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Free papers

B3.1

AN ANALYSIS OF GERIATRIC PATIENTS PRESENTING WITH DECREASED GENERAL CONDITION TO THE EMERGENCY DEPARTMENT

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Objectives: The aim was to describe the characteristics and outcome of geriatric patients presenting with decreased general conditions to the emergency department. We tried to evaluate whether it was suitable to manage these patients in the Emergency Medicine Ward, and to identify any clinical predictors for in-hospital mortality.

Methods: This was a retrospective study using data between April 2007 and May 2007 in the Accident and Emergency Department of Caritas Medical Centre. Patients aged ≥ 65 with 'decreased general condition' as the provisional diagnosis in the A&E record were included. Their demographic and clinical data including age, sex, social support, functional status, co-morbidity, presenting symptoms, vital signs, triage category, initial laboratory blood tests, chest X-ray and electrocardiographic finding were analysed. Outcome measurement included hospital admission rate, in-hospital mortality, length of stay, re-attendance rate, discharge diagnosis and clinical predictors for in-hospital mortality.

Results: A total of 158 patients (mean age 83.3; 46% male; 54% female) were included. Patients who lived in old age home, lived with family and lived alone were 52%, 39% and 9% respectively; 81% of the patients were in triage category 3 and 88% were trolley cases. The most common chief complaint was cognitive impairment (44%), followed by malnutrition (35%) and decreased mobility (22%). Other important associated symptoms included respiratory symptoms (35%), fever (19%) and fall (10%). For mean laboratory test values, high white cell count ($11.1 \times 10^9/L$), high urea (10.0 mmol/L), high creatinine (129 $\mu\text{mol/L}$) and low albumin (28 g/L) were noted. The hospital admission rate was high (98%) and it accounted for 5% of the total medical ward admission. The median length of stay was 7 days. Only 18% (29/158) of the patients were discharged within three days and 16% (21/132) re-attended our emergency department within one week. Notably, 1.3% of the patients required intensive care unit admission, 13% of the patients were transferred to rehabilitation ward

and 4% had placement problem. The in-hospital mortality rate was 18% (29/158). Male patients (OR 4.8, 95%CI: 1.91, 12.07, $p < 0.001$), cognitive impairment (OR 2.91, 95%CI: 1.25, 6.75, $p = 0.011$) and lower serum albumin (mean value 23 g/L, $p < 0.001$) were significantly associated with in-hospital mortality. The three most common discharge diagnoses were pneumonia (23%), urinary tract infection (10%) and stroke (7%).

Conclusions: Geriatric patients with decreased general condition were associated with prolonged length of stay and high in-hospital mortality, which were against the 'short-stay' purpose of the Emergency Medicine Ward. A variety of medical diseases accounted for elderly patients presenting with decreased general condition, and sepsis was an important cause.

B3.2

ALLERGIC REACTIONS IN TWO DIFFERENT LOADING INFUSION RATES OF N-ACETYL-CYSTEINE

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Objectives: We aimed to study the allergic reaction incidences of the two loading regimes of intravenous N-acetylcysteine (NAC) in paracetamol overdosed patients. The rate of liver injury was also compared between the two groups of patients.

Methods: This was a retrospective study of patients with paracetamol overdose whom were treated with intravenous N-acetylcysteine. All cases reported to the Hong Kong Poison Information Centre (HKPIC) from July 2005 to December 2007 were included. Their medical records were reviewed. The recorded appearance of rash, hypotension and respiratory distress during NAC infusion were regarded as allergic reactions.

Results: Totally 161 cases were extracted from the HKPIC records, and 29 cases were excluded because of incomplete records. The medical records of the remaining 132 patients were studied. Totally 26 patients developed allergic reactions. The overall allergic rate was 19.7%; 103 patients were in the '15-minute group' in which 21 patients developed allergic reactions (20.4%) and 29 patients were in the '60-minute group', with 5 patients developing allergic reactions (17.2%). Although the 60-minute regimen had a lower allergic rate; the difference was not statistically significant ($p = 0.991$). Two patients developed severe allergic reactions (one with asthmatic attack and one with anaphylactic shock). Both of them belonged to the 15-minute group.

Conclusions: Although this study did not show a statistically significant reduction of allergic reactions with the 60-minute NAC infusion for paracetamol overdose, severe allergic reactions were only found in the 15-minute group. The one-hour regime may be a safer way of NAC loading.

B3.3

FACTORS AFFECTING ANTIBIOTIC PRESCRIPTION FOR UPPER RESPIRATORY TRACT INFECTION PATIENTS IN AN A&E DEPARTMENT IN HONG KONG

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Introduction: Most upper respiratory tract infections (URTI) are viral infections. Evidences show that for this self-limiting illness, the harmful effects of antibiotic, such as increased antibiotic resistance and adverse side effect, outweigh the benefits. Antibiotic treatment is only useful in those cases with confirmed bacterial infection. However, there are still significant amounts of antibiotics prescribed for uncomplicated URTI patients worldwide.

Objective: To identify factors affecting the antibiotic prescribing pattern in the management of URTI in an A&E department in Hong Kong.

Methods: This was a cross-sectional retrospective study. The study was carried out in a local emergency hospital using the Clinical Management System. A single day of each month was randomly chosen for data collection during the period of 1 January 2005 to 31 December 2005. Data of patients (which included patient factors, disease pattern, epidemiology factors and medical officer factors) who were diagnosed as URTI were included for analysis. Chi-square test was performed on each factor to assess its association with antibiotic prescription. All statistical analyses were performed by SPSS 14.0 and the level of significance was set at 5%.

Results: In the random sample of 291 cases of URTI, antibiotics were used in 22.7% of the patients. There was a significant association between the prescription of antibiotics and the presence of fever, positive chest X-ray finding, pre-existing co-morbidity, the presence of sore throat and absence of runny nose in the patient. When classifying the degree of fever into different groups, the prescription of antibiotics was significantly associated with mild and moderate fever. Re-attending cases within 48 hours had a significantly higher antibiotic prescription rate. No significant association was observed between the prescription of antibiotics and epidemiology factors (seasonal difference, peak influenza-like illness epidemic period, travel history) or medical officer factors (training status of the medical officer, case presenting during night shift duty).

Conclusion: The antibiotic prescription rate in uncomplicated URTI patients in this study was similar to other primary care doctors (22.9%) in Hong Kong. Antibiotic treatment is only effective in URTI patients with complications of bacterial infection. Identifying these cases can be made effective by the use of scoring systems and delay prescription strategy to reduce inappropriate use. Medical

officers may prescribe an unnecessary antibiotic under pressure to strive for patient satisfaction. Thus patient education and evidence-based information for health professionals are effective ways to reduce inappropriate antibiotic use.

B3.4

MEASUREMENT OF INOTROPY STATUS IN EMERGENCY DEPARTMENT PATIENTS

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Inotropy as a concept is well known to all clinicians but to date, inotropy has never been quantified as a discrete physiological parameter to form a basis for clinical diagnosis and to guide treatment in acutely ill patients. Abnormally low inotropy status is a characteristic of many emergency presentations, including myocardial infarction, septicaemia, dehydration, burns, poisoning and drug overdose, amongst others. Correction of pathological inotropy is usually carried out on the basis of interpretation of surrogates of inotropy such as blood pressure, skin perfusion or urine output which are notoriously unreliable indices even in the hands of experienced clinicians.

We derived a simple formula based on haemodynamic theory to calculate inotropy from the potential and kinetic energy developed during ejection of a single stroke volume during a finite systolic flow time.

$$\frac{\text{BPm} \times \text{SV} \times 10^{-3}}{7.5\text{FT}} + \frac{\text{BD} \times \text{Vpk}^2 \times \text{SV} \times 10^{-6}}{2\text{FT}}$$

Where BPm = mean blood pressure (mmHg), SV = stroke volume (ml), BD = blood density (Kg/m³), Vpk = peak aortic ejection velocity (m/s), FT = systolic flow time (s).

Haemodynamic data was obtained using continuous-wave Doppler ultrasound (ultrasonic cardiac output monitor, USCOM Ltd., Sydney, Australia) and combined with blood pressure, haemoglobin concentration and jugular venous or central venous pressure estimations to calculate mean blood pressure, blood density and thus inotropy of the patient. Total inotropy was then divided by the body surface area of the patient to produce an inotropy index to compensate for widely differing physical characteristics of the patients, similar to the concept of cardiac index.

Twenty Emergency Department patients in whom inotropy was suspected to be abnormal by their attending clinician were studied. The sample comprised both adults and children from 3 to 84 years, with weight ranging from 14 to 96 Kg. Suspected diagnoses included myocardial infarction, cardiomyopathy, septicaemia, traumatic hypovolaemia and hypotension of unknown cause. Accurate determination of inotropy was possible in all 20 subjects within 7 minutes. Seven patients were identified as having pathologically low inotropy. Repeat measurements of

inotropy were made at 10-20 minute intervals to guide appropriate therapy until the patients were judged to be stable. Four patients were treated with intravenous inotropes, using repeat measurement of inotropy to guide therapy until figures returned to the normal range. Two hypovolaemic patients and one septic patient were shown to have a pathological inotropic status which responded adequately to volume replacement alone.

The quantification of inotropy can be easily and rapidly performed as a bedside investigation and can be used in the assessment and treatment of many Emergency Department patients.

B3.5

CASE SERIES OF A NOVEL VAGAL MANOEUVRE FOR PAROXYSMAL SUPRAVENTRICULAR TACHYCARDIA THAT GREATLY INCREASES THE SUCCESS RATE

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Aim: To study the successful rate of a novel vagal manoeuvre in treating paroxysmal supraventricular tachycardia (PSVT)

Methods: The author developed a special vagal manoeuvre called "breath-holding manoeuvre" that was tested in a series of 21 patients presenting with PSVT to the emergency department (ED). The success rate of the conventional Valsalva manoeuvre was compared in the same period of time.

Results: The success rate of the novel manoeuvre was 71% (15 out of 21). The conventional Valsalva manoeuvre or carotid massage had at most only about 25% success rate as reported in the literature. While in the same period of time, the conventional Valsalva manoeuvre had only a 5% success rate in the same ED.

Conclusion: The novel vagal manoeuvre greatly reduced the need of pharmacological treatment of PSVT. This method is easy to learn and requires no instrument, thus making it potentially useful in the prehospital setting as well as for self-treatment of this recurrent condition.

C3.1

DETERMINING RISK FACTORS ASSOCIATED WITH PHYSIOLOGICAL DETERIORATION DURING INTER-FACILITY TRANSPORT IN HONG KONG

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Introduction: Inter-facility transport (IFT) itself certainly imposes essential risks for the patients and the quality largely depends on the pre-transport preparation and escort personnel. Determining risk factors for IFT is an important but difficult task because of the highly heterogeneous case-mix.

Objective: The aim of this study was to review data relevant to IFT in a district hospital so as to determine risk factors associated with physiological deterioration during IFT.

Methods: A retrospective review over a 24-month period (January 2005 to December 2006) took place in the Alice Ho Miu Ling Nethersole Hospital (AHNH) by including patients who required IFT with accompanying emergency personnel. Cases were reviewed for: (1) age, (2) gender, (3) transport configuration, (4) case-mix, (5) clinical severity, (6) vital signs upon departure, (7) indications of transport, and (8) en route adverse events. Risk factors that predisposed to the occurrence of en route physiological deterioration were demonstrated with statistical analysis.

Results: From 1st January 2005 to 31st December 2006, 200 patients were transported away from AHNH with 49 and 151 accompanied by doctor-led team and nurse-led team respectively. Among these 200 cases, 95 were males and 105 were females. Twenty patients (10.0%) were aged <12, 129 patients (64.5%) aged 12 to 65 and 51 patients (25.5%) >65 years old. The case-mix was as follows: neurosurgical (n=56; 28.0%), trauma (n=40; 20.0%), obstetric (n=30; 15.0%), critically ill patients with intubation done (n=27; 13.5%), upper gastrointestinal bleeding (n=26; 13.0%) and others (n=21; 10.5%). Regarding clinical severity, 36 (18.0%) and 110 patients (55.0%) were in critical and serious condition respectively, whereas 54 patients (27.0%) were in either stable or satisfactory condition. The majority of these transports were indicated due to the need of definitive care from a tertiary centre (n=186; 93.0%) and bed unavailability (n=11; 5.5%). Thirty-three cases (16.5%) were transported despite suboptimal vital signs upon departure. The presence of en route physiological deterioration was reported in 43 transports (21.5%) and 4 suffered from multiple deteriorations. The occurrence of physiological deterioration was demonstrated to be significantly higher in obstetrical emergency (p<0.05), upper gastrointestinal bleeding (p<0.05) and cases with suboptimal vital sign upon departure (p<0.05). **Conclusions:** Physiological deterioration was associated with patients transported with upper gastrointestinal bleeding, obstetrical emergency and suboptimal vital sign upon departure. Stratifying risk by means of case-mix and pre-transport clinical condition would be the approach in developing an IFT triage guideline.

C3.2

GERIATRIC CONSULTATION TEAM IN THE EMERGENCY DEPARTMENT: AN IMPACT ON ACUTE MEDICAL ADMISSION

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Introduction: Like other developed countries, Hong Kong is facing the problem of an aging population with increase in both the absolute and relative numbers of the elderly. The high prevalence of geriatric syndromes exerts an

enormous burden on our healthcare system as these elderly patients tend to be more likely to require hospital admission. The emergency department is however always an initial contact point for them.

Objectives: This cohort study aimed at evaluating the impact of a pilot "We Care" geriatric consultation program in the emergency department on acute medical admission.

Methods: The emergency department of Alice Ho Miu Ling Nethersole Hospital was provided with geriatric consultation service. Eligible elderly patients were referred by emergency physicians every weekday morning and screened by the Geriatric Consultation Team (GCT) consisting of one geriatric liaison nurse and one geriatrician. The study started from 15 November 2006 till 31 July 2007. Demographic information and adverse outcomes including re-attendance within 48 hours and death within 14 days were recorded. Each referred case was further assessed by the Emergency Severity Index (ESI) version 4 algorithm, and a 5-level triage instrument that stratifies patients into 5 mutually exclusive categories with the extreme categories (1 and 5) excluded. Corresponding admission rates of the ESI categories were also described and compared with published studies.

Results: A total of 140 geriatric consultations were requested with none belonging to either category 1 or 5. The age distribution ranged from 63 to 99 with a mean of 80 (95% CI 78.8-81.2). The diagnoses of the referrals to GCT were summarised into 6 groups: (1) chronic pulmonary disease (chronic obstructive pulmonary disease [COPD], occupational lung disease) (n=53; 37.9%), (2) debilitating cardiac disease (cardiac arrhythmia, heart failure) (n=22; 15.7%), (3) geriatric syndromes (dementia, falls, functional decline) (n=21; 15.0%), (4) neurological problems (dizziness, parkinsonism) (n=23; 16.4%), (5) diabetes-related problems (hyperglycaemia, medication intolerance) (n=4; 2.9%) and (6) others (n=17; 12.1%). Forty-six (32.9%) patients were discharged from the emergency department after GCT assessment and 31 (22.1%) were discharged with enhanced home care through community nurse support. Admission to convalescence hospital (Tai Po Hospital) was suggested in 56 patients (40.0%) whereas 38 patients (27.1%) required placement in acute medical ward. The number of referrals, number of acute medical admission, admission rate and expected admission rate regarding published studies of each ESI category were: (1) ESI category 2 (n=15 [5]; 33.3%; 58%-73%), (2) ESI category 3 (n=67 [16]; 23.9%; 22-51%) and (3) ESI category 4 (n=58 [14]; 24.1%; 5%-10%). There were 4 re-attendances to the emergency department within 48 hours and the only risk factor involved was COPD. Four patients died within 14 days because of terminal carcinoma, cardiac arrest and septicaemia.

Conclusion: The "We Care" program provided a means for comprehensive geriatric assessment in the emergency department with subsequent rapid decision on disposition. A substantial number of patients were diverted from the already crowded emergency department to less congested facilities detouring acute medical admission. It effectively functioned as a gatekeeper for hospital acute admission but

the encouraging effect was however minimised due to a suboptimal utilisation rate.

C3.3

EVALUATION OF PLASTER IMMOBILISATION VERSUS COLLAR-AND-CUFF IMMOBILISATION IN SUPRACONDYLAR FRACTURE OF THE HUMERUS IN CHILDREN

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Supracondylar fracture of the humerus is the most common injury about the elbow in the paediatric population. Classification of the types of supracondylar fracture is based on the extent of fracture fragment displacement. The most widely used classification system is based on the criteria described by Gartland in 1959. Type I fractures are undisplaced. Type II fractures are defined by a partially intact posterior cortex with angulation but without complete displacement. Type III fractures are completely displaced.

Recommendations for the treatment of type I supracondylar fractures are mostly plaster immobilisation. Whereas for type II and III fractures, depending on the displacement and neurovascular injury, either close or open reduction plus internal or external fixation by plaster immobilisation or pinning are suggested. However, some recommended collar-and-cuff instead of plaster as the immobilisation means, which is not a common practice in Hong Kong.

This is a primary study comparing the results of the two methods of external fixation, plaster and collar-and-cuff, for immobilisation in patients suffering from supracondylar fracture via a retrospective analysis.

This study reviewed 38 cases, aged from 2 to 10, and identified from the hospital database between January 2003 and December 2006 with a diagnosis of supracondylar fracture. Twenty-eight patients were regarded as Gartland type I injuries. Ten of these were immobilised with collar-and-cuff and 18 with plaster. Six patients were included as Gartland type II injuries. Of these, four were immobilised with collar-and-cuff and closed reduction was performed in two of them. Two were treated with plaster immobilisation and closed reduction was performed in one of them. Four patients were regarded as Gartland type III injuries. All of these were treated with closed reduction and collar-and-cuff immobilisation.

The results of the two immobilisation methods were analysed by reviewing the cases about the need of closed reduction after the first visit, the need to progress to an operation and by comparing the Baumann's angle of the injured arm before and after immobilisation and also with the normal arm.

As X-rays taken in the anteroposterior view were usually not repeated in patients with Gartland type III injuries after closed

reduction, therefore the Baumann's angle for those with type III injuries could not be obtained. Thus, comparison of the Baumann's angle was excluded in this group of patients.

For those patients with type I and type II injuries, no one required closed reduction after the first visit or operation, in both treatment arms. There was also no statistically significant difference of the pre and post Baumann's angle found in both treatment groups.

There was no statistically significant difference between either treatment modality in terms of predicting a better outcome. We conclude that plaster immobilisation has no advantages over immobilisation with collar-and-cuff in certain Gartland type I and II injuries. Therefore collar-and-cuff can be an alternative choice of immobilisation in the treatment of stable supracondylar fractures.

C3.4 RISK STRATIFICATION IN PROVIDING INTER-FACILITY TRANSPORT: EXPERIENCE FROM A SPECIALIZED TRANSPORT TEAM

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Introduction: Inter-facility transport (IFT) of patients is getting more frequent due to the reorganisation of hospital services and its emerging trend is in line with future healthcare development such as the doctor work-hour reform. However, IFT service is not without risks if it is inadequately prepared. **Objective:** The aim of this study was to stratify the risks of providing IFT service by the Accident and Emergency Department (AED) to other in-patient departments in Alice Ho Miu Ling Nethersole Hospital (AHNH) during the night time.

Methods: This study was carried out in the AED of AHNH for 12 consecutive months from August 2006 to July 2007. AHNH, located in Tai Po, lacked surgical, neurosurgical, obstetric and emergency endoscopic services. Within this period of time, nurses in AHNH AED were responsible for providing night time (2200 hour to 0600 hour) inter-facility transport service when requested by other in-patient departments. IFT clinical guidelines, protocols, transport equipment and escort kits were all readily prepared and supplied by AHNH AED. Transports were reviewed for: (1) gender, (2) transport configuration, (3) case-mix, and (4) physiological parameters upon departure. The Mann-Whitney test was used to analyse any association between these factors and pre-defined en route adverse events.

Results: A total of 48 patients were transported during night time with their age ranged from 3 to 96 years. IFT of male patients (n=29; 60.4%) exceeded female ones (n=19; 39.6%). Transfers were most frequently indicated due to the presence of neurosurgical complications (n=18; 37.5%), followed by surgical emergencies (n=17; 35.4%) and upper gastrointestinal bleeding (n=11; 22.9%) that required care in a tertiary centre. Regarding the transport configuration,

28 transports (58.3%) were accompanied by nurse-led team whereas the other 20 transports (41.7%) were by doctor-led team. Eight transports were carried out despite abnormal physiological parameters. En route adverse events occurred in 13 transports (27.1%). Significant associations were demonstrated in transports with neurosurgical complications and abnormal physiological parameters upon departure. (p<0.05)

Conclusion: A clinical department with specialized transport teams experienced in providing IFT can help other clinical departments to accomplish safe inter-facility transport. In addition to administrative and hardware support, special attention needs to be paid on specific case-mix (neurosurgical) and transporting patients with abnormal physiological parameters.

C3.5 THE ACCURACY OF PHYSICAL EXAMINATION IN PREDICTING ROTATOR CUFF TEAR DIAGNOSED BY ULTRASONOGRAPHY IN PATIENTS WITH PRIMARY ANTERIOR SHOULDER DISLOCATION (A PILOT STUDY)

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Background: Full thickness rotator cuff tear (FTRCT) is a common complication of primary anterior shoulder dislocation. Clinicians rely on physical examination as the first screening tool to detect it. However the accuracy of the physical examination is not well known. This pilot study aimed to delineate the prevalence of FTRCT in primary shoulder dislocation and to look for more reliable physical signs in detecting the condition.

Methods: Chinese patients attending three local emergency departments with primary anterior shoulder dislocation were recruited. Twelve physical tests and ultrasonography (USG) were performed to detect full thickness rotator cuff tear 5 to 10 days later. The USG were performed by emergency physicians.

Results: The prevalence of full thickness rotator cuff tear after primary anterior shoulder dislocation was 40% (95% CI: 13.7-72.6%). Patients older than 40 years old were predisposed to this type of complication of anterior shoulder dislocation. The sensitivities and specificities of Jobe's Test and Modified Jobe's Test in the diagnosis of supraspinatus tear were 100% (95% CI: 5.46-100%) and 92% (95% CI: 64.2-99.6%) respectively. The sensitivity and specificity of the External Rotation Lag Sign in the diagnosis of supraspinatus tear were 33% (95% CI: 1.76-87.5%) and 100% (95% CI: 74.7-100%) respectively. Among the 5 subjects unable to abduct the shoulder by 90 degrees for Jobe's Test, 3 of them had full thickness rotator cuff tear.

Conclusion: Focused examination of the supraspinatus tendon with Jobe's Test and External Rotation Lag Sign Test are most efficient in diagnosing full thickness rotator cuff tear after primary anterior shoulder dislocation. High resolution ultrasound examination of the shoulder performed

by emergency physicians is useful in diagnosing full thickness rotator cuff tear after primary anterior shoulder dislocation.

C3.6

OPTIMAL AND MINIMAL LEVEL OF ILLUMINATION REQUIREMENT IN ORAL INTUBATION WITH MACINTOSH SIZE 3 LARYNGOSCOPE: A MANIKIN STUDY

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Introduction: An optimal level of illumination provided by direct laryngoscopes is important for successful intubation, especially in situations requiring emergent establishment of a secure airway in the Accident & Emergency (A&E) Department. There are limited published standards for such optimal illumination levels. Neither is there a standard equipment to objectively assess the level of illumination provided.

This study aimed to determine the optimal and minimal level of light intensity required in oral intubation with laryngoscope in a manikin.

The equipment used included: -

1. Macintosh laryngoscope, size 3, fiberoptic blade, modified with an external-source variable voltage supply to allow for adjustable light intensity output.
2. A light intensity meter modified with an external attachable acrylic tube apparatus to measure light intensity. (An Iso-tech 1332A Digital Illuminance Meter Luxmeter – the photosensor portion is fitted with an external transparent acrylic cylinder and lined with opaque black paper. Manufacturer's specification: accuracy $\pm 3\%$ of reading, calibrated to a standard incandescent lamp at colour temperature of 2856K).
3. Airway manikin with life-sized laryngeal inlet to allow for intubation. The manikin is placed in normal room lighting conditions akin to resuscitation room settings.

Methodology: A&E physicians working in the A&E Department of Changi General Hospital were recruited to perform laryngoscopy on a manikin and were asked to state their individual preference for optimal and minimal level of light intensity required for intubation.

Results: A total of 31 A&E physicians took part in this study. The median value of optimal level of light intensity required is 495 Lux, with an interquartile range of 420 to 557 Lux. The median value of minimal level of light intensity required is 37 Lux, with an interquartile range of 28 to 60 Lux.

Conclusion: We recommend that routine equipment check of laryngoscopes used in the A&E should be done using a similar modified Luxmeter to objectively assess the illumination level and to achieve the optimal illumination level of 495 Lux.

E3.1

EVALUATION OF PREDICTORS FOR AIRWAY INTERVENTION IN ADULT ACUTE EPIGLOTTITIS

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Background: Acute epiglottitis has traditionally been regarded as a paediatric emergency. Its occurrence in adults has been increasingly recognised in recent years. While the majority of patients have a benign clinical course, adult epiglottitis still remains a potentially life-threatening cause of upper airway obstruction. No consensus has yet been reached as regard to the optimal strategy of airway management for these adult patients.

Objectives: To characterise the clinical features of acute epiglottitis in adults in Hong Kong and to identify factors associated with airway intervention.

Methods: This was a retrospective chart review of consecutive cases of adult acute epiglottitis over a 9-year period from January 1998 to May 2007 admitted to Pamela Youde Nethersole Eastern Hospital. Patients were identified using the Clinical Data Analysis & Reporting System (CDARS) of Hospital Authority. Data, including clinical, diagnostic, therapeutic and outcome variables, were collected from patient records using standard forms. Modified Early Warning Score (MEWS) were calculated basing on patients' systolic blood pressure, heart rate, respiratory rate, AVPU score and temperature upon presentation at the emergency department or upon admission.

To identify factors associated with the need for airway intervention, patients were divided into two groups for analysis: airway group and conservative group. Univariate analysis was performed using Chi Square test or Fisher's exact test for categorical variables and two-tailed Student's t test for continuous variables. For those variables significantly associated with airway intervention in the univariate analysis, stepwise forward logistic regression was performed to control for potential confounders among these patient's characteristics and to identify predictors for airway intervention.

Results: A total of 127 episodes were identified in which 5 episodes were excluded from data analysis because of incomplete clinical records. The remaining 122 episodes belonged to 120 patients (2 patients had recurrent attacks). The mean patient age was 51 years (range 18-84 years) and the male-to-female ratio was 1.9 to 1 (80 males and 42 females). Nine patients required airway intervention (5 endotracheal intubation, 2 nasotracheal intubation and 2 tracheostomies), all of them were male patients. Patients who required airway intervention had statistically significant longer length of stay in hospital ($p=0.000$) and longer intensive care unit stay ($p=0.000$). Univariate analysis showed recurrent attack ($p=0.013$, OR 35.0, 95% CI 2.77-442.69), dyspnoea ($p=0.001$, OR 17.41, 95% CI 2.09-144.79), and stridor ($p=0.016$, OR 30.0, 95% CI 2.42-372.65) were significantly associated with the need for airway intervention. Those who required airway intervention also had a significantly lower SpO_2

on presentation ($p=0.000$) and MEWS ($p=0.002$). MEWS ≥ 4 was significantly associated with airway intervention ($p=0.049$, OR 5.81, 95% CI 1.16-29.17). However, the areas under the receiver operator characteristic (ROC) curve for MEWS was only 0.71 (95% CI 0.50-0.91). Forward stepwise logistic regression showed that stridor was the only reliable predictor of airway intervention ($p=0.001$, OR 88.46, 95% CI 5.48-1427.45).

Conclusion: Although patients with adult acute epiglottitis can often be managed conservatively, patients with stridor on presentation should be attended to promptly with early airway intervention.

E3.2

THE EFFECTIVENESS OF CATHETER ASPIRATION IN THE TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX IN THE A&E DEPARTMENT

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Introduction: Catheter aspiration is a simple and minimally invasive method to treat primary spontaneous pneumothorax. It was recommended by the British Thoracic Society in 2003 as the treatment for spontaneous pneumothorax. This study was designed to evaluate the effectiveness of catheter aspiration in the treatment of primary spontaneous pneumothorax.

Methods: Patients presenting with spontaneous pneumothorax were recruited. Patients with history of asthma or chronic obstructive airway disease were excluded. History of smoking and size of pneumothorax were recorded. The aspiration catheter was inserted by the Seldinger technique. The extent of pneumothorax was assessed from the chest X-ray and the initial aspirated volume. Patients were observed in the department and discharged if the chest X-rays were reassuring after 6-12 hours. Factors associated with the outcome of the patients were analyzed.

Results: Twenty-four patients were recruited from October 2006 to June 2007. Their age ranged from 15 to 35 years old (mean 22); 23 patients were male and 17 (71%) patients showed full lung expansion immediately after the 1st aspiration. Of these 17 patients, 6 (35%) patients showed re-collapse of lung during the observation period and required repeated aspiration; 2 patients showed complete lung expansion after repeated aspiration. Seven (29%) patients did not achieve complete lung expansion after the 1st aspiration. Of these 7 patients, 2 patients required immediate chest tube drainage. Five patients showed complete lung expansion after the 2nd aspiration. However, their lungs re-collapsed during the observation period and required chest tube drainage. Ultimately, 13 (54%) patients could be successfully managed by the catheter aspiration method and discharged from the emergency department.

Conclusion: This management strategy is likely to fail if the total volume of aspiration is ≥ 2000 ml. If patients failed in achieving complete lung expansion after the initial aspiration, it is likely that they will fail in repeated aspiration and need chest tube drainage.

E3.3

HOW OFTEN DO WE DIAGNOSE ECTOPIC PREGNANCY AT THE EMERGENCY DEPARTMENT?

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Objectives: To evaluate the diagnostic rate of patients with ectopic pregnancy (EP) presenting to the Accident and Emergency Department (AED), and the way to improve the diagnosis.

Design: Retrospective and descriptive study.

Setting: A district public hospital in Hong Kong.

Methods: Patients with AED attendance and a discharge diagnosis of ectopic pregnancy made by the Gynaecology Department in the Clinical Management System of the Hospital Authority from year 2001 to year 2005 were studied.

Results: A total of 185 patients were analysed, 107 (57.8%) patients were diagnosed EP at the AED attendance and 78 (42.2%) patients with EP were not diagnosed. Amongst misdiagnosed cases, 70 (89.7%) patients were admitted into the Gynaecology unit with other pregnancy-related diagnosis. Two (2.6%) patients were admitted into the Surgical unit for abdominal pain. Six (7.7%) patients were discharged from the AED after first consultation and referred to the Gynaecology Early Pregnancy Assessment Clinic; and subsequently re-admitted via the outpatient clinic. The mortality was zero. For all EP patients, the commonest symptoms at presentation were abdominal pain (91.9%), amenorrhoea (83.3%) and vaginal bleeding (70.3%). Ultrasound and urine pregnancy test were additional diagnostic tools. The ultrasound finding of an absence of intrauterine sac was present in 108 (58.4%) of the EP patients. Abdominal pain, urine pregnancy test, and ultrasound study showed statistically significant relationship with ectopic pregnancy; with odds ratios of 7.684, 1.946 and 2.334 respectively. The combination of abdominal pain, positive urine pregnancy test and an ultrasound finding of absence of intrauterine sac may greatly help the diagnosis of ectopic pregnancy.

Conclusion: Women who present with abdominal pain, vaginal bleeding and amenorrhoea must be suspected of having an ectopic pregnancy with urine pregnancy test and ultrasound done. The combination of abdominal pain, positive urine pregnancy test and an ultrasound finding of absence of intrauterine sac will make the diagnosis of ectopic pregnancy very likely (odds ratio 35.223).

E3.4**THE EFFECTIVENESS OF AN AMBULATORY CARE MODEL IN ACUTE URINARY RETENTION SECONDARY TO BENIGN PROSTATIC HYPERPLASIA IN A LOCAL EMERGENCY DEPARTMENT IN HONG KONG**

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Introduction: Acute urinary retention (AUR) is a urological emergency characterised by a sudden and painful inability to void. The initial management is immediate catheterisation, followed by either trial without catheter (TWOC) in the emergency department, discharge to home with catheter or admission to the urology unit. Studies showed that the addition of an oral alpha-adrenergic blocker could optimise the chance of TWOC, leading to success of managing AUR in an ambulatory setting. It is both cost-effective and less harmful to patients if they can be discharged.

Objective: This study was conducted to evaluate the successfulness of an alternative management pathway of ambulatory care for patients suffering from AUR in the emergency department.

Methods: This prospective observational study was conducted in the Accident and Emergency Department of Queen Elizabeth Hospital between April 2007 and July 2007 targeted at patients with AUR secondary to benign prostatic hyperplasia and not currently taking alpha-blockers. Recruited patients were given doxazosin mesylate (Cardura XL) after catheterisation. If the patients have normal renal function, no oliguria or diuresis, no bladder stone and no adverse effect of Cardura XL such as dizziness and postural hypotension, they were discharged with catheter. Follow up at the Emergency Medicine Ward was arranged at 48 hours to test TWOC. If these patients could void with residual urine <500 ml as documented by bladder scan, they were discharged and referred to the urology clinic with an early follow up within 1-2 weeks' time.

Results: A total of 22 patients were recruited. Eleven patients had oliguria, diuresis or impaired renal function test, 11 patients (50%) were discharged home from the emergency department with catheter and 9 cases (82%) could successfully wean off catheter two days later. One patient re-attended for catheter-related problem. Only 1 case re-attended for 2nd AUR after successful TWOC. Faecal impaction was a precipitating factor for AUR ($p=0.054$, Fisher's exact test), whereas the anticholinergic effect of various cough mixtures did not have any statistical significance ($p=0.45$, Fisher's exact test).

Conclusion: An ambulatory care model for patients presenting with acute urinary retention is feasible in the emergency department to reduce admission rate, decreasing the chance of hospital acquired infection and improving patient satisfaction.

E3.5**A RETROSPECTIVE REVIEW OF SPONTANEOUS INTRACRANIAL HAEMORRHAGE IN THE ACCIDENT AND EMERGENCY DEPARTMENT OF A DISTRICT HOSPITAL**

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Objectives: To study the epidemiology of adult spontaneous intracranial bleeding in the Accident and Emergency Department (AED) of a district hospital and the proper utilisation of urgent plain computed tomography (CT) brain scan by AED doctors. The feasibility of promoting the use of urgent CT scans in patients with suspected intracranial bleeding in AED and the benefits obtained were also investigated.

Design and setting: Retrospective study in a district AED over a period of 3.5 years. Patients without head injury who had urgent CT brain done in the AED, and in-patients who were first diagnosed by the neurology team to have intracranial bleeding after admission were included.

Results: Urgent plain CT brain scans initiated by the AED were only 2.9% of the total CT scans of the whole hospital, and 92.3% of the total referrals from the AED for CT brain scan were considered appropriate. The emergency physicians were 99% sensitive and specific for diagnosing intracranial bleeding from the CT scans. Totally, 559 patients without head injury were offered urgent non-contrast brain CT scan at the AED (AED CT group); 91 (16.3%) patients were found to have intracranial bleeding, of which 34 (37.4%) underwent urgent neurosurgical intervention within 24 hours. On the other hand, 353 patients were identified to have intracranial bleeding after admission (No AED CT group), of which 49 (13.9%) underwent urgent neurosurgical intervention. The AED CT group had significantly shorter door to CT time and door to urgent neurosurgical intervention time. Yet there was no statistically significant difference in the length of stay in the neurology or neurosurgery ward and overall mortality between the two groups.

Conclusion: Urgent CT scan initiated by emergency physicians has played a significant role in facilitating early identification and exclusion of intracranial bleeding, and proper triage of patients with stroke to different specialties. It was feasible and did not significantly increase the workload of the CT suite. These results may have implications on the use of CT imaging of other body regions by emergency physicians.

E3.6**ADULT ACUTE EPIGLOTTITIS – IS INTENSIVE CARE UNIT ADMISSION NECESSARY FOR ALL CASES?**

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Background: Acute epiglottitis has been traditionally regarded as a paediatric emergency. Its occurrence in adults

has been increasingly recognised in recent years. While the majority of patients have a benign clinical course, adult epiglottitis still remains a rare but potentially life-threatening cause of upper airway obstruction. No consensus has yet been reached with regard to the optimal strategy of airway management for these adult patients. This has led to indiscriminate admission and potential wastage of intensive care unit (ICU) resources.

Objectives: To characterise the clinical features of acute epiglottitis in adults in Hong Kong and to identify predictors for uneventful recovery without the need of ICU care.

Methods: This was a retrospective chart review of consecutive adult cases of acute epiglottitis over a 9-year period from January 1998 to May 2007 admitted to Pamela Youde Nethersole Eastern Hospital. Patients were identified using the Clinical Data Analysis & Reporting System (CDARS) of Hospital Authority. Data, including clinical, diagnostic, therapeutic and outcome variables, were collected from patient records using standard forms. Modified Early Warning Score (MEWS) were calculated basing on patients' systolic blood pressure, heart rate, respiratory rate, AVPU score and temperature upon presentation at the emergency department or upon admission.

To identify factors associated with uneventful recovery without ICU admission, patients were divided into two groups for analysis: those who recovered without ICU admission and those who required ICU care. Univariate analysis was performed using Chi Square test or Fisher's exact test for categorical variables and two-tailed Student's t test for continuous variables. For those variables significantly associated with uneventful recovery without ICU care in the univariate analysis, multiple logistic regression was performed to control for potential confounders among these patient characteristics and to identify predictors for uneventful recovery without ICU care.

Results: A total of 127 episodes were identified in which 5 episodes were excluded from data analysis because of incomplete clinical records. The remaining 122 episodes belonged to 120 patients (2 patients had recurrent attacks). The mean patient age was 51 years (range 18-84 years) and the male-to-female ratio was 1.9 to 1 (80 males and 42 females). Forty-five patients did not require ICU admission and recovered uneventfully (36.9%). They did not differ significantly from those who required ICU care in terms of age, gender, duration of symptoms, co-morbidities and individual vital signs on admission. Univariate analysis showed absence of hoarseness ($p=0.006$, OR 3.28, 95% CI 1.37-7.82) was significantly associated with uneventful recovery without ICU care. Those who did not require ICU care also had a significantly lower temperature ($p=0.005$) and MEWS ($p=0.002$) on presentation. A MEWS <1 was significantly associated with good outcome without ICU care ($p=0.008$, OR 7.77, 95% CI 1.53-39.47). Multiple logistic regression showed that absence of hoarseness ($p=0.033$, OR 3.10, 95% CI 1.10-8.79), absence of fever ($p=0.015$, OR 3.2, 95% CI 1.25-8.16) and MEWS <1 ($p=0.023$, OR 7.07, 95% CI 1.31-38.07) were predictors

of uneventful recovery without the need of ICU care.

Conclusion: Absence of fever, absence of hoarseness and MEWS <1 on presentation were associated significantly with good outcome in adult patients with acute epiglottitis. This allows us to select low-risk patients who can be disposed appropriately without unnecessary ICU admissions.

Posters

1.

REVIEW ON RISK ASSESSMENT – GATE KEEPER FOR THE HOSPITAL ENTRANCE

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Objectives: To compare the out-patient cases between two private hospitals, which had been assessed for risk on history of travel, occupation, contact exposure as well as clustering (TOCC) and ended up with referral to public hospitals.

Methods: A retrospective study was made for two private hospitals' out-patient department (OPD) from January to June 2007; all feverish patients were assessed for risks according to the Centre for Health Protection recommendation on TOCC. Patients with positive history related to the latest local and international outbreak events would be reassessed to identify further associated risks in order to prevent spreading or transmission of infection in the community. Prior to admission to hospital, Nasopharyngeal Aspiration (NPA) Rapid Test would be conducted for influenza-like illness if any one of the risk factors had been identified.

Lately, due to the pandemic risk as warned by the World Health Organization, the focus was mainly on Avian Influenza; and high and vigilant alert was posed to identify high risk cases. All high risk cases would be referred to public hospitals for further management where more appropriate isolation facilities were available and therefore the chance of the infection spreading in the community would be lessened.

Results:

Case	Hospital A	Hospital B
TOCC +ve with NPA Rapid Test done	2	7
NPA Rapid Test with +ve result	0	2
Case referred to public hospital	0	2

No cases with NPA Rapid Test positive result were further classified as Avian Influenza like H5 or H9, after referral or further investigation.

Conclusion: As infection prevention is everybody's business, with lesson learnt and cost paid already in the 2003 SARS (Severe Acute Respiratory Syndrome) era, we should be more vigilant on any communicable disease outbreak. The above

risk assessment and alertness should not only be focussed on influenza pandemic, but also on any local community or international communicable disease outbreak. If the early detection target could be achieved, outbreak size, number and impact would be limited and further reduced. As the entrance gate-keeper of the hospital, such attitude should be strictly enforced.

2. VAGINAL TEARS AFTER COITUS – A DIAGNOSIS COMMONLY MISSED IN THE ACCIDENT AND EMERGENCY DEPARTMENT

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Objective of study: Vaginal bleeding after coitus is not an uncommon presentation in the emergency department. The amount of bleeding can be mild to severe, sometimes causing hemodynamic disturbance. A proper (sexual) history and physical examination (including a speculum and pelvic examination) in the emergency department usually provides the correct diagnosis and appropriate management. We reviewed a number of patients who developed vaginal bleeding after coitus and admitted through the emergency department.

Results: There were 16 patients who presented with vaginal bleeding after coitus from 2002 to July 2007. Twelve of them were Chinese and the rest were of different ethnicity like Philippines. Their age ranged from 20 to 39. Six patients (38%) presented 3-24 hours after their first sexual intercourse. Nine (56%) attended the emergency department during Friday and weekends. Most of the patients presented with vaginal bleeding in the afternoon. Atypical symptoms like headache, fever and abdominal pain were noted as the presenting complaints in some patients. None of the patients admitted non-consensual sex or violence or insertion of foreign body into the vagina.

Speculum examination was performed by medical officers in the emergency department in 9 patients (56%). However, only 2 patients were diagnosed to have vaginal injury in the emergency department. One patient had severe arterial bleeding which required blood transfusion. In those patients with no speculum examination, 2 of them were diagnosed as vaginal bleeding and menorrhagia. They were found to have vaginal tear after admission to the gynaecology ward which required operation subsequently. Speculum and pelvic examination were not performed in 5 patients. In the other two patients, only a pelvic examination might have been performed (vaginal tear missed).

Discussion: Making an accurate diagnosis in the emergency department facilitates appropriate treatment by the gynaecologist and early resort to surgical repair if needed. A proper gynaecological and sexual history should be taken in every patient who presents with vaginal bleeding. Awareness should be raised in patients who are nulliparous and have their first sexual debut before vaginal bleeding. A speculum

examination must be performed in the emergency department to rule out the possibility of vaginal tear. Various possible confounding factors such as age, parity, ethnicity and sexual position in causing vaginal tear will be discussed.

3. A RETROSPECTIVE REVIEW ON TRANSCUTANEOUS BILIRUBINOMETRY IN AN ACCIDENT AND EMERGENCY DEPARTMENT

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Introduction: Neonatal jaundice (NNJ) is a very common reason for neonates visiting the accident and emergency department (AED). Using a non-invasive point-of-care test, transcutaneous bilirubinometer (Minolta JM-103), in the accident and emergency department can guide our management plan on these patients. Serum bilirubin level is one of the main parameters to decide on further management. Heel prick is used to obtain blood for serum bilirubin and the result will usually be available in one hour in Tuen Mun Hospital AED. The use of a transcutaneous bilirubinometer may offer a quick, accurate and non-invasive way to guide our management for neonates with NNJ in the AED.

Methods: This was a retrospective study. AED and in-patient medical records of neonates referred by Maternal & Child Health Centres (MCHC) for neonatal jaundice from 1st December 2006 to 31st July 2007 were reviewed. Only patients with total serum bilirubin (TSB) and transcutaneous bilirubin (TcB) performed simultaneously in the same episode of the emergency visit were included in this review. The correlation of the two tests was calculated and the time span of the patients in the accident and emergency department was analysed using Pearson's correlation.

Results: There were totally 965 neonates visiting our accident and emergency department in the study period and 706 cases (73.2%) were referred from MCHC for neonatal jaundice. There were totally 66 (9.4%) cases identified according to our selection criteria in the study period. The mean age was 6.59 days old (SD 3.22). SPSS v.14 was used for statistical analysis. The correlation between TcB values ($\mu\text{mol/L}$) and TSB measurements ($\mu\text{mol/L}$) was determined by Pearson's correlation. The Pearson's correlation was 0.69, the mean time span of patients with serum bilirubin taken was 125 minutes and the mean time span of patients with transcutaneous bilirubinometry performed only was 40 minutes.

Conclusion: The use of transcutaneous bilirubinometry in the accident and emergency department offered a fast and non-invasive method to guide our treatment plan on neonates with suspected hyperbilirubinaemia. The transcutaneous bilirubinometer (Minolta JM-103) presented a good prediction on patient's serum bilirubin level. However, the result showed that it tended to underestimate the actual serum bilirubin level. Therefore, larger and prospective studies on the application of the transcutaneous bilirubinometer (Minolta JM-103) are required.

4. FALL IN THE ELDERLY – AN EMERGENCY ROOM PERSPECTIVE

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Aim: Injuries are a significant cause of mortality and morbidity in the elderly. A retrospective study looking at the injury pattern of 720 patients aged 65 years and above who attended the Emergency Medicine Department of National University Hospital from January to June 2005 showed that 85.3% of the injuries were due to fall. This study aimed to examine the epidemiological profile of the elderly who fell, evaluate the mechanisms of fall and identify specific correctable events in order to suggest appropriate intervention strategies that one can adopt in the busy emergency department.

Methods: Patients aged 65 years old and above who attended the National University Hospital Emergency department from 1 May 2005 to 30 June 2005 with fall as the cause of injury were studied. Retrospective data were obtained from the Emergency Medicine Department System and Computerized Patient Support System records. The epidemiological profile of the patients, mechanism of fall, injury sustained and disposition were examined.

Results and Discussion: 651 records were analyzed using Microsoft Excel. Their age ranged from 65 years to 100 years old with a median age of 69 years; and 319 patients (49%) arrived via ambulance. Female patients (65%) formed the majority of the patients who fell and 74% of the patients fell at home. Fifty-seven percent of the falls were due to accidental cause, and the common injuries were fractures and head injury, 18% of the patients sustained multiple injuries as a result of the fall. Thirty-seven percent of the patients were admitted to hospital. Since the majority of the falls occurred at home and were often due to accidental causes, these events were preventable. The emergency department plays an important role in injury prevention, and in the co-ordination of a multi-disciplinary approach (involving geriatricians, occupational therapists or physiotherapists) in the management of falls.

5. IMPROVING THE PERCENTAGE OF AMBULANCE CASES GETTING A FULL TRIAGE WITHIN 5 MINUTES

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Objectives: In our national triage system, it was stated that priority one (P1) patients, denoting the most critically sick patients, should be seen within 5 minutes of presentation. Thus, we felt that all patients brought in by the ambulance should be fully triaged (denoting a short history, temperature, blood pressure, heart rate, respiratory rate and oxygen saturation) by a nurse within 5 minutes of arrival to allow the recognition of P1 patients. There was an increase in the total number of cases brought in by ambulance of about

30% within the past year in our emergency department without a corresponding increase in our manpower. An audit done in our department noted that only 65% of these patients fulfilled our criteria of being triaged within 5 minutes. Thus we looked to improve our percentage of ambulance cases getting triage within 5 minutes by a change of workflow only.

Methods: Using the method of "the model for improvement" developed by the Institute for Healthcare Improvement (Boston), we made three changes in our workflow: (1) assigning an exclusive health attendant to the resuscitation room; (2) compulsory vetting of junior doctors' cases in the resuscitation room by seniors within 20 minutes; and (3) a team system for the nurses in the resuscitation room with an assigned triage nurse. The changes were carried out in phases over one year.

Results:

	Baseline	1st Change	2nd Change	3rd Change
Average ambulance case/day	37	47	42	53
Low range	52%	66%	65%	63%
High range	90%	84%	100%	88%
Average	65%	74%	75%	73%

Conclusion: The group felt that shortage of manpower could not be fully overcome by pure workflow changes especially with an increasing workload during our project which further worsened the situation. We were however, happy with our results because the interventions done had the following effects: (1) there was an improvement in patients' safety; (2) this improvement was sustainable even with the increased workload; and (3) the stresses borne by the nurses in the resuscitation room became more evenly spread compared to previously.

6. CURRENT TRAUMA EPIDEMIOLOGY IN ZHENGZHOU AND A TRAUMA CARE MODEL STUDY

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Objectives: To investigate the documentation of trauma epidemiology in Zhengzhou and the effects of different trauma care models.

Methods: Statistical data on the classification of emergency diseases and the number of ambulance dispatch in the Zhengzhou Emergency Rescue Centre from January 2004 to December 2006 were collected and the effects of a trauma care model in an inclusive emergency station were compared with those in a simple model emergency station.

Results: Ambulance dispatches by the Zhengzhou Emergency Rescue Centre for trauma care were 45.3%, 44.7% and 45.8% of the total ambulance dispatch in the years of 2004, 2005 and 2006. There were 26 emergency

stations in Zhengzhou, of which one was an inclusive station, 8 were half-inclusive stations and 17 were simple model stations. Definitive operation could be performed for severe multi-trauma in the inclusive emergency station which decreased the waiting time for operation and reduced mortality rate.

Conclusion: Trauma is a common reason for emergency call. Emergency stations distributed at proper areas can provide faster prehospital first aid. Transport of critical trauma patients to the inclusive emergency station promptly can increase successful resuscitation rate.

7.

A PILOT STUDY ON THE USEFULNESS OF CT BRAIN SCAN AND NEUROLOGICAL OBSERVATION IN MANAGING GERIATRIC PATIENTS WITH MINIMAL HEAD INJURY PRESENTING TO THE EMERGENCY DEPARTMENT

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Background: Geriatric patients are more prone to have adverse outcome after head injury even with apparently trivial mechanisms and initially occult presentations. The management of such minimally head-injured elderly patients in the emergency department has not been standardised.

Methods: A retrospective review of patients 65 years or older with minimal head injury presenting to the emergency department of a district hospital over a one-year period was carried out. These patients received either an immediate CT brain scan, put on neurological observation, or discharged immediately with post-injury advice after initial assessment. No standard protocol was developed for the choice of management. The three groups of patients were compared in terms of demographic details, mechanisms of head injury, positive findings on different modalities of investigation, as well as their adverse outcomes.

Results: A total of 267 patients consisting of 289 episodes were included; 42, 123, and 124 episodes were in the immediate CT brain group, the neurological observation group, and the immediate discharge group, respectively. Those of the immediate discharge group tended to be younger, of a lower triage category, more independent in the activity of daily living, and with less underlying medical conditions, compared to the other two groups (all $p \leq 0.001$). No head injury-related death was recorded. In total, 53 CT brain scans were performed; four cases had significant brain injury, all from the immediate CT brain group, but only one required neurosurgical intervention. Age 85 or above, poor pre-morbid condition, intake of aspirin, and significant visible external injuries appeared to be significant factors. Six head-injury-related re-attendances were noted, four were from the immediate discharge group, all without major sequelae. No positive CT findings were recorded from those performed during neurological observations ($n=8$) or those who re-attended ($n=3$). Notably, 127 skull X rays were

performed and all did not reveal a definite fracture.

Conclusions: The mortality and the need for neurosurgical intervention are still extremely low in minimally head-injured geriatric patients. The diagnostic value of neurological observation is doubtful. Although the yield for significant brain injury is low, this risk still exists. A larger scale study is required to identify certain risk factors for significant brain injury in order to improve the utilisation of immediate CT brain scan.

8.

THE USE OF PATIENTS' INFORMATION TO AUDIT: PREDICTION OF IN-HOSPITAL MORTALITY AND ICU ADMISSION AMONG MEDICAL ADMISSIONS FROM THE EMERGENCY DEPARTMENT OBSERVATION WARD

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Objective: The Standardized Early Warning Score (SEWS); Rapid Acute Physiology Score (RAPS) and Rapid Emergency Medicine Score (REMS) are risk adjustment methods for emergency medical admission developed for use in audit and research. We aimed to evaluate the predictive value of each for combined poor outcome (in-hospital mortality and ICU admission) using six (SEWS); four (RAPS) or six (REMS) variables that could be easily recorded at presentation.

Methods: Age, heart rate, respiratory rate, blood pressure, Glasgow Coma Scale (GCS), body temperature, and oxygen saturation were recorded by nurses performing routine observations for patients who were admitted to the emergency department observation ward (EDOW) of a teaching hospital in Hong Kong. SEWS, RAPS and REMS were compared using the area under the receiver operator characteristic curve (AROC). Multivariate analysis was used to identify which variables were independent predictors of mortality.

Results: A total of 428 patients were admitted to the EDOW from 10 April to 8 May 2006; 414 (96.7%) were recruited and 14 (3.3%) excluded due to incomplete data records. The mean patient age was 60 years (range 18-100) with 46% males and 54% females; 51 patients were admitted to hospital wards, 2 needed ICU care and 1 died. RAPS (AROC 0.771; 95% CI 0.679 to 0.893) was superior to SEWS (AROC 0.651; 95% CI 0.377 to 0.925) and REWS (AROC 0.651; 95% CI 0.533 to 0.769) as predictor of in-hospital mortality. Multivariate analysis showed that only increased heart rate (odds ratio 1.17; 95% CI 1.0-1.21, $p=0.002$) was an independent predictor.

Conclusion: RAPS seemed to be a better predictor of combined poor outcome in emergency medical admission than SEWS and REMS in this group of patients. Heart rate appeared to be a useful predictor variable. Inclusion of other variables in risk adjustment scores, particularly body temperature and oxygen saturation, may reduce their value.

9. DOES THE MINIMUM CLINICALLY SIGNIFICANT DIFFERENCE IN VISUAL ANALOGUE SCALE PAIN SCORE VARY WITH AGE, GENDER, EDUCATION LEVEL OR CAUSE OF PAIN?

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Objective: To determine whether minimum clinically significant difference (MCSD) in the visual analogue scale (VAS) pain score varies with age, sex, education level and trauma versus non-trauma cases.

Methods: This was a prospective descriptive study of patients 15 years of age or older who presented with pain to the Accident & Emergency Department. On presentation, the patients were asked to indicate their current pain severity with a single mark through a standard 100-mm visual analogue scale. Then they would be offered analgesic for pain-relief. After 30-45 minutes, the patients were asked to give a verbal categorical rating of their pain as 'a lot better', 'a little better', 'much the same', 'a little worse', or 'much worse' and to mark the level of pain on a VAS of the same type as used previously. The MCSD in VAS pain score was defined as the mean difference between current and preceding scores when the subject reported 'a little worse' or 'a little better' pain. Data were compared basing on gender, age, education level, and traumatic versus non-traumatic causes of pain.

Results: A total of 150 patients were enrolled in the study, yielding 59 evaluable comparisons where pain was rated as 'a little better' or 'a little worse'. The MCSD in VAS score in the overall group was 16.6 mm (95% CI 12.6 mm to 20.5 mm). There was statistically significant difference between the MCSD in VAS pain score based on gender ($p=0.008$), education level ($p=0.024$) and cause of pain (trauma vs. non-trauma) ($p=0.042$). There was no statistically significant difference between the MCSD in VAS pain score based on age ($p=0.053$).

Conclusion: There was significant difference in MCSD in VAS score based on gender, education level and cause of pain.

10. THE PREVALENCE OF OCULAR COMPLICATIONS AFTER BLUNT ORBITAL TRAUMA IN A REGIONAL HOSPITAL

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Aim: To investigate the prevalence of potential complications after blunt eye trauma in a regional hospital in order to raise the awareness of emergency physicians to these complications.

Methods: A retrospective study was conducted on all blunt eye trauma patients who attended the Emergency Department (ED) of Pamela Youde Nethersole Eastern Hospital (PYNEH) over a one-year period between January 2006 and January 2007. Case details were retrieved from the Clinical Data Analysis & Reporting System (CDARS) database, ED records and outpatient records of specialist clinics of PYNEH.

Results: A total of 337 patients were retrieved with the mean age of 37.3 years, and 61.4% were men. Common sources of trauma included: work-related (29.9%), domestic (28.8%), sports (13.9%), assault (13.1%) and road traffic accident (3.0%). There were 162 (48.1%) referrals to Ophthalmology, of which 14 (4.2%) patients required hospital admission. Orbital fracture was found in 11 (3.3%) patients. Intraocular sequelae were detected in subsequent ophthalmic follow-up in 40 (11.9%) patients, which included gross and microhyphema (10.4%, $n=35$), iridodialysis (0.6%, $n=2$), traumatic cataract (0.6%, $n=2$), glaucoma (0.6%, $n=2$), vitreous haemorrhage (0.9%, $n=3$), retinal tear (0.9%, $n=3$), retinal detachment (0.6%, $n=2$) and ruptured globe (1.2%, $n=4$). A total of 6 (1.8%) operations were performed and 3 (0.9%) patients underwent laser treatment. Emergency physicians were able to recognise more than 90% of gross hyphema but missed all the microhyphema. Intraocular pressure was not commonly measured by the emergency physicians.

Conclusion: Blunt orbital trauma may lead to significant morbidity in the presence of intraocular sequelae. Raised awareness to microhyphema and increased intraocular pressure may lead to more effective management in the future.