.526) 32;

Figure 1. Actual vs Estimated APLS weight by age
Subgroup analysis was performed by sex and race in order to ascertain if there were any significant difference by ethnic origins or sex. Analysis by ethic origin or sex did not show any significant difference from the actual recorded weight by age alone. CONCLUSION: The traditional APLS formula underestimates paediatric weight by up to 33% in older children. This could lead to clinically significant under dosing of children in a resuscitation situation. We suggest that further large scale studies to confirm these finding and the use of a Breslow tape or alternative formula for estimating paediatric weight.

TH.44) Prevalence and predictors of positive blood culture in infants under three months with fever without source : **Borja Gómez[1], Santiago Mintegi[1], Javier Benito[1], Diego García[1], Ana Romero[1] : 1. Cruces Hospital, Barakaldo, Bizkaia, Spain.**

INTRODUCTION: Traditional approach to febrile infants under 3 months of age with fever without source (FWS) included performing blood culture (BC) systematically as part of their evaluation. Objective: 1) to describe the rate of positive BC in infants under three months of age with FWS and the bacteria isolated, 2) to detect factors related to a higher probability of having a positive BC in this group of patients. METHODS: Retrospective cross-sectional five-years descriptive study (September 2003 and August 2008) including all infants under 3 months of age attended in our Pediatric Emergency Department with FWS and in whom BC was performed. We analyzed the positive BC rate in relation to the following factors: general appearance, past medical history, gender, sex, highest temperature (T) registered and result of urine dipstick. RESULTS: We admitted 1125 infants under 3 months with FWS. BC was performed in 1018 (91.5%), growing a true bacterial pathogen in 23 (2.2%). Eight of them were associated with a positive urine culture. The most frequently isolated pathogen was E. coli (9), followed by S. pneumoniae (4). There were 2 positive BC for group B Streptococcus. Urine dipstick was performed in 1000 infants (98.2%). Risk factors detected in the multivariate logistic regression were: a) being classified as “not well-appearing” (12.5% vs 1.8% in those classified as “well-appearing”; OR 8.01, IC 2.67-23.05), b) detecting leukocyturia and/or nitrituria in the urine dipstick (5.6% vs 1.6% for those with a normal urine dipstick; OR 3.70 IC 1.48-9.19). Rate of positive BC in infants with none of these risk factors was 1% (8/786).
CONCLUSIONS: Rate of positive BC in infants under 3 months of age with FWS is 2.2% (1% in well-appearing infants with a normal urine dipstick). The most frequent isolated pathogen was E. coli. Being classified as “not well-appearing”, and detecting leukocyturia

and/or nitrituria increased the risk of having a positive BC in infants under 3 months of age with FWS.

TH.45) Toxic Surveillance System of the Spanish Pediatric Emergency Society (SEUP): Initial results : S. Mintegi[1], B. Azkunaga[1], Working Group Clinical Toxicologic [2] : 1. H Cruces, Barakaldo, Basque Country, Spain. 2. Spanish Pediatric Emergency Society (SEUP), Madrid, Spain.

INTRODUCTION: In August 2008, an electronic Toxic Surveillance System was established in different Spanish Paediatric Emergency Departments (PEDs) by the Clinical Toxicologic Working Group of the SEUP. All the patients admitted with a possible poisoning on the 13th of every month must have a specific electronic questionnaire fulfilled. The objectives of this Surveillance System are to study epidemiological concerns of paediatric poisonings and management variability in Spanish PEDs. The aim of the study is to describe the results obtained of the Toxic Surveillance System of the SEUP during the initial months. METHODS: Descriptive study of the questionnaires corresponding to the patients admitted in 33 Spanish PEDs since October 2008 to April 2009. RESULTS: During the study period 25.001 patients less than 18 years were admitted in the 33 PEDs on the registered days. Of these, 82 (0.32%) corresponded to patients with a diagnosis of poisoning (50% female). The median (interquartile range, 25th–75th percentile) age was 24 months (17–63 months); 22% of patients were older than 11 years. About 50% of patients were admitted within 1 hour of poison ingestion. Nearly 40% contacted other Health or Poisoning Information Services before coming to the PED and about 13% were transferred by ambulance. Drug ingestion was involved in 61% (paracetamol was the most frequent drug), domestic products in 18.3%, ethanol 4.9%, cosmetics 3.7%, illicit drugs 3.7% and carbon monoxide inhalation 2.4%. At the time of admission to the PED, 44 (53.7%) were symptomatic (mainly, neurological or digestive symptoms) and 45 (54.9%) received any treatment in the PED (mainly, activated charcoal). About 85% of children were managed as outpatients and no patient was admitted to the Intensive Care Unit. All registered patients did well. CONCLUSIONS: Exposure to a potentially toxic substance is an infrequent reason of consultation in Spanish PEDs. Young children who accidentally ingested drugs accounted for most cases. A large amount of parents or caretakers contacted with other Health or Poisoning Information Services before coming to the PED.

TH.46) Comparison of Normal Ranges of Cardiovascular Indices for Chinese and Australian Children Derived Using the Ultrasound Cardiac Output Monitor (USCOM) : Mia Leung[2], Giles N. Cattermole[1], Paulina Mak[1], Colin A. Graham[1], Timothy H. Rainer[1], Chi On Tang : 1. Accident and Emergency Medicine Academic Unit, Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. 2. University of Melbourne, Melbourne, VIC, Australia.

INTRODUCTION: The makers of the Ultrasound Cardiac Output Monitor (USCOM), used as a non-invasive Doppler ultrasound measure of cardiovascular parameters, provide a set of unpublished normal values derived from 500 healthy subjects of all ages in Australia, of whom only 70 were 0-12 years old. Objectives: 1. To derive normal ranges for heart rate (HR), cardiac output (CO), stroke volume (SV) and systemic vascular resistance (SVR) in Chinese

children in Hong Kong using the USCOM. 2. To compare these ranges with those provided by the makers of the USCOM for Australian children.
METHODS: Design: Prospective observational comparative study; part of the “Healthy Children’s Vital Signs and USCOM Values” study for which ethical approval was obtained from the Chinese University of Hong Kong. Setting: Kindergartens and primary schools in Hong Kong. Participants: 948 Chinese children (430 girls, 518 boys), aged 0-11.9 years old (mean 6.9, SD 2.6). Measurements: BP using standard oscillometry, height to 0.1cm and weight to 0.2kg were measured. Cardiovascular indices were measured using the USCOM. Main outcome measures: Derived normal ranges for each parameter, defined as lying within 2 standard deviations of the mean. One-sample t-test was used for comparison with the mean values of cardiovascular indices in Australian children. RESULTS: The derived normal ranges for cardiovascular indices in Chinese children are presented (Table 1). The ranges of HR, CO, SV and SVR in Chinese children are significantly different from those derived in Australia (Table 2). CONCLUSION: This is the only study to derive normal values of cardiovascular indices for Chinese children. We hope that the use of these values, specific for Chinese children, will improve the diagnosis, treatment, management and monitoring of paediatric patients in Chinese emergency departments.

Table 1: Normal ranges for cardiovascular indices derived from Chinese children in Hong Kong

Age	n	Heart rate (/min)	Cardiac output (L/min)	Stroke volume (mL)	Systemic vascular resistance ($d.s.cm^{-5}$)
0	3	85 (56-115)	2.1 (1.5-2.6)	14.7 (9.1-20.4)	2470 (1631-3309)
1	6	141 (114-167)	2.6 (2.0-3.1)	22.0 (15.6-28.4)	1960 (1558-2362)
2	21	117 (91-143)	3.1 (2.0-4.2)	31.0 (17.9-44.1)	1867 (1101-2634)
3	59	101 (74-129)	3.5 (2.3-4.7)	35.5 (25.7-45.3)	1641 (1016-2265)
4	108	99 (74-123)	3.8 (2.3-5.4)	41.0 (27.1-54.8)	1517 (799-2234)
5	104	95 (66-123)	3.9 (2.4-5.5)	45.3 (30.2-60.4)	1456 (857-2055)
6	117	88 (66-109)	4.2 (2.6-5.8)	49.5 (33.8-65.3)	1447 (854-2039)
7	124	85 (62-108)	4.5 (2.6-6.3)	54.3 (32.8-75.7)	1401 (869-1933)
8	117	83 (56-110)	4.8 (2.9-6.8)	58.9 (38.6-79.2)	1332 (851-1812)
9	99	83 (58-107)	5.2 (2.7-7.6)	63.3 (42.1-84.6)	1250 (742-1758)
10	85	82 (57-107)	5.4 (3.0-7.8)	71.3 (43.6-99.0)	1210 (698-1721)
11	105	77 (52-101)	5.7 (3.3-8.2)	75.0 (49.3-100.8)	1155 (650-1659)

All variables are presented as: mean (normal range), where normal range is defined as 1.96 standard deviations from the mean.

Table 2: Comparison of cardiovascular indices in Chinese and Australian children

Age group	0-1.9 years			2-4.9 years			5-9.9 years		
	Australian (n=2)	Chinese (n=9)	p	Australian (n=15)	Chinese (n=188)	p	Australian (n=31)	Chinese (n=561)	p
Heart rate (/min)	125 (110-140)	125 (91-159)	n/a	100 (85-115)	97 (69-124)	0.0009	90 (75-105)	84 (59-109)	<0.0001
Cardiac output (L/min)	3 (2.5-3.5)	2.4 (1.7-3.1)	<0.001	3.25 (2.5-4.0)	3.6 (2.1-5.2)	<0.0001	3.9 (2.8-5.0)	4.5 (2.4-6.6)	<0.0001
Stroke volume/kg (mL/kg)	1.9 (1.5-2.3)	2.1 (1.4-2.7)	0.11	2.0 (1.5-2.4)	2.4 (1.6-3.2)	0.32	1.7 (1.3-2.2)	2.2 (1.5-3.0)	<0.0001
SVR ($d.s.cm^{-5}$)	1750 (1500-2000)	2130 (1397-2863)	0.014	1750 (1500-2000)	1595 (868-2322)	<0.0001	1500 (1200-1800)	1380 (817-1942)	<0.0001

All variables are presented as: mean (normal range), where normal range is defined as 1.96 standard deviations from the mean. P values were calculated using the one-sample t-test. Age groups are as defined by the makers of USCOM.

TH.47) Utility of urine paracetamol determination in pediatric acute poisoning: a multicentric study : Esther Molina[1], Lidia Martínez[1], Jose M. Quintilla[1], Carles Luaces[1], Anna Valls[1], Esther Crespo[2], Ana Fernández[3], Juan C. Molina[4], Tomeu Castanyer[5], Bartolomeu Barceló[5] : 1. Hospital Sant Joan de Déu, Barcelone, Spain. 2. Hospital Virgen de la Salud, Toledo, Spain. 3. Hospital de Cruces, Bilbao, Spain. 4. Hospital Niño Jesús, Madrid, Spain. 5. Hospital Son Dureta, Palma de Mallorca, Spain.

INTRODUCTION: Determination of blood levels four hours after ingestion is the standard of care in paracetamol (PCT) poisoning. Screening for PCT toxicity is recommended in all cases of self poisoning, including patients without evidence of PCT ingestion. A urine PCT test would be useful for deciding which patients will need a blood PCT determination. Objectives: To study the utility of urine PCT determination (PCT-U) in order to detect PCT ingestion at both toxic and non-toxic doses. To identify the best cutoff of PCT-U for confirming the ingestion of PCT in previous 24 hours. To correlate the blood and urine determination of PCT. METHODS: The study period was from Sep 2006 to Jan 2008. We collected prospectively three groups of patients: A, children without PCT ingestion in previous 24 hours (controls); B, children who had received therapeutic doses; C, children with ingestion of toxic doses. Proportion of positive PCT-U and quantitative urine level were compared between cases and controls. Sensitivity, specificity, predictive values, area under ROC curve (AUC) and optimal cutoff point were determined. In patients from group C correlation between urine and blood

positivity was also studied. RESULTS: We included 184 children, aged from 17 days to 17 years (group A, 78 children; group B, 83 children; group C, 23 children). Urine PCT was detected in all patients from groups B and C but only in 7,7% of children from group A. Quantitative PCT-U levels were also significantly higher in group B (23,2 ?g/ml) and group C (138,7 ?g/ml) than in group A (0,1 ?g/ml). The AUC of PCT-U test for detecting the ingestion of therapeutic doses (group B) was 0,998 and the optimal cutoff was 1 ?g/ml (sensitivity 100% and specificity 96,15%). In the group C (toxic doses) the optimal cutoff was 6 ?g/ml (sensitivity 100% and specificity 100%). All cases with a positive blood PCT level also had a positive PCT-U. CONCLUSION: Determination of PCT-U is a useful test for detecting patients with ingestion of therapeutic doses or greater in previous 24 hours. A negative test makes unnecessary to measure PCT blood level.

TH.48) Family presence during invasive procedures in the pediatric emergency department: attitudes of health care providers in Spain : **Cristina Parra[1], Patricia Corniero[1], Anna Gamell[1], Victoria Trenchs[1], Carles Luaces[1] : 1. Hospital Sant Joan de Deu, Esplugues de Llobregat, Spain.**

INTRODUCTION: Family presence (FP) during invasive procedures (IP) in children remains controversial among emergency department staff. Objectives: The aims of this study were to determine health care providers' attitude toward FP during IP, to know if parents were given the option to be present during different IP, and to investigate the difference between the approach of physicians and nurses. METHODS: This was an observational study. A questionnaire was sent to 43 pediatric emergency departments and it was available in the Spanish Pediatric Emergency Society website. Physicians and nurses were asked to answer the questionnaire. RESULTS: We obtained 222 questionnaires, from 36 Spanish hospitals. 65.8% of the surveys were answered by physicians (66.4% attending physicians) and 34.2% by nurses. The mean age of respondents was 32 years and 69.2% were women. Parents were given the option to be present during blood sampling (36.4%), intravenous line placement (32.7%), urethral catheterization (32.1%), lumbar puncture (13.5%) and resuscitation (1%). More than 60% of health care professionals approved FP during blood sampling (75.2%), simple wound suture (66.7%), intravenous line placement (65.5%) and urethral catheterization (64.4%); however 35.5% of providers agree with family presence during lumbar puncture and 10.8% during resuscitation. Health care providers against FP argue procedural invasiveness (75.6%), parents' anxiety (87.6%) and detriment to success of the procedure (66%). Commonly expressed advantages were reducing patient's distress (72.9%), as well as parents' anxiety (62.3%) and a better parent-physician relationship. Physicians, especially the older ones, encourage FP in a higher number of IP than nurses (median of IP 7 vs. 3; $p<0.01$). The mean ages of health care providers who did not approve FP during most of the IP were lower than that of the ones who approved them. CONCLUSIONS: Health care providers tended to prefer parents not be present during IP, as the level of invasiveness increased. More research needs to be conducted to demonstrate the benefits of FP in IP.

TH.49) Characterization of PEM Research from the Developing World : **David M. Walker[1], Victorio R. Tolentino[2], Stephen J. Teach[3] : 1. Yale University School of Medicine, New Haven, CT, USA. 2. Yale University School of Nursing, New Haven, CT, USA. 3. Children's National Medical Center, Washington, DC, USA.**

INTRODUCTION: Improvements in care for acutely ill and injured children remain a global priority, especially in the developing world, where access to emergency care and lack of resources and technology are obstacles. Little is known about the quantity, origin and subject matter of the body of pediatric emergency medicine (PEM) literature originating from and pertaining to the developing world. Objective: We sought to quantify and characterize academic publications in PEM from the developing world. METHODS: A literature survey using PubMed was performed to identify academic publications in PEM from developing countries published from 2003-2006. Publications qualified if their subject populations were infants, children or adolescents and if their subject fit within the definition of emergency medicine (EM) as defined by the International Federation of EM. World Bank conventions were used to identify developing countries and group them into six geographical regions. RESULTS: We identified 370 articles from 70/151 (46.4%) developing nations. They were published in 158 journals, 65 (41.1%) of which are from the developing world. The majority of the articles describe original observational research performed by physicians from the same country as the study populations. Nations with the highest contributions were Turkey (42) and Nigeria (31). Leading regions were Sub-Saharan Africa and Europe & Central Asia. Four articles studied populations across multiple regions. The majority of the articles focused on infectious disease emergencies (136, 39.6%) and trauma/burns (73, 38.9%). Of the infectious disease articles, 49 (44.1%) dealt with meningitis and/or sepsis. CONCLUSION: Current academic publications in PEM originate from less than half of developing nations, although the represented countries demonstrate a wide geographical distribution. The majority of publications focused on infectious disease and injuries, mirroring the epidemiology of morbidity and mortality of children in the developing world. Repeating this study in the future will elucidate overall and individual country trends regarding quantity and foci of PEM research.

TH.50) A review of children admitted directly to PICU/HDU from the Emergency Department : Fiona M. Burton[1], Andrew Cooper[1], Scott Hendry[1], Fiona Russell[1] : 1. Royal Hospital for Sick Children, Glasgow , United Kingdom.

INTRODUCTION: In 2005 plans were announced to build a new Children's Hospital in Glasgow, UK. The present completion date is 2012 and work is underway to collect service data to inform the design process. We analysed the presentation and management of children admitted directly to PICU/HDU from the Emergency Department (ED) of a tertiary Children's Hospital. METHODS: Patients admitted to PICU/HDU from the ED between January 2006 and July 2007 were identified retrospectively using the MVICU database. RESULTS: 77 patients were identified, 58% were male and 42% female. 42% were <1yrs, 38% were 1-5yrs and 20% were 5-15yrs. 75% of children 'self presented' to the ED with 19% referred by GPs. 5% were referred from other hospitals for medical admission, but subsequently required admission to PICU/HDU. Only 49% of patients arrived by ambulance. The majority of children, 43%, presented with respiratory problems. 21% had severe sepsis and 10% were admitted following seizures. 8% had trauma. 49 children were admitted to PICU, with 35% requiring intubation and 12% inotropic support in the ED. The median time spent in the ED

was 113 minutes. The median stay on PICU was 3 days and on HDU 1 day. CONCLUSION: Half of the children admitted to PICU/HDU were transported to hospital by their family. The majority had not been seen by another medical professional. Sick children present to the ED often with little warning and no pre-hospital care. Plans for the new Children's Hospital must reflect this.

TH.29) Presentations of glyphosate herbicide intoxication : Frederik Staikowsky[1], Annibal Hernandez[1], Amandine Buono[1], Paul Laforet[1], Cyril D'Andrea[1], Abdel Souab[1] : 1. Emergency, CHR Reunion Island, St Pierre, La Réunion, France.

INTRODUCTION: Glyphosate herbicide (GlyH) is widely used as a non-selective herbicide. It is marketed in various formulations in particular in the form of its isopropylamine salt (Roundup ®, Missile ® Glyfort ®) responsible for its causticity. METHODS: This was a retrospective study of GlyH-intoxicated patients treated at the Emergency Department from 2001 to 2008. RESULTS: 67 patients ingested GlyH, 3 were excluded because of concomitant ingestion of other pesticides. For 64 patients (male 85.9%; 35.7 ± 13.6 years, range 2 - 70 years), the gesture was aimed at suicide attempts in 96.9% of cases. The most common symptoms included gastrointestinal symptoms: vomiting (59.4%), abdominal pain (46.9%) with epigastric pain for 2/3 of cases, diarrhea (20.3%), nausea (10.9%). Retrosternal pain, oropharyngeal irritation and salivation were reported in respectively 21.9, 17.2 and 7.8% of patients. Altered consciousness in 7 cases could be linked to an association with alcohol or psychotropic substance or opposition. Other symptoms were agitation (3.3%), mydriasis (3.3%). Initial hemodynamic parameters were normal. One patient, following a massive ingestion, presented difficulties in breathing followed by a cardio-pulmonary arrest before the arrival of a medical team. Initial laboratory evaluation revealed rhabdomyolysis in 26 patients (316 ± 271.6 IU/l, range 60 and 1615 IU/l) and decrease of serum bicarbonate levels (< 22 mmol/l) in 13 patients with lactate > 5 mEq/l in 3 cases. The arterial blood gas, performed in 13 patients, showed a metabolic acidosis in 4 cases and a compensatory alkalosis in 2 other cases. Two patients presented an increase in the lipase serum levels more than three times the upper limit of normal. The evolution was marked by episodes of oxygen desaturation (n = 3), renal failure by tubulopathy, hypotension (n = 3), atrial fibrillation (n = 1), and pulmonary oedema (n = 1). Oesogastroduodenal fibroscopy (n = 37) was normal in 10 cases or showed esophagitis and / or gastritis most often toxic. CONCLUSION: While glyphosate herbicide poisoning is uncommon, ingestion of a glyphosate herbicide can result in serious and sometimes fatal sequelae.

TH.30) Anaphylaxis to ovine Fab-fragments in a child envenomated by European viper. : Valeria Petrolini[1], Carlo A. Locatelli[1], Stefania Bigi[1], Andrea Giampreti[1], Sarah Vecchio[1], Davide Lonati[1], Antonio Bellini[2], Mauro Arrica[2] : 1. Poison Control Centre and National Toxicology Information Centre, Toxicology Unit, IRCCS Maugeri Foundation and University of Pavia (Italy), Pavia, Italy. 2. 1st Department of Anesthesia and Intensive Care, University Hospital of Parma, Italy, Pavia, Italy.

BACKGROUND: Specific Fab-fragments are used as antidote in European Viper envenomation. We describe a case of anaphylaxis to ovine Fab-fragments. CASE: A thirty-two

month-old child was bitten by a viper on his right foot: typical fang-marks were present, and severe local effects developed in 4-6 hours. Initially, the foot was tender, red and swollen: within 30 hours, the local lesion progressively involved the leg that became swollen and ecchymotic up to the groin. Leukocytosis, neutrophilia and elevated D-dimer were present. An infusion of ViperaTab® (200 mg in 30 minutes) was started. Within a few minutes the child rapidly became diffusely erythematous and started coughing; respiratory stridor, facial angioedema, hypotension and tachycardia appeared, with sudden restlessness and progressive reduction of peripheral oxygen saturation (90%). Fab-fragment infusion was immediately interrupted, and oxygen, intravenous chlorphenamine, hydrocortisone and epinephrine were administered. Mild anaemia and elevated plasma tryptases concentration were detected. Intravenous fluid infusion and midazolam were administered, and low-molecular-weight heparin prophylaxis was started. A repeated Doppler-ultrasound study showed no alterations of arterial blood flow. The extension of oedema, swelling and ecchymosis gradually reduced, hemodynamic status improved, plasma D-dimer decreased, and haemoglobin concentration began to rise on the 4th day. Five days after the bite, the child was discharged home. DISCUSSION: The incidence and the severity of adverse reactions to Fab-fragment administration against European vipers is still unknown, even if it is generally believed to be extremely rare. Only a few minor adverse reactions have been reported to equine fragments, whereas no adverse reactions have ever been reported to ovine viper Fab-fragments. This is the first time that an anaphylactic reaction following administration of ovine Fab-fragments is described. Nevertheless, the patient recovered completely. The possibility of anaphylactic reactions, although infrequent, should be considered when evaluating the balance between possible risks and benefits.

TH.31) Life threatening hypermagnesemia: a stroke mimic and a potential complication of cathartic use : Sara Jane D. Reedy[1], Ziad N. Kazzi[1], Stephanie L. Hon[2], Matthew W. Keadey[1], Brent W. Morgan[1] : 1. Emory University, Atlanta, GA, USA. 2. Georgia Poison Center, Atlanta, GA, USA.

Introduction: Magnesium salts and oxides are often used for constipation. Overuse of these cathartics may lead to hypermagnesemia. Basilar thrombosis may present as sudden onset of severe motor and bulbar symptoms with reduced consciousness.

Case reports: A 78 year-old female presented to the emergency department (ED) after 2 hours of an acute onset of coma and flaccid quadriparesis as reported by her husband. Initial computed tomography of the head and laboratory testing were normal. In consultation with neurology, the patient received a bolus of intravenous tissue Plasminogen Activator (tPA) for presumed basilar artery thrombosis. During the infusion, the serum magnesium, which is not routinely included with basic electrolytes, was found to be 19.7 mEq/l two hours post presentation. The infusion was discontinued and the patient received furosemide and hemodialysis. Her mental status gradually returned to normal and she was discharged 5 days later. Further history revealed that the patient had been using Epsom salt (magnesium sulfate) as well as Milk of Magnesia (magnesium hydroxide) for constipation.

Conclusion: Overuse of magnesium sulfate and or hydroxide can lead to acute neurologic consequences that may mimic a basilar artery thrombotic stroke.

TH.32) Clinical and experimental evidences of Italian viper venom neurotoxicity : Carlo A. Locatelli[1], Davide Lonati[1], Ornella Rossetto[2], Mariana Cintra-Francuischinelli[2], Andrea Giampreti[1], Sarah Vecchio[1], Stefania Bigi[1], Valeria Petrolini[1], Roberto Sacchi[3], Fabrizio Bernini[3], Augusto Gentilli[3], Luigi Manzo[1], Cesare Montecucco[2] : 1. Poison Centre and National Toxicology Information Centre, IRCCS Maugeri Foundation and University of Pavia, Pavia, Italy. 2. Department of Biomedical sciences, University of Padova, Padova, Italy. 3. Department of Animal Biology, University of Pavia , Pavia, Italy.

INTRODUCTION: Peripheral neurotoxic effects (PNE) after European Viper envenomation, due to a phospholipases-A2 (PLA2) component of the venom, have been previously reported and involve mostly cranial nerves. Currently PLA2 in Italian viper has never been demonstrated. The aims of this study are to identify PNE observed in patients referred to Pavia Poison Centre after viper bite, and describe presence and activity of PLA2 in Italian viper venom. METHODS: Clinical data: Patients with PNE after viper bite observed between 2001-2008 were reviewed. Experimental data: Venom milked from Italian Vipera aspis was analyzed through a SDS-PAGE and tested with mouse phrenic nerve-hemidiaphragm and stimulated by supramaximal stimuli; isometric muscle contraction was monitored and a curve of paralysis was registered. Immortalized motor neuron cell line was incubated with venom. RESULTS: Clinical data: Eighteen patients were observed (3-75 years). PNE included bilateral ptosis (16/18 patients), diplopia (6/18), dysphagia (3/18). Patients showed mild (6/18), moderate (10/18) or massive limb oedema (2/18). Systemic non-neurotoxic effects were vomiting (12/18), abdominal pain (6/18) and diarrhea (5/18). Five patients showed PNE as unique systemic manifestation. PNE were observed 3-30 hours after bite; systemic non-neurotoxic effects occurred earlier. Experimental data: SDS-gel electrophoresis of venom showed proteins with molecular mass resembling PLA2. Venom added to mouse hemidiaphragm caused a biphasic curve of paralysis without impairment of muscle contraction. Incubation of neuronal cells with venom induced a defined swelling of synaptic sites with formation of bulges similar to other snake neurotoxins with PLA2 activity. CONCLUSION: PNE observed seems potentially connected with the action of PLA2. PNE can occur with delayed onset, even in patients presenting with only local effects. PLA2 was detected in all venom samples analyzed. Nevertheless patients without signs of neurotoxicity are reported, and this could be related to the amount of venom injected, the concentration of PLA2 and a possible individual susceptibility.

TH.15) Tourniquet-induced acute ischemia-reperfusion injury is associated with oxidative stress and mitochondrial dysfunction : T. P. Tran[1], Huiyin Tu[1], Robert L. Muelleman[1], Hassam Albadawi[2], Iraklis Pipinos[1], Yulong Li[1] : 1. Emergency Medicine, University of Nebraska Medical Center, Omaha, NE, USA. 2. Massachusetts General Hospital, Harvard Medical School, and the VA Boston Healthcare System, Boston, MA, USA.

INTRODUCTION: Up to 10% of preventable combat fatalities are due to hemorrhage from extremity wounds, making emergency tourniquet one of the first-line treatments. While lifesaving, prolonged application of tourniquet can cause serious ischemia-reperfusion (IR) injury. METHODS: Using a murine model of tourniquet-induced acute hind limb IR, we

investigated acute IR injury, oxidative stress, and mitochondrial dysfunction in skeletal muscle. An IR protocol of three hours of ischemia and four hours of reperfusion was achieved by placement and release of a rubber tourniquet at the greater trochanter level around the hind limb of C57/BL6 mice. Tourniquet-induced ischemia and subsequent reperfusion were verified by measuring skeletal muscle blood flow (SMBF) in gastrocnemius muscle. SMBF was significantly reduced to < 10% of baseline during the ischemic period and partially recovered to about 40% of baseline during the reperfusion period. RESULTS: This IR protocol was accompanied by > 40% necrosis in gastrocnemius muscle. Superoxide production was markedly increased (0.05 ± 0.01 vs 0.13 ± 0.01 MLU/min/100 ?g protein, $p<0.05$) and activities of mitochondrial electron transport chain complexes including complex I, II, III, and IV in gastrocnemius muscle decreased in the IR group compared to sham. Activity of manganese superoxide dismutase (MnSOD, the mitochondria-targeted SOD isoform) in gastrocnemius muscle was also reduced in IR, although the protein expression of MnSOD was increased. CONCLUSION: These results suggest that in a tourniquet-induced IR model, 3 hours of ischemia and 4 hours of reperfusion results in significant skeletal muscle necrosis and mitochondriopathy. These IR injuries are associated with an elevated superoxide production and reduced antioxidant activity. In the future, this murine IR model can be adapted to mechanistically evaluate anti-ischemic molecules in efforts to minimize morbidity and mortality of tourniquet-induced IR in battlefield injury.

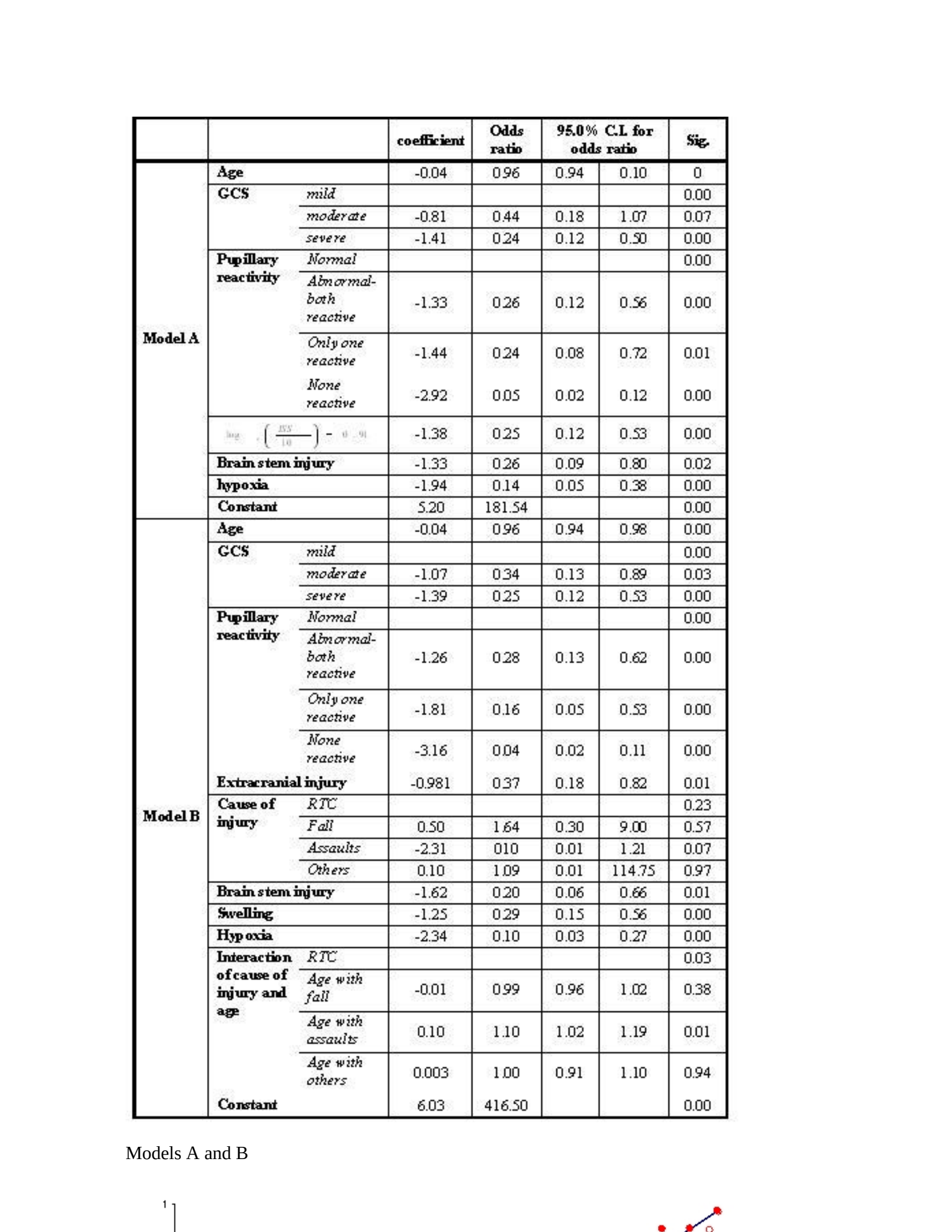
TH.16) Models of Mortality Probability in Severe Traumatic Brain Injury : Mehdi Moazzez Lesko [1], Maralyn Woodford[1], Omar Bouamra[1], Tom Jenks[1], Fiona Lecky[1] : 1. The Trauma Audit and Research Network (TARN), University of Manchester , Salford , United Kingdom.

INTRODUCTION: Prognostic models in traumatic brain injury (TBI) are employed to design clinical trials, to assess/compare trauma care systems and to adjust trauma care for an individual patient. However, models derived from a given dataset are not reliably generalisable to other populations due to changes in trauma care systems/protocols regionally or over-time. Aim: To construct prognostic models in TBI applicable to British patients and recent changes in TBI management. METHODS: Records of patients with brain injury since January 2005 were extracted from the Trauma Audit and Research Network (TARN) database. TARN holds the records of patients with severe injuries i.e. longer than 3 days stay at hospital, inter-hospital transfer, critical care in hospital or death. Following a literature review, the covariates age, cause of injury, GCS, pupillary reactivity, Injury Severity Score (ISS), CT classifications, systolic and mean blood pressure, hypoxia and the presence of extracranial injury were tested with survival at discharge as outcome. Covariates with no significant correlation on univariate analysis were excluded. Stepwise logistic regression analysis was performed with split sampling for internal validation. RESULTS: Two models were derived on 802 patients with significant brain injury (models A and B)(image 1). Age, GCS, pupillary reactivity, hypoxia and brain stem haemorrhage are significant predictors in both. However, model A contains ISS and brain swelling in contrast to model B with the presence of major extracranial injury i.e. AIS > 3 instead. Both models have acceptable discrimination and calibration strength (Model A; Area Under the ROC Curve (AUC) =0.92 (95% CI: 0.89-0.94) and HL test: P value = 0.32, Model B; AUC = 0.92 (0.90-0.95) and HL test: P value= 0.32)(image 2). CONCLUSION: We have developed two prognostic models applicable to the patients hospitalised after traumatic

brain injury in England and Wales.

			coefficient	Odds ratio	95.0% C.I. for odds ratio		Sig.
Model A	**Age**		-0.04	0.96	0.94	0.10	0
	GCS	*mild*					0.00
		moderate	-0.81	0.44	0.18	1.07	0.07
		severe	-1.41	0.24	0.12	0.50	0.00
	Pupillary reactivity	*Normal*					0.00
		Abnormal-both reactive	-1.33	0.26	0.12	0.56	0.00
		Only one reactive	-1.44	0.24	0.08	0.72	0.01
		None reactive	-2.92	0.05	0.02	0.12	0.00
	$\log_e\left(\frac{ISS}{10}\right) - 0.91$		-1.38	0.25	0.12	0.53	0.00
	Brain stem injury		-1.33	0.26	0.09	0.80	0.02
	hypoxia		-1.94	0.14	0.05	0.38	0.00
	Constant		5.20	181.54			0.00
Model B	**Age**		-0.04	0.96	0.94	0.98	0.00
	GCS	*mild*					0.00
		moderate	-1.07	0.34	0.13	0.89	0.03
		severe	-1.39	0.25	0.12	0.53	0.00
	Pupillary reactivity	*Normal*					0.00
		Abnormal-both reactive	-1.26	0.28	0.13	0.62	0.00
		Only one reactive	-1.81	0.16	0.05	0.53	0.00
		None reactive	-3.16	0.04	0.02	0.11	0.00
	Extracranial injury		-0.981	0.37	0.18	0.82	0.01
	Cause of injury	*RTC*					0.23
		Fall	0.50	1.64	0.30	9.00	0.57
		Assaults	-2.31	010	0.01	1.21	0.07
		Others	0.10	1.09	0.01	114.75	0.97
	Brain stem injury		-1.62	0.20	0.06	0.66	0.01
	Swelling		-1.25	0.29	0.15	0.56	0.00
	Hypoxia		-2.34	0.10	0.03	0.27	0.00
	Interaction of cause of injury and age	*RTC*					0.03
		Age with fall	-0.01	0.99	0.96	1.02	0.38
		Age with assaults	0.10	1.10	1.02	1.19	0.01
		Age with others	0.003	1.00	0.91	1.10	0.94
	Constant		6.03	416.50			0.00

Models A and B



TH.17) How good is full-body low-dose digital radiography (LODOX) in detecting fractures in polytraumatized patients? : **Simone Deyle[1], Tina Brehmer[1], Harald Bonel[2], Heinz Zimmermann[1], Aristomenis K. Exadaktylos[1] : 1. University Hospital Bern, Department of Emergency Medicine, Bern, Switzerland. 2. University Hospital Bern, Department of Radiology, Bern, Switzerland.**

INTRODUCTION: As part of the primary survey, polytraumatized patients in our emergency department are examined using the new "Lodox Statscan" (LS) digital low-radiation imaging device that provides full-body anterior and lateral views based on enhanced linear slot-scanning technology in accordance with the recommended ATLS Guidelines. The aim of this study was to rule out injuries in polytraumatized patients with LS scans and to review the reasons for performing subsequent radiological imaging. We tested the hypothesis that full-body radiography captures bone injuries obviating separate conventional X-rays to assist with further management. METHODS: 263 polytrauma patients aged 16 years or more who underwent LS imaging between October 2006 and October 2007 were included in this retrospective chart analysis. Computed tomography (CT) scans were performed when indicated and according to the Canadian rules for head and C-spine injuries. We reviewed the LS scans to detect injuries from head to toe and then performed additional radiological imaging when necessary to determine subsequent therapy. RESULTS: The sensitivity and specificity of the LS scans were 74% and 100% for skeletal thoracic injuries, 64% and 100% for overall spine lesions, and 72% and 99% for pelvic injuries. Sensitivity for skull fractures was 35%, and for the limbs 71%. 34% of all pathological findings were missed. Additional conventional X-rays were performed in 24% of cases. 23% were performed due to requests for better alignment, <1% because of the low quality of the LS scan, and <1% because the fracture zone had not been fully captured. CONCLUSION: Our study demonstrates that the 'all-in-one' technique of LS digital imaging rapidly detects injuries from head to toe with an overall sensitivity of 66% and specificity of 99%. This is similar to and, in some cases, more accurate than values reported in the literature for single-shot radiography. Although additional conventional X-ray was performed in one quarter of our cases, this was almost always to achieve better alignment to assist with further management.

TH.18) Long Term Outcome in Patients with Mild Traumatic Brain Injury (MTBI): A Prospective Observational Study : **Mario Moser[1], Matthias Mottini[1], Sebastian Ott[1], Charlotte Sadowski-Cron[1], Luca Martinolli[1], Bogdan P. Radanov[1], Heinz Zimmermann[1], Aristomenis K. Exadaktylos[1] : 1. Inselspital Bern, Bern, Switzerland.**

INTRODUCTION: Patients with MTBI defined as Glasgow Coma Scale (GCS) 14 or 15 have shown contradictory short- and long-term outcomes. Therefore, the objective of this study was to evaluate the long-term clinical and neurocognitive outcome of patients with MTBI. METHODS: Patients with MTBI were included and underwent cranial CT scans at initial presentation as well as clinical symptoms and quality of life (QoL) were systematically assessed using a standardized data entry form and a structured interview with a validated 24-item questionnaire on admission and during follow up after 1 year and 10 years, respectively. RESULTS: 176 patients were initially included and 86 patients could be reached and re-evaluated after 10 years by structured phone calls. During follow-up a significant decrease was

observed in QoL in the 24-item questionnaire (mean score: 5.92 ± 9.52 vs. 20.60 ± 17.14; p<0,001). At inclusion 21/176 patients had intracranial injury (ICI) and 14/176 had skull fracture. There was a strong relationship between ICI and skull fractures (p=0,001). The most frequent complaints were fatigue, emotional disturbances, myo-skeletal pain, headache, memory and concentration impairments. There was no correlation between initial injury severity score (ISS) and long-term quality of life. One year after head-injury, posttraumatic headache (PTH) was observed in 14% of the patients, and 12,8% still suffer from PTH 10 years after MTBI. 9.3% (8/86) of the subjects had to change their profession or were disabled due to persistent complaints following MTBI. None of them presented with ICI. CONCLUSION: Our data suggest that the long-term impact of MTBI might have been underestimated and MTBI can lead to significant limitations in every day life. Most patients presented with significantly impaired QoL ten years after MTBI. Interestingly, patients without ICI and low ISS showed a significantly lower QoL, than patients with ICI and higher ISS. Skull fracture was directly correlated with a high risk for ICI, but there was no correlation to long-term clinical outcome. The long-term outcome of MTBI patients is independent of age.

TH.19) A study on the pattern and outcome of stab injuries from a North London Hospital-Is there a change in trend? : Mohammed Mohsin Uzzaman[1], Manojkumar S. Nair[1], Ashok Jadeja[1], Navaratnam Romi[1] : 1. General And Emergency Surgery, North Middlesex University Hospital, London, United Kingdom.

INTRODUCTION: Aim: To study the incidence, pattern, and outcome of stab injuries attending the North Middlesex University Hospital NHS Trust, London over a three year (2006-2008) period. We were especially interested at the impact of implementing “24-hour drinking laws” in November 2005 on the workload of our trauma service. METHODS: A retrospective review of data from the Hospital database was conducted. The database contains comprehensive medical records for all patients attended by the trauma team for deliberate stab injuries. All patients with deliberate penetrating injury who were attended by the service between 1 January 2006 and 31 December 2008 were identified. Patients who died in the pre-hospital phase and those managed exclusively by the emergency department were excluded from the study. The primary outcome measure was number of deliberate penetrating trauma attended by trauma service at North Middlesex University Hospital, London over the study period. We recorded the site of the trauma, timing of presentation, the population affected, mortality rate and the operative/non-operative measures that were taken. RESULTS: 619 patients with stab injuries (following knife crime) from North London attended the North Middlesex University Hospital in the above period. 137 required surgical admission. Most cases were male (94%) and involved chest injuries (60.7%). Two were cases of self-inflicted knife injuries. There has been significant decline in the number of penetrating injuries since the 24-hour drinking laws were implemented. The percentage of victims below 20 years of age is increasing. 93% of knife crimes occur between 6pm to 6am, recently moving towards week days from weekend period. Only 19% of patients needed operative management with five deaths over study period. CONCLUSION: The overall rate of penetrating injuries is slowly declining. Timely cardiothoracic support facility is vital in saving lives with major cardiac stab injuries. Although alcohol drinking restriction has been lifted, most cases of stabbings are still

occurring out-of-hours when emergency personnel are limited.

TH.20) Barriers in pain management and procedural sedation for trauma patients in the emergency department : Sivera Berben[1], Gaël Smits[1], Annemieke Ansems[1], Tineke Meijs[2], Arie van Vugt[3] : 1. Accident and Emergency department, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands. 2. HAN University, Nijmegen, Netherlands. 3. Hospital Medical Spectrum Twente, Nijmegen, Netherlands.

INTRODUCTION: Pain is one of the main complaints of trauma patients in the emergency department (ED). Several studies have reported barriers, although it is unclear to what extent these play a role in initial pain management and procedural sedation and analgesia (PSA) in the ED in the Netherlands. In preparation of implementing advice of two Dutch national guidelines on these topics, it is essential to gain insight in existing barriers. Aim: The aim of the study is to gain insight into barriers in pain management and PSA in the ED from the organizational and professional perspective. METHODS: We conducted qualitative in depth interviews with ED managers (nurses and physicians) and focus group interviews with ED staff (nurses, emergency physicians, and (orthopedic) surgeons). The interviews were held in four different hospitals (level 1 – level 3). Interviews were recorded and typed out unabridged. The notes were independently analyzed by two pairs of researchers using the MaxQDA2007 qualitative data management program. Text fragments were coded with MESH terms and organized in a tree-structure. Subsequently analysis compared the data and disagreements were discussed with another investigator. Findings were synthesized in themes, and linked to the theoretical framework. RESULTS: The study showed six barriers from the professional perspective and 3 themes at the organizational level regarding initial pain management. For PSA we identified three themes: knowledge and skill deficits, insufficient cooperation of medical staff members from other specialties, and lacking organizational attention for recovery care. For initial pain management, three of the nine barriers were: the triage in the ED appeared to be a barrier instead of a facilitator, the professional perspective on pain was not patient focused, commonly shared or evaluated amongst the staff, furthermore attention for and continuity of pain treatment in the chain of care was lacking. CONCLUSION: According to the respondents the Emergency Physician plays an important role in reducing these barriers.

TH.21) Social Factors Which Predict Penetrating Trauma: Has Anything Changed in the Past Twenty Years? : Lisa Moreno-Walton[1], Valerie Katz[2], Amish Shah[3], Jayne Lieb[3] : 1. Emergency Medicine, Louisiana State University Health Sciences Center, New Orleans, LA, USA. 2. Lincon Medical and Mental Health Center, Bronx, NY, USA. 3. Mt. Sinai Medical Center, New York, NY, USA.

INTRODUCTION: Literature review on factors that predict trauma and recidivism reveal no studies on characteristics of trauma patients in South Bronx, the poorest Congressional District in the US with a population 98% minority, a lower level of education, higher violent crime rate, and higher per capita rate of substance abuse than US averages. Objective: To establish a database of social factors that typify penetrating trauma in South Bronx, to evaluate each as an independent risk, to compare risk factors to those identified in the literature. METHODS: Records of consecutive patients admitted to Level One Trauma Service inner city academic

medical center were reviewed for injury type, age, sex, race, highest level of education, history of substance use, current intoxication, previous history of trauma. Percentages, relative risk and odds ratio were calculated for each risk factor by comparing to the Bronx County population. RESULTS: Of 204 patients, 122 had penetrating trauma. 89.34% were male(Bronx population 46.79%,RR 9.53,P=0). Age peaked at 15-19 years(25.41%,Bronx 7.47%), 20-24 years(30.33%,Bronx 14.39%) and 25-34 years(23.77%,Bronx 24.76%). RR 4.22,2.59,1.80(P=0). Patients were 59.84% Hispanic(Bronx 50.97%;P=0.05,RR1.43). 31.97% had some high school; 24.59% graduated. 59.84% gave history of alcohol use,33.61% THC,9.02% heroin,9.84% cocaine,4.10% methadone. 32.79% were positive for alcohol at time of trauma, 6.56% THC, 2.46% heroin, 8.20% cocaine, 0.82% each benzos and methadone, 36.89% tested negative, 22.13% weren't tested. All patients with previous trauma were male. CONCLUSIONS: Male sex, Hispanic race, age 15-34, education of high school or less correlate with penetrating trauma. 23.78% had history of previous trauma. Findings are consistent with the literature, suggesting that time and geography don't alter some trauma risk factors. History of alcohol but not drugs predispose to penetrating trauma. Patients were more likely to be sober than intoxicated, a significant difference from the literature. Despite peak age range consistent with the literature, a lower mean age at presentation suggests a trend towards violence at a younger age.

TH.22) Value of Swimming Position and Arm Traction in Visualizing the Cervicothoracic Junction over the Standard Lateral Cervical X-Ray : Aydin Toksoy[1], Firat Bektas[1], Cenker Eken[1], Kaan Ceken[2], Yildiray Cete[1], Alp Giray Aydin[1] : 1. Akdeniz University Faculty Of Medicine Department Of Emergency Medicine, Antalya, Turkey. 2. Akdeniz University Faculty Of Medicine Department Of Radiology, Antalya, Turkey.

INTRODUCTION: The aim of this study is to investigate whether swimmer's view and arm traction could enhance the image field on the standard lateral cervical x-ray (SCL). METHODS: The study was conducted in a university hospital in October 2007 with 40 volunteers. SCL, lateral cervical x-ray in swimming position and lateral cervical x-ray with arm traction were performed in the supine position. The enhancements in the image fields were analyzed. RESULTS: There was a statistically significant difference in the increases in the view of cervical spines between SCL x-ray (12.60±7.48) and either lateral cervical x-ray with arm traction (21.73±9.78; p=0.000) or swimming position (21.20±14.19; p=0.001)). Both arm traction and swimming position increased the field of view approximately 9 mm. Increased visualization of the C-spine occurred for 24 out of the 40 participants using the arm traction view (60.0%) and 23 participants (57.5%) using the swimming position view—results found to be statistically similar according to the =>1/3 caudal vertebral height visualized (p=0.902). Using the lateral cervical x-ray view, the number of cervical spines visualized differed according to BMI—seven cervical vertebrae were visualized in participants with BMI<25 and six vertebrae were visualized in participants with a BMI=>25 (p=0.007). CONCLUSION: Lateral cervical x-rays with arm traction and swimming position enhances the view of SCL x-rays. An initial SCL x-ray including the lower third of 7th cervical spine, arm traction and swimming position may be beneficial in visualizing the cervicothoracic junction. However, patients with an increased BMI are unlikely to benefit from all three methods.

TH.23) Comparison of Two Mechanical Intraosseous Infusion Devices: A Randomized Crossover Trial :
Yoav Hoffmann[1], Itai Shavit[1], Roger Galbraith[2], Yehezkel (. Waisman[3] : 1. Rambam Health Care Campus, Haifa, Israel. 2. Alberta Children's Hospital, Calgary, AB, Canada. 3. Schneider Children's Medical Center, Petah Tiqva, Israel.

Introduction. Administration of medications via the intraosseous (IO) route has proven to be a lifesaving procedure in critically ill or injured children. Two mechanical IO infusion devices have been approved for use in children, the spring-loaded IO infusion device (Bone Injection Gun, BIG) and the battery-powered IO infusion drill (EZ-IO). The objective of this pilot study was to compare the success rates for insertion and the ease-of-use of the two devices.
Patients and Methods. A randomized crossover study was conducted in a local paramedic training course with 29 paramedic students participating. Participants watched two videos describing the use of the two devices, followed by a demonstration on how to use each device on a turkey bone model. Then subjects were divided into two study groups: BIG-first or EZ-IO-first. Each participant performed one insertion attempt with each device independently. All attempts were filmed by a video camera. Successful placement was defined as the visualization of fluid flow from the marrow cavity. Following the study procedure, participants completed a two-item questionnaire recording their ranking of the ease-of-use of each device and their "first choice device".
Results. Participants had a significantly higher one-attempt success rate with the EZ-IO than with the BIG (28/29 vs 19/29, p=0.016), and selected the EZ-IO as their first choice (20/29). Participants of the EZ-IO-first group assessed the EZ-IO as easier to use than the BIG

(p=0.0039). The subjects of the BIG-first group found no difference in the ease-of-use between the two devices (p=0.32).
Conclusions. As tested by paramedic students on a turkey bone model, the EZ-IO demonstrated higher success rates than the BIG and was the preferred device. Future studies are planned to determine which of the two devices is more appropriate for obtaining IO access in the setting of paediatric emergencies.

TH.24) Success Rates of GlideScope Video Laryngoscopy versus Direct Laryngoscopy in Blunt Trauma Patients With Cervical Immobilization : John C. Sakles[1], Clay P. Josephy[1], Stephen F. Chiu[1] : 1. Department of Emergency Medicine, University of Arizona, Tucson, AZ, USA.

INTRODUCTION: Objective: To compare the success rates and performance of GlideScope Videolaryngoscopy (GVL) versus Direct Laryngoscopy (DL) in emergency department (ED) intubations of blunt trauma patients with cervical spine immobilization. METHODS: This study analyzed 270 consecutive ED intubations in which GVL or DL was utilized at an academic Level One trauma center between 1 July 2007 and 1 May 2009. Following each intubation, a data collection form was completed by the operator. Data was collected on success, number of attempts, and difficult airway predictors (DAPs). DAPs included, among other factors, cervical immobilization and the presence of blood in the airway. Descriptive statistics were used to compare the success rates of GVL to DL. RESULTS: See table. CONCLUSION: In blunt trauma patients with cervical collars requiring emergent intubation, GVL was significantly more successful than DL if there was no blood in the airway. However, if blood was present in the airway, the two devices had similar success rates. These data suggest that GVL should be the device of choice in trauma patients with cervical immobilization.

Success Rates of DL vs. GVL in Patients with Cervical Immobilization

	Cervical Collar, No Blood in Airway		Cervical Collar, Blood in Airway	
	First Pass Success*	Final Success**	First Pass Success†	Final Success‡
DL	69.5% (41/59)	76.3% (45/59)	66.7% (34/51)	86.3% (44/51)
GVL	93.7% (59/63)	95.2% (60/63)	58.3% (28/48)	68.8% (33/48)

*: p=0.0007
**: p=0.003
†: p=0.42
‡: p=0.052

TH.25) Injury Patterns Are Different for Older and Younger Patients in Equestrian Accidents : Jaroslaw W. Bilaniuk [1], Alexis M. Gage[1], John M. Adams [1], Brian K. Siegel [1], Mark I. Cockburn [1], Louis T. DiFazio [1], John R. Allegra[2] : 1. Morristown Memorial Hospital, Morristown, NJ, USA. 2. Emergency Medical Associates Research Foundation, Livingston, NJ, USA.

INTRODUCTION: Horseback riding has been identified as a higher-risk activity than motorcycle riding, football and skiing. There has been little research of injuries associated with equestrian accidents. Examining injury patterns may give clues for prevention of injuries. We hypothesized that there are different patterns of injury for older and younger patients in equestrian accidents. METHODS: Design: Retrospective cohort. Setting: Level two trauma center in suburban northern New Jersey. Population: Consecutive visits from January 1, 2004 to Dec. 31, 2007. Protocol: We searched the trauma registry and the E- codes from the hospital information system to identify patients with equestrian injuries. We grouped injuries into categories based on regions of the body. We a priori chose to compare patients less than 50 years with those greater or equal to 50 years. Chi-square was used to test for statistical significance with alpha set at < 0.005 using the Bonferroni correction for multiple comparisons. RESULTS: Of 277,000 visits in the database, 285 patients (0.1%) had equestrian injuries. The median age was 30 years (inter quartile range 14 – 50 years) with 27% > 50 years. Female comprised 84%. The two most common injuries as a percentage of injured patients for each age group were: > 50 years - rib fractures (23%) and T-L-S spine fractures (18%) and < 50 years - concussion (22%) and upper extremity fractures (16%). Comparing the two groups we found: statistically significant greater percentages in the older population for rib fractures 23% vs. 5% (p = 0.00001) and spinal fractures 18% vs. 6% (p=0.004). There were no statistically significant differences for other injuries between the two age groups. CONCLUSIONS: We found different patterns of injuries associated with equestrian accidents for older and younger patients. There were a statistically significant greater percentage of rib and spinal fractures for ages > 50. Older horseback riders may benefit from steps to prevent osteoporosis and by using chest protector vests.

TH.26) Predictors of In-hospital Mortality and 6-month Functional Outcomes in an Elderly Population after Moderate to Severe Traumatic Brain Injury : **Terrence Mulligan[1], Peter Cameron[2], Wesley Utomo[1], Belinda Gabbe[2], Pamela Simpson[2] : 1. Emergency Medicine, Erasmus Medical Center, Rotterdam, Netherlands. 2. Monash University, Melbourne, QLD, Australia.**

INTRODUCTION: Traumatic Brain Injury (TBI) is the single largest cause of death and disability following injury worldwide. While TBI in the elderly is less common, it still contributes to significant morbidity and mortality in this group. This population-based study investigated predictors of mortality and longer-term functional outcomes following serious TBI in the elderly. METHODS: All elderly (aged >64 years), isolated moderate to severe TBI cases from the population-based Victorian State Trauma Registry for the period July 2005 to June 2007 (inclusive) were extracted for analysis. Demographic, injury event, injury diagnosis, management and comorbid status information were obtained and the outcomes of interest were in-hospital mortality, and the Glasgow Outcome Scale – Extended (GOSE) score at 6-months post-injury. Multivariate logistic regression analysis was used to identify independent predictors of in-hospital mortality and independent living (GOSE>4) status at 6-months. RESULTS: Of the 428 isolated, elderly TBI cases, the majority 88% were the result of a fall, male (55%), and aged >74 years (76%). The in-hospital death rate was 28% and increasing age (p=0.009), decreasing GCS (p<0.001) and injury type (p=0.002) were significant independent

predictors of in-hospital mortality. Of the 310 patients who survived to discharge, 65% were successfully followed-up 6 months following injury. The significant independent predictors of independent living at 6-months were age, and SBP on arrival at hospital with younger (<75 years) patients and those with an SBP on arrival at hospital of 131-150 mmHg at increased odds of living independently at follow-up. CONCLUSION: In this population-based study, we found that age, GCS, brainstem injury, and systolic blood pressure were the most important factors in predicting outcome in an elderly TBI population. No patients with a GCS <9 had a good 6 month outcome and most died and the survival rate for brain stem injury was low.

TH.27) Urinalysis in Adult Blunt Trauma Patients: Is It Relevant Today? : Julie A. Gorchynski[1], Andrew DeLeon[2] : 1. JPS Health Network, UT Southwest, Fort Worth, TX, USA. 2. CHRISTUS Spohn Health System, Texas A&M, Corpus Christi, TX, USA.

INTRODUCTION: Objective: To evaluate the utility of the initial emergency department (ED) urinalysis (UA) in adult blunt trauma patients as a screening tool for the detection of intra-abdominal injuries (IAIs), specifically liver, spleen or hollow viscus. METHODS: Prospective study of consecutive adult blunt trauma patients that presented to a tertiary care teaching hospital, level II trauma center who received an abdominal or whole body (panscan) CT or an exploratory laparotomy (ex-lap) and an initial UA. Subjects were excluded if a UA was not obtained or if an abdominal CT, panscan CT or an ex-lap was not performed. The presence of uroblinogen, urine hemoglobin, urine bilirubin and red blood cells in the UA were reported. CT scans and operative reports were reviewed for evidence of liver, spleen, small bowel or mesenteric injuries. RESULTS: The sample population included 159 subjects with 6 subjects excluded due to the absence of an ED UA. Of the 153 study subjects, the mean age was 43 years, with 94 males, 58 trauma activations (38%) and 102 (67%) motor vehicle accidents. There were 95 (62%) abnormal UAs with 48 (31%) IAIs in 40 (26%) subjects. Test characteristics for the presence of an IAI stratified by abnormal UA were as follows: urobilinogen prevalence 55%, SN 0.55 (95%CI:0.39-0.70), SP 0.68 (95%CI:0.59-0.76),OR 2.38; UA hemoglobin prevalence 2.5%, SN 0.18 (95%CI:0.08-0.33), SP 0.85 (95%CI:0.77-0.91),OR 0.72; UA bilirubin prevalence17.5%, SN 0.03 (95%CI:0-0.15), SP 0.94 (95%CI:0.87-0.97), OR 1.12; hematuria prevalence 26%, SN 0.53 (95%CI:0.36-0.68), SP 0.71 (95%CI:0.61-0.79), OR 2.68. CONCLUSION: This is the first prospective study to investigate the utility of an abnormal ED UA for the detection of IAI adult blunt trauma patients. Our data demonstrates that the routine initial ED UA is not clinically useful as a screening tool for the detection of an IAI where CT panscan is routine. However, an abnormal UA may be utilized as an adjunct tool in addition to the physicians' clinical assessment for further investigation for IAIs where CT imaging is limited or not readily available in countries outside of the USA.

TH.28) Risk Factors for Delayed Analgesia in Patients Presenting to the Emergency Department with Long Bone Fractures : Jose Mejia[1], Ferleine Bautista[1], Nidhi Garg[1], Alfred C. Caligiuri[1], Vamshi Reddy[1], Michael S. Radeos[1] : 1. Department of Emergency Medicine, New York Hospital Queens, Bayside, NY, USA.

INTRODUCTION: Oligoanalgesia has been identified as a problem area in emergency

medicine. We sought to determine the causes for delayed administration of analgesics in adults presenting to the emergency department (ED) with long bone fractures. METHODS: Retrospective review of consecutive adult patients presenting to an urban level I Trauma Center ED with a long bone fracture. Patients were excluded if they were age 17 or less or involved in a major trauma. We examined demographic and clinical data, mode of arrival and time to analgesic administration. Data were analyzed using chi-square and Kruskal-Wallis test for non-parametric data as needed. Logistic regression was performed and odds ratios (OR) with 95% confidence intervals (95% CI) were used. Alpha was set at 0.05 by convention. RESULTS: 615 total patients were enrolled between 7/1/06 and 11/30/06. 407 (66.2%) were female, Age groups were 18-39 (75 [12.2%]), 40-64 (168 [27.3%]) and 65 and above 372 (60.5%). More than a dozen languages were represented in our patient population, with 393 (63.9%) speaking English as their primary language. 338 (55.1%) were white, 40 (6.5%) were Black, 63 (10.3%) were Latino 123 (20.0%) were Asian or Pacific Islander and 50 (8.1%) were other race. 402 (66.0%) of our patients arrived via ambulance. 301 (65.4%) patients experienced a delay in getting analgesia. Delay was statistically significantly related to age (209 (74.1%) of those 65 and older): OR 1.84 (95% CI [1.35,2.50]) $p<0.001$. There was no delay associated with either race or English speaking ability. Neither was delay associated with sex or mode of arrival. The effect remained quite significant even when adjusting for sex age race, English language preference and mode of arrival. CONCLUSION: There does appear to be a delay in older emergency department patients getting timely analgesia when they have suffered a long bone fracture. Future studies should focus on how to overcome barriers to rapid pain relief for all of our patients, especially the elderly.

TH.51) Pediatric burn injuries in Flanders: A prospective, multi-center study : Maarten Kuppers[3], Patrick Van de Voorde[2], Marc B. Sabbe[1] : 1. Emergency Medicine, University Hospitals Leuven, Leuven, Belgium. 2. University Hospital Gent, Gent, Belgium. 3. Salvator Hospital, Hasselt, Belgium.

INTRODUCTION: Pediatric burn injuries remain an important cause of morbidity and mortality. There is a marked difference in studies from burn-centers and EDs, both in epidemiology and outcome. If we wish to allocate resources for prevention, it is imperative to have a clear view on causes and effects of burn injuries. METHODS: PENTA was a prospective hospital-based registry in Flanders (Belgium) in 2005 and the main entry point for patient inclusion was the ED. The registry was split into two levels. Level A included “all children or youngsters (0–17 years), with an injury, as well as all deaths-on-scene encountered” (30 variables collected). Level B was then meant to describe in more detail all children with ‘severe’ injuries (length of stay expected to exceed 48 hours; 291 variables). RESULTS: Of all A group patients, 1.1% were burn injuries (40% female). The annual incidence in Flanders for children presenting to the ED because of burns could thus be estimated to be around 1.3/1000/year (95% CI=[1.2, 1.4]). When compared, incidences in the age group of 0-4 years were 3.8 times higher than in the 5-9 year age group. The most common cause, overall and in all the different age groups was scalding. Together with direct contact burn injuries they accounted for 75% of all burn injuries. Most of the patients were discharged and follow-up was arranged in the out-patient clinic (80%). 21% of all scalding-type burns needed hospitalization. Of all the patients who were admitted for more than 48 hours (B group), 32 (13.1%) were burn patients. This is a more than tenfold increase when

compared to the A group. Once again the age group 0-4 year is overrepresented (6:1 ratio when compared with the 5-9 year age group). CONCLUSION: Burn injuries are a very minor cause of injury overall, but are an important cause of hospital admittance. The most important cause of burn injuries is scalding, and the most vulnerable group is 0-4 year olds. Any campaign to prevent burn injuries should primarily target that specific group.

TH.52) Comparing the Prognostic Performance of S100B with Prognostic Models in Traumatic Brain Injury : **Mehdi Moazzez Lesko [1], Timothy Rainey[2], Charmaine Childs[2], Omar Bouamra[1], Fiona Lecky[1] : 1. The Trauma Audit and Research Network (TARN), Universtiy of Manchester , Salford , United Kingdom. 2. Brain Injury Research Group, Univeristy of Manchester , Manchester , United Kingdom.**

INTRODUCTION: There are currently two prognostic tools available to predict outcome in traumatic brain injury (TBI); these being prognostic models which combine clinicodemographic characteristics of patients for outcome prediction and serum brain injury biomarkers. S100B is a widely-acknowledged biomarker of brain injury. Objective: To identify which tool has better prognostic strength and also to identify how combination of these tools would improve the prognostic strength. METHODS: Retrospectively, a dataset of 100 TBI patients all admitted to the intensive care unit with their venous S100B level recorded at 24-hour after injury was analysed. TBI prognostic models A and B constructed in Trauma Audit and Research Network (TARN), UK were run on the dataset and then S100B was added as an independent predictor to each model. Similarly, another model was developed containing only S100B and then prognosticators from TARN A and B models along with those found significant on univariate analysis (such as compressed cisterns on CT) were added to seek the improvement in the predictive power of S100B. The outcome measures were survival and favourable outcome at three months. RESULTS: Among all the predictors of age, cause of injury, GCS, pupillary reactivity, Injury Severity Score (ISS) and CT classifications; S100B has the highest predicative strength on multivariate analysis. Addition of S100B to the prognostic models improved Area Under the ROC Curve (AUC) (e.g. AUC and classification accuracy of model A to predict survival increased from 0.64 and 0.71 to 0.72 and 0.73 respectively). Similarly, the predictive power of S100B increased by adding other predictors to S100B (e.g. AUC and classification accuracy of 0.69 and 0.73 versus 0.78 and 0.75 respectively for survival prediction). However, prognostic models without S100B are more predictive of favourable outcome than models which contain only S100B, although S100B is superior in survival prediction. CONCLUSION: Combination of these tools seems more accurate for outcome predication than individual application of each.

TH.53) Determining the accuracy of base deficit in the diagnosis of intra-abdominal injury in patients with blunt abdominal trauma : **Mani Mofidi[1], Abbas Hasani[1], Nahid Kianmehr[1] : 1. Emergency Department, Iran University of Medical Sciences, Tehran, Iran.**

INTRODUCTION: Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups. A multiplicity of diagnostic modalities exists to evaluate the abdomen. We sought to assess the diagnostic performance of base deficit (BD) in identifying intra-abdominal injury in patients with blunt abdominal trauma. METHODS: A prospective,

nonrandomized series of patients with blunt abdominal trauma admitted into the 2 emergency departments was investigated from September 2007 to September 2008. Arterial blood samples were analyzed. According to BD, the patients were divided into 2 groups: group 1 who had BD?6 and group 2 who had BD?6. Ultrasonography, CT scan or laparotomy performed to find intra-abdominal injury. Follow-up at 7 days by telephone interview was obtained on patients who were discharged. RESULTS: In total 400 patients were enrolled with mean age of 34.8 ± 17.1 years that 268 (67%) of were male. 76 (19%) of patients had BD?6. 68 (17%) of patients were found to have intra-abdominal injury with BD about -8.7 ± 3.2 in comparison to patients without intra-abdominal injury, -0.4 ± 0.1. Patients with BD?6 underwent more laparotomies and blood transfusions compared to patients with BD?6. On ROC curve analysis, the cutoff point of -6 resulted in sensitivity and specificity of 88.2%, 95.2% with PPV and NPV of 79%, 97.5%. None of the outpatients had abdominal problems on telephone follow up.
CONCLUSIONS: These data show that the base deficit is an early available important indicator to identify intra-abdominal injury in patients with blunt abdominal trauma, as well as a high transfusion requirement.

Measured variables of patients

Mean of Age	34.8 ± 17.1 years
Sex (male)	268 (67%)
Unconscious	62 (15%)
Head trauma	102 (25%)
Intoxicated (opium)	20 (5%)
Mean time of measuring blood gas	81 ± 44 min
Mean of SBP	118 ± 24 mm Hg
Mean of DBP	68 ± 14 mm Hg
Mean of Pulse rate	91.5 ± 14.4 /min
Mean of PCO2	37.8 ± 7.0 mm Hg
Mean of PO2	94.8 ± 8.7 mm Hg
BD? -6	76 (18%)
Abdominal injury	68 (17%)
Retroperitoneal bleeding	12 (3%)
Blood transfusion	56 (14%)
Laparotomy	48 (12%)

SBP & DBP: systolic & diastolic blood pressure
Unconscious: GCS < 9

TH.54) Validation of the Ottawa Knee Rule in Iran: A prospective study : Mohammad Jalili[1], Hadi Gharebaghi[2] : 1. Emergency Medicine, Tehran University of Medical Sciences, Tehran, Tehran, Iran. 2. Kermanshah University of Medical Sciences, Kermanshah, Iran.

INTRODUCTION: Acute knee injury is one of the most common complaints in the emergency department (ED). While almost all of these patients are referred for radiography, only a small percentage of them have clinically significant fractures. The Ottawa Knee Rule (OKR) is a clinical decision rule designed to reduce the number of unnecessary radiographs ordered for these patients. This study was designed to determine the sensitivity and specificity of the OKR when applied to patients with acute knee injury in the Iranian population of our ED. METHODS: This prospective cohort validation study included a convenience sample of all patients with a blunt knee injury sustained in the preceding 7 days presenting to the ED of a tertiary care teaching hospital during the study period. Patients were assessed for the five variables comprising the OKR, and a standardized data form was completed for each patient. Standard knee radiographs were ordered on all patients irrespective of the determination of the rule. The rules were interpreted by the primary investigator on the basis of the data sheet and the final orthopedist radiograph reading. Outcome measures of this study were: sensitivity, specificity, positive predictive value, and negative predictive value of the OKR. RESULTS: A total of 283 patients were enrolled in the study. The mean age was 37.3 ± 14.2 years, and 184 (65.01%) were male patients. Twenty-two fractures (7.77%) were detected. The decision rule had a sensitivity of 0.95 (95% confidence interval [CI] 0.77 to 0.99), and a specificity of 0.44 (95% CI 0.37 to 0.50). The potential reduction in use of radiography was estimated to be 41%. The Ottawa rule missed only one fracture. CONCLUSION: Prospective validation has shown that the OKR is a highly sensitive tool for detecting knee fractures and has the potential to reduce the number of radiographs in patients with acute knee injuries.

Performance of the Ottawa Knee Rule in the identification of knee fractures among the study patients

		fracture	
		Yes	No
decision rule	positive	21	146
	negative	1	115
Sensitivity was 95.4% (95% CI: 77.1% to 99.8%), specificity was 44.0% (95% CI: 37.9% to 50.1%), negative predictive value was 99.1% (95% CI: 95.2-99.9%), positive predictive value was 12.5% (95% CI: 7.9-18.5%), negative likelihood ratio was 0.09% (95% CI: 0.01-0.66%), and misclassification rate was 51.9%.			

TH.55) ENTERING THE "TRIAD OF DEATH" AND THE CONCEPT OF FUTILITY IN THE USE OF RECOMBINANT ACTIVATED FACTOR VII. : Amanda J. Zatta[1], Louise E. Phillips[1], Biswadev Mitra[2], Peter A. Cameron[2] : 1. Monash University. DEPM, Melbourne, VIC, Australia. 2. The Alfred, Emergency and Trauma Centre, Melbourne, VIC, Australia.

INTRODUCTION: The so-called “triad of death” occurs with the combination of hypothermia, acidosis and coagulopathy. This combination is commonly seen in patients that have undergone major trauma and results in a significant rate of mortality. Over the past years recombinant activated Factor VII (rFVIIa, Novoseven) has increasingly been used for indications outside its approved areas, including in trauma. Many clinical practice guidelines recommend the use of rFVIIa only in conditions where pH and temperature are not considered too low. METHODS: Monash University established the Haemostasis Registry in 2005 to monitor the use of rFVIIa throughout Australia and New Zealand. Nearly 90 hospitals are contributing data to the Registry including all major users of rFVIIa in Australia and New Zealand. Included in the data collected by the Registry is information relating to pH, temperature and coagulation parameters at the time of rFVIIa dose. RESULTS: Over 2790 cases of rFVIIa use have been reported to the Register, including 382 trauma cases (~14%). Trauma cases vary in severity of injury, degree of acidosis, hypothermia and coagulopathy. Despite clinical practice guidelines, a number of patients with very low pH (<7.2), temperature (<35°C) and INR (>1.5) have been treated with rFVIIa and a number of these patients have decreased or stopped bleeding (8 out of 37; ~22%) and have survived (15 out of 45; ~33%). A detailed investigation of the circumstances and similarities in these cases will be presented. CONCLUSION: Despite laboratory and clinical data suggesting reduced efficacy with low pH and temperature and elevated INR, a surprising number of these patients were not only treated with rFVIIa but stopped bleeding and survived. Although clearly not ideal circumstances, these finding raise questions about the concept of futility in relation to rFVIIa treatment in major trauma. In these circumstances, data from the Haemostasis Registry continues to be important in elucidating the safety and efficacy of rFVIIa and providing important feedback to doctors and hospitals.

TH.56) The Sensitivity of Statscan in Screening for Pelvic Fractures in Trauma Patients : Aysha Nazir[1], Glenn Verheul[1] : 1. Rashid Hospital, Trauma Center, Dubai, United Arab Emirates.

INTRODUCTION: Statscan provides full body anterior and lateral digital X-ray images for screening of multiply injured trauma patients. The sensitivity of Statscan as a radiology screening exam for seriously injured trauma patients has not been adequately documented in the medical literature, to date. Therefore, utility of this technology remains to be proven. This study aimed to estimate the sensitivity of the Statscan in identifying pelvic fractures compared to pelvic CT, the gold standard imaging technique in the diagnosis of pelvic fractures. METHODS: A retrospective review of the radiology department network picture archiving and communication system (PACS) at a level one trauma center in Dubai, UAE, identified all pelvic fractures diagnosed with CT scan over a five month period (September 2008 to January 2009). RESULTS: Of the 207 pelvic fractures identified, the PACS documented that 103 had been screened by Statscan prior to CT (49%). Radiologist review of these Statscans identified pelvic fractures in 79 patients (76.7%). CONCLUSION: A literature review suggests pelvic X-rays as being 67% to 87% sensitive and its role in the ATLS primary survey is already under debate. Therefore, it may safely be concluded that in being insufficiently sensitive (76.7%), Statscan is of limited value in screening for pelvic fractures and is of questionable utility in the

assessment of multiply injured trauma patients.

Type of Pelvic Fracture	%
Pubic Rami	33.4%
Ischial Ramus	33.4%
Acetabular	29.1%
Sacral	4.1%

Missed Pelvic Fractures on Statscan

Left: The Statscan unit with dedicated patient trolley.
Right: The digital arm of the Statscan for easy viewing and image uploads.

TH.57) Facts and figures of trauma induced coagulopathy (TIC) - Lost in translation? : Victor Jeger[1], Luca Martinolli[1], Heinz Zimmermann[1], Aristomenis K. Exadaktylos[1] : 1. Emergency Department Inselspital University Hospital and University of Berne, Bern, Switzerland.

OBJECTIVE

Hemorrhagic shock with TIC is the second leading cause of death in trauma, its knowledge and optimal treatment has major priority. We hypothesize that there is still a discrepancy between personal perception, textbook theory and daily routine practice.
METHODS
1. To determine the numbers of patients with TIC defined as INR>1.5, aPTT>60sec or TT>15sec. we studied all trauma patients n=172 (age>16, ISS>15) which were treated in our resuscitation room (10/2006-10/2007). We then determined in how many patients TIC was corrected within the first hour.2. We performed a standard interview with 55 anesthetists directly involved in trauma care concerning there believes about TIC.
RESULTS
Ad 1: 172 patients (m=134, f=38), age 49 (median, range 17–90) were included. ISS was 25 (16–68). Coagulopathy on admission was in 32.6% (n=56). 12.5% (7/56), received FFP during the first hour. It took a median of 61 min. from admission until conventional laboratory based coagulation screening was available.
Ad 2: The questions were answered as follows:
1)11% (n=6) estimate that 1/3 of the patients suffers from a TIC. 35% (n=19) underestimate and 54% (n=30) overestimate the number of patients suffering from TIC.
2)70% (n=38) are not satisfied with the information they receive.
3)Time to diagnose a TIC was estimated to be 33.6min±13.1 (mean±SD).
4)The most preferred laboratory parameter is INR, followed by platelet count and fibrinogen concentration.
5)The most preferred product to correct coagulopathy is FFP (n=55).
6)Time until a TIC can be corrected was assumed to be 31.2min±13.5 (mean±SD).
CONCLUSION
We are not surprised about the low level of satisfaction neither about the long laboratory turn around time. However, only 11% of the physicians estimated the number of TIC patients right. Interestingly, physicians think TIC will be corrected within 30 minutes, although coagulation screening is available not before 61 minutes. These findings show that although we think that we perform evidence-based medicine we clearly do not. Future academic efforts should focus more on translation and introduction of existing knowledge into trauma care.

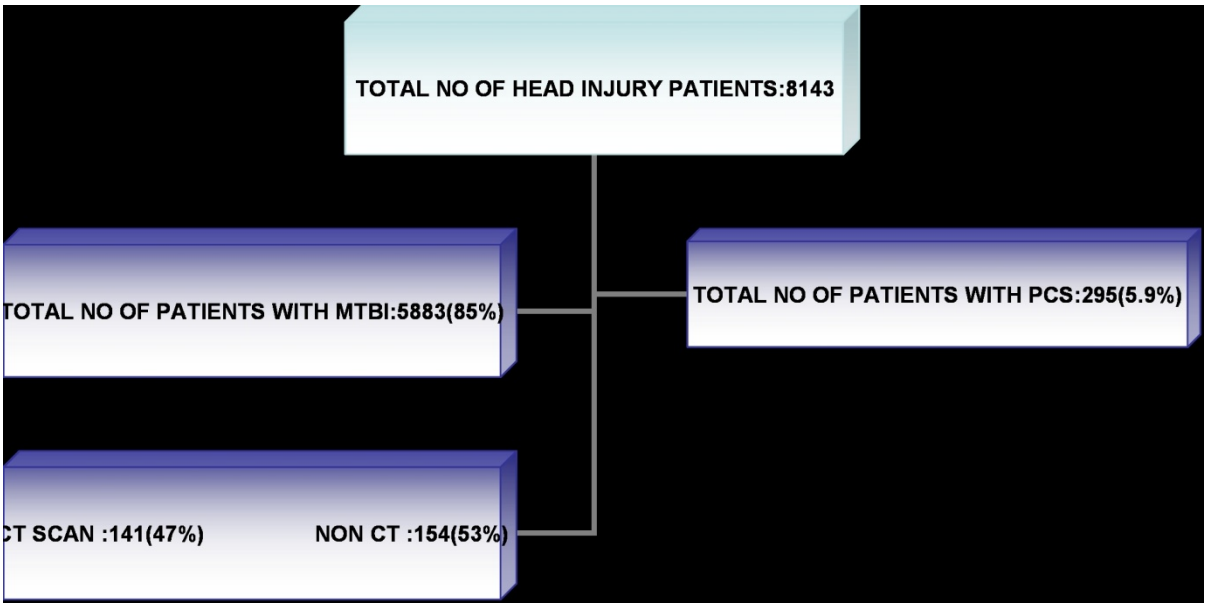
TH.58) Post Concussion Syndrome in Patients with Minor Head Injury: Is CT Warranted? : Farooq Pasha[1], Peter Bradley[1] : 1. Accident and Emergency, Bradford Royal Infirmary, Bradford, WestYorkshire, United Kingdom.

INTRODUCTION: A significant proportion of subjects report chronic concussive symptoms after minor head injury. The object of this study was to assess whether early CT scan in patients with post concussive symptoms with minor head injury can result in exclusion of serious intracranial pathology which would necessitate neurosurgical intervention.
METHODS: Between June 2007 and June 2008 our large inner city Emergency Department saw 5883 adult patients with minor head injury. 295 of these patients were noted to have significant post concussive symptoms (PCS).
We retrospectively analyzed the records of these 295 patients in both groups (CT vs Non CT) for social demographics, clinical sign and symptoms, mechanism of head injury and health

status of individuals at the time of injury. RESULTS: Out of 295 patients with mild traumatic brain injury (MTBI), 141(47%) had CT scans but none revealed any serious pathology which would require neurosurgical intervention. We found out that clinical symptoms (e.g. insomnia 55%, amnesia 63%, fatigue 66%), presence of mental health problems (35%) along with coup-counter coup mechanism of head injury (33%) are early predictors for significant concussive symptoms. Similarly PCS was more common in cases of assaults (56%), domestic violence (22%) and alcohol intoxication (74%) at the time of injury. CONCLUSION: In our study early CT scan in patients who reattended the ED following a minor head injury did not reveal any serious pathology which would need surgical intervention. However clinical symptoms and health status of patients at the time of head injury are early predictors for post concussive syndrome. The authors suggest that using these predictors in clinical practice can help clinicians determine which patients are at risk of PCS following MTBI.

SOCIO-DEMOGRAPHICS, HISTORYAND CLINICAL DATA IN PATIENTS WITH PCS: CT VS NON CT

	TOTAL NO OF PTS n=295	CT SCAN GROUP n=141	NON CT SCAN GROUP n=154
MEN /WOMEN	194/101	98/43	96/58
MEAN AGE	33	31	34
PRESENCE OF LOC	97	71	26
DIZZINESS	61	26	35
FATIGUE	194	108	86
HEADACHE	112	53	59
AMNESIA	185	79	106
INSOMNIA	162	73	89
SINGLE DIRECT BLOW TO HEAD	133	56	77
COUP-COUNTER COUP INJURY	97	44	53
ASSAULTS	165	97	68
DOMESTIC VIOLENCE	97	52	45
RTA	47	27	20
ALCOHOL/DRUG INTOXICATION	218	93	125
MENTAL HEALTH PROBLEM	106	41	65



TH.59) An Audit of Pain Management and Admission Patterns of Patients Presenting to the Emergency Department at Mayo General Hospital with Femoral Neck Fracture : Noor Ahmed[1], Paul P. Gaffney[1] : 1. Mayo General Hospital, Castlebar, Ireland.

INTRODUCTION: A third of people over 65 in the community fall each year and the rate almost doubles from the ages of 65 to 85. The British Association for Emergency Medicine U.K recommended guidelines for these patients. They recommended that patients in severe pain should receive appropriate analgesia within 20 minutes, X-ray should be performed within 60 minutes, and one hundred percent of patients should be admitted within four hours of arrival. METHODS: We performed a retrospective analysis of 108 patients from January 2005 to Dec 2005. Results were compared with the standards set by the British Association. All the data was entered in an EXCEL sheet of British Association of Accident and Emergency Medicine. Statistical analysis of age was done by SPSS 16.1 for windows. The descriptive results were compared in percentages. RESULTS: There were 89 patients potentially eligible for the study. Out of these; 71 were females and 18 were males. Pain was recorded in 74 (83.1%) patients. 33 (44.5%) patients were categorized as having severe pain. In this audit we found that only 11 (33.3%) patients among the severe pain group received analgesia within 20 minutes. We also found that only 35 (39.25%) had x-rays within 60 minutes. Only 42 (47.19%) were admitted within four hours. CONCLUSION: Ryan J et al suggested protocols aimed at fast tracking patients with hip fracture from the emergency department to in–patient beds for patients with hip fracture. In our study we found that patients were not prescribed analgesia quickly enough, not x-rayed and were not admitted as recommended. Based on the finding of this audit a fast tract system should be introduced for

all patients with fracture neck of femur.

sex distribution

male	18
female	71
total	89

AGE DISTRIBUTION

<60	4
61-70	8
71-80	33
>81	44
total	89

TH.60) Preservation of Active Range of Motion Following Acute Elbow Trauma Predicts Absence of Elbow Fracture : **Edward A. Panacek[1], Michael Darracq[1] : 1. EM, UC Davis, Sacramento, CA, USA.**

INTRODUCTION: Previous studies indicate an inability to fully extend the elbow following elbow trauma is indicative of fracture. We hypothesized that maintenance of full active range of motion of the elbow in flexion, extension, pronation, and supination following elbow trauma is very specific for the absence of fracture or effusion. METHODS: This was a prospective observational study with convenience sampling. Patients with elbow injury receiving radiographs were enrolled between June 2006 and March 2007 using prospective enrollment criteria at four emergency departments in the greater Sacramento, California region. Demographics, active range of motion, and presence of point tenderness at the olecranon, epicondyles and radial head were recorded by enrolling clinicians. All enrolled patients received standard elbow radiographs. Radiographs were reviewed by board-certified radiologists for the presence of fracture and effusion. Sensitivity, specificity, and 95% confidence intervals of examination findings were calculated. RESULTS: One hundred thirteen patients were enrolled. Limitation of active full range of motion and the presence of point tenderness on examination was 100% (95%confidence interval 0.93-1.00) sensitive for fracture or effusion. Preservation of active range of motion was 97% (95% confidence interval 0.885-0.996) specific for the absence of fracture. CONCLUSIONS: We found that individuals with preservation of full active range of motion following acute elbow trauma have a very low risk of associated fracture and may not require further radiographic investigation. If these results are confirmed, such patients may be able to forego radiographic studies. Any limitation in range of motion should warrant radiographic studies.