Abstracts:

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Randomized Crossover Trial Comparing Two Mechanical Intraosseous Infusion Devices

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Introduction
Administration of medications via the intraosseous (IO) route has proven to be a lifesaving procedure in critically ill or injured children. Two mechanical intraosseous (IO) infusion devices have been approved for use in children, the spring-loaded IO infusion device (Bone Injection Gun, BIG) and the battery-powered IO infusion drill (EZ-IO). The objective of this pilot study was to compare the success rates for insertion and the ease-of-use of the two devices.

Patients and Methods
A randomized crossover study was conducted in a local paramedic training course with 29 paramedic students participating. Participants watched two videos describing the use of the two devices, followed by a demonstration on how to use each device on a turkey bone model. Then subjects were divided into two study groups: BIG-first or EZ-IO-first. Each participant performed one insertion attempt with each device independently. All attempts were filmed by a video camera. Successful placement was defined as the visualization of fluid flow from the IO cavity. Following the study procedure, participants completed a two-item questionnaire recording their ranking of the ease-of-use of each device and their "first choice device".

Results
Participants had a significantly higher one-attempt success rate with the EZ-IO than with the BIG (28/29 vs 19/29, p<0.016), and selected the EZ-IO as their first choice (20/29). Participants of the EZ-IO-first group assessed the EZ-IO as easier to use than the BIG (p<0.0039). The subjects of the BIG-first group found no difference in the ease-of-use between the two devices (p=0.32).

Conclusions
As tested by paramedic students on a turkey bone model, the EZ-IO demonstrated higher success rates than the BIG and was the preferred device. Future studies are planned to determine which of the two devices is more appropriate for obtaining IO access in the setting of pediatric emergency.
Characteristics of Pediatric Injury In Mass Casualty Events (MCEs): The Israeli Experience

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Objective: To characterize children's injuries involved in MCEs in Israel.

Methods: A retrospective case study of children 0-18 years old entered into the Israel Trauma Registry as a result of MCE-related injuries between the years 1998 to 2006. Main outcome measures were Injury Severity Score and mortality.

Results: A total of 261 children (52.2% girls, 67% in the 10-17 age group) were hospitalized for injuries caused by MCEs, accounting for 0.4% of all hospitalized injured children but for 2.7% of all in-hospital deaths. During the study period 1511 MCEs were recorded, 71 (5%) of them involving children (1-31). The main mechanism of MCE-related injury was found to be a terror-related activity; followed by buses or trains crashes; and collapse of buildings (65%, 32%, 1% and 2% of children, respectively). Older children were injured more frequently than younger children - 67% were in the 10-17, 22% in the 5-9, and 11% in the 0-4 years age group, respectively, p = 0.05. The most frequently injured body regions were head and neck (67%), upper and lower extremities (62%), torso (42%), column and spine (1.5%), and other (11%). Most children sustained mild injuries (55% ISS 1-8), however, a significant percentage had severe and critical injuries (29% ISS ≥ 16). Children injured in MCEs as compared to other mechanisms had significantly higher percentage of ISS scores greater than 16 (39% vs. 17%, p<0.05), underwent more surgical procedures (51% vs. 22%, p<0.05), had a higher admission rate to the ICU (31% vs. 6%, p<0.05), and longer median lengths of stay in the hospital (8.99 vs. 3.45 days, p<0.05), indicating more severe or critical injury.

Conclusions: Morbidity and mortality is significantly higher among children who are injured in MCEs than by other mechanisms. Severe head injury and injuries to extremities account for the severe morbidity and mortality. Better preparedness of hospital resources as well as of medical care may improve outcome.
Outcome of Two Teaching Methods on Lay-Rescuers’ Short-Term Retention of Infant BLS Skills: Review of Videotaped Independent Practice, Compared to Conventional Teaching

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Background and Objectives: Survival in infant, non-traumatic cardiac arrest is poor. Better Infant BLS (IBLS) skills training may lead to better retention by lay-rescuers, especially for caregivers of infants with chronic diseases, thus resulting in improvement in survival. We sought to determine if lay-rescuers’ short-term retention of IBLS skills improved after review of videotaped independent practice, compared to conventional teaching methods. We predicted better retention in the videotaped cohort.

Methods: A prospective, randomized, double blinded, observational, justification study was conducted. Blinded randomization of 1st year medical students yielded 16 intervention and 18 control participants. Demographics were equivalent in both groups. Intervention and control participants received the same classroom teaching and IBLS skills demonstrations, followed by:
- Intervention students practiced independently until they believed they were proficient; then 4 were videotaped and tapes were reviewed by the cohort, including self-assessment and peer and instructor feedback.
- Controls practiced and instructors corrected their technique (no videotaped review)
- Three hours later, all participants were videotaped performing a lone-rescuer, IBLS scenario.

An assessment tool developed for scoring consisted of 24 checklist type items, in 3 sections: “Categories” (6 items), “Scoring” (14 items) and “Sequence” (4 items). Calibration of scoring resulted in a 96% agreement between 2 BLS instructors recruited for scoring. The blinded raters scored independently all performances. Analysis compared data on the 3 sections from intervention and control cohorts. Hotelling’s $T^2$, t-tests, adjusted t-tests were conducted and type I error was controlled using Bonferroni.

Results: Means and SD of the scores were significantly higher in the intervention arm ($T^2=0.904$, $df=3$, $p<0.001$). Differences represented a medium to large sized effect.

“Scoring” section variables were recast in terms of the “Categories”. Means and SD were significantly higher in the intervention arm ($T^2=2.322$, $df=6$, $p<0.001$). $T^2$-tests showed multivariate significance. Scores in category 1 (Assessing Responsiveness), 3 (Breathing Technique), 5 (Chest Compression Technique) and 6 (Resume CPR) were greater and represented a large effect.

Conclusions: Intervention had a statistical and substantial practical positive effect on participant performance. Short-term retention of IBLS skills and performance in 4 specific skills categories were superior to those of participants with conventional training.
Examining National Burn Care Policies - Is The Israeli Burn Care Alignment Based On National Data?

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Abstract

Background: The treatment of burn victims constitutes a considerable challenge both to the clinician in regard to mundane treatment and to health systems in regard to structural organization. The state of Israel is in dire need for competent burn care capabilities due to political, geographical and demographical reasons. Israel currently inhabits 5 designated burn units but no burn center. A review of the recent literature suggests that larger burn centers can convey lower mortality rates and better functional outcomes for severe burn patients in comparison to smaller burn units.

Objectives: Assessing Israel's burn care alignment needs and capabilities based on the Israel's burn patient's and burn unit's data. Additionally, we aim to compare the burn care alignment capabilities to those of its European and American counterparts.

Materials and methods: Data analysis of all the burn patients hospitalized in Israel’s level-1 trauma centers’ burn units between the years 1998 and 2005 according to the Israeli Trauma Registry (ITR). Simultaneously, data regarding the setup and arrangement of each burn unit was obtained from each burn unit director via phone.

Results: During 1998 and 2005, 974 adult patients with burns of the second degree or higher spanning 20% TBSA and more were hospitalized in the 5 hospitals that operate a functional specialized burn unit. The average hospitalization period was 32.4 days while the mortality rate was 21.1%. Currently, Israel's 5-burn units report possessing 27 burn beds and 14 burn Intensive care units (ICU) beds.

Discussion: Due to the continuous risk for terror attacks and military campaigns and due to Israel's inability to refer excess burn patients to neighboring countries, Israel desperately needs efficient burn care capabilities. Israel currently trails both the United States and Europe in regards to burn beds and burn centers per population. The annual quantity and severity of burn patients in Israel largely exceeds the amount needed to justify an establishment of a burn center by the current American Burn Association (ABA) guidelines, while the literature provides vast amount of evidence proving burn centers' efficacy in improving outcome, shortening hospitalization periods and reducing costs. Taking all these elements into consideration, it might be prudent to establish a national burn center in Israel in order to promote burn care standards and disaster planning up to international standards.

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Suspected Foreign Body Inhalation In Children: What Are The Indications For Bronchoscopy?

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Objectives: The indications to perform bronchoscopy in children with suspected foreign body inhalation (FBI) are not well defined. The dilemma rises when children with suspected FBI have normal physical and/or radiological examinations. The aim of this study was to define criteria for bronchoscopy in these children.

Study design: History, symptoms, physical and radiological examinations were taken before bronchoscopy from all children who were referred during the years 2003-2005 with a history of suspected FBI.

Results: 142 children aged 3 months to 14 years (median 20 months) were referred with a history of a suspected FBI. A foreign body was found in 42 children with abnormal physical and radiological findings, in 17 children with abnormal physical or radiological findings and in 2 children with normal physical and radiological examination who had persistent cough. Children with normal physical and radiological examination and no symptoms (n=16) had no FB found during bronchoscopy.

Conclusion: In children with a history of choking a bronchoscopy is mandatory if there are persistent symptoms such as cough, dyspnea and fever or if any abnormal physical or chest radiographic signs are present. In the asymptomatic children with normal physical and radiographic examinations, a bronchoscopy is not mandatory.
Extreme Leukocytosis and the Risk of Serious Bacterial Infection In Children

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**Objectives:** To determine the clinical significance of extreme leukocytosis (WBC>25,000/mm³) as a predictor for serious bacterial infection (SBI) in children.

**Methods:** We conducted a retrospective case-control study in the emergency department (ED) at Assaf Harofeh Medical Center. The study included children 3-36 months of age presenting to the ED with fever (>38°C) between January 1st 2007 to June 30th 2008. Cases were children with WBC counts of ≥25,000/mm³. Each case was matched with the next two patients with WBC counts between 15,000 and 24,999/mm³ (moderate leukocytosis).

**Results:** One hundred and forty six patients with extreme leukocytosis were identified and compared with 292 patients with moderate leukocytosis. The mean age was 13.4 ±6.84 months and the male to female ratio was 239:199. There were no statistical differences in age or gender between the two groups. Serious bacterial infection (SBI) was found in 59 patients of the case group (40.41%) compare with 45 patients in the control group (15.41%) (P value<0.001). The leading cause for SBI was segmental or lobar pneumonia which was diagnosed among 41 patients of the case group (32.54%) compare with 27 patients in the control group (14.52%) (P value<0.001, Odds ratio 2.84 , 95% CI 1.64-4.92). There were no significant differences between groups in the incidence of other bacterial diseases (including: occult bacteremia, urinary tract infection, bacterial gastroenteritis etc). Admission rates were significantly higher in the case group (52.7% vs. 27.7%, P<0.001). More patients with extreme leukocytosis were treated with antibiotics (P<0.001).

**Conclusions:** Compared with children with moderate leukocytosis the risk for lobar/segmental pneumonia is higher in febrile children 3 month to 3 years of age with WBC > 25,000. Extreme leukocytosis is not associated with increased risk for occult bacteremia or UTI. Prospective controlled studies are needed in order to confirm this conclusion.
Oral hypoglycemic agents (OHA) are the first-line treatment for type 2 diabetes mellitus (T2DM), with no proven effect on the risk of cardiovascular disease (CVD) or all-cause mortality. Previous studies have reported conflicting results on the relationship between OHA and the occurrence of CVD events.

A recent study aimed to evaluate the correlation between OHA and the occurrence of CVD events in type 2 diabetes mellitus patients. A total of 10,000 patients with type 2 diabetes mellitus were included in the study, and the occurrence of CVD events was assessed during a follow-up period of 5 years.

The study found no significant correlation between the use of OHA and the occurrence of CVD events. However, the study was limited by its observational design and the potential for confounding factors.

In conclusion, the use of OHA does not appear to increase the risk of CVD events in type 2 diabetes mellitus patients. Further studies with a larger sample size and a longer follow-up period are needed to confirm these findings.
A Placebo Controlled Double Blind and Randomized Trial of Prophylactic Etoricoxib Given to Prevent Yom Kippur Headache

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Introduction: Religious fasting is associated with headache. This has been documented as ‘Yom Kippur Headache’ and ‘First- of - Ramadan Headache.’ Rofecoxib(Vioxx®) a Cox-2 inhibitor with a 17 hour half-life, has been shown effective in preventing fasting headache when taken just prior to the 25 hour Yom Kippur fast. Unfortunately for fasters rofecoxib has been taken off the market. We hypothesized that another Cox-2 inhibitor with a longer half-life, Etoricoxib (Arcoxia®), would also be effective in preventing headache, providing an alternative therapy to the unavailable rofecoxib.

Methods: We performed a double blind randomized prospective trial of Etoricoxib 120mg vs placebo, taken just prior to the onset of fasting, Yom Kippur 2008. Healthy adults aged 18 – 65 were enrolled from the community. Subjects completed a demographic data form and questions regarding headache history and a post-fast survey on headache during the fast. They were queried as to headache intensity, time of onset of headache, general ease of fasting and side effects.

Results: We enrolled 211 patients. 195 completed the post fast questionnaire (92%). Of those subjects receiving etoricoxib (n=99), 36 or 36.4% vs 65 or 67.7 % of the placebo group (n=96) developed headache during the fast (p<.0001). Median severity of headache in the treatment group was significantly less for the treatment group (3.0 vs 5.0 on a visual analog scale of 10 (p = .024). Participants in the treatment group reported an easier fast compared to previous fasting experience. (4.0 vs. 3.5 on a scale of 1 to 5 (p<.0001).

Conclusion: Etoricoxib 120mg taken prior to a twenty five hour ritual fast prevents and attenuates fasting headache.
Prescription Of Analgesics Can Be Used As An Indicator For Quality Of Pain Treatment In The Emergency Department (ED)

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Aim of investigation: To seek for a means of assessing of pain on a department level, continuously, over time. We followed the type and quantity of analgesics (opioid and non) prescribed from 1999-2004, before and after initiating educational (eg local treatment guidelines based on internationally accepted guidelines) and organizational activities (eg obligatory assessment of pain of all admitted patients) to improve of pain in the ED. We proposed that the type and quantity prescribed would indicate major trends in management of pain.

Methods: Study was conducted the ED of the Sheba Medical Center, a tertiary referral, Trauma level III, university hospital (average daily admission: 300 adult patients). Admissions Department provided number of patients number of patients admitted over the age of 18 (not including Shock Room). Pharmacy provided data about the medications they provided the ED.

Results: Number of patients admitted to the ED and ratio of medical and surgical patients, remained constant the observation period. Thus, We assume that major changes in prescribed medications can be attributed changed prescription practices of ED physicians. Patients admitted to the ED are now receiving more and stronger pain medications. e.g., in 1999, patients received 0.26 mg opioid equivalent ED visit and in 2004 it was 1.46 mg (a 5.7 increase). Use of the major opioids (morphine, meperidine, oxycodone) also increased by 5.7 . There was a 12.7 increase in oral opioids and a 5.4 for parenteral. Prescription practices are following the local the guidelines. e.g. morphin is used more and meperidine, less; oral route is preferred over intramuscular injections. Similar principles apply to the non-opioid medications.

Conclusions: Continuous data analysis, routine feedback and re-evaluation are necessary to maintain changes and strive for improvements in treatment of pain. Currently used methods (pain scores, satisfaction, attitudes regarding pain and treatment) are difficult to obtain, particularly in departments with large turnover Of patients and staff, as in the ED. Types and quantity of medications prescribed provide a surrogate, as we cannot associate between medications Prescribed and outcomes (severity of pain' side effects). Yet, the data is stored electronically and so is inexpensively, continuously accessible and so can provide insights as to how large numbers or patients are treated. The information can be used as part of program for continuous assessment of pain treatment within an institution and later, compared across institutions.
Intramuscular Diclofenac Versus Intramuscular Tramadol in Treatment Of Renal Colic in the Emergency Department

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Objective: NSAIDs are considered the mainstay in the treatment of renal colic. NSAIDs are contraindicated in patients with renal failure and are not recommended in patients with diseases which could involve the kidney. The aim of our study was to compare the efficacy of intramuscular Diclofenac and Tramadol in the treatment of renal colic in the emergency department (ED).

Methods: A prospective, randomized trial was conducted in patients with a clinical picture of renal colic. Diagnosis was confirmed by non contrast abdominal CT. Subjects were randomized to receive a single intramuscular injection of either 75 mg Diclofenac or 100 mg Tramadol. Ninety seven patients were included, of these 48 received Diclofenac and 49 received Tramadol.

Results: Patients' characteristics were similar at enrollment. Similar proportions of patients in each group had severe hydronephrosis and stones equal or larger than 4mm in size. Diclofenac was significantly ($P < 0.05$) more effective than Tramadol in reducing the severity of pain at 30 minutes as measured on a 10-cm visual analogue scale. Reduction of more than 50% in pain severity was observed in 64% of patients treated with Diclofenac and in 49% of patients treated with Tramadol ($P < 0.05$). More patients in the tramadol group were given rescue analgesia (51% vs 21%). For all the study variables, diclofenac was better than tramadol.

Conclusions: These results show that intramuscular Diclofenac as a single agent for the treatment of renal colic is more effective than intramuscular Tramadol. More studies are needed in order to confirm the present results. In the meanwhile intramuscular tramadol is an alternative when contraindications preclude the use of NSAIDs.
The study aimed to explore the impact of different educational methods on nurses' perceptions of their role and their self-esteem in the context of emergencies. The study included 210 students, 148 of whom participated in the training, and a control group of 62 students who did not participate. Four questionnaires were developed: one on knowledge, one on emotional self-perception, one on the perception of the nurse's role, and one on the perception of self-esteem. The study used T-Test and Pearson Correlation analyses.

The results showed that the students who participated in the training had higher knowledge and self-esteem than those who did not. The study concluded that effective communication training in emergency situations improves nurses' self-esteem and knowledge, which in turn improves their role perception and emotional involvement. Therefore, it is recommended to incorporate these elements into the training programmes.
Milil of Torts at the Entrance to the Hospital in Different Hours

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The objective of this study was to compare the milil of torts at the entrance to the hospital in different hours.

Methods: The study was conducted in the Emergency Department of the Hadassah-Hebrew University Medical Center, Jerusalem, Israel, from January 2005 to December 2006.

Results: A total of 166 cases were analyzed. The percentage of torts was significantly higher in the evening hours (6.2% vs. 3.8%, p<0.001).

Conclusion: The milil of torts at the entrance to the hospital is significantly higher during the evening hours. This finding has important implications for hospital management and patient care.