parents, children and pediatricians. Follow-up after patient discharge from the Pediatric Emergency Department (PED) is difficult although necessary to report tests received after discharge. The aim of this study was to determine whether the Internet could be used to facilitate the delivery of culture results to care-givers. METHODS: During a 10-month period, we approached parents of children that had cultures taken and were discharged from our tertiary PED. Internet access, e-mail use and demographic information were collected. Parents were given a unique ID and password to retrieve information on culture results from the study web-site. Results were posted on the web-site soon after they were received from the Hospital laboratory and an e-mail was sent to the family. Access pattern to the web-site was recorded, and a follow-up call with the family (after 5 or 10 days) was made. RESULTS: A total of 527 families were approached, 224 were excluded. Of 303 cultures available, 24 (8%) were positive and 5 (2%) were positive with contamination. 186 (61%) parents accessed the Internet-system after a mean of 94 hours (range 1m–611hr) after the e-mail was sent. Of the 243 (80%) families reached for follow-up, 66 (27%) "had no time" to enter the web-site. Almost 95% wanted future cultures and other tests to be posted in a similar way. CONCLUSIONS: The majority of recruited families used the new web-based follow-up system and were extremely satisfied. Future efforts should be made to increase awareness of parents and patients about the importance of obtaining culture results which would help implement a web-system such as ours. Key words: emergency health services, quality

Poster Presentations
(Abstracts #59 to #115)

Administration

59

Development of an objective emergency physician practice profile.

MacLeod DB, Curry DG, McNaul M, Wang D. Department of Emergency Medicine, Calgary Health Region, Calgary, AB

INTRODUCTION: Emergency physicians find it difficult to obtain objective feedback on personal practice patterns. An iterative process is being undertaken to develop an objective profile by which emergency physicians can compare their own practice to that of peers in the same environment. METHODS: A profile was developed by combining a regional EDIS database, a regional diagnostic imaging database, a regional Health-Information database, and billing service databases tracking hours worked. Profiles are provided to individual physicians revealing personal data on each parameter, along with normative data of the entire group of 85 physicians, with personal and normative data being provided for practice at each of the four Calgary emergency departments. Profiles are provided in a non-threatening manner for personal information, but if individual physicians are outliers, results are discussed in biannual performance reviews. RESULTS: The third iteration of the profile included the following parameters: total number of patients seen, new patients seen per hour, CTAS breakdown of patients seen, admission rate for each CTAS level and overall admission rate, median length of time from physician sign-up for CTAS 3 patients until the patients leave the emergency department, percentage of patients seen with residents or clinical clerks, percentage of patients receiving Ultrasound, CT, VQ scan or IVP, and percentage of patients returning within 72 hours of discharge and requiring admission, with a list of these patients and diagnosis on both visits. Physicians receive information for each site worked, and normative data is separated by site. Physicians working on several sites demonstrate significant variability on different sites. The fourth iteration will include rates of consultation of various services on each site, and complaints received per 1000 patient care encounters. CONCLUSIONS: After initial apprehension prior to the first iteration release, the process has been very well accepted and requested by emergency physicians. Key words: medical administration; physician evaluation; CQI

60

Physician determinants of emergency care quality.

Innes G, Grafstein E, Christenson J, Stenstrom R. St. Paul's Hospital, Vancouver, BC

INTRODUCTION: High quality care is safe, timely, patient focused, effective and efficient. Care quality may be related to physician characteristics like age, training path and experience. Our objective was to determine whether shorter (CCFP-EM) residency training is associated with differences in emergency care quality. METHODS: We assessed safety by tracking bounce-back rate (% of patients hospitalized within 72 hrs of ED discharge) and we measured timeliness by waiting time to physician exam. We used random exit surveys to evaluate patient perception of MD communication and concern (patient focus) and to assess physician skill and care quality (effectiveness). Efficiency was based on admission rates for triage level 2–3 patients and on imaging rates (number of studies per 100 patients) in two cohorts: abdominal pain and extremity injury. For each outcome, physicians were stratified by quartile and the sum of their quartile ranks in 7 domains comprised an overall Q-score where low score = high quality. RESULTS: See Table 1, Abstract 60. 23 physicians were evaluated, including 12 CCFP-EM, 6 FRCP and 5 ABEM. Median Q scores (IQR) were 19 (17.8–20.2), 15.0 (14–16) and 15.5 (14.3–17.5) for CCFP-EM, ABEM and FRCP physicians, respectively ($p = 0.16$). Median Q scores (IQR) were 19 (17.8–20.2) for CCFP-EM vs. 15 (14–17) for other physicians ($p = 0.06$). This apparent difference was not apparent ($p > .10$) when ANCOVA was used to adjust for years in practice. CONCLUSION: Quality measures did not differ significantly based on training path. Key words: medical administration; CQI; emergency medicine, residency training

Table 1, Abstract 60

Median	(IQR)	CCFP–EM	(12)	Other (11)
Practice years	10	(8–19)	20	(13–22)
Bounce-back rate	0.75%	(.62–.89)	0.67%	(.58–.78)
Wait time to MD (min)	30	(26–31.8)	28	(25–31)
Effectiveness (0–100)	85	(80.3–87.3)	87	(84.8–92)
Patient focus (0–100)	74.5	(70–78.9)	78	(72.2–85.3)
Admit rate	25.8%	(24.3–27)	25.9	(25–26.7)
AP Imaging (n/100)	52	(44–55)	44	(39–50)
Extremity imaging	92	(82–100)	93	(86–96)

61

Emergency department triage: evaluating the reliability of a computerized triage tool and the effect of overcrowding.

Dong SL, Bullard MJ, Meurer DP, Blitz S, Rowe BH. Department of Emergency Medicine, University of Alberta, Edmonton, AB

INTRODUCTION: Emergency department (ED) triage prioritizes patients based on urgency of care. We describe agreement between duty triage nurses and study nurses using eTRIAGE, a web-based triage tool based on CTAS, and examine the effects of overcrowding on agreement. METHODS: This prospective study enrolled consecutive patients presenting to a tertiary care ED in a large urban centre. Patients were assessed by a duty triage nurse (TN) and a study nurse (SN). Both used eTRIAGE and were blinded to each other's assessment. SN collected data on the ED busyness every two hours. Agreement between TN and SN and the effects of ED busyness are reported. RESULTS: See Table 1, Abstract 61. Over a 9-week period, 577 patients were assessed and 569 (98.6%) data pairs were available. The mean age was 49.4 and 51.0% were male. Overall agreement was moderate (weighted κ = 0.518, 95% CI 0.464, 0.573). ED busyness questionnaires were completed for 353 (62.0%) data pairs. The most common reason for not completing the questionnaire was "too busy". There was no significant difference in agreement when busyness data was available (weighted κ = 0.558, 95% CI 0.491, 0.625) or not (weighted κ = 0.445, 95% CI 0.353,0.537). ED busyness had no significant effect on agreement:

Table 1, Abstract 61

Factor	Weighted κ	(95% CI)
ED on Diversion	0.534	(0.387–0.680)
ED not on Diversion	0.564	(0.490–0.639)
Admitted inpatients below median (37.5% capacity)	0.534	(0.447–0.620)
Admitted inpatients above median (37.5% capacity)	0.597	(0.493–0.702)
Waiting room size below median (13)	0.553	(0.462–0.644)
Waiting room size above median (13)	0.563	(0.466–0.660)
Patients registered in 2hrs below median (18)	0.578	(0.494–0.661)
Patients registered in 2 hrs above median (18)	0.528	(0.418–0.637)

CONCLUSIONS: Real-time, prospective evaluation of eTRIAGE use by two independent groups of nurses during a climate of ED overcrowding generated moderate agreement. Surges in overcrowding did not significantly influence agreement. More study is warranted to determine the impact of distractions on triage performance. Key words: triage; information systems; emergency medicine; overcrowding

62

The relationship between preventive health practices of emergency department patients and access to family physicians.

Han A, Russell B, Blitz S, Strome T, Rowe BH. Department of Emergency Medicine, University of Alberta, Edmonton, AB

OBJECTIVE: Many Emergency Department (ED) patients report not having a family physician (FP). This study assesses FP contact and use of preventive services prior to the ED encounters. METHODS: Patients > 17 years of age were randomly selected from computerized ED records at 2 urban ED sites in Edmonton, AB (UAH; RAH). Following initial triage, stabilization, and informed consent, patients were asked to complete an on-line or paper survey. Survey data were cross-referenced to a minimal patient dataset. The questionnaire asked various demographic, presentation, primary care visit contact and preventive health practice questions. RESULTS: Of the 1425 patients approached, 904 (63%) surveys were completed; mean age was 44, 51% were female. Overall, 713 (78.9%) reported that they had a family physician (FP), while 191 (21.15%) reported that they did not have a FP (NFP). FP patients were more likely to report receiving a flu shot in the past year (37% vs. 19.4%; $p < 0.001$), less likely to smoke daily (24% vs. 44%; $p < 0.001$), less likely to smoke occasionally (7.2% vs. 15.7%; $p < 0.001$); and more likely to always wear a seat belt (71.7% vs. 62.5%; $p = 0.077$) than NFP patients. Female FP patients were more likely to have had a pap smear in the past 2 years (33.5% vs. 25.1%; $p < 0.001$) and male FP patients were more likely to have had a prostate exam in the past 2 years (13.5% vs. 2.1%; $p < 0.001$) than NFP patients. FP patients were less likely to receive a triage score of 4 or 5 (44.0% vs. 57.9%; $p < 0.001$) and less likely to be non-heterosexual (2.2% vs. 5.2%; $p = 0.047$). CONCLUSIONS: Nearly 1 in 5 patients presenting to urban Alberta EDs have no link to a FP and FP patients demonstrate better access and use of preventive health practices. This indicates the important role FPs can play on the health of their patients and why EDs should link patients with primary care whenever possible. The relationship between health practices and ED utilization is worthy of more detailed investigation. Key words: emergency medicine; public health

63

Contribution of various components of emergency department length of stay to emergency department overcrowding.

Curry DG, McLeod DB, Wang DM, McNaul MA. Department of Emergency Medicine, Calgary Health Region, Calgary, AB

INTRODUCTION: Creating and measuring impacts of successful initiatives to reduce Emergency Department (ED) overcrowding requires an understanding of the various factors that contribute to flow through EDs. Limited published data exists to quantify the contribution of various components to overall ED length of stay (LOS). METHODS: A retrospective database audit was conducted for all patients admitted to hospital from three urban ED sites over a 26 week period. Multiple time stamps were extracted from a computerized ED information system to measure the following intervals: triage to ED bed assignment (waiting room time), bed assignment to ED physician signup (bed to physician time), ED physician sign up to consultation (workup time), consultation to decision to admit (consultant time) and decision to admit to discharge to ward time (boarding time). Average and median LOS components were analyzed for admitted patients, by site and consultation service (including a category for patients with multiple consultations). LOS for each service was multiplied by number of patients to create a utilization measure of the relative contribution of each service to total ED LOS. RESULTS: Significant variability between different consultation services at the same site and significant consistency between the same services at different sites exists. Variable waiting room times confirmed the effect of triage decisions. Bed to ED physician times were usually longer than waiting room times, consultant times contributed more to ED LOS than boarding times and patients admitted to hospitalist services or those requiring multiple consults were the major contributors to ED LOS in our system. CONCLUSIONS: Multiple components of ED LOS can be identified, each requiring focused efforts to reduce. The majority of ED LOS for admitted patients is outside the direct control of the ED. Increasing access to consultants, inpatient beds and

ED physicians are all keys to reducing ED overcrowding. Key words: overcrowding; CQI; emergency medicine

64

A quality improvement process enhances vital signs documentation.

Al Darrab A, Fernandes CMB, Zimmerman R, Smith R, Smith T, Worster A. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: Patient safety is a key concern in the Emergency Department. Documentation of full vital signs enhances screening for potential catastrophes in the Emergency Department. The objective of this study was to enhance complete documentation of vital signs upon initial triage. METHODS: A quality improvement process was undertaken to ensure full vital signs for all patients in the ED. Solutions included a departmental vital signs policy, availability of equipment, vital signs audits, a defined triage nurse role, and not to pull the triage nurse. A 48 h before–after intervention analysis was undertaken for Aug 2003 and 2004. Vital signs (temperature, blood pressure, respiratory and heart rates) were assessed. RESULTS: In the pre-intervention evaluation 578 charts were reviewed; of those 66% (383/578) had complete vital signs documented (95% CI: 62–70%). In the post intervention evaluation 492 charts were reviewed; of those 74% (365/492) had complete vital signs documented (95% CI: 70–78%) ($p < 0.005$). CONCLUSIONS: The application of a quality improvement process may improve complete vital signs documentation upon initial triage. Key words: quality improvement; triage

65

Correlation between the number of patients emergency physicians see on a shift and the percentage of patients who leave without being seen.

Abu-Laban RB, McKnight RD. Division of Emergency Medicine, University of British Columbia, Vancouver, BC

OBJECTIVES: It is known that a significant proportion of emergency department patients who leave without being seen (LWBS) have serious pathology. One factor shown to influence a decision to LWBS is the Emergency Department waiting time. We sought to determine the correlation between the number of patients Emergency Physicians (EPs) see on a shift and the percentage of patients who LWBS. METHODS: Data captured on a patient care information system from April 1, 2003 to April 30, 2004 for 19 board certified EPs (12 male, 7 female) practicing at a tertiary care teaching hospital were retrospectively reviewed using explicit criteria. The mean/median number of years since medical school graduation of the EP cohort was 21.7/21 (range 8–35). RESULTS: During the one year study period there were approximately 52,000 patient encounters. The mean/median number of patients seen per shift by EPs was 20.5/20.5 (range 17.7–23.6), and the mean/median percentage of patients who LWBS was 3.7%/3.9% (range 1.5% to 5.9%). Spearman's coefficient of correlation between the mean number of patients seen per shift and percentage of patients who LWBS for each EP was 0.62. A linear regression model, fit for hypothesis generating purposes, showed that the percentage of patients who LWBS was independent of EP gender or years of experience, but was significantly associated with the number of patients seen per shift ($p = 0.027$). CONCLUSIONS: For reasons that are unclear, there is a striking (almost four-fold) variability between different EPs in the percentage of patients under their care who LWBS. A moderate correlation exists between the percentage of patients who LWBS and the mean number of patients EPs see per shift. Whether this finding represents association or causation, whether confounding exists, and the relationship between individual EP efficiency and Emergency Department waiting time, merit further evaluation. Key words: quality improvement; emergency medicine; medical administration

66

A cross-sectional analysis of high frequency users of the emergency department and their reasons for visiting.

Brooks S, Brubacher JR, Sernik J. Vancouver General Hospital and University of British Columbia, Vancouver, BC

INTRODUCTION: Understanding why high frequency users (HFUs) visit the ED may allow us to improve their care and minimize their impact on ED resources. Our objective was to classify the reason for each HFU ED visit over a one year period. METHODS: An electronic database identified patients who visited the ED >10 times between 06/01/2001 and 05/31/2002. We randomly selected age and gender matched controls who visited the ED <2 times over the same period. One author retrospectively reviewed all ED visits and, using explicit criteria, abstracted data to classify patient visits. RESULTS: During the study period 33,646 patients made 44,954 ED visits. There were 1212 visits by 96 HFUs (10–33 visits/patient). The 56 male and 40 female HFUs ranged in age from 18 to 95. The 96 controls made 113 visits. Compared with controls, HFUs were more likely to have at least one visit with no listed GP (30/96 [31.2%; 95% CI = 22.2%–41.5%] vs 17/96 [17.7%; 95% CI = 10.7%–26.8%], $p = 0.044$}, no current employment (51/96 [53.1%; 95% CI = 42.7%–63.4%] vs 21/96 [21.9%; 95% CI = 14.1%–31.5%], $p < 0.001$), for substance problems (32/96 [33.3%; 95% CI = 24.0%–43.7%] vs 5/96 [5.2%; 95% CI = 1.7%–11.7%], $p < 0.001$), psychiatric problems (30/96 [3%; 95% CI = 24.0%–43.7%] vs 7/96 [7.3%; 95% CI = 3.0%–14.5%], $p < 0.001$), chronic pain (16/96 [16.7%; 95% CI = 9.8%–25.7%] vs 2/96 [2.1%; 95% CI = 0.3%–7.3%], $p = 0.001$), or drug seeking (8/96 [8.3%; 95% CI = 3.7%–15.8%] vs 0/96 [0%; 95% CI = 0–3.1%], $p = 0.011$). To reduce the impact of detection bias we also compared these categories as percentages of total HFU vs control visits. All findings except drug seeking and homelessness remained significant when analyzed in this way. CONCLUSIONS: Our data suggests that HFUs may have higher rates of unemployment, homelessness, substance problems, psychiatric problems and chronic pain issues and may be less likely to have a GP than controls. Appropriate care plans may be beneficial. Hypotheses formed from this data can be used to guide experimental ED interventions for HFUs. Key words: emergency medicine; medical administration

67

A quality improvement process enhances armband use in the emergency department.

Al Darrab A, Fernandes CMB, Zimmerman R, Smith R, Smith T, Worster A. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: Patient identification is an important step in error reduction in the Emergency Department. Armband use can enhance patient safety and reduce resource utilization. The objective of this study was to ensure patient identification with an armband upon registration to the Emergency Department. METHODS: A quality improvement process was undertaken to ensure all patients registered to the ED wear armbands. As a result of this process, the following solutions were put in place: business clerk accountability to apply armbands to ambulatory patients at time of registration, regular armband audits were completed and posted and followed up with education. A two-day pre–post intervention analysis was undertaken for August 2003 and 2004. RESULTS: In the pre-intervention evaluation 142 patient were checked; of those 83% (118/142) were identi-

fied with armbands (95% CI: 77–89%). In the post intervention evaluation 129 patients were checked; of those 98% (126/129) were identified with armbands (95% CI: 94–99%) ($p < 0.0001$). CONCLUSIONS: The formal application of a quality improvement process can improve patient identification upon registration to the ED. Key words: emergency medicine; medical administration; quality improvement

68

How does fast-track affect quality of care in the emergency department?

Al Darrab A, Fernandes CMB, Zimmerman R, Smith R, Smith T, O'Connor K, Worster A. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: The balanced scorecard includes business process measurement and customer satisfaction; in the Emergency Department, this includes length-of-stay and left-without-being-seen rate. The objective of this study was to determine if a dedicated fast-track for CTAS 4/5 patients affected: (1) the time to assessment for CTAS 3 patients; (2) the length-of-stay for CTAS 4/5 patients and; (3) the left-without-being-seen rate? METHODS: In June 2003, fast-track was opened in our Emergency Department from 1300–1900. A before–after intervention comparison analysis was completed for one week in Aug 2002 and the same week in Aug 2003. Data collected included: (1) time to assessment of CTAS 3 patients; (2) the length-of-stay for CTAS 4/5 patients and; (3) percentage of patients left-without-being-seen. RESULTS: 373 patients were reviewed for 2002, with 253 patients triaged as CTAS 4/5. 375 patients were reviewed for 2003 with 274 triaged as CTAS 4/5. Median time to assessment of CTAS 3 patients presenting 0930–1259 for 2002 was 0.92 h (95% CI: 0.56–1.27) compared to 1.8 h (95% CI: 1.38–2.22) in 2003 when fast-track was not open. Median time to assessment of CTAS 3 patients presenting 1300–1900 was reduced from 1.08h (95% CI: 0.87–1.29) to 1.00h (95% CI: 0.73–1.26) after fast-track was opened ($p = 0.6$). Median length-of-stay of CTAS 4/5 patients decreased from 2.83 h (95% CI: 2.55–3.11) to 1.83 h (95% CI: 1.63–2.03) ($p < 0.0001$). For those who did not require diagnostics length-of-stay decreased from 2.16h (95% CI: 1.74–2.58) to 1.33h (95% CI: 1.15–1.51) ($p < 0.0005$). Left-without-being-seen rate of CTAS 3 patients reduced from 4.2 % to 3.4%, while left-without-being-seen rate of CTAS 4/5 patients reduced from 4% to 1%. CONCLUSIONS: A dedicated fast-track for CTAS 4/5 patients reduced length-of-stay and left-without-being-seen rate with minimal impact on CTAS 3 patients to be seen in the main ED. Key words: fast track; emergency medicine; medical administration; quality improvement

69

Pareto analysis to identify delays of the admitted patients in leaving the emergency department.

Al Darrab A, Frenandes CMB , Zimmerman R, Smith R, Smith T, Worster A. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: Emergency department overcrowding reflects a crisis. One of the determinants of overcrowding is the inability to move admitted patients from the Emergency Department to an inpatient bed. The objective of this study was to identify the root causes for delays in the admitted patients leaving the Emergency Department. METHODS: A continuous quality improvement process was undertaken to examine the flow process of the admitted patients in an urban Emergency Department from the time of decision to admit to the time the patient leaves the Emergency Department. RESULTS: A flow chart of the admitted patients was developed for a two-week period in October 2003. The median time interval from the decision to admit until the time the patient left the ED was (20.65) hours (95% CI: 16.54–24.75). The longest delay was attributed to the time from "admitting has returned paperwork" to "Bed assigned" (15.55) hours (95% CI: 10.91–20.18). The causes of delay included bed management processes, discharge planning/communication, repeated phone calls, unclear overall picture of bed availability and physician workload. CONCLUSIONS: A quality improvement process can identify root causes of delays of admitted patients to leave the ED. The greatest cause for delay is waiting for a bed on an inpatient unit. Key words: overcrowding; emergency medicine; medical administration; quality improvement

Cardiovascular

70

Epidemiology of heart failure in a Canadian emergency department.

Marsden J, Grafstein E. Div. of Emergency Medicine, Department of Family Medicine, University of British Columbia, Vancouver, BC

INTRODUCTION: Most heart failure (HF) literature originates outside Canada and focuses on the epidemiology of the chronic heart failure patients. We describe the characteristics of patients with heart failure at an urban Canadian Emergency Department (ED) in Vancouver, BC. METHODS: A retrospective study utilizing the New Emergency Resource Database (NERD), the administrative ED database at Providence Health Care, from Jan. 2003–Jan. 2004. HF was defined as a discharge diagnosis using ICD-9CM codes (428.0). Only patients with the primary diagnosis of HF were analyzed. RESULTS: 242 of 49,632 ED patients (0.56% of overall visits) had a diagnosis of HF. These 242 patients had 282 encounters for HF of which 197 (70%) had a Canadian Triage Acuity Score Level of 1–3. Median age was 76 years and 60% were male. Disposition was: 65.6% (183) admitted; 32% (90) discharged; 1.4% (4) left against medical advice and 1% (3) discharged to a Long Term Care Facility. Of encounters without index admission to hospital, mean ED length of stay (LOS) was 5.2 hours (SD 4.4) and 15 (16.7%) revisited the ED within 30 days and were readmitted having a mean hospital LOS 19.6 days (SD 21.9). HF was the twenty-second most common admission diagnosis overall. The 183 encounters that were admitted accumulated a total hospital LOS of 2454 days with an mean hospital LOS of 13.8 days (SD 16.5). 11% (27) of patients died during their hospitalization. Median age of this cohort was 82 years. 49 patients (20%) had 98 visits to the other 4 regional hospitals during this period and were admitted on 33 of these encounters. CONCLUSION: The burden of CHF on acute care is significant and although one third of ED patients with CHF are discharged some revisit. Investigation of newer diagnostic techniques, clinical care pathways, and specialized follow up clinics may show enhanced the provision of care to this patient population. Key words: retrospective study; congestive heart failure; epidemiology; emergency medicine

71

Cardiac arrest care and emergency medical services in Canada.

Vaillancourt C, Stiell IG. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: Cardiac arrest is the primary cause of mortality in Canada and survival to hospital discharge from out-of-hospital cardiac arrest is low. The purpose of this study is to provide an overview of the outcomes for out-of-hospital cardiac arrest in Canada. METHODS: We conducted a national descriptive analysis

of cardiac arrest care and emergency medical services, Utstein style. We approached a convenient sample of EMS directors and researchers in the field of cardiac arrest from across Canada. We compiled data from five separate sources: the City of Edmonton Emergency Response Department, the British Columbia Ambulance Service, the Nova Scotia Emergency Health Services, the "Urgences-santé" corporation of the Montreal Metropolitan region, and the Ontario Prehospital Advanced Life Support (OPALS) Study database. Data was analysed using descriptive statistics with 95% confidence intervals when available. RESULTS: There were 5,288 cardiac arrests from a range of small communities to large provincial cardiac arrest registries in 2002. They were men in their late sixties and early seventies, witnessed (35.2% to 55.0%), rarely receiving bystander CPR (14.7% to 46.0%), most often in asystole, most often at home (56.1%), and rarely surviving to hospital discharge (4.3% to 9.0%). Bystander CPR and early first responder defibrillation were significantly associated with increased survival. Cardiac arrest incidence rates per 100,000 varied between 53 and 59 among provinces and followed a downward trend. CONCLUSIONS: This paper is an important first step toward a national cardiac arrest registry comparing the impact of regional variations in patient and system characteristics. Most communities do not have accurate data on their performance with regards to the chain of survival, and need to significantly improve their capacity of providing citizen bystander CPR and rapid, first responder, defibrillation. Key words: EMS; cardiac arrest; epidemiology

Clinical Practice

72

A prospective evaluation of clinical pharmacy services in the emergency department.

Chan A, Simmons T, Green RS. Department of Pharmacy, Dalhousie University, Halifax, NS

INTRODUCTION: Elderly ED patients receive multiple prescription medications and are at risk for significant drug related problems (DRP). Clinical pharmacists provide valuable services in many patients care disciplines, however incorporation into the ED team is uncommon. The objective of this study was to prospectively assess the effect of a clinical pharmacist in the ED on identification and management of DRP's in elderly patients receiving > 4 outpatient medications compared to a historical control group. METHODS: A prospective evaluation of elderly (> 65 years) patients was performed comparing patients receiving pharmacist intervention to historical case controls. In the intervention group, the pharmacist conducted patient interviews over 1 one month period and documented drug related problems, medication history clarifications, and recommendations made to resolve identified DRP's. A retrospective chart review of elderly ED patients who were seen over the same time period 1 year prior served as controls. RESULTS: In total, 41 patients were assessed by the clinical pharmacist in the ED, and 75 patient charts were reviewed. The groups were similar when age, mean number of prescription medications per patient and medication class were compared. Pharmacists identified one additional DRP per patient in both the control and intervention groups. In total, 2.24 DRP's were identified in the prospective group compared to 2.13 in the control. DRP's identified by the pharmacist in the prospective group were more likely to be of minor severity (26.42% vs. 8.43%, $p = 0.005$), and resulted in more action take to resolve the DRP (35.85% vs. 0.00%, $p < 0.0001$) compared to the control group. CONCLUSION: Pharmacists have a beneficial impact in the identification and resolution of DRP's in an elderly ED patients. Key words: elderly; adverse drug effects; therapy

73

Efficacy, safety and patient/physician satisfaction of propofol for procedural sedation in the emergency department: a prospective observational study.

Zed PJ, Chan WWY, Abu-Laban RB, Harrison DW. CSU Pharmaceutical Sciences, Vancouver General Hospital, Faculty of Pharmaceutical Sciences and Division of Emergency Medicine, University of British Columbia, Vancouver, BC

INTRODUCTION: To evaluate the efficacy, safety and patient/physician satisfaction with the use of propofol for procedural sedation in the Emergency Department (ED). METHODS: All patients receiving propofol for procedural sedation in the ED between 1/12/03 and 31/12/04 were prospectively evaluated. Propofol was administered using a standardized protocol which included an initial dose of 0.25–0.5 mg/kg followed by 10–20 mg/min until sedated. Efficacy was evaluated using procedural success rate and recovery time. Adverse respiratory effects were defined as apnea > 30s or any oxygen saturation < 90%. Hypotension was defined as > 20% reduction in systolic blood pressure from baseline. Patient and physician satisfaction were determined using a 5-point Likert scale. Descriptive statistics using mean ± SD were utilized. RESULTS: 74 patients were included with a mean age of 50.7 ± 19.4 years and 43% were female. Procedures included orthopedic manipulations (51%), direct current cardioversion (35%) and abscess incision and drainage (14%). The mean total propofol dose required was 1.6 ± 0.9 mg/kg. Procedural success was achieved in 87% of cases and the mean patient recovery time was 8.3 ± 4.6 minutes. Ten patients (14%) experienced adverse effects which included apnea > 30s (1), oxygen saturation < 90% (2), emesis with oxygen saturation < 90% (1) and hypotension (6). All patients were very satisfied or satisfied with the procedure and 92% reported no recall. 87% of physicians were very satisfied or satisfied with the sedation/conditions achieved during the procedure. CONCLUSIONS: Propofol appears to be a safe and effective agent for performing procedural sedation in the ED and was associated with high patient and physician satisfaction. Key words: propofol; procedural sedation; patient satisfaction; physician satisfaction

74

Utilization of clinical pharmacy services in the emergency department.

Chan A, Simmons T, Green RS. Department of Pharmacy, Dalhousie University, Halifax, NS

INTRODUCTION: Decentralization of clinical pharmacy services is a developing area of practice promoting patient safety and effective medication utilization. Emergency departments have been identified as high risk areas for medical errors. The purpose of this study was to document the utilization of clinical pharmacy services in a tertiary care Emergency Department (ED). METHODS: As part of a prospective trial of clinical pharmacy services in the ED, a pharmacist documented all activities performed while in the Queen Elizabeth II Health Sciences Centre ED in Halifax, Nova Scotia over a four week period. The activities were classified into five categories. The incidence, ED team member requesting advice, and time to complete the activities were recorded. RESULTS: The pharmacist provided a total of 137 clinical services over nineteen - 8 hour ED shifts (50% evenings). Forty percent of clinical services included retrieval of medication histories, 20% each on drug information questions and patient counseling, 10% on physician medication order clarifications. Recommendations to physician and nursing staff ac-

counted for the remainder of the services provided. Half of the services provided were for the purposes of a concurrent prospective study. However, of the remaining 50 % of services, requests for pharmacist intervention were initiated by physicians, nurses, and remote pharmacists 20%, 18%, and 11% respectively. Fifty percent of the interventions required 11–30 minutes to complete, followed by 34% requiring 5–10 minutes, 15% requiring 31–60 min and 1.5% requiring more than 60 minutes. CONCLUSION: The introduction of clinical pharmacy services in a tertiary care, teaching ED is widely accessed by various members of the health care team. Key words: therapy; medical administration; pharmacy services; emergency medicine

75

Analgesia administration for acute abdominal pain in the pediatric emergency department.

Goldman RD, Crum D, Bromberg R, Rogovik A, Langer JC. Pediatric Research in Emergency Therapeutics (PRETx) Program, Division of Pediatric Emergency Medicine, Department of Pediatrics, Population Health Sciences, The Research Institute, The Hospital for Sick Children, University of Toronto, Toronto, ON

INTRODUCTION: To document the use of analgesia for children with acute abdominal pain in the Pediatric-Emergency-Department (PED) and to compare between children with suspected appendicitis in a high versus low probability. METHODS: Patients 0–16 years recruited prospectively as part of another PED study in Toronto. History of present illness and physical exam was available, and information on analgesia administered in the PED was retrospectively collected from charts. Physicians' probability of appendicitis before any imaging was recorded. A follow-up call was made to verify final diagnosis. RESULTS: We included 438 patients, 16% with appendicitis. Analgesics were given 154 times to 112 patients. Thirty one percent of the cohort received analgesia before seeing the physician, mostly febrile, 37% after seeing physician and 17% after seeing pediatric-surgery consultant. 15% received multiple dosages. Underdosing was recorded in 14% of medications, mostly morphine (24%). Analgesia was given significantly more often to children with high probability of appendicitis. Age was not a factor in analgesia administration. CONCLUSIONS: Children with abdominal pain receive more analgesia when the physician suspect appendicitis, yet only in half of the cases, and only 15% receive opioids. Opioid underdosing happens in a quarter of times it is given. Key words: analgesia; abdominal pain; children

76

The provincial airway database (PAWD) of the British Columbia ambulance service.

Vu E, Yee R, Vu M, Brubacher JR, Berringer R, Straight R. Division of Emergency Medicine, University of British Columbia, Vancouver, BC, and Paramedic, BC Ambulance Service, BC

INTRODUCTION: PAWD was developed to test the feasibility of collecting data on prehospital endotracheal intubations (ETI) by ALS paramedics. METHODS: Zoomerang® software was used to create a web-based, password protected database with multiple-choice menus supplemented by free text. From 05/05/04 till 20/08/04, paramedics voluntarily, anonymously, and prospectively entered data on ETIs. RESULTS: PAWD captured 172 ETI attempts. All entries were complete. 163 (94.8%: 95% CI 90.3–97.6%) ETIs were successful. 114 pts (66.3%: 95% CI 58.7–73.3%) were male: average age 60.8 yrs (newborn–91 yrs) and weight 78.9 kg (0.3–220 kg). GCS = 3 in 142 (82.6%: 95% CI 76.1–87.9%) pts. Glottic views were Cormack–Lehane (CL) grade III or IV in 44 (26%: 95% CI 19.2–32.8%) pts. Grade III or IV views were common outdoors at night (8/15; 53%: 95% CI 26.6–78.7%) and in pts with head injury (5/15; 33.3%: 95% CI 11.8–61.6%) or major trauma (4/12 33.3%: 95% CI 9.9%–65.1%). Airways were soiled (blood, vomitus, other) in 73 (42.4%: 95% CI 35.0–50.2%) cases. Lidocaine, morphine, and midazolam were the most commonly used intubation drugs. There was 1 laryngoscopy attempt in 87 cases (50.6%: 95% CI 42.9–58.2%), 2 attempts in 52 (30.2%: 95% CI 23.5–37.7%), 3 attempts in 21 (12.2%: 95% CI 7.7–18.1%), and > 4 attempts in 12 (7.0%: 95% CI 3.7–11.9%). Nine patients (5.2%: 95% CI 2.4–9.7%) could not be intubated. Of these, 8 (88.9%: 95% CI 51.8–99.7%) had CL grade III or IV views, 5 (55.5%: 95% CI 21.2–86.3%) had soiled airways, 3 (33.3%: 95% CI 7.5–70.1%) had head and neck trauma and 1 (11.1% 95%: CI 0.2–48.3%) drowning victim had laryngospasm. Reported complications included airway bleeding in 11 (6.4%: 95% CI 3.2–11.2%) cases, airway swelling in 3 (1.7%: 95% CI 0.3–5.0%) cases, and 1 case (0.6%: 95% CI 0.0–3.2%) each of injury to the hypopharynx and extubation during transport. CONCLUSIONS: We have described 172 prehospital ETI reported to PAWD. Technical objectives of accessibility, confidentiality, and ease of data extraction were met. PAWD would be improved with mandatory reporting. Key words: EMS; airway; endotracheal intubation; database

77

Categories of drug related problems identified in elderly emergency department patients.

Chan A, Simmons T, Green RS. Department of Pharmacy, QEII Health Sciences Centre, College of Pharmacy, Dalhousie University, Halifax, NS

INTRODUCTION: Elderly ED patients receive multiple prescription medications and are risk for significant drug related problems (DRPs). The provision of clinical type pharmacy services to patients in hospital can identify these DRPs to enhance patient safety and promote effective medication use. The objective of this study was to document the types of DRPs identified in elderly patients receiving > 4 outpatient medications receiving pharmacist intervention compared to a historical control group. METHODS: A prospective evaluation of elderly (>65 years) patients was performed comparing patients receiving pharmacist intervention to historical case controls. In the intervention group, the pharmacist conducted patient interviews over a one month period. A retrospective chart review of elderly ED patients who were seen over the same time period 1 year prior served as controls. DRPs in each group were identified and categorized according to the Hepler–Strand definition. RESULTS: In total, 41 patients were assessed by the clinical pharmacist in the ED, and 75 charts were reviewed. The total number of DRPs identified in the prospective patients was 160, while 92 DRPs were found from the chart review. A significantly greater amount of DRPs were identified as patients having an untreated indication (47.5% vs. 34.5%, $p = 0.05$) in control patients. Conversely, in the group receiving pharmacist intervention, more DRPs were classified as patients failing to receive drug (18.5% vs. 30.4%, $p = 0.03$). CONCLUSION: Pharmacist intervention alters the number and type of DRPs identified in an elderly population at risk of polypharmacy visiting the ED. Key words: elderly; emergency medicine; adverse drug events

78

Effect of a clinical predictive tool for Streptococcal pharyngitis on emergency physicians practice.

Emond M, Archambault P, Pigeon D, Aube M, O'Grady J, Champagne E, Poitras J. Division of Emergency Medicine, Laval University, Quebec City, QC

INTRODUCTION: To evaluate the impact of implementation of a

predictive tool for Strep throat infection on emergency physicians (EP) medical management of sore throat. METHODS: A non-randomised multicenter pre and post evaluation in university-affiliated emergency departments. Attitudes of EP regarding investigation and treatment of sore throat were collected from a chart review in 2002. A previous Canadian validated clinical predictive score of sore throat was then explained and implemented in three different emergency departments by used of remainders and «clinical data sheets». A post phase analysis was done four months after implementation in each ED. Outcome measures were obtained by comparing pre and post phases. RESULTS: 191 charts and 195 charts were respectively reviewed in pre and post implementation phase. Pre phase:, 63,9% (122/191) of EP followed the clinical predictive score for throat culture when all criteria of the score was noted in the chart. 71.2% (136/191) followed the appropriate recommendations for treatment. Post phase: 73.4% (143/195) of throats cultures were done according to standards and 74.9% (146/195) of treatment plans were considered adequate. Outcome measures comparison showed statistically significant increase in adherence to throat cultures recommendations: 9.5%, p = 0,045 and but not for treatment recommendation: 3.7% (from 71.2% to 74.9%, p = 0.41). Interestingly, we observed an important increase in antibiotic prescriptions in the post phase analysis from 42.6% (81/190) to 52.1% (100/192, p = 0.06). CONCLUSIONS: Our study confirmed that EPs are using clinical score to guide their management of sore throat. We also showed that implementation of a specific clinical predictive score for throat cultures may improve adherence to throat culture indications and improve efficiency in medical management of sore throat. Further evaluation of EP attitudes at one and two year post implementation is recommended to determine long term adherence. Key words: clinical scoring; pharyngitis; diagnosis

79

Impact of clinical practice guideline on management of critically elevated international normalized ratio (INR) in three emergency departments.

Lari H, Manouchehri N, Blitz S, Bullard M, Meurer D, Holroyd B, Rowe BH. Department of Emergency Medicine, University of Alberta, Edmonton, AB

OBJECTIVE: To determine the impact of clinical practice guideline (CPG) on management of critical INR (> 5.0) and to examine practice variation in three emergency departments (EDs). METHODS: We conducted a retrospective chart review of 239 consecutive patients aged > 18 presenting to a university (U), university-affiliated (UA) and community (C) hospital with critically elevated INR. Patients presenting between 04/02–03/03 were eligible. An electronic Clinical Practice Guideline (eCPG) has been available at the university site since 01/02 and the management of critical INRs was compared to the other EDs. RESULTS: Patients characteristics among sites were similar: mean age was 70, 54% were male, and 82% presented with a GCS of 15. These patients often required admission (63%) and 5 died in the ED. Mean INR was 8.1 and most patients at each site presented with varying combinations of signs and symptoms (hematuria, melena, pain etc.). Many (41%) patients were at high risk for bleed and rates were similar between sites; however, 33% of patients were at high risk for clot with differences observed between sites (U = 41%, UA = 28%, C = 26%; p = 0.09). Only 4% of charts demonstrated use of eCPG at the U. The use of vitamin K (Vit K) was high (52%), while fresh frozen plasma (FFP; 18%) and packed RBC (PRBC; 13%) was lower; rates of use were similar across sites. CONCLUSIONS: The frequency and complexity of patients presenting with elevated INR varies across sites; however, treatment approaches appear similar. An eCPG designed to improve the ED management of elevated INRs has not changed practice appreciably. Interventions to reduce FFP and Vit K use still appear warranted. Key words: practice guidelines; quality improvement; critical incidents; INR

80

Variation in diagnosis and management of uncomplicated pediatric clavicle fractures in tertiary care centres in Canada.

Mayer A, Joubert GI. Section of Pediatric Emergency Medicine, Department of Pediatrics, University of Western Ontario, London, ON

INTRODUCTION: Recently literature reported that a majority of physicians are able to accurately diagnose uncomplicated clavicle fractures (CF) with clinical exam alone. This would limit the use of X-rays (XR) and decrease patient stays in the Emergency Department, reduced exposure to radiation and overall costs. Recent reports suggest that there is no need for follow-up of uncomplicated CF. The primary purpose of this study was to assess the current practice patterns of Canadian pediatric emergency physicians (PEP) with respect to diagnosis and management of CF. METHODS: A survey was sent to 170 PEPs working either full or part-time in a pediatric emergency department at 10 tertiary care centres in Canada. The 8 questions survey invited them to provide opinions regarding use of XR to diagnose uncomplicated CF, treatment and follow-up. RESULTS: 115 (67.6%) surveys were returned. 92 (80%) of respondents acquired XR in all cases (AXR) of suspected CF, 18 (15.7%) acquired XR in only select cases (SXR), and 5 (4.3%) nurses fast-track all suspected CF to X-ray. The most common reasons to SXR were location (medial or lateral), medico legal, and age of the patient. MD's using SXR felt that acquisition of an XR does not alter management (p = 0.05), and that patients with uncomplicated clavicle fractures require no follow-up at all (P = 0.019). No difference SXR and AXR was found with respect to XR altering prognosis, choice of treatment. Type of fracture (comminuted vs. displaced) did not alter treatment or analgesia choice. 68% of chose simple sling as the management of choice. Follow up was family physician (74%). Most commonly chosen analgesic was ibuprofen. CONCLUSIONS: There is a great deal of variation among PEP with respect to need for XR to diagnose uncomplicated CF, treatment and follow-up recommendations, despite reports in the literature suggesting no need for XR or follow-up. Further research is required to define need for XR in pediatric patients with suspected CF, as well as optimum treatment and follow-up. Key words: clinical guidelines; clavicle fractures; children; diagnosis

81

Written consent for interventions in the paediatric emergency department: physicians' practices and attitudes.

Killorn EE, Matsui DM, Joubert GI. Department of Pediatrics, Section of Pediatric Emergency Medicine, University of Western Ontario, London, ON

INTRODUCTION: There is a need to improve physician practices regarding informed consent. Studies have confirmed patient's desire to be fully informed regarding the treatment process, but have been equivocal in determining their desire for active participation in clinical decision-making. Little literature exists regarding physician's attitudes toward written consent for interventions. METHODS: 167 physician PEPs at the 10 academic Paediatric Emergency Departments (PED) received an anonymous survey containing questions regarding written consent for interventions. Interventions included IV starts, simple (SWR) and complicated wound repair (CWR), lumbar punctures (LP), endotracheal intubation (ETI), administering blood products (ABP), fracture reduction (FR) and procedural sedation (PS). Data was analyzed using SPSS, student T, Chi-square and Kappa tests. RESULTS: 96 (57.5%) PEPs responded to the survey.

43% worked in PEDs with their own specific policies on written consent, 43% followed a hospital-wide policy, while 13% worked in centres with no policy. Of the 8 interventions surveyed, PEPs believed that consent should be obtained in: PS 74%, ABP 60%, FR 55%, LP 31%, CWR 13%, ETI 7%, SWI 1% and 0% for IV starts. Surprisingly, 26% of PEPs felt that consent was unnecessary for PS, whilst 40% felt it unnecessary for FR. 18% felt that written consent should not be required for any interventions. Comparison of agreement between physicians current consent practice and optimal consent practice for PED interventions demonstrated poor agreement for ETI and CWR ($\kappa < 0.2$), fair agreement for ABP (κ 0.20.4) and moderate agreement for LP, FR and PS (κ 0.4–0.6). CONCLUSIONS: These results suggest that PEPs feel that written consent for interventions is warranted for many complex interventions (e.g. FR, PS). These results also demonstrate a disparity between current and optimal written consent practices in Canadian PEPs. There appears to be a need to develop a national consensus on interventional consent. Key words: consent; survey; pediatrics

82

The management of critically ill patients in the emergency department: a retrospective analysis.

MacIntyre JK, Green RS. Department of Emergency Medicine, Dalhousie University, Halifax, NS

INTRODUCTION: Previous studies have demonstrated that critically ill patients remain in the Emergency Department (ED) for prolonged periods of time. The rapid implementation of invasive procedures and intensive therapy is thought to have a positive affect on patient outcomes. In particular, early goal directed therapy of critically ill septic patients while in the Emergency Department has been demonstrated to reduce mortality. The objective of our study was to examine the epidemiology of critically ill patients receiving care in a Canadian tertiary care adult emergency department. METHODS: This study was a retrospective chart review of all ED patients admitted directly to the ICU over a one-year period. Prehospital, ED and ICU data was collected for the first 24 hours of admission and included patient demographics, triage acuity, physiologic parameters, procedures performed and length of stay in the ED and ICU. RESULTS: One hundred and sixty five critically ill patients were included in this study with an overall hospital mortality of 23.2%. Patient mean age was 55.4 years (SD 19.4 years), and 56.4% were male. Of the 165 patients, 115 (69.7%) required intubation, with the majority being performed in the ED (75/115, 65.2%) and in the prehospital setting (33/115, 28.7%). Central venous access was obtained in 49 patients (29.7%) with only 10 (20.4%) performed while patients were in the ED. Similarly, arterial lines were inserted in 92 patients (55.8%), with 12 (13.0%) completed in the ED. The mean length of stay in the ED of critically ill patients requiring ICU admission was 6.7 hours (SD 4.6 hours). CONCLUSIONS: Critically ill patients are managed in the Emergency Department for a significant length of time. The majority of early airway control occurs in the prehospital setting and the ED, however few patients undergo invasive procedures while in the Emergency Department. Key words: critical care; emergency medicine; epidemiology

83

Pharmacists identify more drug related problems than physicians in elderly emergency department patients.

Chan A, Simmons T, Green RS. Department of Pharmacy, Dalhousie University, Halifax, NS

INTRODUCTION: Elderly patients who present to the ED are often receiving multiple medications for chronic medical problems. Emergency physicians need to accurately evaluate their patients medications to ensure that significant drug related problems (DRP's) are minimized. Due to multiple factors inherent in busy emergency departments, the identification of DRP's by emergency physicians may be incomplete. The purpose of this study is to determine whether the introduction of a clinical pharmacist in the ED increases the identification of DRP's in elderly emergency department patients. METHODS: A prospective evaluation was performed in patients > 65 years of age who presented to the Queen Elizabeth Health Sciences Center Emergency Department, Halifax, Nova Scotia. A clinical pharmacist conducted patient interviews and reviewed outpatient medications after ED physician assessment over a one-month period. DRP incidence and severity were identified utilizing a published classification, and recommendations made to resolve identified DRP's were provided to the attending emergency physician. DRPs identified by the emergency physicians were prospectively recorded. RESULTS: The clinical pharmacist evaluated 41 patients in the ED, in which a total of 92 DRPs were identified (2.24 DRPs per patient). Assessment by a clinical pharmacist identified an additional 53 DRP's compared to the 39 DRPs initially identified by the emergency physicians. Physicians identified more DRPs classified as "marked severity" while the pharmacist identified an increased number of "modest and minor severity" DRPs. Emergency physicians were more likely to immediately modify prescribed medication when they identified a DRP. CONCLUSION: Pharmacists identify an increased number of DRPs than emergency physicians. Key words: elderly; adverse drug events; emergency medicine; pharmacists

Decision Analysis

84

The role of the history in predicting the need for CT scan in minor head injury.

Howton JC, Stiell IG, Clement CM, Brison R, Schull M, Rowe BH, Dreyer J, McKnight RD, Eisenhauer M, Wells GA, for the CCC Study Group. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: The history is often underutilized in the evaluation of patients with minor head injury (MHI). This study measured the accuracy and reliability of specific history findings in MHI. METHODS: As part of the Canadian CT Head Rule Study, this prospective cohort study enrolled patients who presented with GCS 13–15 after loss of consciousness, amnesia, or confusion at 9 tertiary care EDs. MDs recorded standardized history findings; in

Table 1, Abstract 84

History finding	Inj / No inj, %	Kappa	Sens / Spec, %	OR
Vomiting ≥ 2	25 / 9	0.86	25 / 91	3.6
Age ≥ 65 yr	24 / 9	N/A	24 / 90	3.2
Dangerous mechanism	47 / 24	N/A	47 / 76	2.8
Amnesia > 30 min before	27 / 21	N/A	27 / 79	2.1
Loss of consc. > 5 min	8 / 5	N/A	8 / 95	NS
Headache	61 / 62	0.61	61 / 38	NS
Suspected chronic alcohol	16 / 12	0.71	16 / 88	NS

All p values were 0.0001 except Headache, which had a p value of 0.011

some cases, 2nd physicians performed interobserver assessments. Patients underwent CT to determine the outcome, clinically important brain injury. Analyses included univariate association, kappa, sensitivity, specificity, adjusted odds ratios by stepwise logistic regression. RESULTS: 5858 patients were enrolled with mean age 39 years, important brain injury 8%, neurological intervention 1.5%. Table 1 (of Abstract 84) shows % of injury and non-injury patients with the history findings and statistical outcomes. Hosmer–Lemeshow value was 0.84, suggesting a good fit for the data. CONCLUSIONS: The CCHR Study represents the largest collection of data involving patients with minor head injury. Historical variables comprise 4 of the 7 criteria of the CCHR. A history of 'age > 65', 'dangerous mechanism', 'amnesia > 30 mins prior to injury', or 'repeated vomiting' each puts patients at higher risk of clinically important brain injury. These findings should be carefully reviewed when managing patients with minor head injury. Key words: clinical guidelines; minor head injury; inter-observer agreement

Education / Teaching

85

A survey of one CCFP(EM) program's graduates: their background, their intended type of practice and their actual practice.

Shepherd LG, Burden JK. Division of Emergency Medicine, University of Western Ontario, London, ON

INTRODUCTION: The purpose of this study was to examine one College of Family Physicians of Canada Certification of Special Competence in Emergency Medicine [CCFP(EM)] program's graduates to determine their background, their intended type of practice and their actual practice. METHODS: All 83 physicians who had completed a CCFP(EM) residency year of training at the University of Western Ontario (UWO) from 1982–2004 were surveyed. Cross tabulations tables for all combinations of two characteristics/factors from the data set were calculated. Chi-square tests of interdependence were applied. RESULTS: We received 72 survey replies for a response rate of 87.0%. 71% of the respondents were male. Only 8% grew up in a rural community versus 43% and 49% from regional and urban centres respectively. Overall, 50% of respondents intended to practice emergency medicine exclusively at the start of their CCFP(EM) residency training while 47% intended to undertake a blended practice of family medicine and emergency medicine with 3% undecided. Neither gender nor medical school attended influenced intended type of practice. The majority of graduates (range 72–53% over the first four positions of employment) practiced emergency medicine exclusively. The number of physicians practicing a blended emergency and family medicine practice was never greater than 20% throughout all positions. Examining all positions of employment, 11.3% were in a rural setting vs. 48.4% and 40.3% in regional and urban centres respectively. There were no relationships demonstrated between gender, size of city in youth and eventual location of practice. For all positions "type of practice" was the highest ranked factor of influence in choosing position of employment. CONCLUSIONS: The majority of graduates of the UWO CCFP(EM) program have worked in emergency medicine positions and had this intention from the start of residency. No demographic factors surveyed had significant correlation with intended or actual practice. Key words: workforce; emergency medicine; medical training

86

ED teaching shifts: Are they effective for teaching medical students?

Clow J, Frank JR, Lee C, Nuth J, Weitzman B. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: The ED has been recognized as a rich environment for teaching medical students. However, in an era of overcrowding and under funding, medical students can sometimes not receive optimal teaching and supervision. Teaching shifts have been promoted as an answer to these challenges. We investigated the perceptions of students and faculty with respect to the effectiveness of a dedicated teaching shift as part of a new third-year EM clerkship. METHODS: We conducted a cross-sectional survey of all medical students in the initial cohort to complete a new EM clerkship, as well as all EM residents and EM faculty eligible to teach medical students. Via email and paper, respondents were asked to rate the effectiveness of the teaching shifts, perception of the number of observed histories and physicals on teaching shifts, and to indicate the strengths and weaknesses of the teaching shift format. Narrative answers were coded for analysis. RESULTS: Respondents included 58 of 75 (77.3%) of students and 39 of 46 (84.8%) of teachers. Students and faculty rated their overall satisfaction as 4.51 and 4.25, respectively ($p = 0.17$). Students and teachers rated more histories and physicals were observed during the teaching shifts (4.23 and 4.08 out of 5, respectively, $p = 0.56$). Identified strengths included: practical teaching, good feedback, dedicated supervision, and observed histories and physicals. Challenges identified included: dependence on patients present in the ED, variable quality in teachers, large groups and scheduling issues. CONCLUSIONS: Students and teachers perceive the ED teaching shift to be effective. Key words: medical education; emergency medicine

87

Use of an online needs assessment to identify learning needs of rural and urban emergency practitioners for a web-based learning environment.

Curran J, Murphy A, Sinclair D, Best S. Department of Emergency Medicine, IWK Health Centre/Dalhousie University, Halifax, NS

INTRODUCTION: Access to timely and relevant pediatric emergency medicine continuing education opportunities has been identified as a key priority by CAEP. A Multidisciplinary Pediatric Emergency Care [MPECW] Learning Centre was developed to address gaps in the current delivery of education within rural and urban emergency departments[EDs] in Nova Scotia. An online needs assessment was conducted to determine content areas for inclusion in the Learning Centre. METHODS: The needs assessment was developed during roundtable discussions of the investigative team based on literature review, current trends, experience and incidence of conditions presenting to emergency departments. The needs assessment was pilot tested with a group [n = 12] of multidisciplinary practitioners and modified. Study participants [n = 157] from eleven provincial EDs were asked to complete an online needs assessment and rank pediatric emergency content areas for relevance, volume, and importance. Needs assessment data was analyzed using SPSS. RESULTS: Forty-seven percent [97/204] of participants who signed consent forms completed needs assessments. Eleven percent of respondents were male and 77% were between 30–49 years of age. Of participants completing needs assessment, 87% were nurses and 11% were physicians. Greater than 10 years of experience in emergency care was reported by 38% of clinicians. The content areas that were ranked most frequently as having a high degree of relevance to their practice were lacerations [74%], managing airways [71%] and

asthma [53%] Managing airways [48%], advanced pediatric assessment [34%] and reading cardiac rhythm strips [33%] were ranked as number one in level of importance by respondents. CONCLUSIONS: Web-based technology is a useful means for sharing knowledge and improving access to continuing education. This study demonstrates that the utilization of an online needs assessment survey is an effective means for gathering information related to learning needs of emergency practitioners in urban and rural health centres. Key words: e-medicine; medical education; lifelong learning

88

Perceived barriers to emergency ultrasound use by emergency medicine residents: pilot study.

Woo MY, Reardon M, Lee AC, Frank JF. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: Emergency Ultrasound training has begun at many residency programs across Canada. However, little is known about their effectiveness. We set out to identify potential barriers to Emergency Ultrasound use by Emergency Medicine Residents. METHODS: A questionnaire was developed based on current literature and using standard methods. Two Academic Emergency physicians reviewed the validity and reliability of the questionnaire. The questionnaire was then pilot tested by an Emergency Medicine Resident. Research ethics approval was obtained. The questionnaire was given to all Emergency Medicine Residents at the University of Ottawa. The survey consisted of 24 questions regarding demographics, current use, and potential barriers to Emergency Ultrasound use. RESULTS: The response rate was 75% (12/16). 58% of respondents agreed or strongly agreed that clinical shifts in the Emergency Department are too busy to perform Emergency Ultrasound. Equally 67% felt that there was not enough supervision. 67% agreed that it is too difficult to review scans with attending staff while 100% agreed or strongly agreed that not enough attending staff use Emergency Ultrasound. While on off-service rotations, residents were unable to do any Emergency Ultrasound scanning and 75% agreed that this was a barrier to scanning. CONCLUSION: Identification and addressing potential barriers to Emergency Ultrasound is important in providing a successful training program for Emergency Medicine Residents. Increasing the number of attending staff who perform Emergency Ultrasound may improve Emergency Ultrasound use by Emergency Medicine Residents. Key words: emergency medicine; ultrasound; medical education

89

Residents' attitudes and practices regarding the use of analgesia and sedation for lumbar puncture in children.

Breakey VR, Pirie J, Goldman R. The Hospital for Sick Children, Toronto, ON

INTRODUCTION: Although analgesia and sedation for painful procedures in children are safe and effective, pain management during lumbar puncture (LP) in children is often sub-optimal. The purpose of this study was to document factors influencing residents' decisions to use analgesia and sedation during LP and compare practices of Pediatric Residents (PR) and Emergency Medicine Residents (ER). METHODS: PR and ER Residents from across Canada responded to a mailed survey regarding the use of analgesia and sedation for LP in children. Student t-test and χ-squared test were used to compare the groups using SPSS statistical software. RESULTS: 245/374 (67%) residents completed the survey. 57% and 1% of PR and ER respectively reported frequently doing LPs with no local anesthetic ($p < 0.005$). PR reported more frequent use of EMLA (64% vs. 27%, $p < 0.005$) whereas PR reported less frequent use of lidocaine (29% vs. 94%, $p < 0.005$). Both groups recorded witnessing adverse effects of local anesthesia at a low rate (3 vs. 5%) and the rates were not significantly different. 78% of PR reported using sedation at least once for LP versus 60% of ER ($p < 0.005$). 35% of PR reported frequent use of benzodiazepines, compared to 20% of ER ($p < 0.05$), but there was no significant difference in the reported use of Ketamine (11% vs. 9%). 19% of PR witnessed adverse effects of sedation versus only 5% of ER ($p < 0.05$). 39% of PR and 57% of ER reported formal education in the use of sedation ($p < 0.05$). More PR were responsible for teaching trainees (75% vs. 44%, $p < 0.005$). PR were less likely to recommend the use of local anesthetic during LP when teaching the procedure ($p < 0.005$). CONCLUSIONS: Most PRs report infrequent use of local anesthesia for LP in children but use more sedation than ER. PRs indicate less education in sedation than ER and higher incidence of adverse effects of sedation. These findings should initiate development of an educational curriculum to improve procedural competency and ensure PRs are capable teachers, as they educate more trainees. Key words: procedural sedation; lumbar puncture

90

Effective EM medical education: preliminary evaluation of a new core emergency medicine clerkship.

Frank JR, Nuth J, Weitzman B, Lee C. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: There is renewed interest in Canada in enhancing medical student education in emergency medicine (EM), but very few outcome studies have been done to identify effective methods. We conducted a systematic program evaluation of the initial cohort in a new EM clerkship at the University of Ottawa in order to identify the effectiveness of both the activities and the clerkship overall. METHODS: We used multiple methods to obtain data on program activities and overall program effectiveness. Student satisfaction data were obtained from surveys of the initial cohort who completed the clerkship. Change in student competence was assessed in each procedural skill workshop. Data forms were collected after each activity, before and after each skills workshop, and at the end of the clerkship rotation. Faculty and the Undergraduate Dean were surveyed at the end of the first year. Primary outcome was the overall satisfaction ratings of students and faculty. Secondary outcomes included: change in pre–post competence scores in clinical skills, student achievement of procedure performance, and student satisfaction with individual learning activities. RESULTS: Data were analyzed on the first 8 clerkship rotations. Overall student evaluation of the value of the clerkship was 4.7 on a 5-point Likert scale. Teachers and the Dean rated the clerkship highly. All skills workshops demonstrated significant change in objective skills competence: Cohen's D = 1.65 for suturing, 1.38 for IV, 1.58 for NG, and 1.38 for Foley. 99% of students met expectations in bedside procedure performance. ACLS, procedure labs, and web materials were the highest rated activities. Triage and EMS rideout shifts were rated lowest. CONCLUSIONS: Preliminary data indicate that this design for the new EM clerkship is effective. Key words: medical education; undergraduate training; emergency medicine

EMS

91

Etiology of pediatric out-of-hospital cardiac arrest by coroner's diagnosis.

Ong MEH, Stiell IG, Osmond MH, Nesbitt L, Gerein R, Campbell S, McLellan B, for the OPALS Study Group. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: Determining etiology of pediatric Out-of-Hospital Cardiac Arrest (OHCA) based on clinical impression has limitations and autopsy remains the 'gold standard'. We sought to determine etiology of pediatric OHCA in a population-based sample from autopsy and coroner's diagnosis. METHODS: As part of the Ontario Pre-hospital Advanced Life Support (OPALS) study, we conducted a prospective cohort study including children below age 19 with OHCA in 20 cities. Deaths were matched with provincial coroner's office records, autopsies and investigation notes were reviewed, and descriptive statistics compiled. RESULTS: From 1992 to 2002, there were 474 cardiac arrests in children giving an annual incidence of 59.7 per million children. Characteristics were mean age 5.8, <1 year of age 43.0%, male 59.1%, bystander witnessed 25.1%, bystander CPR 20.3%, survival to discharge 2.3%. 439 matched to coroner's office records. Estimated annual incidence rates per million by age groups were: 175.0 (age 1–4 years), 33.0 (age 5–14 years) and 61.6 (age 15–18). Annual incidence rates per million according to coroner's cause of death were: natural (26.2), accidental (17.4), suicide (3.7) and homicide (1.9). The post mortem rate was 84.3% and mean Injury Severity Score was 31.4 (SD 16.5). The commonest causes of natural death were SIDS (30.3%), cardiovascular (19.2%), respiratory (18.3%), neurological (8.7%) and perinatal (7.2%). The commonest causes of accidental death were drowning (27.5%), residential accidents (18.8%), fire (13.0%), motor vehicle collision (12.3%), pedestrian (7.2%) and bicycle (4.3%). CONCLUSION: This is the largest study looking at the causes of pediatric OHCA from coroner's diagnosis. Besides 'medical' causes of mortality, up to 52.6% of these deaths were from 'unnatural' causes (accidental, suicide, homicide, undetermined) and may be amenable to prevention or intervention. Our findings will be useful for planning prevention, treatment and future research of pediatric OHCA. Key words: prehospital; pediatrics; cardiac arrest

92

Patient response to written notification during prehospital care trials using waiver of informed consent.

Spence JM, Notarangelo V, Frank J, Long J, Morrison LM. Division of Emergency Medicine, University of Toronto, Toronto, ON

INTRODUCTION: Resuscitation research has been allowed to proceed using Waiver of Informed Consent when compliance with guidelines is assured. In these circumstances, there is a commitment to notify enrolled patients. This study describes the notification experience for 2 prehospital care (PHC) trials in a city serving 2.5 million people with a single EMS system. METHODS: Results of written notification were reviewed for 2 studies (N = 620): 1) ORBIT, an RCT comparing rectilinear biphasic and monophasic damped sine waveform for out-of-hospital cardiac arrest 2) PrePACE, an RCT comparing dopamine and transcutaneous pacing for unstable bradycardia. RESULTS: The ORBIT study enrolled 538 patients, 72% male, with a mean age of 67 years. Survival to discharge was 8%. In 44 (8%) patients, contact information could not be obtained from ambulance or hospital records. Notification was attempted for 494 (92%) patients for whom information was available. No response was obtained for 408 (83%) letters; 48 (10%) letters were returned. Researchers were contacted by telephone regarding 38 (8%) subjects: 17(3%) requested information, 14 (3%) responded positively, 1 (0.2%) did not return follow-up calls, and 2 (0.4%) were withdrawn from the study. PrePACE enrolled 82 subjects, 54% male, with a mean age 74 years. Survival to discharge was 17%. Contact information was unavailable for 1 (1%). For the remaining 81 patients, no response was obtained from 67 (82%); 4 (5%) letters were returned. Researchers were contacted 10 (12%) times: 7 (9%) requested information, 2 (2%) responded positively, 1 (1%) did not return follow-up calls. No patients were withdrawn from the study. CONCLUSIONS: Contact information may be difficult to obtain for critical patients treated in the PHC setting. A significant number of persons contact researchers; however, most requests are for information. Most responses are positive. Small numbers may be withdrawn from studies after written notification of participation. Key words: EMS; informed consent; clinical trials

93

ED offload study: the subjective impressions of patients awaiting EMs offload in the ED.

Jamieson T, Fried B, Friedman SM. Department of Family and Community Medicine, University of Toronto, Toronto, ON

INTRODUCTION: To characterize patient impressions during EMS offload delay. METHODS: Convenience sample in downtown teaching hospital. A standardized survey was administered to patients upon arrival by EMS and hourly until offload. Fisher's and McNemar's tests performed using Excel and SAS. RESULTS: Data was collected for 76 hours (12 intervals, 16 weeks). 60 patients arrived by EMS, 30 met inclusion criteria and 22 (73.3%) consented. Mean offload delay was 71 minutes (range 16–283). At initial survey 32% (95% CI 0.12, 0.51) rated privacy as good or very good, 27% (95% CI .09, 0.46) were concerned others could see them, and 18% (95% CI 0.02, 0.34) were concerned that personal information could be overheard. Good or very good ratings were scored for comfort by 50% of patients (95% CI 0.29, 0.71), dignity by 64% (95% CI 0.44, 0.84), and safety by 86% (95% CI 72, 100). Hourly patient interviews demonstrated worsening perceptions regarding personal information being overhead ($P = 0.0053$), exposure ($p = 0.0128$), privacy ($p = 0.0124$), and comfort ($p = 0.0097$). Median ten point pain score increased from 4 to 7 for patients over two or more hourly surveys ($N = 9$). Interviews of 21 patient–medic pairs demonstrated a significant relationship between patient and medic ratings of patient privacy ($p = 0.0088$). Patients tended to report higher privacy ratings ($p = 0.0030$) than their medics. CONCLUSIONS: Patient impressions of privacy were inferior to perceived safety and comfort. Impressions of overall privacy and comfort diminished over time. There is a significant relationship between medic and patient estimates of patient privacy. Key words: EMS; overcrowding; patient satisfaction

94

Pre-hospital index, high velocity impact and emergency medical technician judgement as trauma center triage criteria.

Emond M, Lavoie A, Moore L, Sampalis JS. Division of Emergency Medicine, Laval University, Quebec City, QC

INTRODUCTION: Our objective was to compare prehospital trauma triage tools to emergency medical technician (EMT) judgment for the triage of injured patients. METHODS: A retrospective cohort consisting of 17,377 trauma patients transported to two level I trauma centers was identified. Two triage tools: the Pre-Hospital Index (PHI) and High Velocity Impact (HVI) were evaluated and compared to EMT judgment for their efficiency at triage. Outcome measures were obtained by univariate and logistic regression analyses. RESULTS: 69,8% of trauma patients being transported directly to level I trauma centers did not meet the minimum requirements for transport by either the PHI, HVI or EMT judgment. 994 patients had a PHI e 4 (5.5%), 3,610 patients had HVI (20.8%), and 2,875 patients were judged to be "major" trauma by EMTs (16.6%). There were 4,288 (24.5%) patients with either a PHI e 4, or HVI. There were 991 (5.7%) patients receiving the classification of "major" trauma by EMT judgement with PHI < 4 and no HVI. Logistic regression was performed to identify outcomes, which were well correlated with each triage method. Overall, PHI was found to be the

best predictor of death and death in the first 72 hours after arrival at hospital. EMT judgment was found to be the best predictor for the need for Intensive Care Unit (ICU) admission, high injury severity scores (ISS). HVI was not found to be the best predictor of any severity indicator. Subsequent analyses in the geriatric trauma population (age > 65 y) showed significant lowest predicting capacities of all criteria. The best sensitivity at detecting death at 72 h was achieved by the combination of all three criteria. CONCLUSIONS: PHI in combination with EMT judgment identify seriously injured trauma patients who have high mortality rates, high ISS, high rates of ICU admission. The HVI may add only little to the armamentarium of pre-hospital personnel in identifying seriously injured patients. All of those predictors perform differently in the geriatric trauma population. Key words: EMS; trauma; prediction tools; geriatrics

95

Occupational injuries and stressors among Canadian air medical health care professionals in rotor-wing programs.

Sibley AK, Tallon JM, Day A, Ackroyd-Stolarz S. Department of Emergency Medicine, University of Alberta, Edmonton, AB

INTRODUCTION: Air medical crews are faced with unique occupational risks including: noise, vibration, and the physiological and psychological stresses of flight. Despite this knowledge, little evidence exists about the effects that these factors have on the physical health of the air medical crew. Following a comprehensive search of the literature, we were unable to identify any studies that evaluated the occupational injuries specifically incurred by air medical healthcare professionals. We sought to characterize the epidemiology of occupational injuries experienced by Canadian rotor-wing healthcare providers. METHODS: A survey was sent to the four rotor-wing programs in Canada and distributed among the crews by the respective Air Medical Directors (AMDs). All crew members participating directly in patient care were asked to complete the survey detailing any acute occupational injuries sustained within the previous year. A series of both open and closed-ended questions was used to collect participant demographics as well as information regarding any injuries sustained. Return of the survey implied consent and AMDs were unaware of crew participation. RESULTS: One hundred and six (40.6%) participants completed the survey. Three hundred and thirty acute injuries were reported. Hand lacerations and leg contusions were most prevalent (31 and 24 individuals incurred these injuries, respectively). Acute back injuries were also prevalent with 25 (23.6%) participants reporting at least one back injury. Overall, an injury rate of 3.2 injuries per person per year was reported. Lifting was cited as a common factor in injury (30 cases). Most injuries required little treatment with only 17 needing physician intervention, and only 6 injuries required more than one week off work. CONCLUSIONS: Injuries among Canadian air medical crews are common but fortunately the majority are minor in nature. Specific injury prevention strategies may focus on stretcher design, cabin ergonomics, as well as extremity protective equipment. Key words: occupational health; EMS; aeromedical

96

Pre-hospital ALS procedures in major trauma.

Banihashemi B, Nesbitt L, Maloney J, Trickett J, Stiell IG. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: Pre-hospital advanced life support (ALS) care is routinely provided by paramedics to major trauma patients. However the literature does not clearly indicate which, if any, interventions are effective. As a feasibility study, we evaluated pre-hospital ALS procedures and their association with mortality and morbidity in major trauma. METHODS: We conducted a health records review that included Ontario Advanced Life Support (OPALS) Study cases for 2003 that had an Injury Severity Score of greater than 12 and were transported to the regional trauma hospital via land in a mixed BLS-ALS EMS service. Excluded were patients who were younger than 16 years of age. Data were collected from ambulance reports, dispatch data, and hospital records. We reviewed IV line insertion, intubation, and fluid therapy as the main ALS procedures performed by paramedics. RESULTS: Among the 116 patients, mean age was 46 years, 26% had a GCS score < 9, and the mortality rate was 21.6%. ALS procedures (see Table 1, Abstract 96):

Table 1, Abstract 96

Intravenous line insertion	
Successful	68%
Not attempted	23%
Unsuccessful	6%
Intubation Success	8%
IV Fluid Therapy (N=78)	
IV line delay >5 min	19%
Fluid (>50 mL)	42%
Bolus (>500 mL)	11%
Fluid volume, mL	
Mean	416
Median	200

15 cases were intubated within the first 30 minutes of ED arrival but had no attempt for pre-hospital intubation. In 15 cases, there was a delay of more than 5 minutes at the scene to establish an IV line. 54% of this subgroup received more than 500 ml of IV fluid in ED. 27% received more than 500 ml in the pre-hospital setting. 27% of the cases who were not attempted for pre-hospital IV line received more than 500 ml of IV fluid within the first 30 minutes in ED. CONCLUSIONS: In addition to characterizing the use of ALS procedures for major trauma, this study showed that there may be a need to review the pre-hospital indications for intubation and fluid bolus. Key words: EMS; trauma; procedures

Geriatrics

97

Impact of an emergency department-based geriatric nurse practitioner on hospital readmission rates.

Theakston KD, Campbell KE. Division of Emergency Medicine, University of Western Ontario, London, ON

INTRODUCTION: The frail elderly are a complex patient group at high-risk for ED and hospital readmissions. The purpose of this prospective study was to describe the characteristics of the frail elderly population presenting to an acute care teaching hospital ED and assess the impact of an ED-based Geriatric Nurse Practitioner (GNP) on hospital readmission. METHODS: A GNP was seconded from the Geriatric Program. All community dwelling patients >74 years old presenting to the ED were screened by their emergency nurse for referral to the GNP using a simple 6-item triage tool (TRST) previously validated to identify elderly patients at high risk for ED and hospital readmission after ED discharge. The GNP conducted a geriatric assessment in the ED or by telephone. Geriatric issues were identified and a plan was developed collaboratively with the patient, family,

and family physician to ensure that these frail elderly were linked with appropriate community resources. Prospectively collected data from the TRST and the standardized GNP assessment form were abstracted to a database and analyzed using SPSS. The primary study outcome was the 30-day hospital readmission rate after their index visit to the ED. RESULTS: During the 6-month study period, 176 patients were referred to the GNP. These patients had a high percentage of geriatric risk factors: falls (48%), depression (30%), cognitive impairment (42%), recent functional decline (71%), malnutrition (15%). On their index ED visit 26% required admission to hospital. In the 6 months prior to the study there were 6 geriatric service referrals. During the study, GNP assessment resulted in 64 new Homecare enrollments and 40 referrals to specialized geriatric outpatient services. The 30-day hospital readmission rate after the ED GNP assessment and intervention was only 6/176 (3.4%). CONCLUSIONS: This prospective cohort study describes a process to identify a frail elderly ED population and the positive impact of introducing an ED-based GNP on hospital readmissions. Key words: geriatrics; emergency medicine; nurse practitioner

98

Anxiety in older persons and unscheduled return visits to the emergency department.

Schwindt GC, Lee JS. Emergency Medicine Research Program, Sunnybrook & Women's Health Sciences Centre, Toronto, ON

INTRODUCTION: Previous research shows that older persons are twice as likely as younger persons to return to the emergency department (RTED). Several factors are associated with increased risk of RTED in older persons, including cognitive impairment, difficulty walking, polypharmacy, recent hospitalization or ED visit, and poorer mental health, particularly depression. Anxiety is associated with increased likelihood of RTED in the general population, however the role of anxiety in predicting RTED in the elderly has not been specifically examined. The objective of the present study was to assess whether anxiety, as measured by the Hospital Anxiety and Depression Scale Anxiety sub-scale (HADS-A), predicts unscheduled RTED among older persons. METHODS: We conducted a prospective cohort study of patients ≥70 years of age discharged from the ED after a fall. After providing consent, subjects completed a baseline HADS-A and were contacted at 30 and 60 days post-discharge and assessed for subsequent RTED. Logistic regression (LR) analysis was performed, and the multivariate odds ratios (OR) and respective 95% confidence intervals (CI) are reported. RESULTS: 81 subjects participated (mean age 79.7 years, 70% female, mean mini-mental status exam [MMSE] 27.9). OR for any RTED by 60 days for the following risk factors were not significant: Age per year (OR = 1.0; 95% CI 0.9–1.1), MMSE per 1 point (OR = 1.0; 95% CI 0.8–1.3), and fracture at first visit (OR = 1.2; 95% CI 0.3–4.3). However, controlling for age, injury, and MMSE, a clinically significant increase in HADS-A of 4 points was associated with a 2.7 times greater OR of RTED (95% CI 1.3 to 5.8). CONCLUSIONS: Higher anxiety was associated with a higher likelihood of RTED. These results are relevant to studies attempting to modify RTED. Future studies should assess the relationship of anxiety to appropriateness of return visits in older persons. Key words: elderly; anxiety; emergency medicine

99

Application of the Canadian CT-Head Rule in patients 65 years of age and over.

Lee JS, Stiell IG, Brison R, Clement C, Rowe BH, Schull MJ, Wells GA, for the CCC Study Group. University of Toronto, Toronto, ON

INTRODUCTION: The Canadian CT Head Rule (CCHR) consists of 5 high and 2 medium-risk criteria, and is highly sensitive for clinically important brain injury (CIBI) and need for neurologic intervention (NI) after minor head injury (MHI). However, all patients ≥65 years require head CT to achieve this high sensitivity. We sought to assess the importance of the age ≥65 criteria to the CCHR. METHODS: The CCHR was derived and validated in two prospective cohorts of adults presenting after MHI to 10 tertiary care EDs. We performed logistic regression on data from both cohorts and calculated odds ratios(OR) and 95% confidence intervals(95% CI) for the CCHR variables stratified by age ≥65. We defined MHI as GCS 13–15 with witnessed LOC, amnesia, or confusion. RESULTS: Of 5858 patients, 655 were ≥65 years (mean age 75.5), 56% were male, 21.5% had CIBI and 3.4% required NI. Omitting the age ≥65 criteria would have missed 24/141 subjects with CIBI and 3/21 patients requiring NI. OR with 95% CI of the CCHR criteria are presented in Table 1 (of Abstract 99):

Table 1, Abstract 99

RISK FACTORS	OR CIBI 95% < 65 CI	OR CIBI 95% ≥ 65 CI	OR NI 95% < 65 CI	OR NI 95% ≥ 65 CI
GCS < 15 @ 2 hr	2.7 (1.9-3.8)	1.6 (0.9-2.9)	3.7 (1.5-8.7)	1.3 (0.4-4.5)
? Depressed Skull #	4.9 (3.2-7.3)	2.5 (1.1-6.0)	10.3 (5.5-19.2)	0.8 (0.1-6.6)
? Basal Skull #	9.5 (7.1-12.8)	5.6 (3.1-10.2)	6.6 (3.8-11.5)	5.4 (2.0-14.3)
Vomited ≥ 2 times	5.9 (4.1-8.5)	4.0 (1.8-8.6)	8.1 (4.3-15.5)	0.7 (0.1-4.7)
Amnesia (30 min)	2.5 (2.0-3.8)	1.9 (1.2-2.9)	1.9 (1.1-3.3)	2.0 (0.8-4.7)
Dangerous mechanism	2.7 (2.1-3.5)	1.5 (1.0-2.4)	1.0 (0.5-1.9)	1.8 (0.7-4.4)

The criteria performed similarly in those ≥65 for CIBI. Vomiting ≥2 times and depressed skull fracture were poorer predictors of NI in those ≥65. CONCLUSIONS: Age 65 or over is an important component of the CCHR. Further research should seek to improve the specificity of the CCHR without sacrificing sensitivity in this rapidly growing segment of the population. Key words: clinical guidelines; head trauma; elderly

Infectious Diseases

100

Temporal changes in vaccine uptake of an ED-based pneumococcal and influenza vaccination program for unprotected high-risk patients.

Lang E, Leger R, Colacone A, Xue X, Guttman A, Pearson E, Afilalo M. Sir Mortimer B Davis Jewish General Hospital–McGill University, Montreal, QC

INTRODUCTION: Uncertainty exists regarding the utility of an ED-based vaccination program. This study examines temporal changes (2001–2003) of vaccine uptake in an ED-based pneumococcal (PVX) and influenza vaccination (FLUVX) program. METHODS: Design: Multi-phased cross-sectional study. Setting: Tertiary-care academic center. Participants: Patients presenting to the ED, eligible to receive either FLUVX or PVX and who did not plan on being vaccinated elsewhere. Study phases: Weekdays from 10:00 to 18:00. Phase #1: Nov. 1 to Nov. 30, 2001. Phase #2: Nov. 3, 2003 to

Jan. 31, 2004. Participants answered a questionnaire that examined vaccination history and attitudes towards vaccination. Consenting patients were then vaccinated by a dedicated vaccination nurse. RESULTS: The study periods differed in length (4 vs. 12 weeks). The average weekly number of patients screened was comparable during the two phases (2092 vs. 2246). The 2001 phase identified a weekly average of 140 patients eligible for either the PVX or FLUVX; this number fell to 58 in 2003. During the 2001 phase, the program vaccinated 46 pts/wk corresponding to a 33% uptake rate. In 2003, 13 pts/week received the FLUVX representing 22% uptake ($p < 0.001$ for both). As for PVX, the 2001 phase vaccinated 41 pts/week representing a 29% uptake. This fell to 10 pts/wk in 2003 or 18% uptake ($p < 0.001$ for both). In both phases, the main reason for vaccination refusal was the patients' perception that the vaccines were not required (37% vs. 33%). CONCLUSIONS: We observed a multifactorial decline in vaccine uptake between 2001 and 2003 related to expanded community-based outreach and a perceived lack of efficacy associated with the 2003 FLUVX. Despite lower uptake in 2003, there remain high-risk unvaccinated patients who would benefit from these interventions. Future research evaluating the cost–benefit of an ED-based vaccination protocol is warranted. Key words: emergency medicine; vaccination; influenza; pneumonia

Informatics

101

SAVETIME: 24/7 Emergency Telehealth consult service at Calgary's tertiary care emergency departments.

Jordan VL, Curry G, McCarthy M, Keenan C, Cleary M. Department of Emergency Medicine, Calgary Health Region, Calgary, AB

INTRODUCTION: The "Southern Alberta Access to Vital E-Services Telehealth Initiative for Medical Emergencies" (SAVETIME) was developed as an innovative new service designed to link rural physicians by videoconference to emergency physicians in an urban tertiary center. Real time 24/7 remote assessment by consultant physicians, located in urban adult and pediatric emergency departments, has facilitated decision making for rural emergency patients. METHODS: A successful government grant application supported the project team. In November 2003, a needs assessment was performed with rural physicians and a multi-disciplinary working group was created. A process was developed where rural physicians were connected with Calgary emergency physicians for Telehealth consultation using a preexistent urgent referral line as first point of contact. Telehealth equipment and cameras were purchased and installed in both an urban adult and pediatric emergency department. At the rural sites, Telehealth equipment also included a document camera for the transmission of X-rays, ECGs and other documents. Staff in eight rural EDs and two urban EDs were trained to use the system. Formal midterm and final evaluations were conducted using questionnaires or telephone follow up. RESULTS: From February 2004 to January 2005, 46 consults have been completed. The top four types of consults were adult orthopedic (16), followed by pediatric orthopedic (10), general pediatric (7) and plastic surgery (6) cases. Use of the service by rural physicians has increased over time. Transport into Calgary for further assessment was avoided in the majority of cases. The average consult took 10 minutes. CONCLUSIONS: Emergency Telehealth consults are possible, useful and improve patient access to Tertiary care. The service has been well accepted and appreciated by the rural physicians. Key words: telehealth; emergency medicine; rural medicine

Injury / Trauma

102

Visits by youth to Toronto emergency departments due to injuries caused by violence.

Snider CS. Division of Emergency Medicine, University of Toronto, Toronto, ON

INTRODUCTION: Youth violence is of significant public concern. Youth are increasingly visiting Toronto emergency departments with injuries due to violence. To date, we do not have a clear understanding of the specific causes or nature of these injuries, or of how many injured youth leave hospitals directly from the emergency department. Previous studies have shown that victims of violence are more likely to become repeat victims of violence and are often perpetrators of future violence. Health care workers often discharge youths who have been injured due to violence from the emergency department with little to no violence prevention intervention. METHODS: An observational study was designed to determine the cause of injury, nature and demographics of the injured, and disposition of the patients aged 19 and under who presented to emergency departments with injuries that resulted from violence during a period of two years (April 2002–March 2004). Data was collected and analyzed from the National Ambulatory Care Reporting System (NACRS) database. RESULTS: A total of 4622 patients aged 19 and under who incurred injuries due to violence visited Toronto emergency departments during the period of this study. Assault or homicide due to bodily force (vs. sharp objects, guns or other) was the most common cause of injury due to violence (62%) [95% CI 60–64%]. Patients aged 15–19 accounted for 76% of the injuries [95% CI 75–77%]. Males accounted for the majority (72% [95% CI 71–73%]) of victims. Most patients (90% [95% CI 89–91%]) were discharged directly from the emergency department. CONCLUSIONS: Males aged 15–19 who have been assaulted by bodily force form the most common group of youth incurring injuries due to violence who visit Toronto Emergency Departments. A large proportion (90%) of these youth are discharged directly from emergency departments. Given victims often become repeat victims or future perpetrators, an opportunity exists for the development of youth violence prevention initiatives in emergency departments. Key words: trauma; adolescents; epidemiology

103

Documentation of substance problems in Canadian trauma patients.

Cowie SE, Brubacher JR, Lee D, Lee SK, Simons R. Resident, Department of Surgery, Vancouver General Hospital and University of British Columbia, Vancouver, BC

INTRODUCTION: Substance abuse is an important risk factor for preventable injury. Substance problems in Canadian trauma patients are not well documented. We investigated rates of documented substance abuse in a Canadian trauma population. METHODS: Trained evaluators using explicit criteria reviewed sequential charts of patients admitted to a Canadian tertiary care trauma service from 01/04/2002 to 31/03/2003. Documentation of substance problems was linked with trauma registry data (ethanol levels (BAL), age, ISS, and length of stay [LOS]). RESULTS: 289 patients met inclusion criteria and 274 (95%) charts were reviewed. Of these, 95 (34.7%: 95% CI = 29.0%–40.6%) "positive" patients had at least one of BAL > 0, CAGE >1, or substance abuse recorded in the chart and 179 (65.3%: 95% CI = 59.4%–71.0%) "negative" patients did not. The (mean/SD/median) ISS was 24.6/15.1/22 for negative patients vs. 19.4/11.7/17 for positive patients ($p = 0.004$). There were 4/95 (4.2%: 95% CI = 1.2%–10.4%) deaths in positive patients and 12/179 (6.7%:

95% CI = 3.5%–11.4%) in negative patients (p = 0.40). The mean/SD/median LOS (days) was 11.0/9.6/7 for surviving positive patients versus 18.7/21.2/10 for surviving negative patients (p = 0.001). The mean/SD/median age was 39.4/15.9/35 for positive patients vs. 43.7/20.7/40 for negative patients (p = .079). CONCLUSIONS: Substance problems are common in Canadian trauma patients. Substance positive patients were less severely injured, had a shorter length of stay and tended to be younger. Our data supports the need for programs designed to recognize and treat substance problems in trauma victims. Key words: substance abuse; trauma; ethanol

104

Feasibility of ED screening for trauma risk factors: Do major trauma patients visit the ED prior to sustaining major trauma?

Brubacher JR, Lee D, Purssell RA. Department of Emergency Medicine, Vancouver General Hospital and University of British Columbia, Vancouver, BC

INTRODUCTION: Risk factors for trauma might be identified and modified by ED based screening programs. We sought to determine how often major trauma victims visit the ED in the years preceding their injury. METHODS: The provincial trauma registry identified major trauma patients admitted to our hospital from 01/04/2002 till 31/03/2004. We searched our ED database visits between 01/01/1999 and 31/03/2004 and selected as cases patients who lived in Vancouver and could be linked to both databases. We selected as controls Vancouver patients visiting the ED on the first of each month from 01/04/2002 till 31/03/2004. We determined how many pts visited the ED prior to their index ED visit or trauma admission. RESULTS: During the study period there were 3012 trauma admissions for 2982 pts. 2543 pts could be linked to the ED database and 1473 cases lived in Vancouver. Most injuries (1311/1473) were accidental but 154 were intentional (29 self-inflicted, 125 assaults). Falls caused 891 injuries and MVCs caused 360. The mean ISS was 12.73, 107 pts died. Ages ranged from 14–102 years, 744 pts were female and 729 were male. BAC was measured in 505 pts and was positive in 150. Of the 1473 trauma pts, 619 (42.0% 95% CI = 39.5%–44.6%) visited the ED prior to their index event. This included 436/891 (48.9% 95% CI = 45.6%–52.3%) fall victims, 106/360 (29.4% 95% CI = 24.8%–34.5%) pts involved in MVCs, 65/198 (32.8% 95% CI = 26.3%–39.8%) drivers, 30/75 (40% 95% CI = 28.9%–52.0%) assault victims, and 41/122 (33.6% 95% CI = 25.1%–42.7%) pts with BAC > 17.5. There were 2619 controls: 1310 female and 1309 male. Age ranged from 12 to 101 years. Controls had a higher previsit rate than trauma pts (1361/2619 = 52.0% 95% CI = 50.0%–53.9%), p < 0.001. CONCLUSIONS: We found that 40% of major trauma pts had a prior ED visit. ED programs screening for trauma risk factors could have captured these patients. Trauma pts at our referral centre were less likely to previsit the ED than controls. Key words: trauma; self-injury; risk factors

105

Mechanisms of injury associated with vertebral column fractures and spinal cord injury in agricultural trauma.

Innes M, Brison R. Division of Emergency Medicine, University of Toronto, Toronto, ON

INTRODUCTION: The agricultural sector is considered to be one of the most dangerous industries in Canada. It is not uncommon for agriculture-related trauma to involve vertebral injuries, yet the mechanisms of these injuries have not been well described. Recognizing the mechanisms most commonly associated with vertebral injuries may assist in the development of interventions that will decrease the frequency of these injuries. The objectives of this study were to examine the most frequent mechanisms of injury for agriculture-related vertebral fractures and vertebral fractures accompanied by spinal cord injury, and to determine whether specific injury mechanisms are more commonly associated with either of these anatomic injury patterns. METHODS: We conducted a retrospective review of the Canadian Agricultural Injury Surveillance Program's hospitalization and fatality databases. We examined all cases of agricultural injuries from April 1990 to March 2000 in which the primary diagnosis or most serious injury was vertebral fracture. We compared the mechanisms of injury associated with cases of vertebral fracture alone to those associated with cases of vertebral fracture accompanied by spinal cord injury (SCI). RESULTS: 565 cases were identified. 108 (19.1%) involved spinal cord injury. Common mechanisms of injury were falls (from heights, machines, and animals) (49.9%) and being struck by objects (15.8%). Three mechanisms were more likely to be associated with spinal cord injury: being involved in a machine rollover, being run over by a machine, and becoming entangled in a machine. In general, machine-related mechanisms of injury were more likely to be associated with spinal cord injury. CONCLUSION: A focus on fall prevention may reduce the risk of vertebral fractures. A focus on the prevention of machine rollovers and entanglements may reduce the incidence of spinal cord injuries in the agricultural population. Key words: vertebral fractures; spinal cord injuries; prevention; etiology

106

What are the key features of minor head injury patients who present with GCS score 15 but go on to require neurological intervention?

Clement CM, Stiell IG, Schull M, Rowe BH, Brison R, Lee J, Wells GA, for the CCC Study Group. Department of Emergency Medicine, University of Ottawa, Ottawa, ON

INTRODUCTION: Emergency Physicians fear the rare minor head injury patients who present with a Glasgow Coma Scale score (GCS) 15, yet eventually require emergency craniotomy or other intervention. This study evaluated the unique features of these patients. METHODS: This prospective cohort study was conducted in 10 tertiary care EDs and involved adults who had suffered minor head injury and had initial ED GCS of 15. MDs conducted standardized as-

Table 1, Abstract 106

Findings	Interv / No int, %*	Kappa / O.R.	95% CI
Canadian CT Head Rule			
GCS < 15 @ 2 hr	22.6 / 29.0	N/A / 0.7	0.3-1.6
Age 65 or older	38.7 / 10.3	0.62 / 5.5	2.6-11.4
Vomited 2 or more	35.5 / 9.7	0.94 / 5.1	2.4-10.8
Suspected open skull #	41.9 / 2.9	0.90 / 24.0	11.5-50.0
Signs of basal skull #	38.7 / 4.8	0.81 / 12.5	6.0-26.1
Amnesia before > 30 min	25.8 / 16.9	0.47 / 1.7	0.8-3.8
Dangerous mechanism	25.8 / 22.3	0.47 / 1.2	0.5-2.7
Other variables			
Witnessed LOC	64.5 / 48.2	0.79 / 1.8	0.9-3.7
Object recall < 3/3	52.2 / 34.5	0.68 / 2.1	0.9-4.6
Any drop in GCS	54.9 / 11.3	NA / 9.9	4.9-19.8
Mean age in years	54.4 / 37.9	N/A / –	–

*Unless otherwise indicated.

sessments and completed data forms prior to imaging. Need for neurological intervention was defined as craniotomy, skull fracture elevation, intubation or ICP monitoring. Analyses included univariate association, kappa, odds ratio and 95% CIs. RESULTS: The 4,556 patients enrolled over 72 months had: mean age 38.1, important brain injury 5.2%, neurological intervention 0.7%. Table 1 (of Abstract 106) shows % of intervention (N = 31) and non-intervention (N = 4,525) patients. Patients requiring neurological intervention also had confusion (77%), amnesia (94%), and focal blow to head (45%). Those who deteriorated (55%) did so within 6 hours. CONCLUSIONS: Patients who deteriorate and require intervention after presenting with GCS 15 have findings that should alert physicians to their high risk, including suspected open skull fracture, basal skull fracture signs, drop in GCS, age 65, vomiting, and increasing confusion. Key words: clinical guidelines; head injury; minor head injury

107

Delivery of analgesics in the pre-hospital sporting environment.

Chahal AM, McLaren A, Brink B, Crickmer S, Mohr B, Oldring B, Rowe BH. Division of Emergency Medicine, University of British Columbia, Vancouver, BC

OBJECTIVES: Analgesia has long been an issue in the pre-hospital care of injured patients. Parenteral narcotics are fast acting and efficacious in relieving pain, but not without side effects (respiratory depression, hypotension, anaphylaxis, nausea). Our goal was to determine the use of analgesics for transported injured skiers assessed on Blackcomb Mountain (Whistler, BC). METHODS: This was a prospective observational study combined with a retrospective chart review. Our population included patients treated by the ski patrol during 01-04/04 who received treatment for acute pain. Subjects used a standardized 100 point visual-analog scale (VAS) to rate pain at start and end of transport as well as at the patient transfer center. The main outcome measured was change in pain scores (pre and post-treatment VAS). Diagnosis and additional treatment were collected retrospectively from the patient's emergency record. RESULTS: 2387 callouts were recorded of which 166 (7%) received analgesics. Overall, 98 winter sport enthusiasts were enrolled in the study; the mean age was 29.7, 58% were male. More boarders (53%) than skiers sustained injuries; 45% of enthusiasts had advanced level skills. The mean initial VAS was 61.7, mean final VAS was 38.8and mean VAS change was –22.9. Injuries included fractures (48%), sprains/contusions (22%), and dislocations (13%). Analgesics were administered in 62 patients, of whom 51 received IV narcotics. Patients who did not receive analgesics had less improvement in pain compared those who received analgesics (15.6 vs 57.6%; $p < 0.01$). There was a clear association between severity at the initial VAS score and the administration of analgesics. CONCLUSIONS: On-hill oligo-analgesia and sub-optimal pain relief for orthopedic injuries were observed. Pain scores predict use of intravenous narcotics; however, more data are required before other factors can be evaluated. This study will continue in 2005 and collect additional injury data. Key words: sports medicine; analgesia; prehospital; pain assessment; injuries

Methodology

108

Reflective clothing use among cyclists and pedestrians.

Rizkallah JW, Lamy A, Belton K, Jhangri G, Willis V, Sevcik W, Rowe BH, Cherry N, Hagel B. Alberta Centre for Injury Control & Research, Department of Public Health Sciences, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, AB

INTRODUCTION: Cyclist and pedestrian injuries are a leading cause of injury-related morbidity and mortality. The purpose of this study was to determine the reliability of clothing visibility and other risk factor data collected on uninjured cyclists–pedestrians in Edmonton, AB. METHODS: This study was conducted from 06-08/04. Reflective clothing of uninjured cyclists–pedestrians was assessed at randomly selected locations by two independent observers. Observers noted cyclist–pedestrian characteristics such as age, sex, clothing color, use of reflectors, flags, helmets, and a subjective impression of overall visibility. Environmental conditions and a third visibility assessment were also recorded. RESULTS: Data were collected for 836 uninjured individuals; most were either walking/jogging (approximately 63%) or cycling (approximately 33%). For the entire sample, inter-rater agreement (Kappa) ranged from 0.61 (major leg colour) to 0.98 (sex) - substantial to almost perfect agreement. In addition, the prevalence of bright coloured clothing on the trunk ranged from 13.4%–15.1%, but fell to under 4% for the legs. Few people used any kind of reflective strips. Restricting the sample to cyclists, inter-rater agreement ranged from 0.35 (speed) to 0.95 (headgear) - fair to almost perfect agreement. The prevalence of helmet use was approximately 53%; 13–14% of headgear was brightly coloured, and 51–52% was white. Approximately one-fourth of the cyclists had a front light while half had a rear reflector. Few cyclists used a flag and 57% used spoke reflectors. CONCLUSIONS: There seems to be acceptable inter-observer reliability for data collection regarding cyclist visibility and reflective clothing. The results also indicate that the prevalence of visibility aid use among cyclists–pedestrians is far below optimal. Future research should determine the role of visibility in cyclist–pedestrian injury prevention. Key words: prevention; injuries; cycling

109

Triage tool inter-rater reliability using live cases vs. paper case scenarios.

Worster A, Sardo A, Fernandes CMB, Eva K, Upadhye S. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: Published studies of triage scale inter-rater reliability assessment have been conducted mostly using paper case scenarios. Our objective was to determine if this method of inter-rater reliability assessment generated significantly different measures from those generated from live triage cases. METHODS: This is a multi-center, prospective, observational cohort study of population-based random sample of patients triaged at 2 EDs during a 2-month period. All patients presenting to the ED within the study periods were simultaneously and independently triaged using a five-level triage acuity scale by two to three research triage nurses all blind to each other's assessment and to the study objective. Six months later, the same nurses were asked to assign triage scores to paper case scenarios of the same patients that they had each previously triaged. RESULTS: Each of the nine research nurses triaged approximately 90 cases. The inter-rater reliability as measured by an intra-class correlation coefficient was 0.9 (95% CI = 0.88, 91) for the live triage assessments and 0.76 (95% CI = 0.73, 0.79) for the paper case scenarios. The mean triage score assigned to the live cases (3.35, 95% CI = 3.25, 3.45) was significantly greater than that assigned to the paper based cases (3.17; 95% CI = 3.08, 3.26) ($p < 0.001$). CONCLUSIONS: There's moderate to high agreement between live cases vs. paper case scenarios and the inter-rater reliability, although significantly different, is acceptable in both cases. It is impossible to determine which triage setting provides a more accurate triage score but, in general, paper case scenarios receive lower triage scores than live cases. Key words: triage; triage tools; research methodology

Other

110

Suicidal men and the emergency department: perspectives of providers regarding access and continuity of care.

Spence JM, Ball JS, Strike CS, Links PS, Bergmans Y, Rhodes AE, Watson WJ, Eynan R. St. Michael's Hospital, Division of Emergency Medicine, University of Toronto, Toronto, ON

INTRODUCTION: Using a qualitative research method, we explored the use of ED's in the mental health (MH) care of suicidal and substance-using men ages 15 to 45. ED service providers (EDP's)characterized their experiences and role in care. METHODS: Semi-structured interviews were conducted with physicians (n = 5), nurses (n = 5), and other ED staff including security, social and crisis workers (n = 7). Their average age was 40.3 years and 41.2% were male. Interviews were tape-recorded, transcribed verbatim and managed using N6. Transcripts were coded using an iterative process and memos prepared to capture emergent themes. RESULTS: Four major areas of concern were described. 1) Lack of continuity of care and collaboration among MH care providers within the ED, hospital, and community. High variability of care and lack of long term plans were discussed. Use of patient care conferences, protocols, and improved community funding were proposed solutions. 2) Location of ED based MH services. Issues of noise, integration with the general ED, lack of privacy and security were raised. Lengthy ED stays were felt to be detrimental for patient care and ED function. Suggestions for developing centralized, ED-based psychiatric units were made. 3) Lack of understanding of patient needs, and unmet needs by the ED. In contradistinction to other ED care, EDP felt patient needs were difficult to define and meet; they stated that for some, nothing could be done. They were frustrated when MH patients returned to the ED, but acknowledged visits may provide therapeutic benefit. 4) Lack of follow-up information for EDP. Staff requested patient follow-up, and worried about immediate and long-term outcomes. They failed to hear about their successes or whether interactions 'matter'. CONCLUSIONS: There is a need for improved continuity of care. EDPs perceive they have a role caring for MH patients, but feel they require specialized ED resources. EDPs request patient follow-up for this population. Key words: suicide; males; assessment; emergency medicine

111

Do ED triage nurses assign lower triage scores than indicated by the triage tool's criteria?

Worster A, Fernandes CMB, Eva K, Upadhye S. Division of Emergency Medicine, McMaster University, Hamilton, ON

INTRODUCTION: Down triaging by ED nurses is the process of ranking a patient's level of acuity at presentation lower than is indicated by the triage tool's criteria. This is hypothesized to occur in response to ED overcrowding when ED resources such as beds and monitors are severely limited or unavailable. METHODS: This is a multi-center, prospective, observational cohort study of population-based random sample of patients triaged at 2 EDs during a 2-month period. All patients presenting to the ED within the study periods were simultaneously and independently triaged using a five-level triage acuity scale by a triage nurse and two research triage nurses all blind to each other's assessment and to the study objective. RESULTS: The mean triage levels assigned by the triage nurses and by the research triage nurses for the 271 patients were 3.35 (95% CI: 3.24, 3.46) and 3.35 (95% CI: 3.25, 3.45) respectively (p = 0.95). The correlation of the triage level assignment between the two groups was r = 0.71 (95% CI: 0.63, 0.79) and the number down triaged by the triage nurses (49) was equal to the number up triaged (51). CONCLUSIONS: In this multi-center study of a population-based random sample of 271 patients triaged at 2 EDs we were unable to find any evidence that down triaging by ED nurses occurs. Key words: triage; triage tools; inter-observer agreement

112

Mental health patients have higher odds of admission to hospital than the general emergency department population.

Spence JM, Murray MJ. St. Michael's Hospital, Division of Emergency Medicine, University of Toronto, Toronto, ON

INTRODUCTION: Approximately 3% of visits emergency departments (EDs) are for patients with mental health (MH) complaints, although it is estimated that up to 30% of ED patients will have psychiatric disorders. However, there is little data describing MH triage decisions in North America. The objectives of this study were: 1) To review the demographics of MH patients presenting to a community hospital in Ontario. 2) To review systematic triage decisions for MH patients presenting to the ED using the nationally endorsed 5-level Canadian Emergency Department Triage and Acuity Scale (CTAS). METHODS: A retrospective analysis of ED visits from a community hospital for 1999 (N = 68,757) was conducted. Demographics were compared using t-test and chi square analysis. Odds ratios (OR) were defined using logistic regression. RESULTS: MH patients were older (39.3 vs. 33.1 years, $p < 0.0001$) and more likely to be female (51.1% vs. 48.9%, $p = 0.0001$). They more frequently arrived on evening and night shifts (56.6% vs. 61.7%, $p < 0.0001$) and during the week (75% vs. 69%, $p < 0.0001$). They had lower estimated incomes ($51,530 vs. $54,033, $p < 0.0001$). MH patients were more likely to be triaged to the higher acuity levels, CTAS 2 and 3, although none was triaged to the highest level ($p < 0.0001$). After adjusting for age, sex, and triage level (a marker of acuity) MH patients had a greater odds of admission than the general ED population, with an adjusted OR of 1.84 (95% confidence interval 1.66–2.04). CONCLUSIONS: MH patients have a higher likelihood of admission to hospital than the general ED population, even after adjusting for acuity. Key words: mental health; emergency medicine; epidemiology

Toxicology

113

A comparison of patterns of practice of gut decontamination by emergency physicians following toxic ingestion.

Norum JN, Blitz S, Rowe BH. Department of Emergency Medicine, University of Alberta, Edmonton, AB

INTRODUCTION: There is considerable controversy regarding the management of the poisoned patient, particularly with regard to methods of gut decontamination. This is largely due to the lack of high quality randomized controlled trial evidence in this area. As a result, wide variation in practice patterns is expected. Our objective was to identify factors associated with the choice of method of gut decontamination. METHODS: This is a multi-centre retrospective chart review conducted in Edmonton region hospitals. We report on a random sample of adult patients from one of the study sites. Dichotomous variables are analyzed with chi-square statistics and continuous variables are analyzed using the Wilcoxon test; $p < 0.05$ was considered significant. RESULTS: Of 106 charts reviewed at the University of Alberta Hospital from May 2003 to April 2004, the mean age of the patients was 34.5 years and 41% were male. The median time from ingestion to an emergency physician (EP) assess-

ment was 2.5 hours. The most commonly ingested substances were antidepressants (40%), analgesics (26%), benzodiazepines (22%) and other sedatives (25%). Activated charcoal (AC) was used in 34% of all patients and was the only method of gut decontamination used; no gastric lavages were performed. 27 patients presented with a Glasgow Coma Scale (GCS) of 13 or less of which 37% were given AC ($p = 0.34$). There was no association between Canadian Triage Acuity Scale (CTAS) score and the use of AC ($p = 0.75$). The median time from ingestion to EP assessment was 2.3 hours for those given AC and 3.3 hours for those who were not ($p = 0.004$). CONCLUSIONS: CTAS score, initial GCS and ingested substance type do not appear to be associated with the use of AC as a decontamination method after toxic ingestion. The time from ingestion to EP assessment does seem to influence the use of AC. Future research will compare practice variation in methods and rates of decontamination used at different sites. Key words: intoxication; decontamination; activated charcoal

114

Emergency physician variation in the use of screening tests in suspected methanol and ethylene glycol toxicity.

Clark K, Gooch S, Purssell R, Abu-Laban RB, Brubacher J. Division of Emergency Medicine, University of British Columbia, Vancouver General Hospital, Vancouver, BC

INTRODUCTION: Evidence-based criteria for managing suspected toxic alcohol exposure are lacking. We sought to determine the variation in the use of anion and osmolar gaps as screening tests for the diagnosis of methanol (Me) and ethylene glycol (EG) toxicity among Emergency Physicians (EPs) with different resources. METHODS: A survey was mailed to 400 British Columbia EPs with questions on clinical decision making in patients with suspected methanol (Me) or ethylene glycol (EG) exposure. Proportions and 95% confidence intervals were calculated using explicit criteria, and a series of logistic regression analyses, defined a priori, were fit to evaluate associations between hospital size and management decisions. RESULTS: EPs from 27 hospitals returned 10 (2.5%) partial and 99 (24.8%) complete surveys. Electrolytes could be measured in all hospitals, ethanol in 24/27 (88.9%) and serum osmolality in 22/27 (81.5%). The osmolar gap was used for management decisions by 94 (94.9%, 95% CI 88.6% to 98.3%) EPs, the anion gap by 81 (81.8%, 95% CI 72.8% to 88.9%) and arterial blood gases (ABG) by 67 (67.7, 95% CI 57.5% to 76.7%). EPs used 6 different formulae for osmolar gap and 5 for anion gap. Osmole gap cutoffs ranging from 0 to >20 were used to determine need for measuring Me or EG levels by 68 (68.7%) physicians, safety for discharge by 28 (28.3%), need for an antidote by 34 (34.3%) and need for dialysis by 24 (24.2%). Logistic regression analyses indicated trends that EPs in small/medium hospitals were more likely to order ABGs ($p = 0.065$) and to use the osmolar gap to decide if patients needed dialysis ($p = 0.079$) or antidote therapy ($p = 0.265$). CONCLUSIONS: This prospective descriptive study suggests there is substantial variability in EPs use of anion and osmolar gap as screening tests in patients with suspected toxic alcohol exposure. EPs would benefit from evidence-based guidelines for this potentially lethal poisoning. Key words: toxicology; methanol; evaluation; anion gap; osmolar gap

115

A pilot study to compare a short alcohol withdrawal assessment tool (HOST) to the validated clinical institute withdrawal assessment (CIWA-Ar).

Borgundvaag B, Kahan M, Gray S, Randall I. Division of Family and Community Medicine, University of Toronto, Toronto ,ON

INTRODUCTION: In previous work we demonstrated significant variability in ED management of alcohol withdrawal, higher complication rates associated with lower doses of benzodiazepines, and an average length of stay of 9.6 hours. A standardized, symptom-triggered approach to the management of alcohol withdrawal is more effective and efficient than scheduled dosing, yet the only validated tool for this purpose (CIWA-Ar) is cumbersome and not commonly used in the ED. The purpose of this pilot study was to compare a new, simplified tool (HOST) with the CIWA-Ar. METHODS: We conducted a prospective observational study comparing the HOST and the CIWA-Ar for patients in alcohol withdrawal. HOST assesses 4 symptoms (Hallucinations, Orientation, Sweating and Tremor) and assigns a total score between 0 (no withdrawal) and 10 (severe withdrawal). Emergency department staff identified patients in alcohol withdrawal, and study personnel obtained informed consent. Following baseline assessment of recent alcohol and drug use (to determine study eligibility), independent, blinded assessors administered the HOST and the CIWA-Ar immediately following each other. The Chi-square test was used to compare the proportion of individuals each tool suggested required additional treatment, and Student's t-test was used to compare means. RESULTS: Forty-one assessments were performed on 38 individual patients (mean age 52 years, 78% were male). The average BAL at presentation (for those in whom it was positive) was 46 mmol/L. The average time between blood work and withdrawal severity assessment in these patients was 6.6 hrs. The mean HOST and CIWA-Ar scores were 2.4 and 13.8 respectively. We found no statistical difference in the number of patients identified for additional treatment using either tool ($n = 33$ HOST, $n = 29$ CIWA-Ar.) The HOST was significantly faster to administer than the CIWA-Ar (mean 1.5 min vs. 5.7 min $p < 0.0001$). CONCLUSIONS: The HOST shows promise for assessing severity of alcohol withdrawal. Key words: ethanol; alcohol withdrawal; evaluation