

# הכנס השנתי ה-24

## של האיגוד הישראלי לרפואה דחופה

יום שלישי, 24 במרץ | מלון דן פנורמה, תל-אביב

### Scientific Program

#### Hall D

**14:30 – 14:45 Parallel Session – Original Articles in PEM**  
Moderators: Dr. Giora Weiser  
Dr. David Rechtman

#### **Hip POCUS for the evaluation of limping children in the ED** *Hadas Katz Dana, Meir Medical Center*

**Background:** limping or refusal to bear weight is a common complaint among children presenting to Pediatric Emergency Department (PED). It may be challenging to evaluate, especially among toddlers and non verbal children.

Point of care ultrasound (POCUS) has many clinical applications, including hip POCUS that enables bedside evaluation of hip effusion.

Our study assessed whether the use of hip POCUS has contributed to shortening patient's stay in the PED and reduced the use of auxiliary tests.

**Methods:** A retrospective study involving children aged 2-18 years who presented to Meir hospital's PED with a chief complaint of limping between the years 2015-2019. The study group included children who underwent hip POCUS as part of their ED evaluation.

The control group included children who underwent evaluation without use of hip POCUS.

The primary outcome was total care duration in the PED and the use of additional diagnostic workup.

**Results:** 220 patients were included in the study group, 191 patients were included in the control group. The groups didn't differ in their epidemiologic characteristics or clinical presentation. The POCUS group's ED length of stay was significantly shorter than the control group ( $p < 0.0001$ ). Use of auxiliary tests was significantly reduced in the POCUS group.

**Conclusion:** the use of hip POCUS as part of evaluating patients presenting to the PED with the complaint of limping or limb pain reduces length of stay and streamlines emergency room resources.

#### **Emergency Department Revisits due to Cast-Related Pain in Children with Forearm Fractures**

*Noa Kvatinsky, Rambam Health Care Campus*

**Background:** Cast immobilization is the primary treatment for children with forearm fractures. After emergency department (ED) discharge, some patients develop cast-related pain (CstRP) around the distal part of the upper extremity. We examined variables associated with ED revisits due to CstRP in children with forearm fractures.

**Methods:** A retrospective cohort study of all children who were treated with cast immobilization for forearm fracture over a 7-year period was conducted. Patient demographics, fracture location, casting method (below elbow/above elbow), first visit pain scores, treatment with fracture reduction, and revisit data were collected. Multivariate regression was used to identify predictors of revisits due to CstRP within 72-hour post-discharge.

**Results:** A total of 2,307 children were treated with cast immobilization; 95 (4.2%) revisited the ED due to CstRP (median pain score 7, interquartile range 5-9). No patient had neurovascular compromise or required surgery or re-reduction. Fifty-eight (61.1%) patients were treated with cast splitting, 10 (10.5%) with trimming, and 27 (28.4%) with cast replacement. Variables on first visit that were associated with increased odds for ED revisit included treatment with fracture reduction (odds ratio [OR] 2.31; 95% confidence interval [CI] 1.58-3.36) and a

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median pain score of 6 or more upon ED presentation (OR 1.57; 95% CI 1.32-2.13).

**Conclusions:** A small number of children with forearm fractures revisited the ED due to CstRP. Study findings suggest that being treated with closed reduction and having a pain score  $\geq 6$  on first visit, were associated with ED revisit due to CstRP.

## Assessing patient safety in a pediatric telemedicine setting: a mixed-methods study Motti Haimi, Clalit Health Services

**Background:** Telemedicine and telephone-triage may compromise patient safety, particularly if urgency is underestimated. We wanted to explore the safety in a pediatric telemedicine service, with particular reference to the "accuracy" of medical diagnoses taken by the physicians, and the reasonableness of their decisions.

**Methods:** This mixed-methods retrospective study investigated physicians' decision-making process, in a pediatric Tele-Triage service, in Israel. In the quantitative part, objective measures relating to patient's safety in telemedicine setting were investigated. It consisted of a review (by two doctors) of a random sample of 339 parent-physician consultations held in a pediatric telemedicine service, in a managed care setting, during 2014-2017. The consultations were analyzed for possible factors affecting physician's decisions, and especially the "accuracy" of diagnoses (agreement about appropriateness) and reasonableness of decisions. The physicians' decisions were also compared to "actual performance" (parents' compliance and face-to-face medical system handling) after each consultation. The qualitative part of the study consisted of interviews with 15 physicians who worked in the pediatric telemedicine service, which explored their subjective experiences and efforts to assure patient safety. The physicians were asked about factors affecting them reaching a diagnosis and deciding on an appropriate decision in this setting, while maintaining patient safety.

**Results:** The quantitative study demonstrated high values of "accuracy" of diagnoses (agreement about their appropriateness, 98.5%), and reasonableness of doctors' decisions (92%), with low values of False Positive (2.65%) and False Negative (5.3%), good sensitivity (82.85%), and high specificity (96.15%). A high association between the online decisions and the "actual performance" was also observed. In the qualitative part of the study, the physicians confirmed striving to ensure high patient safety by using several factors which help them reaching an accurate diagnosis and making reasonable decisions.

**Conclusions:** Despite the overall high safety in Pediatric Telemedicine-triage service shown in this study, one must still find ways to further enhance doctors' ability to reach an accurate diagnosis and best possible treatment decisions, to assure patient safety.

## Variables associated with nurse-initiated analgesia in pediatric triage Lior Hecht-Sagie, Rambam Health Care Campus

**Background:** Triage nurse-initiated analgesia (TNIA) has been shown to be associated with decreased time to provision of analgesia and improved patient satisfaction. We examined variables that influence the provision of analgesia in a pediatric emergency department that uses TNIA.

**Methods:** A 4-year retrospective cohort study of all children with triage pain scores  $\geq 1$  was conducted. Data on demographics, and patients' and nurses' characteristics were collected. Logistic regression analyses were used to examine the effect of multiple variables on the provision of any analgesia and opioid analgesia.

**Results:** Overall, 28,746 children had triage pain scores  $\geq 1$ ; 14,443 (50.2%) patients received analgesia of any type and 1,888 (6.6%) received opioid analgesia. Mean time to any analgesia was  $8.0 \pm 3.7$  minutes. Of the 9,415 patients with severe pain, 1,857 (19.7%) received opioid analgesia. Age, sex, hourly number of patients waiting to be triaged, and nurse experience were not associated with the provision of any analgesia or opioid analgesia. Severe pain had the highest odds ratios (OR) for the provision of any analgesia and opioid analgesia (7.7 (95% CI

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7.1-8.2) and 22.8 (95% CI 18.1-28.8); respectively). Traumatic injury and time-to-triage <8 minutes were associated with the provision of opioid analgesia (OR 4.7 (95% CI 4.2-5.2) and OR 1.6 (95% CI 1.5-1.8); respectively).

**Concussions:** TNIA yielded short time to analgesia, but rates of any analgesia and opioid analgesia were low. Several variables associated with the provision of any analgesia and opioid analgesia were identified. Our findings provide evidence to guide future educational programs in this area.

### Does location of rapid influenza diagnostic testing influence treatment time and ancillary testing in a pediatric ED?

*Ron Jacob, HaEmek Medical Center*

**Background:** Influenza causes significant burden of disease in children presenting to the emergency departments (ED). Our aim was to assess whether location (laboratory or ED bedside) of rapid influenza diagnostic testing (RIDT) for patients with influenza like illness (ILI) has an impact on treatment time or ancillary testing when compared to patients with ILI who were not tested with RIDT.

**Methods:** This was a retrospective observational study in a tertiary pediatric ED during a 2-month period in 2017 peak influenza season. The study population consisted of patients with ILI in 3 groups: Patients for whom RIDT was performed bedside by the clinician, those that RIDT was sent to the lab, and patients with no RIDT. Primary outcome measure was the difference in treatment time between the groups and the correlation of rapid testing location to treatment time. Secondary outcome measures were the correlation of RIDT location or no testing to the use of ancillary testing.

**Results:** A total of 1451 patients were included in the study. 80 patients had bedside RIDT performed in the ED, 215 had RIDT sent to the laboratory, and 1156 were included in the ILI group for whom no RIDT was performed. Patients for whom RIDT was done at the lab had a shorter treatment time in the ED when compared to patients for whom RIDT was done bedside in the ED (2.8 and 3.4 hours respectively;  $P < 0.0001$ ), even when analysed separately ( $P = 0.03$ ). Overall, patients with ILI with no RIDT had the shortest treatment time (1.7 hours;  $p < 0.0001$ ), more so when sub-analysed for discharged patients (1.1 Vs 2.8 and 2.4 hours among patients for whom RIDT was performed in the lab and in the ED respectively;  $P < 0.0001$ ). There was no difference in ancillary testing between the three groups.

**Conclusions:** In our study, location of RIDT for patients with ILI was associated with a shorter treatment time when performed in the laboratory. Overall, patients with ILI with no point of care RIDT had the shortest treatment time. Performance or location of RIDT did not influence ancillary testing.

### Reliability of different methods of collecting urine specimens for culture in children – a prospective observational study

*Michal Hurvitz Florent, Kaplan Medical Center*

**Objective:** To examine the reliability of different methods of collecting urine specimens for culture in children.

**Methods:** A prospective observational study of children aged 0-18 years in a Paediatric Emergency Department (PED). Children whose urine sample was obtained for culture during their PED visit during the study period were enrolled to the study. Data were collected from electronic health records. Contamination rates and positive urine cultures rates were calculated and compared for sex, age group and collection technique.

**Results:** Urine culture samples obtained from 1507 children were included. 284/1507(18.8%) of cultures were positive with significant growth, and 52/1507(3.45%) were defined as contaminated. Contamination rates of midstream (MS) urine samples in toilet-trained children was 1.6% (10/609), of midstream clean catch (MSCC) in non-toilet-trained children was 4.9% (17/348), of catheterized specimens was 4.9% (25/515), and of specimens collected via supra-pubic Aspiration was 0%(0/35); ( $p = 0.006$ ). There was no statistically significant difference between the contamination rates in specimens obtained by MSCC versus catheterization in girls across all age groups. In the subgroup of children that was defined as "high index of suspicion for UTI" there were similar rates

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of positive cultures obtained by the different collection methods.

**Conclusion:** Given the high diagnostic value of MSCC as demonstrated by positive cultures rate in children with high index of suspicion for UTI, and the similarity between contamination rates of MSCC and catheterization, we show that MSCC is non-inferior to catheterization for collecting urine cultures for the evaluation of UTI in non-urgent patients in PED.

## Markers for severe pediatric orbital cellulitis – when should we be more aggressive?

*Gili Palnizky Soffer, Dana-Dwek Children's Hospital, Tel Aviv Sourasky Medical Center*

**Background:** (1) To describe the epidemiological and clinical features of children with orbital cellulitis in their initial presentation in the Pediatric emergency department (PED). (2) To delineate which epidemiological and clinical features of orbital cellulitis in children resulted in conservative or surgical management. (3) To determine the impact of the introduction of the pneumococcal conjugate vaccine (PCV) into the national immunization program (NIP) on the incidence of orbital cellulitis in children.

**Methods:** A retrospective analysis of the medical records of children with orbital cellulitis was conducted between 1997 and 2018. The demographic and clinical features, laboratory and radiology characteristic, management, microbiological data, and outcomes were collected.

**Results:** 76 children were included. There was no significant difference in the annual hospitalization rates before and after the introduction of PCV into the NIP. Four patients (5.2%) were hemodynamically compromised and 19 (25%) required surgical intervention. Higher percentage of patients that required surgery were hemodynamically compromised compared to those who treated with antibiotic alone, but it did not reach to statistical significance. (11.1% Vs. 3.4%,  $P=0.23$ ). Elevated C-reactive protein levels were significantly more frequent in the children that underwent surgery ( $p=0.02$ ). Younger patients (under 9 years) had significantly higher inflammatory markers, ethmoiditis, and subperiosteal abscess than older patients ( $p<0.05$ ), but the rate of patients who required surgery was similar.

**Conclusions:** Elevated C-reactive protein levels, as a sign of systemic involvement in children with orbital cellulitis may serve as marker for early surgical intervention. Hemodynamic compromise should also be considered as a marker for early intervention.

## Characteristics of children admitted to a resuscitation room of a tertiary care pediatric hospital

*Lisa Amir, Schneider Children's Medical Center*

**Background:** There are few articles describing resuscitations in a pediatric ED. The purpose of this study is to characterize the demographics and interventions of patients treated in the resuscitation room of a tertiary care pediatric ED

**Methods:** Retrospective chart review of patients treated from 2007-2018 in the resuscitation room of Schneider Children's Medical Center of Israel, an academic, freestanding tertiary care pediatric hospital with over 55,000 visits per year.

**Results:** 302 patients were treated in the resuscitation room, an average of 24/year (range 19-43). 42% occurred during winter months. Children ages 0-12 months accounted for 39.8% of resuscitations as compared to children 1-5 years (31%), 6-10 years (11.9%), and 11 years or older (15.9%); 2 adults were treated. 48.7% had at least 1 background illness and 23.8% two or more. The majority of resuscitations occurred during evening shift (47%) and lasted 30 minutes or less (62.2%); 9.9% were 60 minutes duration or longer. The most common reason was respiratory arrest/failure (35.4%) followed by cardiac arrest (23%) and acute neurologic change (21.8%). 13.9% died at the end of the resuscitation and 54% were admitted directly to an ICU; only 5.3% were admitted to a general pediatric ward. Intubation was performed 58.6%, chest compressions in 23.2%, IO insertion in 15.5%, and defibrillation in 2.3%. Adrenaline was given in 31.8% of patients, with 38% receiving



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three or more doses.

Conclusions: Resuscitations are in infrequent occurrence, even in a tertiary care pediatric hospital. The high frequency of interventions should direct staff training preparedness and ensure that senior staff are available in evening hours.