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והחברה הישראלית לטוקסיקולוגיה

Book of abstracts

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NORMAL SALINE VERSUS RINGER'S LACTATE SOLUTIONS FOR RAPID REHYDRATION IN CHILDREN: A PROSPECTIVE, RANDOMIZED TRIAL

Revital Sela, Lisa D Amir, Rama Schwartz, Oded Poznanski, Marc Mimouni, Yehezkel Waisman

Unit of Emergency Medicine, Schneider Children's Medical Center of Israel, Petah-Tikva, Israel.

Introduction: The purpose of our study was to compare the efficacy and safety of Normal saline (NS) and Ringer's lactate (RL) solutions for rapid intravenous (IV) rehydration in children.

Methods: Children 1 month to 18 years of age presenting to the emergency department with clinical dehydration requiring IV hydration were assigned in a randomized fashion to receive 20ml/kg boluses (2 at least) of either of RL or NS in 4 hours. Clinical parameters as well as laboratory measurements including complete blood count, blood chemistry and blood gases were obtained at baseline and after 4 hours of infusion. The need for hospitalization was also recorded. The BMDP statistical analyses were applied.

Results: A total of 42 patients were enrolled in the NS group and 31 patients in the RL group. The groups matched for age distribution. Compared to the NS group, children in the RL group had higher degree of dehydration and a lower mean baseline level of bicarbonate and base excess (BE) (15.5 ± 2.2 vs. 17.2 ± 3.2 and -9 ± 2.6 vs. -7.34 ± 3.6, $p<0.05$, respectively). At 4 hours, compared to patients in the NS group, patients in the RL group had a better improvement in their mean bicarbonate and BE levels (2.1 vs. 0.6, and 2.3 vs. 0.9, $p<0.001$, respectively) and children in the NS group had a better decrease in urea levels -9.72 vs. -7.9, $p<0.001$, respectively. No adverse reactions were recorded in either group.

Conclusions: RL seems to be more effective than NS with regards to bicarbonate and BE improvement after 4 hours of infusion in mild to moderately dehydrated children, and equally safe and therefore can be recommended for this purpose.

Causes for acute scrotum and variables associated with increased risk for testicular torsion in children

Beni-Israel T, Goldman M, Kozer E.

Pediatric Emergency Service and Pediatric Ward B, Assaf Harofeh Medical Center

Background: The differential diagnosis of acute scrotum includes various causes including testicular torsion, torsion of testicular appendage and epididymitis. It is crucial to rapidly diagnose testicular torsion in order to save the testis. The purpose of the present study was to evaluate the incidence of the various causes of acute scrotum in children presenting to the pediatric Emergency Department (ED). Methods: The study was conducted at the pediatric ED of a University affiliated Hospital in Israel. A retrospective cohort was studied. It included children, aged 0-18 years presenting to the ED with testicular pain or acute scrotum between January 1st 2005 and August 31st 2007. Medical charts were reviewed and data was extracted into a database. Collected data included historical and clinical information, laboratory and imaging findings and information about the treatment. Descriptive statistics was used to describe the study population. Patients with testicular torsion were compared with all other patients using the Chi square test for categorical variables and the student t test for continuous variables. A multiple logistic regression model was used to identify variables associated with increased risk for testicular torsion. Results: Five hundreds thirty eight children were included in the study. The mean age was 129 ± 52 months. One hundred seventy three (32%) patients were diagnosed with epididymitis, 167 (31%) with trauma, 42 (8%) had a torsion of testicular appendage, 20 (4%) had testicular torsion and 136 (25%) had other diagnosis. In a multivariate analysis the following variable were found associated with an increased risk of testicular torsion: abnormal cremaster reflex (OR, 20.5, 95% CI : 4.5 - 93.9), nausea and/or vomiting (OR, 10.2. 95% CI : 1.3 -83.3) and high riding testis (OR, 31.8, 95% CI : 6.7 -151.8).

Conclusion: The most common causes of acute scrotum in children presenting to the ED are epididymitis, trauma, torsion of testicular appendage and testicular torsion. One must suspect testicular torsion in a patient with abnormal cremaster reflex, nausea and/or vomiting and high riding testis.

Occult bacteremia in children in northern Israel – How important is it?

G. Zamir[1], Y. Antoneli[1], S. Brasilov[1], A. Acaria[2], A. Zahi[3], S. Atalla[2], Y. Cerfin[3], A. Koren[4], Y. Horovich[5], D. miron5,[6].
[1]Pediatric Emergency Department, [5]Pediatric Ward A, [4]Pediatric Ward B, [6]Pediatric Infectious disease counseling service, "HaEmek" medical center, Afula, Rapport Medical school, Technion, Haifa. [2]Pediatric Ward, "French" hospital, Nazareth. [3]Pediatric ward, "Baruch Padeh" medical center, Poriya.

Background: The incidence of occult bacteremia in children in the western hemisphere has decreased dramatically during the last two decades, due to the use of routine vaccinations against *Haemophilus influenza* Type B and *Streptococcus pneumonia* (which is not given routinely in Israel). There is very little data concerning the incidence and prevalence of occult bacteremia in children in Israel.
Objectives: to study the incidence of occult bacteremia in Israel, the causing bacteria, its sensitivity to antibiotics, and the preferred treatment.
Design/method: the study was a prospective, cross-sectional study, and included all children attending the pediatric Emergency Department of the participating centers during the study period (12 months). Inclusion criteria were: age 3-36 months, fever >39°C, over 20,000 WBC/cc in blood sample, no pathological finding on physical examination, chest X-Ray, or urine sample. Exclusion criteria were immune deficiency of any sort and previous antibiotic treatment. Blood and urine cultures were taken from every child enrolled; he was then hospitalized and treated according the decision of the local medical staff. Data concerning type of bacterial growth (if any), antibiotic sensitivity, treatment and outcome were collected.
Results: during the study period, 26,706 children attended the pediatric ER of the participating medical centers, of these, only 86 (0.32%) were diagnosed as suspected occult bacteremia and were enrolled in the study. Bacterial growth in blood culture was found in only 3 patients, and in all cases *Streptococcus pneumonia* sensitive to penicillin was the causative agent. All children recovered, and average hospitalization time was 4.3 days. The prevalence of occult bacteremia in the study group (children suspected of occult bacteremia) was 3.5%, and 0.01% of all ER addmitions. According to the Israeli ministry of health data, 280,000 children attend pediatric emergency departments every year. Using our prevalence data, we expect only 28 cases of occult bacteremia per year, nationwide.
Conclusion: the prevalence of occult bacteremia in northern Israel is very low, and all cases were caused by *Streptococcus pneumonia* sensitive to penicillin. We recommend oral treatment with Amoxicillin, pending blood and urine cultures results. Routine use of conjugated *Streptococcus pneumonia* vaccine would lower the incidence of occult bacteremia even further.

Pediatric Trauma From Terror Explosions: The Effect of Age on Injury and Outcomes

Dena H. Jaffe* & Kobi Peleg* and the Israel Trauma Group

ABSTRACT

Background and Objectives: Pediatric injuries from terrorist explosions are not well documented. We hypothesized that injuries resulting from terror varied according to age, as observed in other trauma-related incidents. In particular, we examined the nature and types of injuries cause by terrorist explosions and the resultant hospital care and outcomes among children ages 0-17 years. *Methods:* A retrospective study was performed on data from the Israel National Trauma Registry from September 1, 2000 through December 31, 2005. Odds ratios (OR) and predicted probabilities were calculated using logistic regression models. *Results:* During the study period, 173 children ages 0-17 years were hospitalized from injuries caused by terror explosions. In-hospital mortality was 4.6% (n=8). Younger children (0-9 years) were less likely to be injured from penetrating than blunt or other trauma compared to older children (10-17 years) (55% versus 75%, respectively, p=0.02). The likelihood of sustaining injuries in the upper or lower extremities increased substantially with age (OR=1.14, 95% confidence intervals (CI) 1.07-1.22). Accordingly, fractures, open wounds, contusions and superficial wounds were observed less often among younger (0-9 years) than older children (10-17 years) (75% versus 91%, respectively, p=0.008), while younger children presented with more internal injuries (36% versus 26%, respectively, p=0.09). No difference was observed between length of stay in the intensive care or overall according to age. The likelihood of undergoing surgery increased by 11% for each year of life (95% CI 2%-21%), even after accounting for injury severity. Finally, we observed a u-shaped curve predicting the probability of dying following hospitalization from a terror explosion. *Conclusion:* Our results indicated that age plays an important role in the injury and recovery from trauma caused by terror explosions.

Emergency Department under Missile Strikes: Is this a better model to explain reasons for overcrowding?

Fuad Basis MD* and Jacky Or MD**

Abstract

Introduction: In July-August 2006, our Emergency Department (ED) functioned for a month under missile attacks. In the first few days of the war, we noticed a decrease of about one-third in the number of visits to our ED. Patients were examined by 2/3s of the usual medical staff over one third of the usual number of beds. Yet our ED was far from overcrowded. This created a unique, *in vivo* model which can change or strengthen some myths concerning overcrowding and non-urgent visits to the ED.

Objectives: to use our unique situation considering it as a natural model, in order to investigate what are the real reasons for ED overcrowding, and to compare it to others' models in the literature.

Results: There was a decrease of 36% in adult and 40% in children visits to the ED. The distribution of visits to the different sections of the ED did not change during the survey period but there was a difference in the diurnal pattern of the visits. Analysis of the distribution by age revealed a decrease in the older population (>70 years of age) but not in the younger one. The mean evaluation time decreased slightly but the time from making a decision for admission or discharge until leaving the ED was shortened significantly. There was no change in the percentage of the main causes for visits to the ED except for a decrease because of fever. There was no influence of the war on the number and pattern of visits to a "safe" hospital in the centre of the country.

Conclusions: We believe that our model concerning non-urgent visits is more accurate than others, as it is an *in vivo* model, where patients themselves were obliged to decide what is urgent and what is not. The distribution of non-urgent visits by age does not agree with what is found in the literature. After a review of the relevant literature and according to our findings, we showed that the effect of decreasing unnecessary work-up time and the time from making a decision until disposition (intrinsic factors) is more crucial in preventing ED overcrowding than decreasing non-urgent visits (extrinsic factors

Prolonged manual mechanical ventilation in disasters: physiological limits of operators and quality of ventilation

*P Halpern, **Y Epstein, D** S Moran, N Constantini,***O Yanai, ***S Rosenman

Key words: manual ventilation, mechanical ventilation, disasters, endurance, quality of ventilation, oxygen consumption

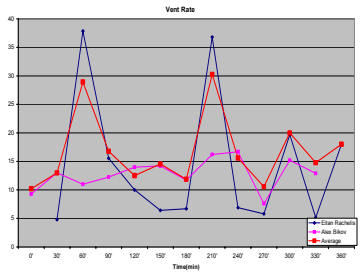
Background:
Manual ventilation using an "Ambu bag" is a basic life-support skill, but is typically restricted to very short periods. In disasters there may be a requirement for prolonged manual ventilation, due to large numbers of victims and a relative paucity of automated ventilators.

Aims:
-To test the limits of endurance of operators performing prolonged manual ventilation. -To document the quality of prolonged manual mechanical ventilation.

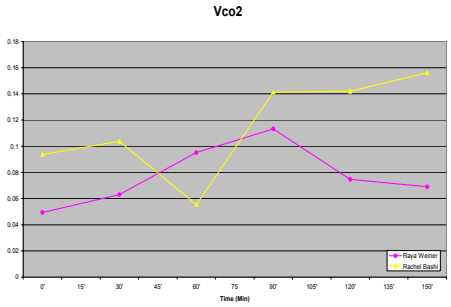
Methods:
Six adult paramedical personnel previously trained to deliver manual ventilatory support ventilated an electronic lung simulator (VT_{200}, C_L=30 ml/cmH_2O, R_L=20 cmH_2O/l) for 3-6 hrs. Subjects used 1 hand, 2 hands or hand and thigh technique. Five min breaks were allowed every hour.

Measurements:
-Pulse rate and blood pressure were obtained hourly;
-Oxygen consumption (VO_2) and CO_2 production (VCO_2) were measured every 30 minutes in 3 subjects.
-A Borg scale was used to assess subjects' perceived level of effort.
-Minute volume and tidal volume were measured continuously from the simulator.

Results:
- Borg Scale ratings remained stable, indicating operators were not feeling discomfort;
- Pulse, blood pressure, VO_2 and VCO_2 did not change appreciably, indicating low cardiovascular effort.
- Delivered minute volume varied widely;



Delivered minute volume, showing large variability.



VCO_2 showing little increase

Conclusions:
Manual ventilatory support for up to 6 hours by each operator is physically possible, but prolonged manual ventilation is associated with variable and usually high minute volumes.

Measuring Tissue Oxygen Saturation (StO2) via Spectrometer in Healthy Children

Ran D. Goldman, Aly Shah Aziz, Linda Marques, Alex L. Rogovik

Pediatric Research in Emergency Therapeutics (PRETx) Program, Division of Pediatric Emergency Medicine, BC Children's Hospital, Department of Pediatrics, University of British Columbia, and Child & Family Research Institute (CFRI), Vancouver, BC, Canada

Background: Near-infrared spectroscopy (NIRS) offers a noninvasive monitoring method for quantifying the percent of tissue oxygen saturation (%StO2) in cases where pulse oximetry (SpO2) is less reliable or not measured, such as in cases of shock or trauma. StO2 in adults is measured in the thenar area but in children, due to small size, this location may not be suitable for measurement.

Objectives: The aim of this study was to evaluate a new NIRS system in children and to determine the best area to measure StO2.
Design: Prospective study in children 0-17 years arriving at the Emergency Department (ED) at the Hospital for Sick Children in Toronto, Canada. StO2 on several areas including shoulder (deltoid muscle), palm (thenar eminence), forearm, calf and mid-triceps was measured with a 25-mm probe and SpO2 documented. We included patients in the three lower triage categories (urgent, semi-urgent and non-urgent), with no respiratory distress or any presenting symptom related to a chronic respiratory or cardiovascular disorder.

Results: We recruited a total of 316 patients and conducted 983 measurements of StO2. The mean age was 6.8±4.4 (range 0.1-17) years and 53% were males. Average StO2 was in the normal range on the bicep (82.7±10.1%) and deltoid (82.2±12.8%) muscles and significantly ($p<0.05$) lower on other areas. While significantly more children moved their limbs (77 (25%) vs. 46 (15%), $p<0.001$) or struggled (31 (10%) vs. 20 (6.4%), $p=0.02$) during the StO2 measurements, less than 5% in the StO2 group reported any type of pain or cried which did not differ from SpO2.

Conclusion: Bicep and deltoid muscles are the most appropriate areas to measure StO2 using the 25 mm transducer in children of different ages. Monitoring peripheral tissue oxygenation using non-invasive NIRS that allows very early application in the pediatric ED, could become a regular part of ED care of critically ill patients to institute prompt therapy and guide resuscitation, avoiding organ damage.

Should the D-dimer test be always used in low clinical probability for pulmonary emboli? Possible role of CRP

Shaden Salameh MD; Meir Antopolsky ; Ruth Stalnicowicz MD

Department of emergency medicine; Hadassah Mount Scopus; Jerusalem

Background

Pulmonary embolism is a challenging diagnosis in the emergency department. Adequate implementation of clinical risk assessment and appropriate use of the D-dimer test is critical in the management of patients with suspected pulmonary embolism. The aims of this study were: to evaluate the clinical application of the guidelines regarding the use of D-dimer test, and to evaluate the role of C-reactive protein test in the exclusion of pulmonary embolism.

Methods

Patients, in whom a D-dimer test was done, were included in the study. Physicians were asked to fill a questionnaire that included: gestalt for pulmonary embolism and D-dimer and CRP test results. The physicians' clinical assessment was revised by the authors. All patients that had positive D-dimer test underwent a CT pulmonary angiography.

Results

One hundred patients were enrolled in the study. Most of them were considered to have a low risk probability for pulmonary embolism by the physicians' gestalt. Revised assessment found similar results. Forty percent had a positive D-dimer test, of them (20%) had pulmonary embolism. Most of the patients with a false positive D-dimer test had high CRP levels. Combination of a low risk probability and a high CRP levels identified 91% of the patients that underwent unnecessary tests.

Conclusions

The application of the guidelines regarding the use of D-dimer test in the appropriate clinical risk population was well shown. A high CRP level may be able to predict a false positive D-dimer result and thus can withhold the use of further expensive time consuming tests.

הטמעת רשומה ממוחשבת במחלקה לרפואה דחופה

אריה איזנמן, זהבה יונה, יוני לרמן, שרה אסולין, דפנה קרויטרו, שירה קנז, יפה הארון

צוות שיפור להטמעת הרשומה הממוחשבת במחלקה לרפואה דחופה, ביה"ח לגליל המערבי, נהריה

רקע

במרבית בתיה"ח בישראל מקובל עדיין גליון מטופל ידני. לגליון מספר חסרונות בולטים העלולים לפגוע בבטיחות המטופל ובאיכות הטיפול: תצורה פגומה, כתב יד שאינו תמיד קריא, הוראות רופא לא ברורות, תלות בארכיון, העדר ממשק ישיר עם רשומות אחרות, סרבול וכו'. משרד הבריאות בישראל החליט על יישום תוכנה ממוחשבת אחידה לכל בתי החולים במדינה. התוכנה שנבחרה היתה SAPfor Healthcare. על מחלקתנו הוטל לאפיין גרסה שתתאים למחלקה לרפואה דחופה (מלר"ד). רשומה ממוחשבת ייעודית למלר"ד לא קיימת בישראל ומעטים כמוה בעולם.

מלר"ד ביה"ח לגליל המערבי בנהריה, על שבעת אגפיו, מטפל בכ-130,000 ביקורים כל שנה ע"י צוות קבוע בן 60 אחיות ושמונה רופאים.

מטרות: לאפיין רשומת מטופל ממוחשבת במלר"ד שתקיף את כל העשייה מרגע הקבלה ועד השחרור.

שיטות: הוקם צוות משימה המורכב מאחיות, רופאים ואנשי תוכנה שמונו ע"י הנהלת ביה"ח, הוגדרו המטרות לאיפיון: תצורה נאותה, למידה והטמעה קלה וידידותית, תכנים ואבחנות קבועים, ממשק ישיר עם יישומים ממוחשבים אחרים בביה"ח, מחלקות אחרות בביה"ח ומוסדות רפואיים אחרים. לאחר שאופיינה תוכנת האב, בוצע ניסוי ראשוני של המהדורה הראשונה משך תקופה מוגבלת. אותרו הבעיות, נרשמו ונידונו, ופתרונות ותיקונים תוכננו ובוצעו. בהמשך נבנה קורס הכשרה מיוחד לכלל הצוות הרפואי והסיעודי במלר"ד והוכרז על מעבר לשלב ההטמעה בליווי צמוד של אנשי התוכנה ויחידת המחשב. כמו כן נקבע תאריך יעד סופי ליישום המערכת הסופית.

תוצאות: הגליון האלקטרוני הכוללני הראשון במלר"ד הושק. בין המסקנות החיוביות: גליון ברור ויציג, הוראות רופא ברורות, העדר שגיאות כתיב, שימוש באבחנות רשמיות ומקודדות בלבד (ICD-9). בין המכשולים שאותרו בדרך היו: פחד מפני המחשב, השקעת זמן במחשב במקום עם המטופל, הארכת זמני המתנה במלר"ד, אי ישימות במצבי חרום כגון בהחייאה או במצבי עומס יתר.

מסקנות: לרשומה ממוחשבת במלר"ד יתרונות על פני הגליון השמרני המקובל. בעיקר בתצורה הנאה והברורה, אבחנות והוראות ברורות המונעות טעויות, ממשק עם תוכנות אחרות בביה"ח. הרשומות נשמרות ונשלפות טוב יותר. הקשיים העיקריים הם פגיעה מסוימת בחסיון המטופל, הארכת זמן השהייה ואי התאמה במצבי חרום. לפתרון הקשיים הוכנס נוהל F4 הכולל טקסטים מובנים לבעיות השכיחות ומצבי החירום במלר"ד, המוכנים להכנסה מידית. הנוהל מאפשר שימוש בתוכנה גם במצבי לחץ ועומס ללא עיכוב בזמנים, תורם לאחידות ושלמות בבדיקת החולה ומבטיח טיפול לפי הקווים המנחים המעודכנים ביותר.

הרשומה הממוחשבת במלר"ד תהווה בעתיד חלק בלתי נפרד מהעשייה במלר"ד. אין ספק שהיא תתרום רבות לבטיחות המטופל ולאיכות הטיפול.

Point of care testing for coagulation studies in an emergency department stroke protocol: A time saving innovation

M J Drescher MD(1), A Spence BS(2), D Rockwell RT(3), I Staff PhD(4), AJ Smally MD(1)

Division of Emergency Medicine(1,4), Departments of Pathology and Laboratory Medicine(2), Respiratory Care(3), and Research Administration(4). Hartford Hospital, Hartford CT USA

Study objectives: Thrombolytics may be indicated for stroke, provided INR< 1.7. Time to treatment is key. We studied whether the use of point of care testing (POCT) for INR in the emergency department may substitute for the same test done in the central hospital laboratory, in order to reduce time to treatment.

Methods: We performed a prospective observational study comparing a POCT analysis of INR performed in the ED (iSTAT-1®, Abbott Inc., Abbott Park IL) with testing of a simultaneously drawn sample sent to the central laboratory. We drew venous blood from a convenience sample of adult patients who were taking warfarin, and presented to the ED of a tertiary teaching hospital. The study was approved by the hospital IRB.

Results: Thirty-two patients were enrolled. Ages ranged from 19-92. POCT INR ranged from 1.2 to 6.8. Four patients were not included in the analysis as their INR was outside the reportable range of the POCT (INR >8.0). A receiver operator curve (ROC) analysis was performed. Sensitivity and specificity were calculated for lab INR cutoff of 1.7 (the clinical cutoff for giving tPA in stroke). The area under the curve was 0.979 (95%CI 0.843-0.991). When POCT INR was 2.1, sensitivity for lab INR being >1.7 was 100%(CI 62.9 – 100.0) and specificity was 90.5 (CI 69.6 – 98.5). When POCT INR was 1.8, specificity for lab INR being < 1.7 was 100% (CI 83.7 – 100) and sensitivity was 62.5% (CI 24.7- 91.0). A linear regression analysis was performed comparing the results of the laboratory PT/INR with the POCT INR. The regression coefficient (r) value was 0.9648. The y intercept was 0.276. The slope test was 0.07%, which was less than two times the overall coefficient of variation (3.5%) of the assay.

Conclusion: Correlation of POCT INR with that of the central lab, and ROC characteristics are excellent. In general POCT INR is about 0.3 higher than the lab INR. This is not generally of clinical importance, but when using a cutoff of 1.7 (central lab) it may be. We have developed a three tiered system for use of POCT INR in determining use of tPA if otherwise indicated:

עבודת צוות בניידות ובאמבולנסים לטיפול נמרץ בישראל כתלות בהרכב ובמבנה הצוות

הילי יהלום, ד"ר דגן שוורץ, ד"ר לימור אהרנסון-דניאל, ד"ר דוד קריגר, פרופ' אבישי גולדברג

המחלקה לרפואת חירום, ביה"ס למקצועות הבריאות הקהילתיים ע"ש רקנאטי, אוניברסיטת בן גוריון בנגב

1. מטרת המחקר

לבחון את עבודת הצוות ברפואת חירום בשלב הטרום אשפוזי כתלות בהרכב ומבנה הצוות.

2. שיטת המחקר

אוכלוסיית המחקר כללה אנשי צוות ובעלי תפקידים בכירים במד"א. הועברו שני סוגי שאלונים: הראשון, שאלון חצי מובנה בעזרתו בוצעו ראיונות עומק לבעלי תפקידים מרכזיים במד"א במהלך החודשים מאי – יוני 2006. השני, שאלון סקר שהועבר במהלך חודשים ספטמבר- אוקטובר 2006 לאנשי הצוות במד"א. אנשי הצוות השיבו בכתב על השאלון שהיה שאלון סגור ברובו עם מספר שאלות פתוחות.

ניתוח הנתונים נעשה באמצעות תוכנת SPSS לחלונות. ניתוח דו משתני נעשה באמצעות מבחני χ^2 לבדיקת קשר בין משתנים לא רציפים. ניתוח רב משתני נעשה באמצעות רגרסיה לוגיסטית כאשר המשתנה התלוי היה דיכוטומי. חלקים משאלון העומק החצי מובנה לבעלי התפקידים, נותחו על פי כללי המחקר האיכותני .

3. ממצאים

ראיונות העומק נערכו עם 13 בעלי תפקידים בכירים במד"א, 105 אנשי צוות מילאו שאלון בכתב. אותרו גורמים הקשורים לסביבת העבודה, לסוג הניידת, למקצועות אנשי הצוות בניידת ולמספר אנשי הצוות המשפיעים על עבודת צוות יעילה כפי שהיא נתפסת בעיני אנשי הצוות. בהגדרת ההרכב היעיל לצוות טיפול נמרץ היה קושי. בפרט, הדעות בנוגע להכללת רופא בצוותים היו חלוקות. אנשי הצוות סברו כי עבודת צוות יעילה יותר התקיימה בצוותים ללא רופא, אך הסכימו כי הכללת רופא בעל הכשרה מתאימה עשויה לתרום ליעילות הצוות.

כיום, כישורי צוות אינם נלמדים בלימודי החובשות ובקורסי הפאראמדיק. תפיסת הארגון היא שאנשי הצוות צריכים להיות מסוגלים לתפקד כחברים בכל צוות אפשרי ולכן הציוות בארגון הוא ארעי ומתקיימת בו תחלופה גבוהה של אנשי הצוות. בקרב אנשי הצוות רווחה הדעה שעבודה בצוותים קבועים תיעל את עבודת הצוות, אולם לא קיימת לגיטימציה מבחינת הארגון לעבודה בשיטה זו.

4. סיכום ומסקנות

מהמחקר עולה כי עבודת הצוות איננה נבחנת בשגרה ואינה מבוקרת בעזרת מדדים אובייקטיביים כגון מרכיבי הטיפול או תוצאיו.טיפוח תהליך יצירת הצוותים ע"י בחירה נכונה של אנשי צוות ובחינה מחודשת של ההרכבים ומספר אנשי הצוות במשמרת, יכול להועיל לארגון. יש לשקול השקעת משאבים בטיפוח הכישורים הצוותיים והבין אישיים של עובדי הארגון.

Posters

פוסטרים

Prolonged INR without Clinical Manifestations

Dr. J. ASHKAR M.D , Dr. S.IUSIM M.D , Dr. P.PESCHANSKY M.D

The Emergency Department , Hillel Yaffe Medical Center Hadera, ISRAEL

Indications for long-term anticoagulation include atrial fibrillation, prosthetic heart valves, intracardiac thrombus, hypercoagulable states and prior thromboembolism. For many patients, anticoagulation can be initiated as well as maintained in the outpatient setting.

The oral anticoagulant warfarin inhibits the vitamin K-dependent clotting factors II, VII, IX, and X and also inhibits the synthesis of proteins C and S. Vitamin K is the fat-soluble substance in our bodies that promotes blood clotting by helping make these factors in the liver.

The response to warfarin varies among individuals, and so each patient is monitored to prevent under dosing or overdosing.
Monitoring is necessary because some people are either fast or slow metabolizers. When the anticoagulant effect and dose requirements are stable, INR monitoring continues through the course of warfarin treatment.

The daily dose is adjusted according to a standard ratio (INR).
Bleeding is a major side effect of oral anticoagulants, usually due to surgery, trauma, peptic ulcers, or cancer. Serious bleeding may occur if the warfarin dosage is too high. A lowered dosage of warfarin generally reduces risk of bleeding.

Patients with too much anticoagulation have high INRs and high risk for bleeding. If the INR is greater than 5.0, warfarin treatment is often stopped for several days, or vitamin K1 is given to counteract the effects of warfarin. However, vitamin K1 may be unnecessary in some patients, and it can cause adverse effects. Deciding which patients need vitamin K1 is not easy because it is difficult to know which patients will have prolonged abnormal INR values without vitamin K1 treatment.
Clinical trials have established guidelines for oral anticoagulation and for prolonged INR.

OBJECTIVES

The objective of this study is to determine the incidence of prolonged INR without clinical manifestations in patients admitted to our ED and the treatment given by physicians when this complication of warfarin therapy appears.

METHODS

A retrospective study was done over the course of a year. We revised the charts of all patients admitted to the ED and then selected those with Warfarin complications. ..

RESULTS

Over a year on 120 patients were admitted to the E.D

CONCLUSIONS

We didn't find uniformity of treatment for these patients.
It is necessary to create and offer a personal chart to each patient receiving warfarin.

Usage, Indications and Prognosis of the D-Dimer Assay in the Emergency Department

Dr. J. Ashkar M.D. , Dr. P.Pechansky M.D. , Dr. M. Medvedovsky M.D.

The Emergency Department , Hillel Yaffe Medical Center, Hadera

The patient presenting in the Emergency Department who is suspected of having experienced a thrombotic event is a challenge for the emergency physician. One of the blood tests that can help in the diagnostic approach towards patients is the D-dimer test (the measurement of fibrin degradation products).

This test is a non-invasive blood test that has been used on a regular and routine basis in the Hillel Yaffe Medical Center, since 2003. It was formally introduced at that time as part of our diagnostic protocol in managing appropriate patients.

This screening test helps the clinician, especially the emergency clinician make decisions about the continuation of investigation into whether or not the patient is suffering from a thrombotic event. In order to use the D-dimer test in an appropriate manner, the test's indications and limitations should be reviewed. In addition, it is important to note that the test sometimes shows "false positive" and "false negative" results. The emergency physician should keep this in mind at all times.

From March 2003 through March 2006 the Hillel Yaffe Medical Center performed 2176 D-dimer tests. Our investigation focused on the 516 tests that were performed in the Emergency Department. Of these 516 tests, 257 results were normal and the remainder showed elevated D-dimer levels in varying ranges. A sample 168 patients with high D-dimer in the Emergency Department showed that 18 of them were discharged and 150 of them were admitted. Only forty-one of these patients were diagnosed with varying thrombotic events. Only 9 of the patients whose D-dimer levels were at the maximum (out of 21 patients) were diagnosed with having some kind of thrombotic event.

When D-dimer levels were at the maximum, the patients suffered from very serious medical conditions such as sepsis with multi-organ failure and DIC and advanced malignancies. Mortality rates among these patients were especially high.

It is important to note that correct use and interpretation of the test can reduce the number of invasive diagnostic procedures performed on the patient (such as angiography and radiation-based imaging). Additionally, the test is not only good for appropriate patients, but it is also good for the hospital (it is highly cost-effective)!

Our study verified the findings from the medical literature that showed that the use of the D-dimer test is a valuable diagnostic tool. However, it is important to remember that only the combination of proper medical history taking, physical examination and appropriate use of screening tests is critical for the management of patients suspected of having experienced a thrombotic event.

Gender differences in pain expression and analgesia administration in the emergency department

Pinchas Halpern, David Aladgem, Shlomo Elias

Emergency Department, Tel Aviv Medical Center, Sackler Faculty of Medicine, Tel Aviv University

Aims: To determine if there differences in the way women and men experience and verbally express acute pain in the ED, and if analgesia care is affected by such differences.

Methods: This was a prospective, observational, noninterventional study of adult ED patients with minor to moderate traumatic pain performed 12/2006 – 1/2007. The patients and staff were not aware of the purpose of the study. Pain was assessed via a visual analog scale (VAS) and all other subjective expressions pain via analog or numerical scoring scales.

Subjects and accompanying persons filled a questionnaire immediately upon arrival in the ED. During patient management, care staff and accompanying persons were asked how they assessed patient's expression of pain. Before discharge, patients and accompanying persons were asked to rate the analgesia care they received. Information regarding analgesic care was obtained from the ED chart.

Results: 328 adults (178 men and 150 women) were studied. Average pain score at reception was identical (61±24mm for males, 60±26mm for females). Pain intensity drop at discharge was equal for both sexes (48±25mm for males, 50±26mm for females). Anxiety levels for females were more than double those of males (59±34mm versus 27±28mm, $p<0.001$). However, analgesia type and timing were identical between the genders and were also not affected by ethnicity, but did correlate well with pain intensity: initial pain intensities of 51±24mm in patients receiving no analgesia, 65±21mm in patients receiving oral analgesia and 81±17mm in patients receiving narcotics, respectively ($p<0.001$). The decrease in pain after treatment was similar, -12±22mm for men and -10±26mm for women. Patients' escorts' evaluations correlated with the patient own pain perception, and the escorts' gender did not affect the results.

Conclusions: Pain perception and the response to analgesic treatment is equal among genders. Women report higher anxiety levels and express their pain more intensely than men. Analgesia care in the ED, however, does not seem to be affected by the gender differences in pain expression, and is related only to pain intensity.

Pain and related emotions in the ED - men vsus women

No differences in pain scores but significant differences in pain expression and related anxiety

	Gender	Mean±SD	
Pain on admission analog scale of 0-100 (VAS)	Men	61±24	P=NS
	Women	60±26	
Verbal expression of pain numerical scale of 0-5	Men	4.0±0.8	P=0.0001
	Women	3.6±1.0	
Anxiety level scale of 0-100 (VAS)	Men	26±28	P=0.0001
	Women	59±35	
Pain on discharge analog scale of 0-100 (VAS)	Men	48±25	P=NS
	Women	50±26	
Pain decrease during care Analog scale of 0-100 (VAS)	Men	12±22	P=NS
	Women	10±26	

REFERRALS OF CHILDREN FROM A PEDIATRIC COMMUNITY CLINIC TO THE EMERGENCY DEPARTMENT: DOES IT MATTER WHO REFERS?

Oded Poznanski[1], MD; Avner H Cohen[2], MD; Meirav Mor[1], MD; Lisa D Amir[1], MD; Marc Mimoun[1]i, MD; Yehezkel Waisman[1], MD

[1]*Unit of Emergency Medicine, Schneider Children's Medical Center of Israel, and the* [2]*Pediatric Ambulatory Center, Petah Tikva, Israel*.

Background: Emergency departments (EDs) are overcrowded and overutilized worldwide.

Aim: This study investigated possible differences in the medical appropriateness of patient referrals to the ED made by the primary care physician (PCP), another medical professional (AMP), or a parent (self-referral). Other factors that might affect the reason for the visit were also evaluated.

Setting: The ED of an urban pediatric tertiary care medical facility**.**

Methods: The sample included children affiliated with a HMO-run pediatric community clinic who visited the ED in July-August 2006 (summer) and January-February 2007 (winter). Data were collected by chart review on demographic parameters, distance of residence from the hospital, referral source, medical appropriateness of the visit, day of week/time of day of the visit, diagnosis, specialist consultation, therapeutic procedures, and hospitalization. Medical appropriateness was determined by a previously developed 19-item guideline for ED referrals from community clinics. The medical appropriateness of the referral and all factors mentioned above were compared by source of the referral using BMDP statistical software.

Results: Of the 523 children who met the inclusion criteria and for whom complete data were available, 193 (36.9%) were referred by their PCP and 124 (23.7%) by AMP; 206 (39.4%) were self-referred (SR). Eighty-two PCP referrals (42.5%), 50 AMP referrals (40.3%), and 103 SRs (50%) were deemed medically appropriate, with no statistically significant difference among them ($p=0.16$). Analysis of other possible confounding factors revealed a significantly older age of the self-referred children compared to those referred by their PCP ($p=0.02$). Time of day of the visit was also significantly different among the groups, with children referred by their PCP presenting more often in the morning (73%), children referred by other physicians presenting more often in the evening (53%), and SR children presenting more often at night (21.6%) ($p<0.001$). There were no significant between-group differences in any of the other parameters compared.

Conclusions: In our study population, medical professional judgment does not seem to be better than parental judgment regarding the referral of a child to the ED.

Internal Jugular Venous Thrombosis Presenting as Neck Pain in a Patient with Recent In Vitro Fertilization

Dr. Leibman Yosef[1], Ms Michal Frankl[2], Dr. Steiner Ivan P[3].

Sheba Medical Center, Ramat Gan, Israe1[1], Ben Gurion University, Goldman school of medicine[2], Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada[3].

Internal jugular venous deep vein thrombosis (IJDVT) is a rare event, mainly due to various hypercoagulable states, head and neck sepsis, and the presence of central venous pressure lines. Recently, more cases have been noted due to ovarian hyper stimulation syndrome (OHSS) - a pathological state brought on by in vitro fertilization (IVF), occurring in 2-6% of treatment cycles. IJDVT secondary to OHSS is probably underreported in the general literature and is totally absent from the emergency medicine database. The true rate of mortality due to all IJDVTs is unknown as the data is scarce. Two small studies showed a 7.8% mortality directly caused by this entity.

IJDVT is a potential source for life threatening PE; however, once diagnosed, it can be treatable. It is uncommon, therefore easily overlooked, as its symptoms are few and the signs may difficult to asess through standard physical examination of the neck. In the face of known OHSS, or recent IVF, if the symptoms warrant it, the emergency physician should consider this entity as part of the differential diagnosis in ruling out potentially life threatening entities.

Using Health to Build Bridges to Peace: An International Pediatric Emergency Medicine Elective

MSc Eyal Lotan[1], BSc Ayal Hassidim[2], MSc Nermine Gorguy[3], MSc Laura Pacione[4], Diala Al-Mardeeni[5], Eiman Al-Atrash[6], Shatha Aburayyan[6], Zahi Batiha[5]
[1] Tel-Aviv University, Israel, [2] Ben Gurion University of the Negev, Israel, [3] Dalhousie University, Canada, [4] University of Toronto, Canada, [5] Jordan University of Science and Technology, Jordan, [6] Al-Quds University, West Bank

Background: A 4 week summer international pediatric emergency medicine (PEM) elective was offered to 8 Canadian, Israeli, Palestinian and Jordanian medical students. It was organized by the Canada international Scientific Exchange Program, the Peter A. Silverman Centre for International Health at Mount Sinai Hospital, and the Division of Pediatric Emergency Medicine (PEM) at the Hospital for Sick Children in Toronto, Canada.

Objectives: The aims were to provide an introduction to the practice of PEM, to educate participating students in medical issues affecting children around the world, to develop leadership skills and to build trust, understanding and cooperation between Canadian, Israeli, Jordanian and Palestinian students.

Methods: In addition to clinical training in PEM, the elective offered both didactic and hands-on, practical sessions on conflict resolution principles, medical professionalism, ethics, research study design and presentation skills. It included extensive social interaction, peace building sessions as well as opportunities to meet with members of international public health and international health organizations.

Results: The peace building sessions taught the medical students to work as a team. They were able to present their different opinions on various health related issues and life experiences. Every effort was made to be supportive and resolve conflicts respectfully. From a discussion about the PEM issues of their respective areas, the students designed two research projects. One project was a general evaluation of pneumococcal vaccination in the child population in the Middle East. The other project was a comparative study of different techniques used to control pain and anxiety in children undergoing medical procedures.

Conclusion: After the end of the elective the medical students felt that the responsibility for making changes lies within themselves. They hoped that some of the professional and leadership tools they learned, as well as their better understanding of one another, would help them to continue to work together, from their homes in the Middle East and Canada and to build mutual trust and confidence across the Arab and Israeli divide.

Comparison of Contrast Enhanced CT vs. Physician Directed Ultrasound In The Diagnosis of Acute Appendicitis

Objectives: Abdominal CT scan (CT) is the preferred radiographic study for the diagnosis of appendicitis in the United States, while radiologist-operated ultrasound (US) is often used in Israel. This comparative international study evaluates the performance of CT vs US in the evaluation of acute appendicitis.

Methods: A retrospective chart analysis was conducted at two tertiary care teaching hospitals, one in each country. Adult patients (age 18-99) with an ED working diagnosis of appendicitis between January 1, 2005 and December 31, 2006 were reviewed. Patients that had an imaging study, went to the OR, had surgical pathology results and complete chart information were included.

Results: Of 520 patients in Israel, 197 were included in the US cohort.
Based on final pathology, US had a sensitivity of 68.4% (95% CI 61.2-74.8%). The negative appendectomy rate in patients with positive US was 5.5%. The total length of stay for these patients was 448.3 minutes (23.4% had subsequent CT scans). Time from US order to completion was
38.2 minutes. Of 136 patients in the United States, 79 were included in the CT cohort. Based on pathology, CT had a sensitivity of 100% (95% CI 95.4-100%). The negative appendectomy rate was 0%. Total length of stay was 559.5 minutes and time from CT order to completion was 194.2 minutes (both values $p<0.001$ compared with ultrasound times). We calculate that a "first pass" approach of using US first, and then performing a confirmatory CT scan in patients with negative US, would have saved our United States patients an average of 20.1 minutes per patient, and avoided CT in 65% of patients.

Conclusions: Radiologist-operated US had inferior sensitivity and positive predictive value when compared with CT, though was significantly faster to perform, and avoids radiation and contrast in a majority of patients. A "first-pass" approach using US first and then CT if US is not diagnostic may be desirable in some institutions

Betzalel E. Reich BA
Tufts University School of Medicine
Boston, MA

Todd Zalut, M.D., F.A.C.E.P.
Director, Department of Emergency Medicine
Shaare Zedek Medical Center
Jerusalem

Scott Weiner, M. D., F.A.C.E.P
Department of Emergency Medicine
New England Medical Center
Boston, MA

Emergency Department Visits of Children with Epilepsy

Landau YE, Shuper A*, Waisman Y

Units of Emergency Medicine and Neurology, Schneider Children's Medical Center of Israel, Petach Tikva, Israel*

Background: Although the definitive treatment and follow-up of children with epilepsy are provided by neurology/epilepsy clinics, visits to the emergency department (ED) for the diagnosis and management of acute events are not unusual**.** This study examined the reasons for which children with seizures attend the emergency department in order to better define the potential role of the neurology clinic in the management of this patients.

Methods: Charts of children aged <18 years, who visited the ED during 4 months period due to unprovoked seizure, were analyzed and the pertinent data were retrieved.

Results: Forty-four boys (52%) and 41 girls (48%) were included; they visited the ED 104 times. Reasons were: new-onset convulsive disorder (30%), recurrent seizure in a child with known epilepsy (38%), recurrent seizure associated with an undiagnosed disorder (16%), status epilepticus in a child with epilepsy (4%), and others (12%). Children with epilepsy that was unassociated with other neurologic or metabolic disorders accounted for 58% of the emergency department visits. Types of epilepsy were as follows: benign focal epilepsy, 14%; juvenile myoclonic epilepsy, 1%; infantile spasms 4%; and unknown (39%). In the remaining children, the epilepsy was associated with other disorders, as follows: developmental disorders, 14%; prematurity and perinatal complications, 12%; anatomic brain anomalies, 5%; postnatal hypoxic brain injury, 3%; and others (8%). Seventy one percent of the children were hospitalized, in 29% an antiepileptic drug (AED) was initiated, in 18% an AED dose was increased. Twenty eight percent underwent a diagnostic work-up only.

Conclusions: At our center, almost 40% of the emergency department visits for an epileptic episode were for recurring seizures in epileptic children. This fraction could potentially be decreased with improved education targeted to this patient population combined with greater availability of neurology clinics. Given that about 70% of our patients were hospitalized, decreasing these visits will lead to a considerable decrease in the in-patient load of children with epilepsy.

Title: Trends in trauma and patterns of hospitalization in California, 1999-2006

Authors: Renee Y. Hsia, MD, MSc[1], and N. Ewen Wang, MD[2]
[1] San Francisco General Hospital, Department of Emergency Medicine, University of California at San Francisco
[2] Division of Emergency Medicine, Stanford University

Word count: 343

Background: The epidemiology surrounding trauma and utilization of trauma services is not well-described in the literature. Appropriate resource utilization decisions, however, require knowledge of what types of patients present or are transferred to trauma centers for what levels of injury.

Objectives: This study seeks to describe the trends in hospitalization of trauma patients in California from the period of 1999-2006.

Methods: We take hospital admission data from the California Office of Statewide Health Planning and Development Patient Discharge Database from 1999 to 2006 and exclude all non-trauma and non-acute discharges, non-residents, those with missing age, scheduled admissions, and those with missing or invalid injury severity scores (ISS). We stratify these trauma admissions into three categories based on ISS, with mild defined as a score of 1-4, moderate of 5-18, and severe as greater than 18, and analyze the trends in severity of trauma patients over time as well as the hospitalization patterns based on ISS.

Results: With a final sample of 752,706 observations over the eight-year period, we find that the proportion of patients admitted for trauma with a mild ISS decreased slightly from 51.5% in 1999 to 49.2% in 2006, and increased from 9% to 12.6% for those with a severe ISS. The proportion of admissions with a moderate ISS stayed approximately the same from 39.5% in 1999 to 38.2% 2006. For patients in all three categories, the rate of hospital admission and discharges to a trauma center (TC) versus a non-trauma center increased: 32.8%% of patients with a mild ISS were transferred to a TC in 1999, compared with 41.1% in 2006; for a moderate ISS, 31.4% to 46.1%; and for a severe ISS, 52.8% to 66.3%.

Conclusion: The proportion of trauma patients with severe injuries over the past eight-year period from 1999-2006 increased, and patterns of utilization suggest that more of these patients are being treated in trauma centers rather than non-trauma centers. Further research on outcomes of both sets of patients is warranted to help provide necessary information for policy-making and planning of trauma resources in the future.

Relapse and Steroid Therapy in Young Adults with Asthma Exacerbation in the Emergency Department.

Bentancur Ariel G MD[1], MHA, Olmer Liraz Msc[2], Dankner Rachel S MD, MPH[2].

From the Emergency Medicine Department[1], The Sheba Medical Center, Tel Hashomer; Affiliated to the Sackler School of Medicine, Tel Aviv University, Ramat Aviv; The Gertner Institute for Epidemiology and Health Policy Research[2], Tel Hashomer, Israel.

Study Objectives: First, to determine the prevalence of: 1-steroid therapy before arriving at the ED, 2- steroid therapy in the ED, 3- steroids recommended upon discharge, and 4- referral to an asthma expert, and second, to establish the influence of these variables on the relapse rate measured as the percentage of readmissions.
Methods: This was a retrospective file review study where we reviewed ED and hospital files of all young adult asthma patients (aged 17 to 35), who presented in a two year period. All files were checked using a structured research tool. Primary outcomes measured were ≤48 hours, and 48 hours to ≤ 1 week readmission to the ED.
Results: During the study period there were 728 visits to the ED. A minority, 201 patients (27.6%) were on steroid treatment (oral and/or inhalation) before arriving to the ED. From all visits 269 (36.95%) patients were admitted to the hospital. Just over half of the patients (401, 55%) received steroid therapy at the ED.
There was a positive correlation between the steroid treatment in the ED and asthma severity (31%, 51%, and 69% of mild, moderate, and severe subgroups). Steroids were begun by emergency physicians in 54% of cases, rotating residents in 56% and senior internists in 36% of cases.
Steroids were recommended upon discharge to 291 patients (63.4% of discharged patients). A small proportion, 204 patients (28%), were referred upon discharge to an asthma expert, and 302 (41.5%) were referred to the family physician.
Among the 459 discharged patients, 17 patients (3.7%) were readmitted to the ED within 48 hours, and another 21 (4.6%) within one week. Significantly more patients in severe attack were treated with steroids in the ED (33.7% versus 19%, $p<0.0001$), or discharged on steroids (25.2% versus 23.6%, $p= 0.0005$).
Though patients treated at the ED with steroids were more severe than those not treated with steroids, similar rates of relapse within 48 hours (3.4% and 4%; $p= 0.9$) and within one week (5.0% and 4.3%; $p= 0.9$) occurred.
Similarly though patients discharged on steroids were more severe than those discharged without steroids and similar rates of patients discharged without steroids returned to the ED within 48 hours (3.8% and 3.6%; $p= 0.9$) and within 1 week (4.8% and 4.2%; $p= 0.9$).
Conclusion: This study suggests a positive correlation between the initiation of steroid therapy in the ED, and its continuation on discharge, and the rates of relapse for young patients with severe asthma. The present findings suggest that the care of the asthmatic patient at the ED could perform better than it does today.

A Simplified Severity Score in Acute Asthma

Dankner Rachel S[1], Olmer Liraz[1], Ziv Arnona[1], Bentancur Ariel G[2]

The Gertner Institute for Epidemiology and Health Policy Research[1], Tel Hashomer, Israel. Sackler Faculty of Medicine, Tel Aviv University, Ramat Aviv, Israel. The Emergency Department[2], Sheba Medical Center, Tel Hashomer, Israel.

Study objectives: To retrospectively evaluate a simplified severity score based on readily available symptoms and signs, to be implemented in the Emergency Department (ED) daily routine to facilitate decision making regarding hospital admission of young adult patients with acute asthma exacerbation (AAE).

Methods: Data from all AAE related ED encounters of a tertiary academic medical center during two calendar years were reviewed. Patients 17 to 35 years old were assigned to one of three grades of severity (mild, moderate, severe) according to recorded vital signs and clinical findings, including pulse rate, oxygen saturation, use of accessory muscles, and presence of respiratory rhales or prolonged expirium, measured upon arrival to the ED. The electronic data base, medical ED records and hospital admission charts were reviewed for treatment and outcomes (return to the ED, length of hospital stay (LOS), mechanical ventilation, and/or death). The three severity groups were compared.

Results: During the study period, 673 visits related to 508 eligible patients were recorded as AAE related ED encounters. Among them, 28.7 were "mild", 41.1% were "moderate", and 30.2% were "severe" AAE. Admission rates and LOS increased as assigned the level of AAE severity increased (13%, 34% and 68% $p<0.001$; and 2±1, 2.5±1.7, and 3.9±8.8 days respectively). The odds ratio for hospitalization in the "severe" category was 13.7 (95% CI: 8.2-23.0), and in the "moderate" 3.4 (2.1-5.5), as compared to the "mild" category.
All patients having a severe outcome (LOS of more than one week, mechanical ventilation or death) were categorized as severe.

Conclusion: The simplified asthma severity score requires no additional tests or costs in the ED, correlates well to clinical judgment, and could facilitate the decision of whether to hospitalize or discharge adult AAE patients. Prospective validation of this tool is still needed.

Diagnostic Resource Utilization in the Management of the Young Asthma Patient in the Emergency Department

Bentancur Ariel G, MD[1] Olmer Liraz[2], Dankner Rachel S[2], M.D†, MPH†

From the Emergency Medicine Department[1], The Sheba Medical Center, Tel Hashomer; Affiliated to the Sackler School of Medicine, Tel Aviv University, Ramat Aviv; The Gertner Institute for Epidemiology and Health Policy Research[2], Tel Hashomer, Israel.

Study Objectives: Asthma is a growing worldwide medical problem affecting up to 3.7% of the adult population and exacerbation being the reason of consult in up to 1% of adults visiting the emergency department (ED). In spite of published guidelines for the management of asthma exacerbation in the ED a high variability in the use of diagnostic resources have been recently suggested. The objective of the present study was to evaluate the use of diagnostic resources on young adults with exacerbation of asthma at the ED.

Methods: We retrospectively reviewed the records of all adults aged 17-35 years old arriving to the ED in a two years period because of asthma exacerbation using a structured research tool.

Results: The files of 728 young adults with asthma exacerbation were reviewed. In order of decreasing frequency, patients underwent chest radiographs (65.1%), sinus radiographs (45.6%), a complete blood count (35.7%), a peak flow measure (37.3%) and blood gases examination (12.5%). An abnormal finding was present in almost half of the sinus radiographs and blood counts, 45% of the blood gases tests, and 29.1% of the chest radiographs. Peak flow measurements were below normal values in 87 % of examined patients. The short term (less than 48 hours) relapse rate (2.7%) and the mean ED length of stay (2.3±2.2 hours) were relatively good.

Conclusions: Discrepancies between published guidelines and the diagnostic management of asthma patients in the ED were found. Simplified guidelines or more effective educative interventions to implement existing recommendations are needed to reduce morbidity and costs.

Increased asthma admission rate and Return to school in northern Israel

G. Zamir[1], L. Himovitch[2], S. Brasilov[1], A. Koren[2], Y.Antoneli[1]
[1]Pediatric Emergency Department, [2]Pediatric Ward B, "HaEmek" Medical Center, Afula, Rapport Medical School, Technion, Haifa.

Background: An increase in pediatric asthma admissions associated with the start of the school year as been described in several studies. While the reason for this surge is not fully understood, it is thought to be caused by the sudden exposure of children to viral pathogens, acquired by their peers during the summer holiday. Such a phenomenon has not been described neither in Israel nor in any other Mediterranean or Mid-Eastern country.

Objectives: To investigate the association between pediatric asthma admissions and return to school in northern Israel.

Design/Method: All pediatric asthma admissions to "HaEmek" Medical Center during the years 2000-2007 were examined. Hospital records of children aged 1 to 18 years were included and date of birth, date of admission and sex were obtained. Each record was marked as 1) acute asthma only or 2) symptoms of acute asthma with additional diagnosis (e.g. pneumonia). Exclusion criteria were a prior prolonged respiratory illness or cases in which asthma diagnosis was uncertain. The association between asthma admission patterns and return-to-school dates was examined by age, sex and type of asthma exacerbation.

Results: During the study period, 1626 children were hospitalized due to asthma. Of these, 1390 children met the inclusion criteria, 844 (60%) boys and 546 (40%) girls. Acute asthma was noted in 916 (66%), and asthma with additional diagnosis in 474 (34%). An additional diagnosis of pneumonia was found in 450 children (32% of total admissions). There was a definite association between asthma admission rate and return-to-school date. A steep rise in admissions was noted in all age groups: the 1-4 year age group peaked at 3.5 weeks, while the 5-14 year age group peaked at 8-10 weeks following return-to-school date. The odds ratio of asthma admission in the 30 days following the return-to-school date was 1.74 (95% CI = 0.92 to 3.2) compared to that of

the 30 days prior to school start. Almost all admissions during this period were of the "acute asthma only" type.

Conclusions: In northern Israel, returning to school is strongly associated with an increase in pediatric asthma admission rate.

Takotsubo Cardiomyopathy mimicking acute ST elevation MI

Aliza Noi MD[1], Jacob Or MD[1], Hanoch Hod MD[2], Victor Gueta MD[2], David Fish[3], Ariel G Bentancur MD[1].

From the Emergency Department[1] and the Heart Institute[2], Sheba Medical Center, Tel Hashomer; Affiliated with the Sackler School of Medicine[3], Tel Aviv University, Israel.

Introduction: Takotsubo cardiomyopathy is an acute and transient left ventricular (LV) dysfunction presenting to the emergency department (ED) with clinical signs and symptoms similar to those of an acute ST segment myocardial infarction (Ac STEMI), an elevation of cardiac serum markers, and normal coronary arteries. The name of the entity originated in the typical LV apical ballooning demonstrated by the ventriculography and showing a narrow neck and a balloon shaped hypokinetic ventricular apex, that reminds a Japanese fishing net. We hereby describe the clinical, electrocardiographic, and laboratory findings of a case of Takotsubo cardiomyopathy.

Case Description: A 66 years old white female patient presented to the ED with retrosternal pressure, nausea and profuse sweating for three hours. She had a history of heavy smoking stopped 4 years ago, hypercholesterolemia, and three episodes of transient ischemic attacks three years ago. The patient denied any history of symptoms on exert, or recent febrile, upper respiratory or gastrointestinal disease. The EMS team transporting her reported no arrhythmia, but transient hypotension (blood pressure 95/60 mmHg) that was corrected with a drip of normal saline. The patient received also 300 milligrams of Aspirin and 4000 units of Heparin. On arrival she was completely conscious and cooperative, the blood pressure was 133/80 mmHg, the pulse 65 and regular, the oral body temperature 36.4°C, and the oxygen saturation in room air 100%. Lungs were clear, and cardiac auscultation revealed no murmurs, friction rub or gallop. The electrocardiogram showed a normal sinus rhythm, ST segment elevation of 3 mm on leads I, II, AVL, AVF, V3-6. After repeating the electrocardiogram, withdrawing blood samples and performing a chest x-ray the patient was transported to the catheterization room where a coronary angiography was performed (35 minutes after arrival).The angiography showed normal coronary arteries and LV ballooning (fig 1 diastole, fig 2 systole).

Conclusion: Takotsubo cardiomyopathy mimicks acute ST elevation myocardial infarction and while treatment differs can only be identified by ventriculography at the cath-lab.

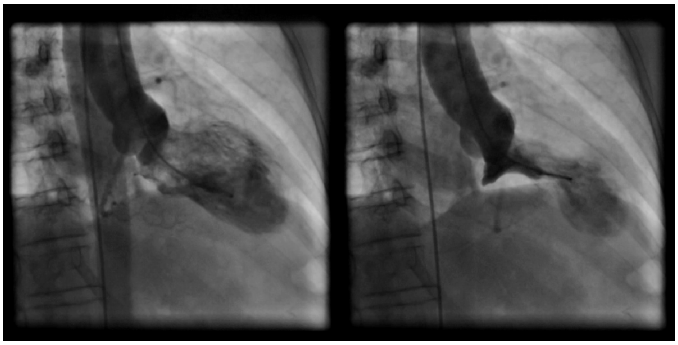


Fig1- Diastole

Fig 2- Systole

בדיקת רמת המוכנות של הצוות המטפל במחלקה לרפואה דחופה להתמודדות עם אירוע רב נפגעים בילדים

מירי אברהם, R.N, MA[1]; סיגלית אידלמן, R.N, BA[1]; ענת נשיא-בשארי, R.N, MA[1]; יניב פרץ, R.N, MA[1]; גלי וייס, R.N, PhD[3]; מיכל רסין, BA[2]; R.N, MA

[1] מלר"ד- המחלקה לרפואה דחופה, מרכז רפואי אסף הרופא

[2] יחידת מחקר בסיעוד, מרכז רפואי אסף הרופא.

[3] פיקוד העורף, חיל הרפואה, צ.ה.ל.

רקע: מערכת הבריאות בעולם, ובישראל בפרט, מתמודדת עם אירועים רבי נפגעים (אר"ן) (Multicasualty event) תוצאה של מעשי טרור. בשנים האחרונות, התרחשו אירועים בהם הנפגעים היו בעיקר ילדים. מציאות זו מחייבת את בתי החולים להיערך להתמודדות עם אר"ן בילדים. סקירת ספרות שנועדה לזהות המלצות ייחודיות, הצביעה על מחסור בתוכניות הכשרה, ורתיעה של צוות מטפל מפני התמודדות עם אר"ן בילדים.

מטרת המחקר: הייתה לבדוק את רמת המוכנות של הצוות המטפל במחלקה לרפואה דחופה (מלר"ד) להתמודדות עם אר"ן שהנפגעים בו הם ילדים.

שיטות: במחקר השתתפו 105 נבדקים שכללו את כל הצוות הסיעודי והרפואי העובד במלר"ד באחד מבתי החולים בארץ. כלי המחקר היה שאלון בן 41 פריטים שבדק תפיסות, עמדות וידע של מטפלים בהתמודדות עם אר"ן בילדים, בהשוואה לאר"ן במבוגרים. מהימנות הכלי נעה בין 0.6-0.94 =α בכל חלקי השאלון.

תוצאות: התמונה הכללית שעולה מהמחקר מלמדת על רמת מוכנות נמוכה לאר"ן בילדים. הסבירות לתרחיש של אר"ן במבוגרים דורגה משמעותית גבוה יותר בהשוואה לאר"ן בילדים. יכולת ההתמודדות הנפשית, הידע והמיומנות באר"ן מבוגרים, דורגו משמעותית גבוה יותר (p=0.000) מאשר באר"ן בילדים. צוות האחיות דרג גבוה יותר מהרופאים את הערכתם בנוגע לרמת הידע והמיומנות שלהם באר"ן ילדים. רמת הידע שנבדקה בתחום ההיערכות לאר"ן בילדים נמצאה כנמוכה אצל כל המשתתפים. הסכמת המטפלים לנוכחות הורה ליד ילדו באירוע של אר"ן הייתה נמוכה- בינונית.

מסקנות: על בסיס הממצאים מומלץ לבנות תוכנית התערבות ברמת המקרו והמיקרו, שתקדם את מוכנות הצוות המטפל במלר"ד לתרחיש של אר"ן בילדים.

Increasing Drugs and Alcohol Abuse Detection Rates in Pediatric Emergency Departments a Prospective Cohort Study

Kozer E (1), Bar-Hamburger R (2), Rosenfeld N (1), Mordel A (1), Dalal I (3), Feinmesser P (4) ,Ben-Yehaoda Y (3) and Berkovitch M (1).

1. Pediatric Emergency Department and the Toxicology Unit, Assaf Harofeh Medical Center, Zerifin, Israel, 2. Israel Anti Drug Authority, Jerusalem Israel. 3. Pediatric Emergency Unit , The Edith Wolfson Medical Center, Holon, Israel, 4. Meir Medical Center, Kefar Saba Israel.

Objective: To improve detection rates of drugs and alcohol use among adolescents presenting to pediatric emergency departments (ED) by introducing structured guidelines for toxicological laboratory workup. **Methods:** The study was conducted between September 1st 2006 and August 31st 2007 in three pediatric ED's affiliated with the Tel Aviv University (AHMC, MMC and EWMC). The annual census is 18,000 to 20,000 patients in all three hospitals and the demographics are similar. Physicians in the one of the centers (AHMC) were instructed to send blood for ethanol levels and urine for toxicological screening in any adolescent (age 12-18) presenting to the ED with a new psychiatric disorder, any change in the level of consciousness, suicidal attempt or past history of alcohol or drug abuse. Physicians in the two other hospitals did not receive any special instructions. **Results:** During the study period, 3200 adolescents (51% males) were seen in AHMC, 3493 (47% males) at MMC and 3633 (58% males) at EWMC. The mean age was 14.9, 15.2 and 13.3 years respectively. Urine drug screen was ordered for 138 patients from AHMC, 48 patients from MMC and 22 patients from EWMC ($P<0.001$). Illicit drugs were detected in 13 patients from AHMC in 4 patients from MMC and 1 from EWMC ($P=0.0005$). Ethanol levels were higher than 10mg/dl in 49, 30 and 19 patients respectively ($P<0.001$). **Conclusion:** Introducing structured guidelines for ordering toxicological screening increases the detection of alcohol and drug of abuse among adolescents presenting to pediatric emergency departments.

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Diagnosis of Pneumonia by Non Pediatricians vs Pediatricians in an Urgent Care Setting.

Kovalski N and Zimmerman DR. TEREM Emergency Medical Centers, Jerusalem, Israel.

Background: Most urgent care facilities do not have the luxury of having children treated only by pediatricians. A number of studies have indicated differences in the care of patients rendered by physicians with different specialty training. The goal of this study is describe differences in the diagnosis of pneumonia within a system of urgent care facilities.

Materials and Methods: *Setting*: TEREM Emergency Medical Centers is a privately owned company that establishes and manages emergent care clinics. TEREM's central clinic is open 24 hours/day, 365 days/ year. Four other branches are open evenings and weekends. Laboratory and radiological services are provided during all hours of operation.
Data source: TEREM uses an in-house developed electronic medical record to register, clinically manage and administer all visits and laboratory tests. Demographic, clinical, laboratory and radiological data can be retrieved through the application's data warehouse.
Study population: All patients < 10 years who presented to any TEREM clinic with a chief complaint of fever. Patients were grouped by age: 0 until 2 years, 2 until 5 and 5-10 years.
Analysis: Pediatricians and non-pediatricians were compared as to percentage of pneumonia as final diagnosis, number of CBC's performed, number of x-rays performed, and percentage of x-rays where the diagnosis of the examining physician differed from that of the radiologist (*mismatch*). To minimize inter-radiologist variability in film interpretation, we looked at mismatch rates relative only to the most senior radiologist (who read 49% of all films in this study). Significance was measured via chi square as $p < 0.05$.

Results: As seen in Table 1 column A, most children with a chief complaint of high fever are seen by non pediatricians. Pediatricians diagnosed significantly fewer pneumonias in age groups 0-2 and 2-5 (column B). Non pediatricians were **not** more likely than pediatricians to perform a CBC or x-ray in any of the age groups (column C, D). In the age group of 0-2 and 2-5, pediatricians had a significantly lower mismatch rate (p=0.06 and p=0.01 respectively).

Table 1	**A**	**B**	**C**		**D**	
Age Group	# cases with high fever seen by Pediatrician	# cases diagnosed as Pneumonia by Pediatrician / % of high fever cases	# cases of Pneumonia did a CBC		# cases of Pneumonia for which a Xray done	
0-2 years	3390	284 / **8.4%**	184	65%	271	95%
2-5 years	1392	171 / **12.3%**	97	57%	159	93%
5-10 years	570	60 / **10.5%**	28	47%	54	90%
	# cases with hi fever seen by **non-Pediatrician**	# cases diagnosed as Pneumonia by non-Pediatrician / % of high fever cases	# cases of Pneumonia for which a CBC done		# cases of Pneumonia for which a Xray done	
0-2 years	9711	1011 / **10.4%**	649	64%	941	93%
2-5 years	5274	758 / **14.4%**	474	63%	709	94%
5-10 years	2743	279 / **10.2%**	158	57%	263	94%

Conclusions: While pediatricians demonstrate superior skills in diagnosing pneumonia, the absolute differences in performance versus the TEREM non-pediatricians was small. We feel that it is clinically appropriate for non-pediatricians to assess such cases but that continuing professional development is necessary to further improve non-pediatrician performance. Furthermore, TEREM's policy of having every mismatch case followed up by a senior physician within 24 hours means that these "errors" have little clinical significance.

Passive versus Active Distraction for Intravenous Catheterization in the Pediatric Emergency Department

Ran D. Goldman, Donna Koller, Tanya Wan, Sandy Bever, Samantha Stuart

PRETx Program, Division of Pediatric Emergency Medicine, BC Children's Hospital, Department of Pediatrics, University of British Columbia, Vancouver, BC and Child Life Program, The Hospital for Sick Children, Department of Pediatrics, U of Toronto

Introduction: Children visiting the ED experience anxiety and pain during procedures. In order to ameliorate the effects of pain and anxiety, many hospitals have Child Life Specialist programs. The objective of this study was to compare the efficacy of active versus passive forms of distraction in decreasing anxiety and pain in children 5-18 years old undergoing IV insertion, the most common procedure in the Pediatric ED.

Methods: This was a prospective, randomized trial comparing anxiety and pain response among children being active (experimental) or passive (control) during intravenous catheter insertion in the ED and while being supported by a Child Life Specialist. Outcome measures were recorded by a Research Assistant (RA) and included Observational Scale of Behavioral distress-Revised (OSBD-r) at baseline, immediately before IV insertion(s), immediately after IV insertion attempt(s) and every 2 minutes in between. The RA also recorded the Faces Pain Scale-Revised (FPS-r) for each angiocath insertion attempt. The number of IV attempts and the length of the procedure were also recorded.

Results: A total of 79 (89%) children completed the study. Children were 10±3 years old (range 5 to 18). 39 and 40 were randomized to the active and passive groups respectively. 10 (13%) children that were allocated to the passive group were subsequently offered active forms of distraction to accommodate their perceived needs. There was no significant difference in mean OSBD-r and FPS-r between the groups. More children in the active group had a successful first attempt to insert an IV compared to the active group ((89% vs 63% respectively), p=0.01) and the mean length of procedure was faster in the active group ((1.2 vs 1.8 minutes respectively), p=0.02).

Conclusion: Active child participation in the distraction procedure by a Child Life Specialist during angiocath insertion appears to be more effective than passive forms of distraction, particularly as they relate to fewer attempts for successful cannulation.

POTENTIAL VITAMIN INTERACTIONS IN CHILDREN

Ran D Goldman, Alex L Rogovik, Sunita Vohra

Pediatric Research in Emergency Therapeutics (PRETx) Program, Division of Pediatric Emergency Medicine, BC Children's Hospital, Department of Pediatrics, University of British Columbia and CARE program, Department of Pediatrics, U of Alberta, Edmonton

Introduction: Significant growth in vitamin use has been documented in the literature in recent years both in children and adults. All vitamins have significant pharmacological activity and can interact with prescribed or over-the counter medications. The objective of the study was to determine the frequency and types of potential interactions between vitamins and conventional medications in children arriving at the pediatric Emergency Department.

Methods: A survey of parents and/or patients 0-18 years arriving at a large tertiary pediatric ED in Canada in the preceding three months.

Results: A total of 1804 families were interviewed in this study. A considerable number of patients (11% of our cohort) had possible vitamin-medication interactions in the preceding three months which could theoretically result in adverse events, and over one-third of these children had more than one interaction. Patients with potential interactions and their parents were significantly older ($p<0.001$ for the child and mother, $p=0.02$ for father), they were much more likely to have a chronic illness ($p<0.001$) and concurrently receive prescribed or over-the-counter medication ($p<0.001$), and more children with interactions were completely immunized ($p=0.02$). Child's gender, parental education, employment status, family income, and primary language spoken at home were not associated with interactions.

Conclusion: Taking into account high rate of potential vitamin-drug interactions, especially among older children and patients with chronic illness, parents and health care providers need to balance the potential benefit of concurrent vitamin-medication use with its potential harms.

Characteristics associated with admission and longer length of stay due to painful vaso-occlusive crisis in children with sickle cell disease

Alex L. Rogovik, Ying Li, Jeremy N. Friedman, Ran D. Goldman

Pediatric Research in Emergency Therapeutics (PRETx) Program, Division of Pediatric Emergency Medicine, BC Children's Hospital, and Division of General Pediatrics, The Hospital for Sick Children, Toronto, ONTARIO

Background: Sickle cell disease (SCD), characterized by chronic hemolysis and vaso-occlusive crises (VOC) carries a significant risk of morbidity and mortality in children. The objective of the study was to identify demographic, clinical, and laboratory characteristics associated with admission and a longer length of stay (LOS) due to vaso-occlusive crisis (VOC) in children with sickle cell disease (SCD).

Methods: Retrospective chart review at a large tertiary pediatric center. All patients under 18 years with VOC due to SCD presenting to the Emergency Department (ED) were included. We performed univariate and multivariate regression analyses to predict characteristics associated with admission and LOS 4 days.

Results: A total of 428 visits for VOC were documented in 2005-2006 years. Children with fever, higher systolic blood pressure, higher leucocyte and monocyte count, and combined extremity and non-extremity location of pain were more likely to be admitted; homozygous genotype, fever, higher mean cell hemoglobin, increased leucocytes, platelets and percentage of reticulocytes were associated with a longer LOS for admitted patients. Higher pain score at triage ($p<0.001$), older age ($p=0.04$), and increased systolic blood pressure ($p=0.02$) were predictors of admission in a multivariate regression analysis. Higher pain score at triage ($p=0.046$), older age ($p=0.002$), increased polymorphonuclear count ($p=0.02$), and homozygous SCD type ($p=0.03$) were associated with prolonged hospital LOS in a multivariate analysis.

Conclusions: A higher pain score at triage and older age predict both admission and a longer LOS for children with painful VOC. Furthermore, increased systolic blood pressure is associated with admission and increased polymorphonuclear count and homozygous SCD type predict longer LOS. These parameters will help healthcare providers predict and plan admission and management of these children.

Comparison of Contrast Enhanced CT vs. Physician Directed Ultrasound In The Diagnosis of Acute Appendicitis

Objectives: Abdominal CT scan (CT) is the preferred radiographic study for the diagnosis of appendicitis in the United States, while radiologist-operated ultrasound (US) is often used in Israel. This comparative international study evaluates the performance of CT vs US in the evaluation of acute appendicitis.

Methods: A retrospective chart analysis was conducted at two tertiary care teaching hospitals, one in each country. Adult patients (age 18-99) with an ED working diagnosis of appendicitis between January 1, 2005 and December 31, 2006 were reviewed. Patients that had an imaging study, went to the OR, had surgical pathology results and complete chart information were included.

Results: Of 520 patients in Israel, 197 were included in the US cohort.
Based on final pathology, US had a sensitivity of 68.4% (95% CI 61.2-74.8%). The negative appendectomy rate in patients with positive US was 5.5%. The total length of stay for these patients was 448.3 minutes (23.4% had subsequent CT scans). Time from US order to completion was
38.2 minutes. Of 136 patients in the United States, 79 were included in the CT cohort. Based on pathology, CT had a sensitivity of 100% (95% CI 95.4-100%). The negative appendectomy rate was 0%. Total length of stay was 559.5 minutes and time from CT order to completion was 194.2 minutes (both values $p<0.001$ compared with ultrasound times). We calculate that a "first pass" approach of using US first, and then performing a confirmatory CT scan in patients with negative US, would have saved our United States patients an average of 20.1 minutes per patient, and avoided CT in 65% of patients.

Conclusions: Radiologist-operated US had inferior sensitivity and positive predictive value when compared with CT, though was significantly faster to perform, and avoids radiation and contrast in a majority of patients. A "first-pass" approach using US first and then CT if US is not diagnostic may be desirable in some institutions

Betzalel E. Reich BA
Tufts University School of Medicine
Boston, MA

Todd Zalut, M.D., F.A.C.E.P.
Director, Department of Emergency Medicine
Shaare Zedek Medical Center
Jerusalem

Scott Weiner, M. D., F.A.C.E.P.
Department of Emergency Medicine
New England Medical Center
Boston, MA