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Santi Mintegi – Hospital Universitario Cruces – Barakaldo (Bizkaia)
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DELEGATE


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EXIT
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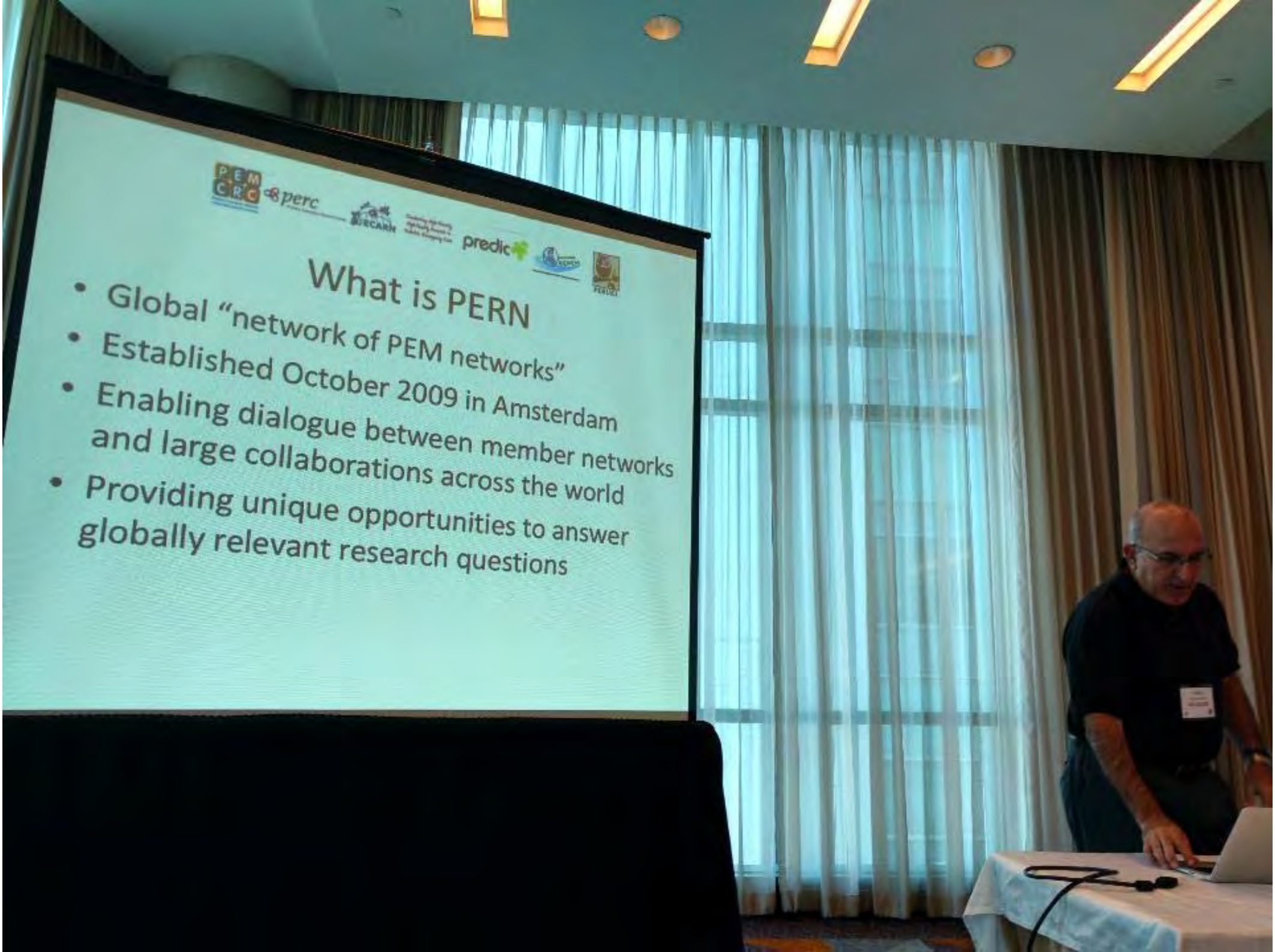
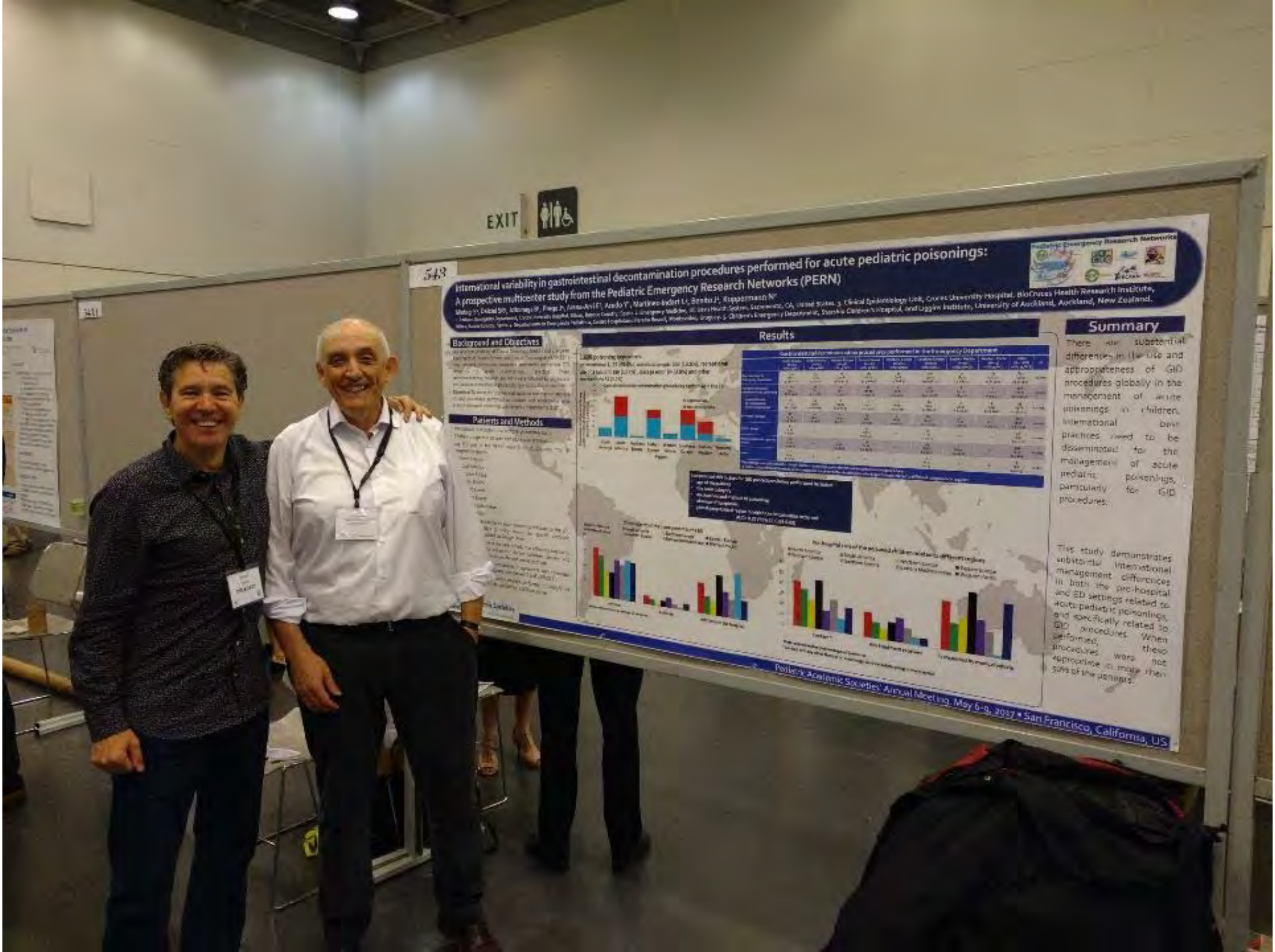

What is PERN
• Global "network of PEM networks"
• Established October 2009 in Amsterdam
• Enabling dialogue between member networks and large collaborations across the world
• Providing unique opportunities to answer globally relevant research questions


193
MICHIGAN MEDICINE
BACKGROUND


EXIT
543
International variability in gastrointestinal decontamination procedures performed for acute pediatric poisonings:
A prospective multicenter study from the Pediatric Emergency Research Networks (PERN)
Pediatric Emergency Research Networks
Background and Objectives
Patients and Methods
Results
Summary
There are substantial differences in the use and appropriateness of GID procedures globally in the management of acute poisonings in children. International best practices need to be disseminated for the management of acute pediatric poisonings, particularly for GID procedures.
This study demonstrates substantial international management differences in both the pre-hospital and ED settings related to acute pediatric poisonings, and specifically related to GID procedures. When performed, these procedures were not appropriate in more than 50% of the patients.
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Societies

San Francisco, CA

d feedback form was sent to all trainees at the
nagement assessment was performed through review of video recorded simulations
assessment with Non TECHnical Skills scale modified for Trauma (T-NOTECHS)
assessment of latent threats (structural, instrumental, environmental)

Results

Table 2. Trainees' satisfaction and feedback on the ISS project

n (%)	Item	Score
32 (54)	Realism of scenario	8.1/10
	Efficacy in reducing the anxiety level on the management of severe trauma	7.5/10
32 (100)	Efficacy in understanding communication problems in an emergency situation	9.0/10
27 (90)	Efficacy in improving communication skills in an emergency situation	8.1/10
17 (57)	Efficacy of debriefing in highlighting relevant clinical knowledge gaps in trauma management	8.1/10
0 (0)	Efficacy of debriefing in raising awareness on the importance of non-technical skills in trauma management	9.3/10
13 (41)	Usefulness of ISS as an effective training tool for the management of pediatric severe trauma	9.7/10
	Overall satisfaction	9.0/10

gram

luation & management

C

Task completed:

- BP measurement — 100%
- Fluids administration — 100%
- 2 intravenous lines inserted — 91%
- Peripheral pulses evaluation — 46%
- CRT evaluation — 36%
- Pelvis assessment/stabilization — 25%

E

Tasks completed:

- Logroll — 63%
- Complete exposure — 40%
- Body temperature checked — 18%


Societies Meetin
Poster Sessions
Saturday
SUBSPECIALTIES
BOARD #
Developmental/Behavioral Pediatrics 1 - 58
General Pediatrics & Preventive Pediatrics 59 - 105
Emergency Medicine Poster 106 - 145
Vulnerable & Underserved Populations 146 - 159
Obesity & Disordered Eating 160 - 190
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Global Pediatric Research 440 - 457
Neonatal Pulmonology 458 - 579
Neonatal Respiratory Assessment/Support/Ventilation 580 - 655
Neonatal/Infant Resuscitation 656 - 728
Palliative Care 729 - 741
Pharmacology 742 - 760
DISCOVER • ENGAGE • BELONG

Introducción

- Organizado por todas las sociedades científicas pediátricas norteamericanas
- 8000 participantes de 64 países y 130 compañías farmacéuticas/dispositivos médicos
- Alrededor de 800 actividades científicas
- Programa urgencias:
  - 4 mesas de comunicaciones (8 comunicaciones/mesa)
  - 4 sesiones de poster (300….)

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Introducción – Temas centrales

- Mejora de la calidad – Ciclos PDSA
  - Implantar evidencia
  - Alcanzar estándar de calidad asistencial
  - Incrementar seguridad
- Temas específicos más tratados:
  - ITU, ecografía, educación, simulación, lactante febril, sepsis, dolor/sedación, dolor abdominal, asma, TCE, tóxicos…..
  - 22 subapartados en las sesiones de poster
- Reuniones con expertos, talleres, reuniones de comités y redes de investigación, reuniones de trabajo…

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POSTER SESSION - EMERGENCY MEDICINE

1509 Emergency Medicine Poster: Mental Health (12)

1510 Emergency Medicine Poster: Pain (14)

1511 Emergency Medicine Poster: Prehospital/Transport (14)

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The Safety of High-Dose Intranasal Fentanyl in the Pediatric Emergency Department

The Safety of High-Dose Intranasal Fentanyl in the Pediatric Emergency Department

Tucker Anderson [1], Allyson M. Berg [2], Jonathan Chang [1], Christopher Cunningham [1], Michael Edwards [1], Adam Greeley [1], Kristopher Ivey [1], Rudy Kink [1], William A Mabry [2], Mark Meredith [1], Rebecca Regen [2], Sarah Schuman [3], Matthew P. Smeltzer [3], John Williams [1]

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2 Department of Clinical Pharmacy, Le Bonheur Children's Hospital, University of Tennessee Health Science Center, Memphis, TN
3 School of Public Health, University of Memphis, Memphis, TN

Le Bonheur Children's Hospital

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

Background

…in is a primary focus of pediatric …ergency departments.
…ranasal (IN) medications such as …ntanyl have grown in popularity due to …se of use, speed of action, and …uivalent efficacy to traditional …ethods such as IV morphine.
…idence is lacking regarding doses …er 100 micrograms (mcg) in pediatric …pulations. Typical dosing is usually 1-…mcg/kg with a maximum of 100 mcg.
… Bonheur Emergency Department …es a dose of 2-5 mcg/kg with a …aximum of 200 mcg (50mcg/mL).

Objectives

…etermine the safety of IN fentanyl in …pediatric emergency department of …o 2-5 mcg/kg at doses greater than … mcg. Our hypothesis is that no …ease in adverse outcomes will be …erved at higher doses, and that these …er doses may be utilized for pain …trol safely.

Methods

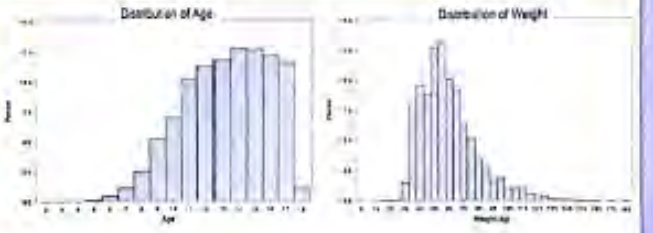
A retrospective evaluation of all patients receiving IN fentanyl in the Le Bonheur Children's Hospital Emergency Department from January 1, 2011 to December 31, 2015. Data was obtained electronically from the Electronic Medical Record (EMR). Values that were missing or out of expected ranges were flagged and audited with manual chart review. Adverse event data involving all doses of IN fentanyl was obtained from Le Bonheur Pharmacy Department Database and were examined for doses greater than 100 mcg. The study was approved by the University of Tennessee Institutional Review Board with a waiver of consent. All statistical analysis was descriptive, and conducted in SAS Version 9.3.

Results

2,322 Patients 102 – 265 mcg

1 Adverse Event

0 Adverse Outcomes No Respiratory Support



A total of 9 adverse events involving IN fentanyl were documented during the study period. These charts were reviewed in detail to determine the reason an adverse event was filed and the outcome of the event. A total of 1 adverse event involved dosing of greater than 100 mcg of fentanyl, and this was due to improper initial weight documentation. There were no adverse outcomes observed, including no patients requiring the reversal agent naloxone or invasive respiratory support.

Results

- 2,322 patients received greater than 100 mcg of IN fentanyl during the study period from 2011 – 2015.
- Average patient age at administration was 13.3 years (SD 2.7 years), ranging from 5 – 18 years.
- Mean initial dose was 160.8 mcg (SD 29.8 mcg) ranging from 102 to 265 mcg.
- Initial average dose for weight was 2.6 mcg/kg (SD 1.6 mcg/kg).
- 747 patients (32%) also received IN midazolam concurrently; average dose 0.16 mg/kg.

Conclusions

- Higher doses of IN fentanyl are able to be used safely with no adverse outcomes observed in 5 years of use.
- Midazolam may also be used in conjunction safely.
- Further investigation is needed to determine degree of pain reduction over typical utilized doses.
- High concentration (300mcg/mL) IN fentanyl is an area of future research with promising potential.

References

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The Safety of High-Dose Intranasal Fentanyl in the Pediatric Emergency Department

- Anderson, Tucker, Hanna et al. Emergency Medicine, Le Bonheur Children's Hospital, Memphis, Tennessee, United States

- **Background** Typical dosing is usually 1-2 mcg/kg (maximum 100 mcg), however in our ED we utilize a dose of 2-5 mcg/kg (maximum 200 mcg).
- **Objective** To determine the safety of higher doses of IN fentanyl in the pediatric ED of up to 2-5 mcg/kg at doses greater than 100 mcg.
- **Design/Methods:** retrospective chart review of patients receiving IN fentanyl.

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The Safety of High-Dose Intranasal Fentanyl in the Pediatric Emergency Department

- **Results:** 2,092 patients received greater than 100 mcg of IN fentanyl during 2011-2015.
  - Average patient age: 13.3 years (SD 2.7 years), ranging from 5-18 years.
  - Mean initial dose: 161.2 mcg (SD 29.8 mcg, 102 to 265 mcg).
  - Initial average dose for weight was 2.8 mcg/kg (SD 1.6 mcg/kg).
  - A total of 9 adverse events involving IN fentanyl were documented.
- 1 adverse event involved dosing>100 mcg of fentanyl, due to improper initial weight documentation. No patients required naloxone or invasive respiratory support.
- **Conclusion(s)** higher doses of fentanyl are well tolerated without any true adverse outcomes.

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An Evaluation of the Use of IN Fentanyl and Midazolam in Children 3 Years of Age and Younger

Chang, Jonathan et al. Tennessee

An Evaluation of the Use of Intranasal Fentanyl and Midazolam in Children 3 Years of Age and Younger

THE UNIVERSITY of TENNESSEE HEALTH SCIENCE CENTER

Jonathan Chang, M.D.[1], Tucker Anderson M.D.[1], Kris Ivey, M.D.[1], Mark Meredith M.D.[1], Barry Gilmore M.D.[1], Rick Hanna M.D.[1], Jonathan Jacobs M.D.[1], Mindy Longjohn M.D.[1], Wesley Rainbolt M.D.[1], Tim O'Connor, M.D.[1], John M. Williams, M.S.[1], Adam Greeley M.S.[1], Michael Edwards M.S.[1], Christopher Cunningham M.S.[1], Sarah Schuman, B.A.[2], Rebecca Regen, Pharm.D.[2], Matthew Smeltzer, Ph.D.[3], Allyson Berg, Pharm.D.[2], Lindsay Hubbard, Pharm.D.[2] Rudy J. Kink, M.D.[1]

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2 Department of Clinical Pharmacy, Le Bonheur Children's Hospital, University of Tennessee Health Science Center, Memphis, TN
3 School of Public Health, University of Memphis, Memphis, TN

Background

- Diagnostic and therapeutic procedures are a common source of pain and anxiety in children.
- Achieving analgesia and anxiolysis must be rapid, but IV access can be difficult or inappropriate in children.
- Often, venipuncture is seen as one of the most painful and fear-inducing experiences in the emergency room setting.
- Intranasal administration offers rapid administration with reliable bioavailability and pharmacodynamics in a minimally invasive route.
- The two most commonly used intranasal medications in our hospital are fentanyl and midazolam.
- Few published studies examine intranasal fentanyl and midazolam use, alone or in combination, in patients 0-3 years of age.

Purpose

Our goal is to demonstrate the safety of intranasal fentanyl, intranasal midazolam, and the combination of intranasal fentanyl & midazolam in the pediatric emergency room setting in patients 0-3 years of age.

Disclosure

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: Nothing to disclose

Methods

- Retrospective chart review of 3947 pediatric patients who received intranasal fentanyl and midazolam, alone or in combination, at pediatric emergency room January 2011 through December 2015.
- Exclusion criteria included patients who required inpatient admission, patients who were older than 3 years of age, and those who did not receive IN analgesia/anxiolysis.
- Patients received 1-5 µg/kg of intranasal fentanyl alone or in combination with 0.1-0.5 mg/kg of intranasal midazolam.
- Adverse events ("safeguards") from the pediatric emergency room were obtained from the hospital's intervention database.
- IRB approval obtained from the University of Tennessee Health Science Center.

Results

There were 3947 patients 0-3 years of age who met our inclusion criteria. 1239 patients received intranasal fentanyl alone, 9 patients received intranasal midazolam alone, and 2699 patients received fentanyl in combination with midazolam. The mean age was 1.7 years (range: 0.08-3 years). The mean initial intranasal fentanyl dose was 2.59 µg/kg (range: 0.92-5.71 µg/kg). The mean initial dose of midazolam was 0.26 mg/kg (range: 0.03-0.99 mg/kg). In cases where the fentanyl/midazolam combination was used, the mean dose of fentanyl was 2.62 µg/kg (range: 0.93-5.71 µg*kg) and the mean dose of midazolam was 0.26 mg/kg (range: 0.03-0.56 mg/kg). There were 3 adverse events that occurred in the emergency department during the study period. All events were due to incorrect administration route. No patients required a reversal agent or respiratory support.

Table 1: Demographic Data

Patients, No.	3947
Age, mean (range)	1.7 (0.08-3)
0-1 years, No. (%)	976 (24.7%)
1-2 years, No. (%)	1384 (35.06%)
2-3 years, No. (%)	2001 (50.70%)
Weight, mean (range), kg	13.0 (3.4-19.8)
Gender (excluding missing data)	
Male, No. (%)	1717 (53.02%)
Female, No. (%)	1520 (46.07%)
Race	
Caucasian, No. (%)	875 (27.11%)
African American, No. (%)	1981 (61.40%)
Other, No. (%)	1369 (42.44%)
Ethnicity	
Hispanic, No. (%)	293 (9.19%)

Table 2: Dosage Data — Fentanyl doses in µg, Midazolam doses in mg

	Fentanyl		Midazolam	
	Alone (n = 1239)	In Combination (n = 2699)	Alone (n = 9)	In Combination (n = 2699)
Initial dose, mean (range, SD)	32.49 (4.64, 11.59)	34.22 (5.4-85, 10.87)	3.22 (1-4, 1.09)	3.43 (0.5-10, 1.13)
Initial dose/kg, mean (range, SD)	2.54 (0.92-5.03, 0.55)	2.62 (0.93-5.71, 0.55)	0.37 (0.18-0.99, 0.24)	0.26 (0.03-0.56, 0.07)

Table 3: Pain Score Data — Negative numbers indicate a reduction in pain score

	Fentanyl Alone (n = 998)	Fentanyl with Midazolam (n = 2144)
Pre-dosage Pain Score, mean (range, SD)	1.91 (0-10, 2.38)	1.94 (0-10, 1.99)
Post-dosage Pain Score, mean (range, SD)	0.63 (0-10, 1.75)	0.39 (0-10, 1.19)
Change in Pain Score, mean (range, SD)	-1.22 (-10-10, 2.44)	-0.55 (-10-10, 1.45)

Conclusions

- We conclude that pain control and anxiolysis can be safely achieved by the implementation of intranasal fentanyl and midazolam in patients 0-3 years of age in the pediatric emergency room setting.
- Additionally, this study demonstrates that intranasal fentanyl and midazolam, in combination, can be safely used in patients 0-3 years of age in the pediatric emergency room setting.

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An Evaluation of the Use of IN Fentanyl and Midazolam in Children 3 Years of Age and Younger

Chang, Jonathan et al. Tennessee

- **Objective:** to demonstrate the safety of these medications in patients 0-3 years of age.
- **Design/Methods:**
  - retrospective chart review, 2011- 2015.
  - Patients< 3 years of age who received IN fentanyl and/or midazolam in a pediatric ED.
  - Patients received IN fentanyl at a dose of 1-5 mcg/kg alone or in combination with IN midazolam at 0.1-0.5 mcg/kg prior to a painful procedure.

An Evaluation of the Use of Intranasal Fentanyl and Midazolam in Children 3 Years of Age and Younger

Chang, Jonathan et al. Tennessee

- **Results:** 3958 ED patients < 3 years of age who received IN fentanyl. Of those, 2720 also IN midazolam.
  - Mean patient age: 1.7 ±0.9 years (range 0-3 years).
  - Mean initial fentanyl dose: 2.6 ±0.6 mcg/kg (0.3-5.8 mcg/kg).
  - Mean initial midazolam dose: 0.26 ± 0.58 mcg/kg (0.03-0.75 mg/kg).
- There were 3 adverse due to incorrect administration route. No patients required a reversal agent or respiratory support.
- **Conclusion(s)** IN fentanyl (1-5 mcg/kg) and IN midazolam (0.1-0.5 mg/kg) can be safely administered for patients < 3 years of age.

Intranasal fentanyl and midazolam for analgesia and anxiolysis in pediatric urgent care centers

Intranasal Fentanyl and Midazolam for Procedural Analgesia and Anxiolysis in Pediatric Urgent Care Centers

Le Bonheur Children's Hospital

John M. Williams, M.S.[1], Sarah Schuman, B.A.[2], Rebecca Regen, Pharm.D.[2], Allyson Berg, Pharm.D.[2], Lindsay Stuart, Pharm.D.[2], Jampana Raju, M.D.[1], Matthew Smeltzer, Ph.D.[3], Rudy J. Kink, M.D.[1]

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2 Department of Clinical Pharmacy, Le Bonheur Children's Hospital, University of Tennessee Health Science Center, Memphis, TN
3 School of Public Health, University of Memphis, Memphis, TN

Background

- Urgent care centers provide cost effective and convenient methods for treating common medical complaints and performing simple procedures for pediatric patients.[1]
- Diagnostic and therapeutic procedures can cause pain and anxiety in children.[2]
- Intranasal (IN) drug delivery is gaining popularity as an effective route for fast-onset analgesia and anxiolysis due to its rapid bioavailability and non-invasive administration.[3,4]
- Two popular and well-studied intranasal drugs used frequently in pediatric procedures are fentanyl and midazolam.
- In order to avoid adverse events while still providing adequate analgesia and anxiolysis during procedural sedation, the recommended dosages in pediatric patients for fentanyl and midazolam are 1-2 µg/kg and 0.1-0.5 mg/kg respectively.[5]
- Literature searches produced no published studies examining intranasal fentanyl and midazolam use, alone or in combination, in the pediatric urgent care setting.

Purpose

The purpose of this study is to report our experience with intranasal fentanyl and midazolam use in pediatric urgent care centers in order to evaluate the safety and efficacy of these medications in this setting.

References

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Methods

- This retrospective study investigated intranasal fentanyl and midazolam use at an urgent care center located within Le Bonheur Children's Hospital (LBCH) and two affiliated off-site urgent care centers from September 22, 2011 through December 30, 2016.
- Patient data was obtained from electronic medical records, with the exception of handwritten fentanyl and midazolam medication administration records for the two off-site urgent care centers.
- Patients who did not have procedures performed or had necessary data missing from their charts were excluded from data analysis as outlined in **Figure 1**.
- Data collected included patient demographics, initial fentanyl dose, initial midazolam dose, type of procedure, and adverse events. For patients who received intranasal midazolam alone, oral pain medications were recorded.
- Patients were grouped into categories based on the type of procedures they underwent. Uncategorized procedures were classified as "other."
- Adverse events occurring at LBCH were obtained from the institution's safety monitoring database, and adverse events at the off-site urgent care centers were independently reported. If available, data obtained included patient demographics, diagnosis, medication name and dose, administration route, and description of event.
- Per institutional protocol, patients at all sites received 2-5 µg/kg (maximum dose of 200 µg) of fentanyl at a concentration of 50 µg/mL. Patients treated at the urgent care center within LBCH received 0.2-0.5 mg/kg (maximum dose of 10 mg) of midazolam at a concentration of 5 mg/mL until December 2012. From January 2013 until September 2015, the 1 mg/mL concentration was used which limited the maximum dose to 4 mg. From October 2015 to the end of the study period, LBCH reverted back to the 5 mg/mL concentration of midazolam. Those treated at each of the off-site urgent care centers received 0.2-0.5 mg/kg (maximum dose of 4 mg) of midazolam at a concentration of 1 mg/mL. Doses for both medications were administered by nurses via a mucosal atomization device in divided doses between each nostril.
- This study was approved by the Institutional Review Board at the University of Tennessee Health Science Center.

Figure 1: Patient selection

Results

Of the 490 patients who met the inclusion criteria, 143 patients received intranasal fentanyl alone, 92 received intranasal midazolam alone, and 255 received fentanyl in combination with midazolam. Of these patients, 239 (48.8%) received intranasal medications at Le Bonheur Children's Hospital, and 251 (51.2%) received intranasal medications at the two off-site urgent care centers. The overall patient population was 52% male with a median age of 4.6 years (range: 0.2-17.9), and the majority of patients were black at 57.1%. In addition, 153 (31.2%) patients were younger than three years of age with 8 (1.6%) being less than one year of age.

Table 1: Baseline patient demographics

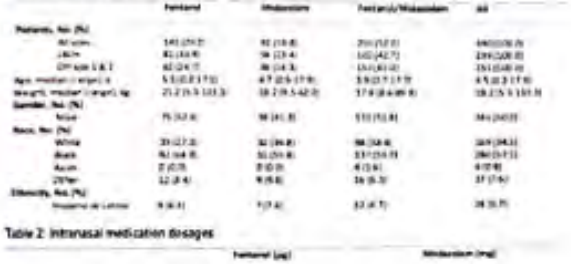
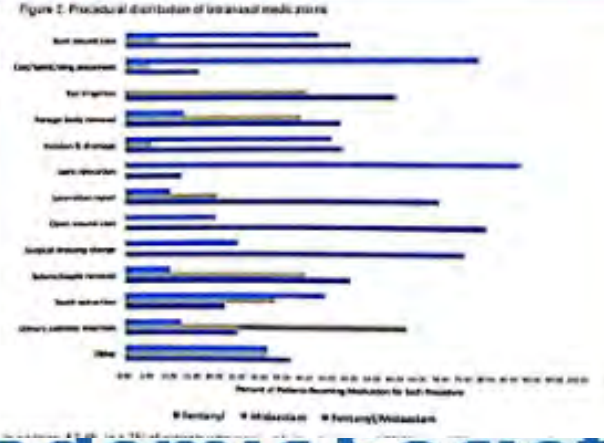


Table 2: Intranasal medication dosages



Intranasal fentanyl and midazolam for analgesia and anxiolysis in pediatric urgent care centers

- Williams, John M et al. Le Bonheur Children's Hospital, Memphis, Tennessee, United States

- There is a lack of studies demonstrating the safety of IN fentanyl and midazolam, alone or in combination, at pediatric urgent care centers.
- **Design/Methods:** retrospective chart review of children who received IN fentanyl and midazolam at an urgent care center.

  Patients received 1-5 mcg/kg of IN fentanyl alone or in combination with 0.1-0.5 mg/kg of IN midazolam.

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Intranasal fentanyl and midazolam for analgesia and anxiolysis in pediatric urgent care centers

- **Results:** 204 urgent care center patients who received IN fentanyl (106 patients also received midazolam).
  - Mean age: 5.9 years.
  - Mean initial IN fentanyl dose: 60.9 ± 42.6 mcg (range: 10-200 mcg).
  - Mean initial dose of midazolam: 5.1 ±2.9 mg (1-20 mg). When the fentanyl/midazolam combination was used, the mean dose of fentanyl was 57.5 ±37.1 mcg (10-200 mcg).
- There were 0 reported adverse events.
- **Conclusion(s):**

  Pain control and anxiolysis can be safely achieved by the implementation of IN fentanyl and midazolam at pediatric urgent care centers.

  IN fentanyl and midazolam, in combination, can be safely used at urgent care centers.

PLATFORM SESSION - Emergency Medicine Sabado 6

8 comunicaciones

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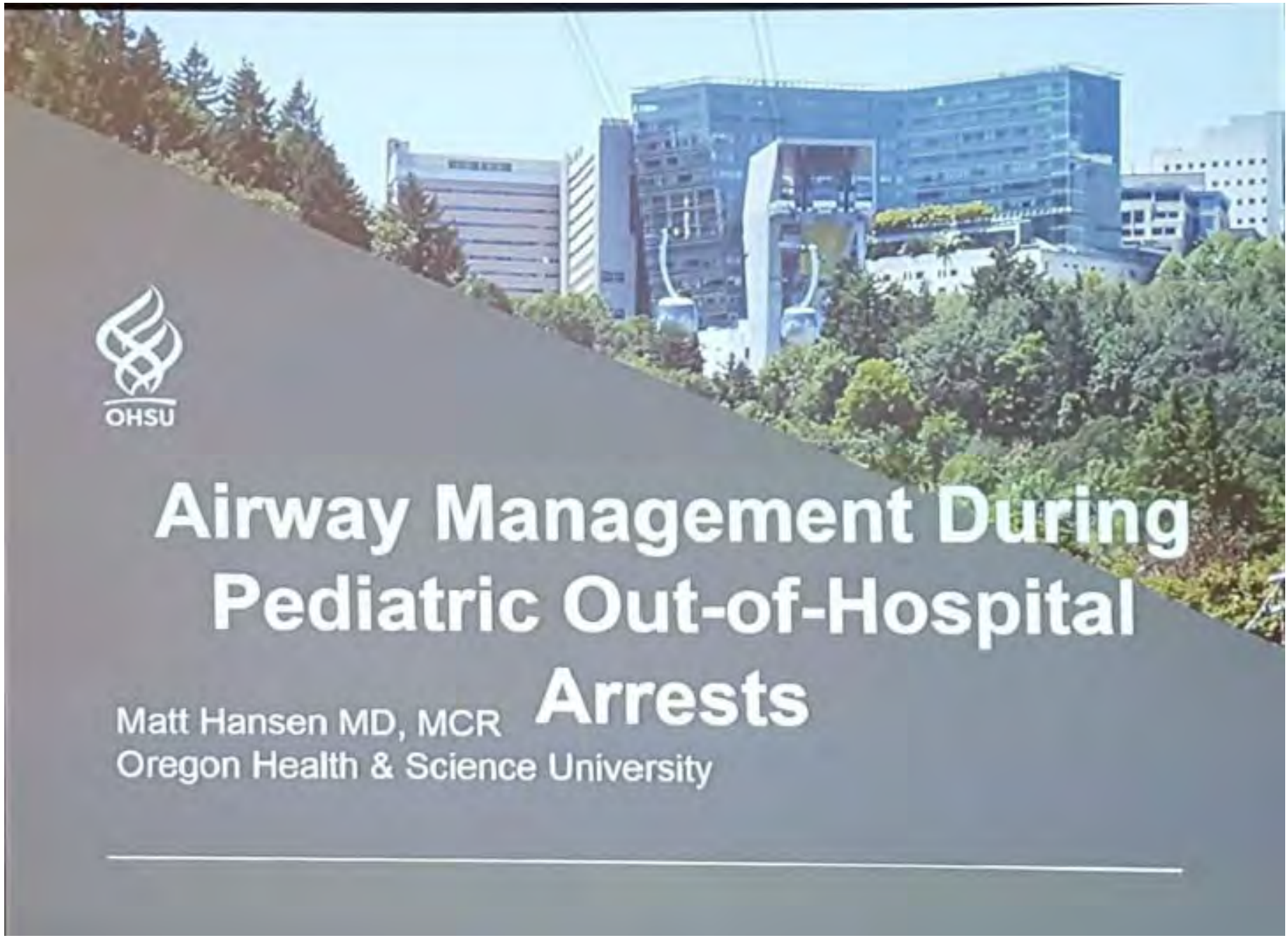

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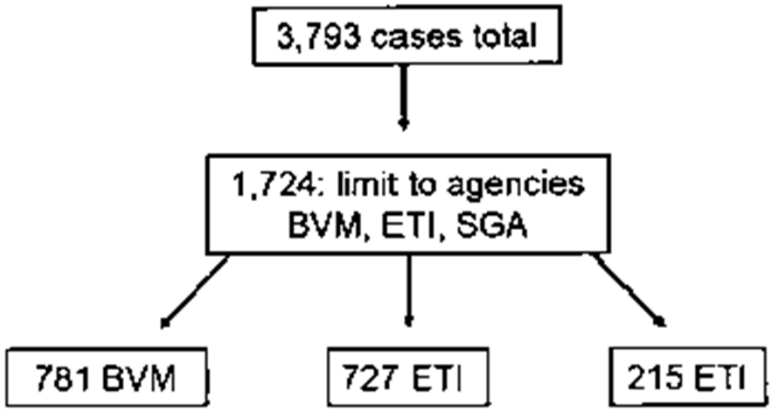
- **Objective:** To compare survival to hospital discharge in pediatric OHCA patients receiving ETI, BVM or supraglotic airways (SGA).
- **Design/Methods:** Retrospective observational study using the Cardiac Arrest Registry to Enhance Survival (CARES) database from 2013-2015.
  - In order to minimize bias related to assignment of treatment (confounding by indication), we conducted a propensity score analysis using the inverse probability of treatment weighting.



Sustained ROSC	20.7%
Survival to Discharge	11.3
CPC Score 1	8.7%

Airway Type	Survival to Discharge
ETI vs BVM	0.39 (0.26-0.59)
SGA vs BVM	0.32 (0.12-0.84)

- **Conclusion**
  - BVM was associated with higher survival to hospital discharge compared to ETI and SGAs. Pediatric out-of-hospital cardiac-arrest resuscitation protocols may consider adopting a BVM-only strategy.

Pediatric Emergency Care Applied Research Network

A Factorial Design Randomized Controlled Trial of Intravenous Fluid Protocols for Pediatric Diabetic Ketoacidosis (DKA): *The PECARN Fluid Therapies Under Investigation in DKA ("FLUID") Study*

N Kuppermann, S Ghetti, JE Schunk, MJ Stoner, A Rewers, JK McManemy, SR Myers, LE Nigrovic, A Garro, KM Brown, KS Quayle, JL Trainor, JE Bennett, AD DePiero, L Tzimenatos, MY Kwok, CS Perry, CS Olsen, TC Casper, JM Dean, NS Glaser

for the Pediatric Emergency Care Applied Research Network (PECARN) DKA FLUID Study Group

Supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development U01HD062417. Also supported in part by the HRSA/MCHB/EMSC Network Development Demonstration Program under cooperative agreement numbers U03MC00008, U03MC00001, U03MC00003, U03MC00006, U03MC00007, U03MC22684 U03MC22685

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- **Objective:** To determine whether IV fluid infusion rate and/or sodium content affect acute (mental status during DKA treatment) or long-term (memory and IQ) neurological outcomes of DKA in children.
- **Design/Methods:**
  - RCT at 13 children's hospitals in PECARN.
  - Patients < 18 years old with DKA were randomized to one of four IV fluid protocols (rapid versus slow fluid rate; 0.9% NaCl 0.45% NaCl rehydration after initial 0.9% NaCl resuscitation).
  - Outcome measures were mental status during DKA treatment (Glasgow Coma Scale (GCS) scores and digit-span recall scores), and memory and IQ scores 2-4 months after recovery from DKA.

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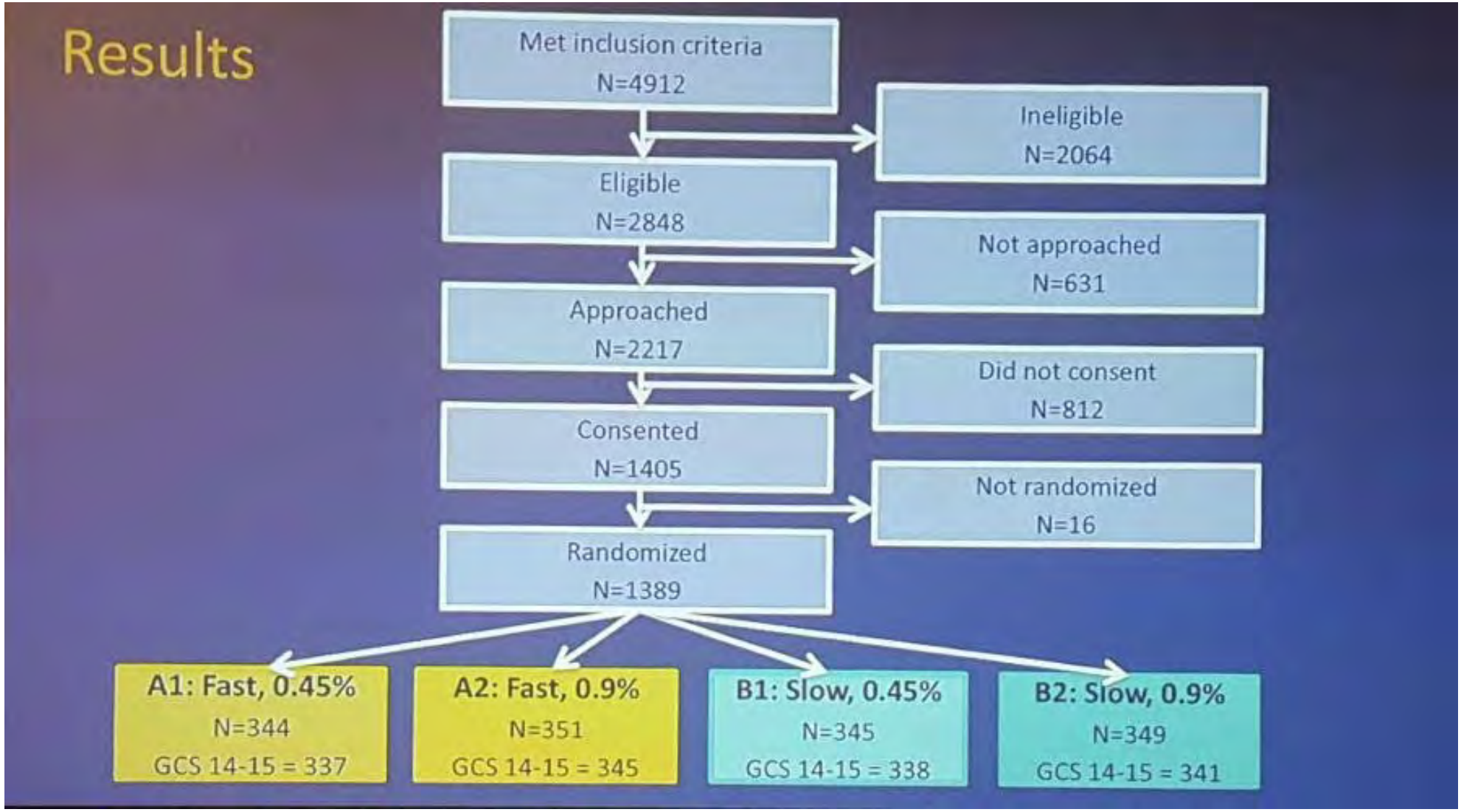
Results


Met inclusion criteria
N=4912
Ineligible
N=2064
Eligible
N=2848
Not approached
N=631
Approached
N=2217
Did not consent
N=812
Consented
N=1405
Not randomized
N=16
Randomized
N=1389
A1: Fast, 0.45%
N=344
GCS 14-15 = 337
A2: Fast, 0.9%
N=351
GCS 14-15 = 345
B1: Slow, 0.45%
N=345
GCS 14-15 = 338
B2: Slow, 0.9%
N=349
GCS 14-15 = 341

Outcome	A1 Fast, 0.45%	A2 Fast, 0.9%	B1 Slow, 0.45%	B2 Slow, 0.9%	Relative Risk Fast rate (95% CI)	Relative Risk 0.45% saline (95% CI)
Confirmed GCS drop < 14	N=337 10 (3.0%)	N=345 11 (3.2%)	N=338 11 (3.3%)	N=341 16 (4.7%)	0.76 (0.44-1.33) p=0.34	**0.80** **(0.46-1.40)** **p=0.43**
Clinically apparent cerebral edema (by adjudication)	N=344 2 (0.6%)	N=351 2 (0.6%)	N=345 5 (1.4%)	N=349 3 (0.9%)	0.49 (0.15-1.64) p=0.24	**1.43** **(0.46-4.40)** **p=0.53**

Outcome	A1 Fast, 0.45%	A2 Fast, 0.9%	B1 Slow, 0.45%	B2 Slow, 0.9%	Fast vs. Slow p-value	0.45% vs. 0.9% p-value
Under 6 years old						
Memory Score	0.44 (0.088) N=7	0.51 (0.109) N=9	0.44 (0.161) N=8	0.47 (0.173) N=5	p=0.95	p=0.33
Full Scale IQ	105 (11.2) N=12	101 (12.5) N=19	103 (13.3) N=17	98 (15.7) N=10	p=0.47	p=0.22
6 years old and older						
Memory Score	0.59 (0.139) N=184	0.60 (0.143) N=192	0.60 (0.146) N=187	0.60 (0.137) N=180	p=0.83	p=0.87
Full Scale IQ	102 (12.2) N=199	102 (12.7) N=209	101 (13.5) N=201	103 (13.4) N=194	p=0.50	p=0.36
All Ages						
Forward Digit Span Score	8.2 (0.13) N=222	8.2 (0.12) N=233	8.2 (0.13) N=226	8.3 (0.14) N=210	p=0.96	p=0.62
Backward Digit Span Score	6.9 (0.12) N=222	6.6 (0.12) N=232	6.8 (0.13) N=226	7.0 (0.14) N=210	p=0.24	p=0.78

Memory Score and IQ p-values are from Van Elteren tests stratified by baseline GCS and treatment; hospital is included as strata for 6 years and older. Digit Span p-values are from a linear regression model adjusting for age, hospital, baseline-GCS, and treatment. Digit Span estimates are means are age-adjusted to 12-years old

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- **Conclusion**
  - Neither fluid rate nor sodium content significantly influenced mental status outcomes in DKA.
  - Long term neurocognitive outcomes (memory and IQ) not significantly different among fluid groups.

Ann & Robert H. Lurie
Children's Hospital of Chicago

Bruising Clinical Decision Rule (**BCDR**) discriminates physical child abuse from accidental trauma in young children

Mary Clyde Pierce, MD

Kaczor K, Lorenz DJ, Makoroff K, Berger RP, Sheehan K, Fortin K, Hymel K, Bertocci G, Jenny C, Herman B, Leventhal JM

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- **Objective:** To test and validate our bruising clinical decision rule (BCDR) for differentiating physical abuse from accidental trauma.
- **Design/Methods:**
  - Multi-center prospective observational study of children < 4 years of age with bruising. Cases were categorized as abuse, accident or indeterminate by a 9-member multi-disciplinary expert panel.
  - BCDR acronym is TEN-4 FACESp and is positive if any of the following four predictors are present:
    - bruising to any of the following regions: Torso, Ear, Neck, Frenulum, Angle of the jaw, Cheek (buccal), Eyelids, or Subconjuntiva,
    - bruising anywhere on an infant 4 months of age and younger,
    - patterned bruising,
    - injury event is not a confirmed public accident.

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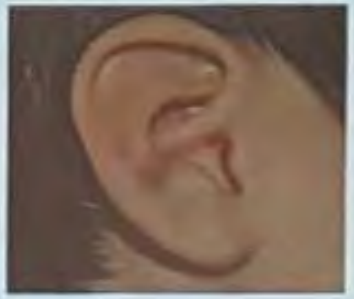
PATRÓN

Ann & Robert H. Lurie Children's Hospital of Chicago

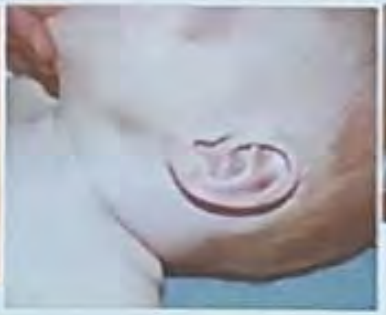
TEN-4-FACES-p BCDR

- **TEN**:
  - *Torso, Ear, Neck*


- **4**:
  - ≤ 4 mo of age: *ANY bruise ANY where*

- **FACES**:
  - *Frenulum, Angle of the jaw, Cheek (Buccal), Eyelid, Subconjunctiva*




EXPERT PANEL	TOTAL SUBJECTS (n=2169)	BCDR +	BCDR -	TEST CHARACTERISTICS
ABUSE	400	386	14	**96%** Sensitive [94.2%, 97.9%]
ACCIDENT	1720	231	1489	**87%** Specific [84.9%, 88.1%]
INDETERMINATE	49	39	10	-

- **Conclusions**
  - The TEN-4-FACESp is a sensitive and specific clinical decision rule for predicting abusive trauma in young children with bruising.
  - Our high sensitivity is aligned with the critical ramifications a missed diagnosis has for a poor outcome.

PLATFORM SESSION - Emergency Medicine II

8 comunicaciones orales

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Pediatric Emergency Care Applied Research Network

Test Characteristics of the Urinalysis for Diagnosing Urinary Tract Infections Among Febrile Infants ≤60 days with and without Associated Bacteremia

L Tzimenatos, P Mahajan, P Dayan, M Vitale, J Linakis, S Blumberg, D Borgialli, R Ruddy, J VanBuren, O Ramilo, and N Kuppermann for the Pediatric Emergency Care Applied Research Network (PECARN)

Supported by Grant H34MC16870 from the Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB), Emergency Medical Services for Children (EMSC) Program, and by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health under Award Number R01HD062477. Also supported in part by the HRSA/MCHB/EMSC Network Development Demonstration Program under cooperative agreement numbers U03MC00008, U03MC00001, U03MC00003, U03MC00006, U03MC00007, U03MC22684 U03MC22685

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Test Characteristics of the Urinalysis for Diagnosing Urinary Tract Infections Among Febrile Infants ≤ 60 days with and without Associated Bacteremia

- **Background**: Recent literature demonstrates better sensitivity in febrile infants ≤ 60 days, especially those with concomitant bacteremia.
- **Objective:** To determine the test accuracy of the UA for diagnosing febrile infants ≤ 60 days with UTIs with and without associated bacteremia in the emergency department (ED).
- **Design/Methods:** Secondary analysis of a prospective cohort study of infants ≤ 60 days being evaluated for fever with blood cultures at any of 26 PECARN EDs.

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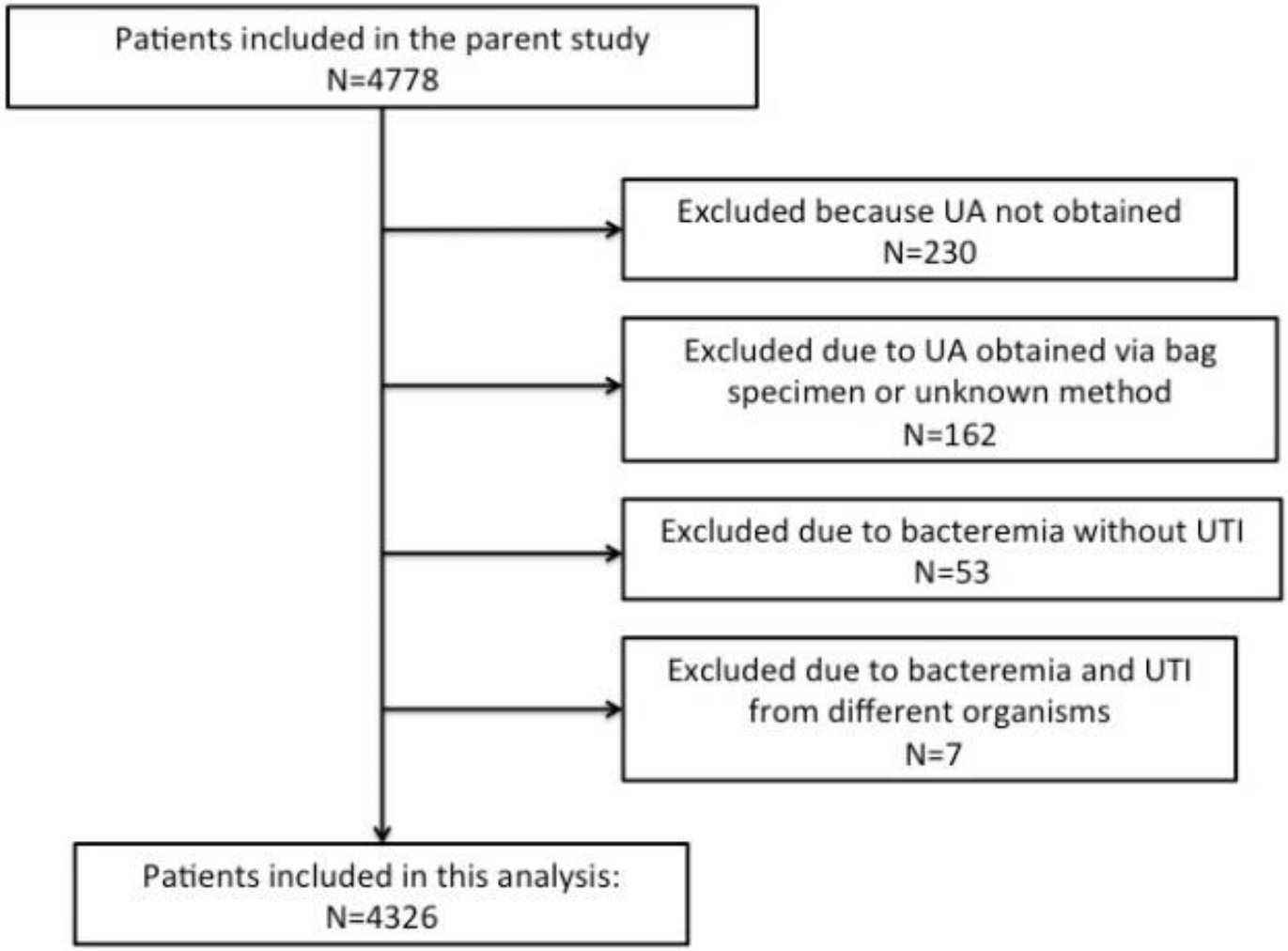
Test Characteristics of the Urinalysis for Diagnosing Urinary Tract Infections Among Febrile Infants ≤ 60 days with and without Associated Bacteremia

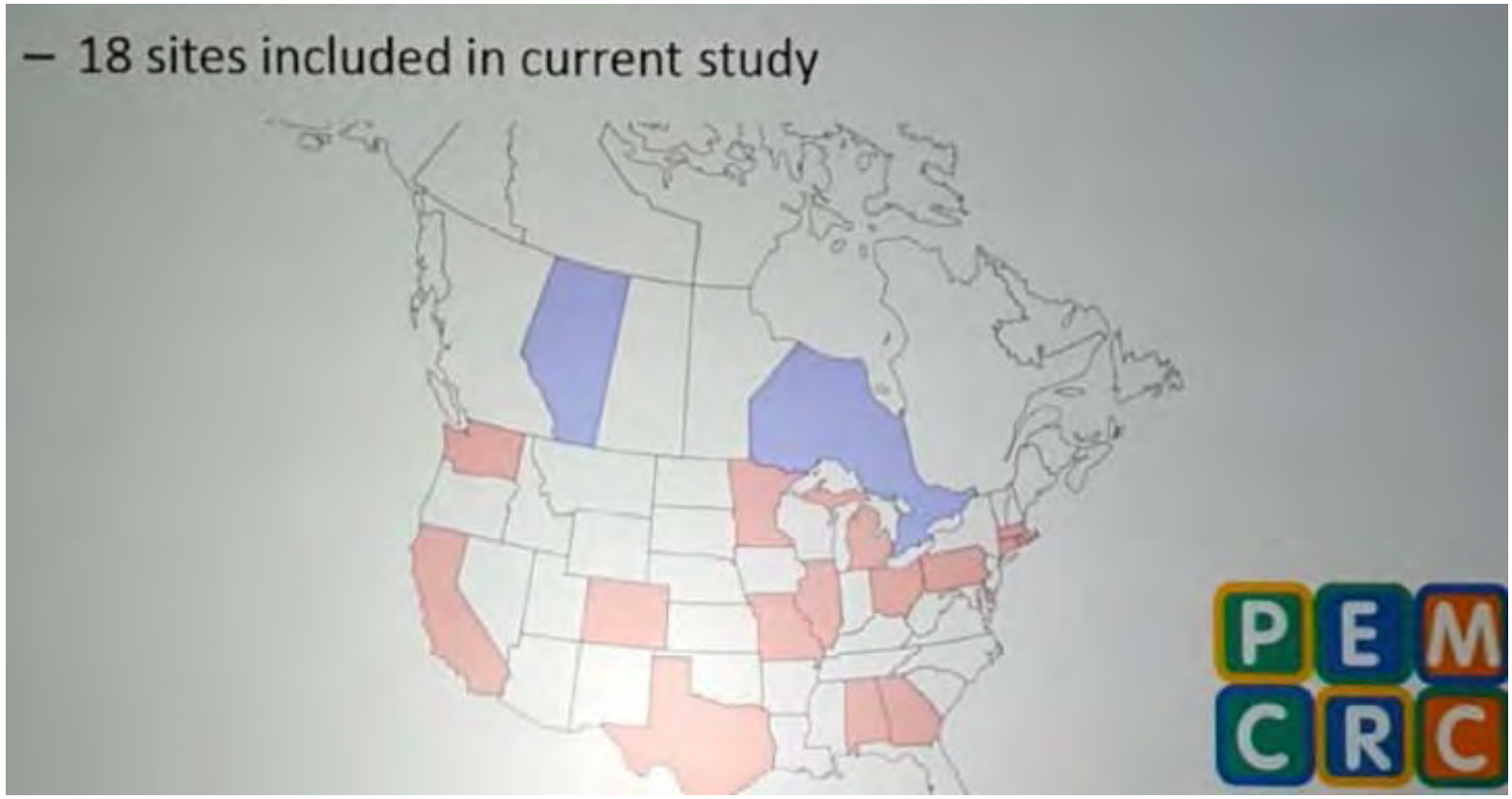


Urinalysis Component	UTI Catheterization > 50,000 CFU OR Suprapubic > 1,000 CFU			
	With bacteremia		Without bacteremia	
	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Individual Components				
Any LE, included, n=4235	1.00 (0.87, 1.00)	0.96 (0.95, 0.96)	0.92 (0.88, 0.95)	0.96 (0.95, 0.96)
+ Nitrites, n=4267	0.41 (0.22, 0.61)	0.99 (0.99, 1.00)	0.38 (0.32, 0.44)	0.99 (0.99, 1.00)
Pyuria >5 WBC/HPF, n=4218	0.77 (0.55, 0.92)	0.94 (0.93, 0.94)	0.82 (0.77, 0.87)	0.94 (0.93, 0.94)
Presence of bacteriuria, n=2603	1.00 (0.85, 1.00)	0.78 (0.76, 0.79)	0.93 (0.88, 0.96)	0.78 (0.76, 0.79)
Aggregate Components				
Any positive UA (Pyuria >5 WBC/HPF, + nitrites, any LE), entire sample, n=4273*	1.00 (0.87, 1.00)	0.91 (0.90, 0.92)	0.94 (0.90, 0.96)	0.91 (0.90, 0.92)
Infants ≤ 28 d, n=1339	1.00 (0.77, 1.00)	0.90 (0.88, 0.91)	0.96 (0.91, 0.99)	0.90 (0.88, 0.91)
Infants 29-60 d, n=2934	1.00 (0.75, 1.00)	0.91 (0.90, 0.92)	0.92 (0.86, 0.95)	0.91 (0.90, 0.92)
Any positive UA (Pyuria >5 WBC/HPF, + nitrites, any LE, bacteriuria), entire sample, n=4304*	1.00 (0.87, 1.00)	0.81 (0.79, 0.82)	0.97 (0.94, 0.98)	0.81 (0.79, 0.82)
Infants ≤ 28 d, n=1349	1.00 (0.77, 1.00)	0.80 (0.77, 0.82)	0.98 (0.94, 1.00)	0.80 (0.77, 0.82)
Infants 29-60 d, n=2955	1.00 (0.75, 1.00)	0.81 (0.79, 0.82)	0.95 (0.91, 0.98)	0.81 (0.79, 0.82)

Test Characteristics of the Urinalysis for Diagnosing Urinary Tract Infections Among Febrile Infants ≤ 60 days with and without Associated Bacteremia

- **Conclusion(s)**
  - **Conclusion(s)** The UA is extremely sensitive and highly specific for diagnosing febrile infants ≤ 60 days with bacteremic UTIs. UA retains very high sensitivity and specificity for diagnosing UTIs in this age group in the absence of bacteremia.

Impact of cerebrospinal enteroviral testing on length of stay for hospitalized infants ≤ 60 days



Aronson, Paul L et al.

Impact of cerebrospinal enteroviral testing on length of stay for hospitalized infants ≤ 60 days

- **Background** Rapid diagnosis of enterovirus (EV) infection with PCR has been associated with reduced hospital length of stay (LOS) for febrile infants .
- **Objective:** To determine the impact of a cerebrospinal fluid (CSF) EV PCR test on hospital LOS in a large multi-center cohort of infants undergoing evaluation for central nervous system infection.
- **Design/Methods:** secondary analysis of a retrospective cohort of hospitalized infants ≤ 60 days of age who had a CSF culture obtained at one of 19 participating centers between 2005 and 2013.

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Impact of cerebrospinal enteroviral testing on length of stay for hospitalized infants ≤ 60 days

When compared to infants without an EV PCR test obtained, infants with an EV PCR test performed had a 0.1 day shorter LOS (95% confidence interval [CI]: 0.1-0.2).

	CSF EV PCR Negative N=3,499 (overall)	CSF EV PCR Positive N=945 (overall)	Median Difference (95% CI)
All infants (n=4,444)	2.4 (1.9, 3.6)	2.0 (1.6, 2.6)	0.4 (0.3, 0.5)
0-28 days of age (n=2,450)	2.5 (2.0, 3.9)	2.1 (1.8, 2.8)	0.4 (0.2, 0.5)
29-60 days of age (n=1,994)	2.3 (1.9, 3.1)	1.9 (1.3, 2.4)	0.4 (0.3, 0.5)
CSF pleocytosis (n=1,163)	2.5 (2.0, 3.8)	2.0 (1.6, 2.6)	0.5 (0.4, 0.7)

Impact of cerebrospinal enteroviral testing on length of stay for hospitalized infants ≤ 60 days

- **Conclusion(s)**
  - The performance of a CSF EV PCR test had a minimal impact on LOS for hospitalized infants who underwent evaluation for central nervous system infection. Infants with a positive EV PCR test had a greater reduction in LOS, particularly those with CSF pleocytosis. Focused EV PCR utilization could increase the impact on clinical care of infants undergoing CSF evaluation.

POSTER SESSION - Emergency Medicine Domingo 7

Systems: 15 posters

Trauma: 13 posters

Ultrasound I: 8 posters

Ultrasound II: 9 posters

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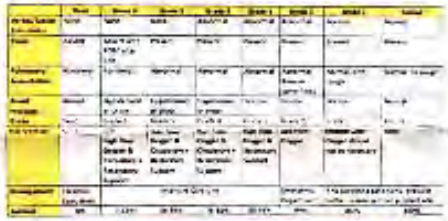
The Pediatric Submersion Score predicts children at low risk for injury following submersions

Rohit P. Shenoi, MD[1], Sachin Allahabadi, MS-4[2], Daniel M. Rubalcava, MD[1], Elizabeth A. Camp, PhD[1]
[1]Section of Emergency Medicine, Department of Pediatrics, Baylor College of Medicine, Houston, TX, United States
[2]Baylor College of Medicine Medical Student Services, Houston, TX, United States
The authors have nothing to disclose

Background

- Drowning → 2nd leading cause of accidental death in children < 14 years of age
- Unclear if falling rates for fatal drowning is due to more widespread bystander CPR, improved hospital management or decreasing number of submersions
- Concern for delayed respiratory distress and lack of evidence-based guidelines → variation in managing well-appearing pediatric submersion victims
- A 6-level classification system (1997) to risk-stratify submersion victims and guide management has not been validated



Objective

Create a scoring tool to identify pediatric submersion victims at low risk for injury who do not require hospital admission after an initial period of 8 hours of observation in the Emergency Department

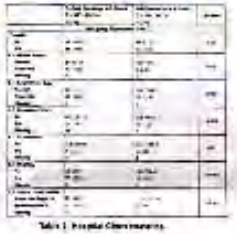
Methods

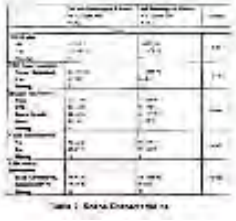
- Single-center Derivation and Validation cross-sectional study
- Children (0-18 years) who presented to a large, urban, tertiary care, children's hospital ED following a submersion event between January 2008 to March 2015
- Derivation Data: Jan 2010 – Mar 2015
- Validation Data: Jan 2008 – Dec 2009
- Inclusion Criteria: Children with discharge diagnosis code for Drowning (ICD-9: 994.1)
- Outcome: Safe discharge from the ED at 8 hours post-submersion was based on:
  - Absence of respiratory distress or need for supplemental oxygen, normal mental status and normal vital signs

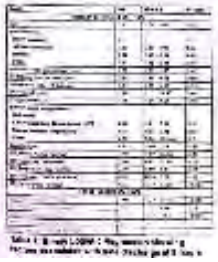
Design and Methodology

- Data variables: demographic, submersion and resuscitation characteristics, clinical and vital signs at the scene, ED and 8 hours post submersion
- Clinical and vital signs were recoded to abnormal/normal based on PALS age-related parameters
- Statistical Methods: Variables compared using Chi-square (or Fisher Exact test) and the Mann-Whitney test. To identify potential scoring factors binary logistic regression performed.
- For validation dataset, scores generated using a one-point scoring system for each normal ED vital. A receiving operating characteristic (ROC) curve was generated along with the calculated area under the curve (AUC) to test sensitivity and specificity of the new tool

Results







Results (Continued)

-1.00	1.00	1.00	0.00	0.50
0.50	1.00	0.97	0.03	0.52
1.50	1.00	0.87	0.13	0.57
2.50	0.95	0.67	0.33	0.60
3.50	0.89	0.41	0.61	0.79
4.50	0.61	0.16	0.84	0.72
6.50	0.00	0.00	1.00	0.5

As a judge of 4, the scoring tool has a Sensitivity of 89.2% (95% CI: 72.8%, 96.7%) and Specificity of 83.9% (95% CI: 83.8%, 84.0%)

Table 5: Discriminant ability of Submersion Score to predict safe ED discharge at 8 hours

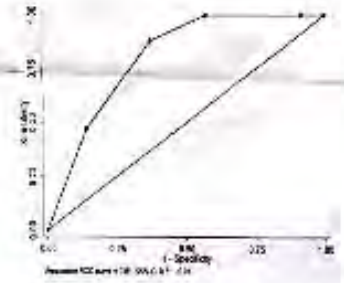


Figure 2: Validation Receiver Operating Characteristic (ROC) Curve of ED Safe Discharge Score and 8-hour Safe Discharge (n = 68) AUC: 0.81 (95% CI: 0.71 – 0.91); p-value<0.001

Conclusion

A clinical risk score can predict children at low risk for post-submersion injury who can be discharged from ED after 8 hours

Limitations

1. Retrospective, single center study which needs to be validated at other sites due to differing environmental conditions and varying mechanisms of submersions in the United States
2. Only clinical data used. Radiographs and other tests could augment score further
3. Missing prehospital data

- **Objective:** to create a scoring tool to identify pediatric submersion victims at low risk for injury who do not clinically deteriorate and require hospital admission after an initial period of 8 hours of observation in the emergency department (ED).
- **Design/Methods:**
  - Retrospective unicenter derivation and validation cross-sectional study
  - Primary outcome was a safe discharge at 8 hours post-submersion based on expert review: absence of respiratory distress or need for supplemental oxygen, normal mentation and normal vital signs.

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- **Results:**
  - Derivation sample included 356 children.
  - Validation sample included 89 children.
  - Five factors were selected to generate the safe discharge score at 8 hours: **normal ED mental status, normal ED respiratory rate, absence of ED dyspnea, absence of need for airway support (BVM, intubation and CPAP), and absence of ED hypotension.**
  - AUC = 0.81 (95% CI: 0.70 - 0.91); p<0.001.
  - A score of 4 or higher in the ED would suggest a safe discharge at 8 hours.

- **Conclusion**
  - A risk score can identify children at low risk for submersion related injury who can be discharged from the ED after 8 hours of observation.

PLATFORM SESSION - Emergency Medicine III

8 comunicaciones orales

Pediatric Academic Societies Meeting

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Boston Children's Hospital

until every child is well

A Systematic Review and Meta-analysis of the Management and Outcomes of Isolated Skull Fractures in Children

Silvia Bressan MD PhD, Luca Marchetto MD,
Todd W Lyons MD, Michael C Monuteaux ScD,
Liviana Da Dalt MD, Lise E Nigrovic MD MPH

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A Systematic Review and Meta-analysis of the acute outcome for children with an isolated skull fracture

- Bressan S et al. Boston Children's Hospital (USA), Department of Woman's and Child's Health, University of Padova, Padova, Italy
- **Objective:** to determine the need for any acute neurosurgical intervention or death for children with an isolated skull fracture.
- **Design/Methods:** systematic review and meta-analysis of children ≤ 18 years diagnosed with non-displaced isolated skull fracture, defined as a skull fracture without intracranial injury on neuroimaging.

  Primary outcome: need for any neurosurgical intervention performed within 72 hours of injury or death.

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A Systematic Review and Meta-analysis of the acute outcome for children with an isolated skull fracture

- **Results:**
  - 6895 children with non-displaced isolated skull fractures.
  - Only one child had an acute neurosurgical intervention.
  - Of the 6412 children with available ED disposition data, 5120 (89% [80-95%) were hospitalized. Of the 644 children that underwent repeat neuroimaging, six had an intracranial hemorrhage (0.0% [0.0-0.1]; p<0.01 for heterogeneity).
- **Conclusion(s)**
  - Children with non-displaced isolated skull fractures were at extremely low risk for any acute neurosurgical intervention or death, but were frequently hospitalized.
  - After careful consideration of non-accidental trauma, children with an isolated skull fracture could safely be managed as outpatient.


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Predictors of escalated care in bronchiolitis

A Paediatric Emergency Research Network (PERN) collaborative study

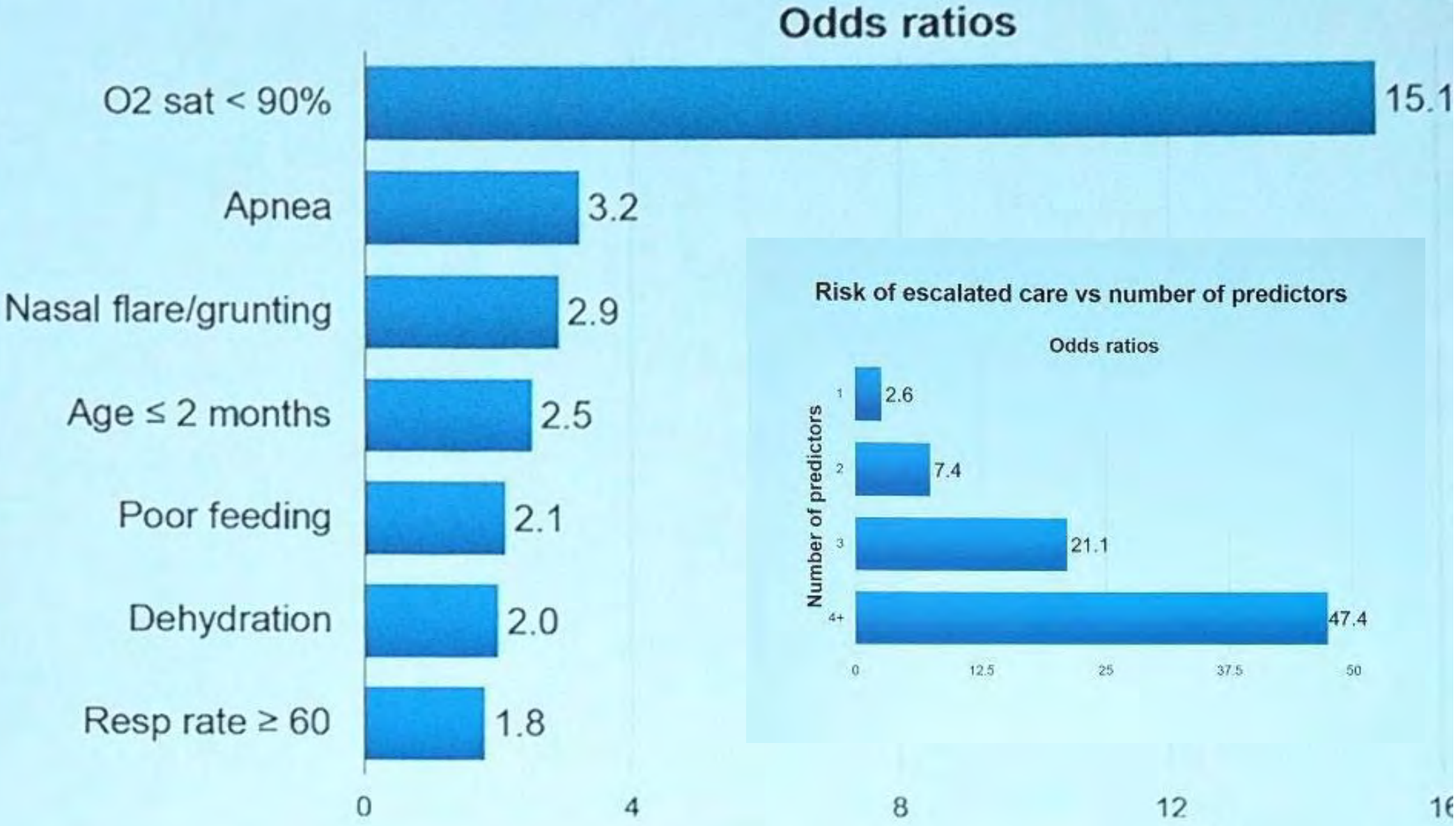
PERN PEDIATRIC EMERGENCY RESEARCH NETWORKS

Presented by Dr. Gabrielle Freire MD,CM

SickKids®

UNIVERSITY OF TORONTO

Association between independent clinical predictors and escalated care



Conclusions

- Infants aged > 2 months with saturations ≥ 90% and without signs of severe respiratory distress or dehydration have a low probability of receiving escalated care (1%) and could undergo limited observation.
- Infants with multiple predictors are at a considerable risk and need consideration for inpatient care with expertise in paediatric airway support.

ShuntCheck versus Neuroimaging for Diagnosing Ventricular Shunt Malfunction in the Emergency Department

Tehnaz P. Boyle, M.D., Ph.D., Joseph R. Madsen, M.D., Mark. I. Neuman, M.D., M.P.H., Mandeep S. Tamber M.D., Ph.D., Robert W. Hickey, M.D., Gregory G. Heuer, M.D., Ph.D., Jeffrey R. Leonard, M.D., Julie C. Leonard, M.D., M.P.H., Robert F. Keating, M.D., James Chamberlain, M.D., David M. Frim, M.D., Ph.D., Paula Zakrzewski, RN, MSN, Petra M. Klinge, M.D., Ph.D., Lisa H. Merck, M.D., M.P.H., Joseph H. Piatt, M.D., Jonathan E. Bennett, M.D., David I. Sandberg, M.D., Frederick A. Boop, M.D., and Joseph J. Zorc, M.D., MSCE

May 8, 2017

Pediatric Academic Societies, San Francisco. CA

BOSTON MEDICAL CENTER
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BU School of Medicine

ShuntCheck versus Neuroimaging for Diagnosing Ventricular Shunt Malfunction in the ED

- Boyle T et al. Multicéntrico USA
- **Background**: ShuntCheck (NeuroDx Development LLC): novel, non-invasive device that uses a thermal gradient applied to the skin to assess CSF flow in a ventricular shunt
- **Objective**: we compared test performance of ShuntCheck to neuroimaging in children assessed clinically as low risk for malfunction.
- **Design/Methods**: prospective multi-center, operator-blinded trial of ED patients with shunted hydrocephalus ≤29 years of age with suspected shunt malfunction.
  - Prior to neuroimaging, ED physicians classified children as low risk if judged clinically as unlikely to require neurosurgery within 48 hours.
- ShuntCheck results were classified as flow detected (negative test) or flow not detected (positive test). We defined shunt malfunction as neurosurgical revision performed for mechanical shunt obstruction within 7 days.

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ShuntCheck versus Neuroimaging for Diagnosing Ventricular Shunt Malfunction in the ED

- **Results**: 406 encounters.

  The NPV of ShuntCheck was not inferior to neuroimaging for diagnosing shunt malfunction (ShuntCheck 100% vs neuroimaging 97.3%; risk difference 2.7%, 95% CI -1.2% to 6.5%)

- **Conclusion(s)**:

  ShuntCheck was not inferior to neuroimaging for diagnosing shunt malfunction in children assessed clinically as low risk for requiring neurosurgical revision. ShuntCheck may obviate neuroimaging and spare unnecessary radiation exposure for many of these children.

Epidemiology of Bacteremia in Febrile Infants in the Pediatric Emergency Care Applied Research Network (PECARN)

- Powell, Elizabeth et al. PECARN
- **Objective**
  - To describe rates of bacteremia (and bacterial coinfections) by week of age, in previously healthy full term febrile infants ≤ 60 days old treated in 26 EDs.
- **Design/Methods**
  - Secondary analysis of a sample of febrile infants ≤ 60 days of age presenting to a PECARN ED between 2008-13 who had blood cultures obtained.
  - We excluded infants with significant comorbidities or toxic/septic appearance.

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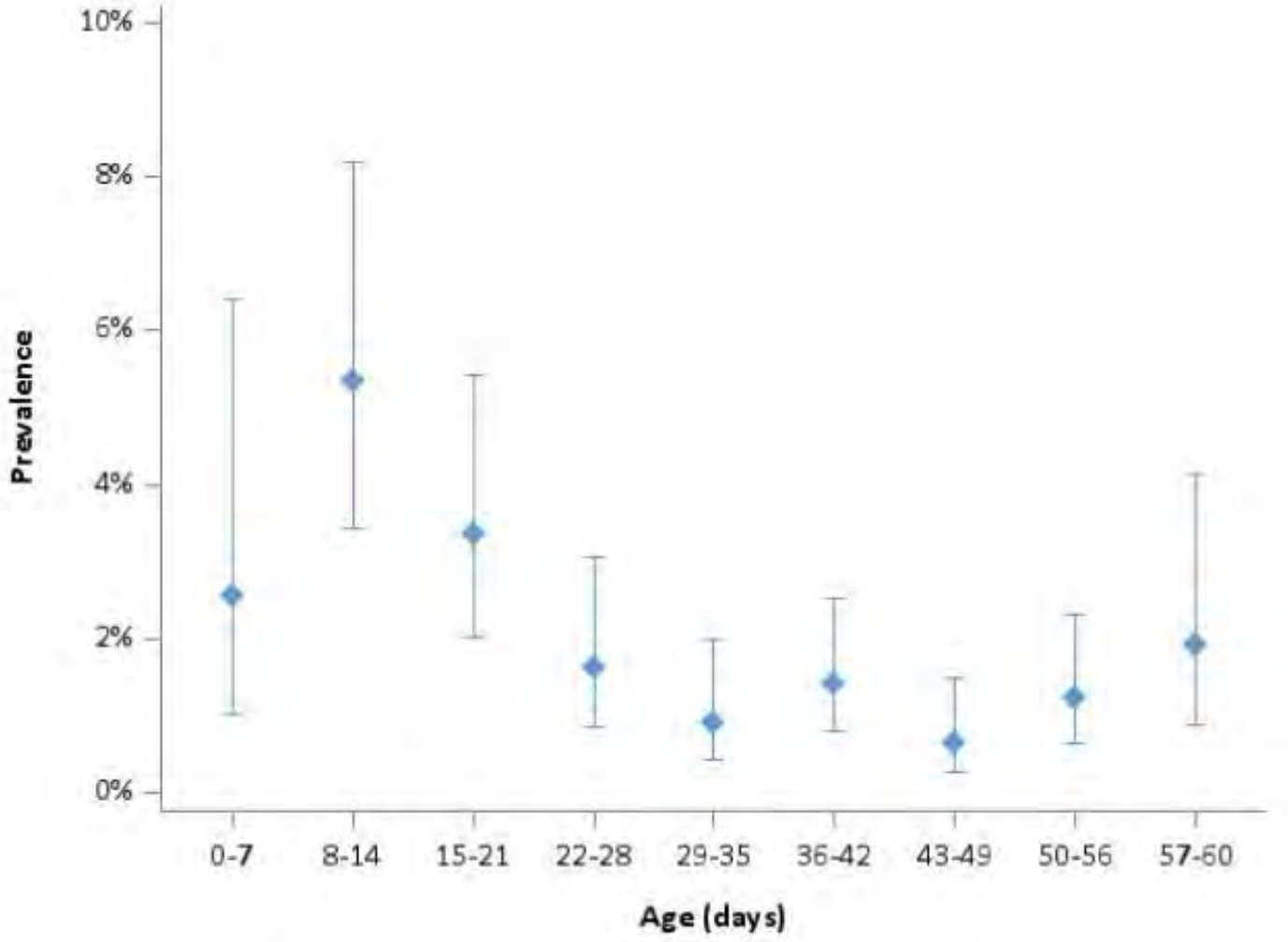
Epidemiology of Bacteremia in Febrile Infants in the Pediatric Emergency Care Applied Research Network (PECARN)



Epidemiology of Bacteremia in Febrile Infants in the Pediatric Emergency Care Applied Research Network (PECARN)

- **Conclusion(s)**
  - The prevalence of bacteremia in the first month of life is substantial; the rate is lower in infants 29-60 days old, but stable by age throughout this time period. E Coli and GBS account for most bacteremia.
  - Neither the YOS nor clinician suspicion reliably aids the clinician in risk stratification and the data support evaluation for bacteremia in all febrile infants ≤60 days.

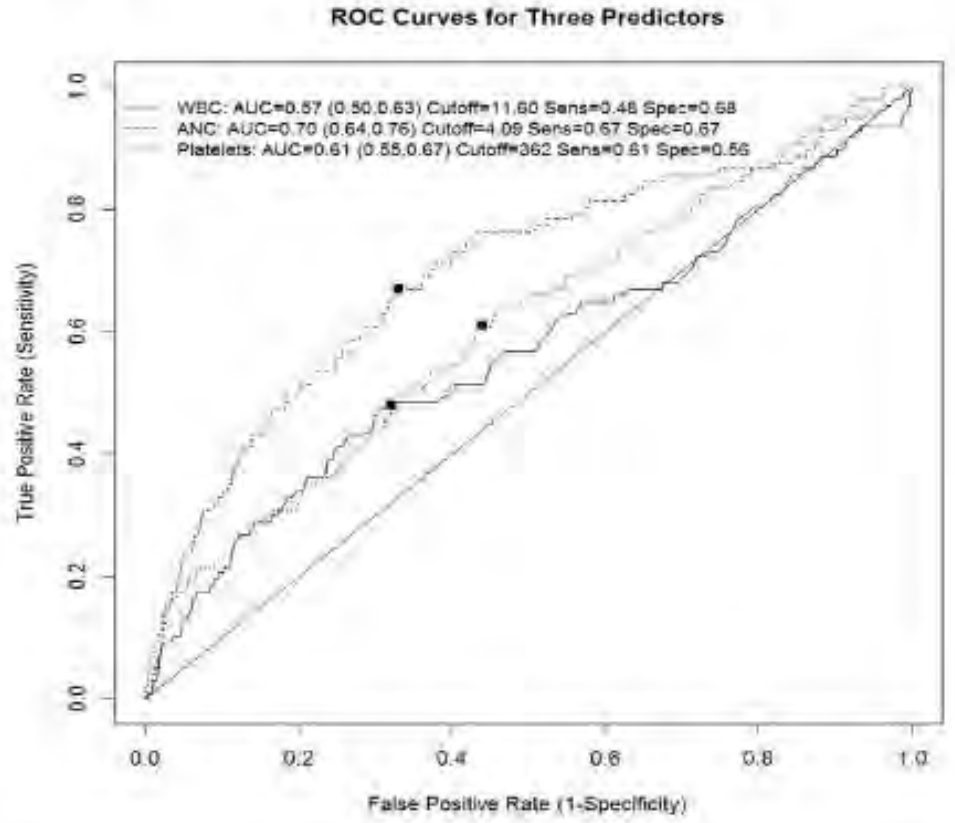
Utility of Blood Cell Counts to Detect Invasive Bacterial Infections in 0-60-day-old Infants

- Cruz, Andrea T et al. PECARN
- **Objective** To evaluate the performance characteristics of individual parameters of the CBC to identify febrile infants < 60 days with IBIs.
- **Design/Methods**
  - Secondary analysis of a prospectively enrolled cohort of previously healthy febrile full-term infants <60-days-old in PECARN who had blood cultures obtained.

Utility of Blood Cell Counts to Detect Invasive Bacterial Infections in 0-60-day-old Infants

- **Results**

Figure: ROC Curves for the Three CBC Parameters*



*The black squares mark the optimal cut-offs

Utility of Blood Cell Counts to Detect Invasive Bacterial Infections in 0-60-day-old Infants

- **Conclusion(s)**
  - None of the CBC parameters in isolation, at commonly-used thresholds or at optimal thresholds, identified febrile infants < 60 days with IBIs with sufficient accuracy to assist clinical decision making.
  - Better diagnostic tools are needed to identify young febrile infants at high and low risk for IBI.

POSTER SESSION - EMERGENCY MEDICINE II

3816 Emergency Medicine Poster: Abdominal Pain (14)

3817 Emergency Medicine Poster: Asthma/Allergy (14)

3818 Emergency Medicine Poster: Education (9)

3819 Emergency Medicine Poster: Febrile Infants (11)

3820 Emergency Medicine Poster: General (19)

3822 Emergency Medicine Poster: Global Health (3)

3823 Emergency Medicine Poster: Gynecology (4)

3824 Emergency Medicine Poster: Head Trauma (14)

3825 Emergency Medicine Poster: Infections (13)

3826 Emergency Medicine Poster: Public Health (13)

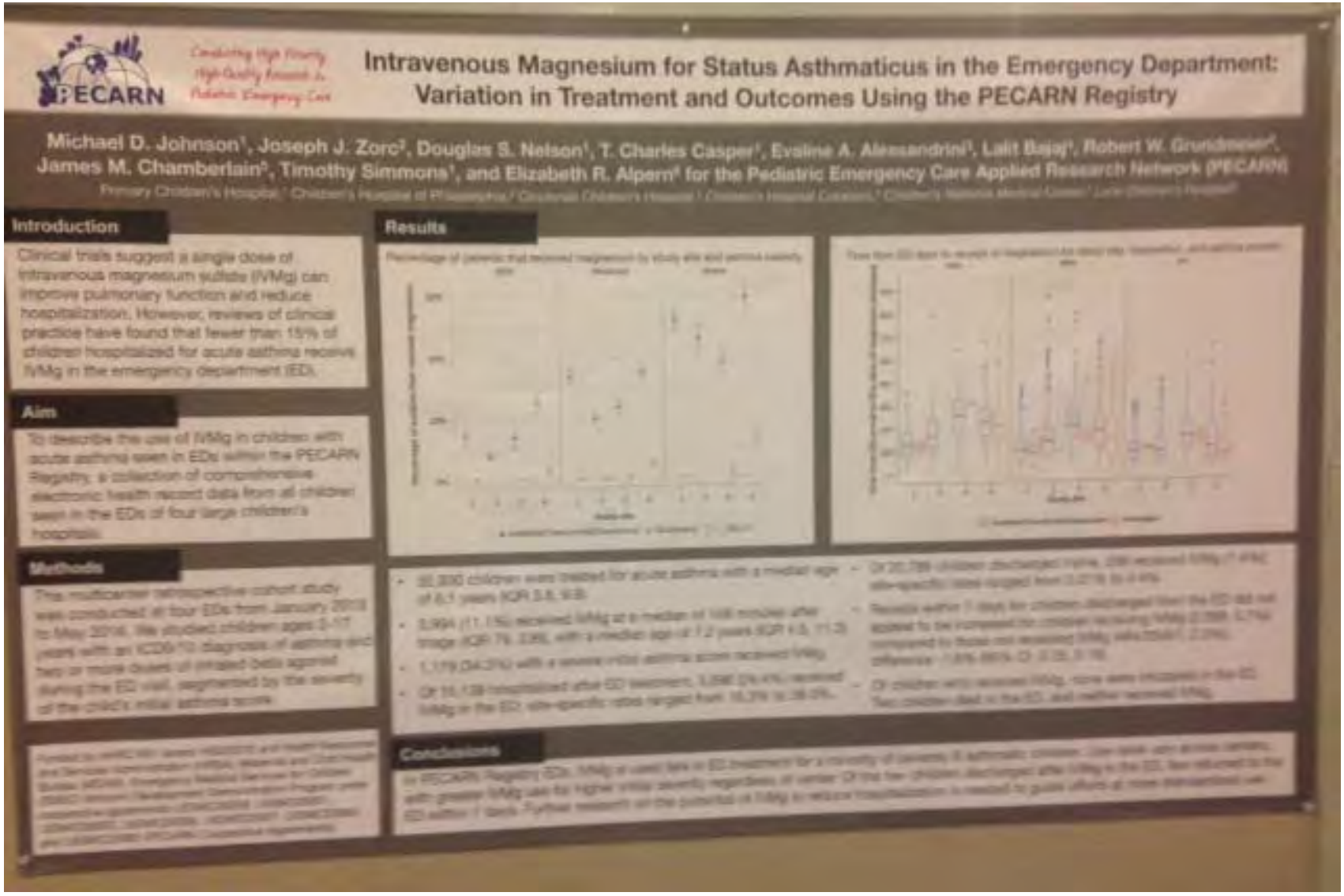
3827 Emergency Medicine Poster: Respiratory (8)

3828 Emergency Medicine Poster: Sedation (5)

3829 Emergency Medicine Poster: Sepsis (12)

3830 Emergency Medicine Poster: Simulation/Procedures (12)

Intravenous Magnesium for Status Asthmaticus in the Emergency Department: Variation in Treatment and Outcomes Using the PECARN Registry



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Intravenous Magnesium for Status Asthmaticus in the Emergency Department: Variation in Treatment and Outcomes Using the PECARN Registry

- J. Zorc et al.
- **Background:** Previous clinical trials suggest that a single dose of intravenous magnesium sulfate (IVMg) can improve pulmonary function and reduce hospitalization
- **Objective:** To describe the use of IVMg in children with acute asthma seen in EDs within the PECARN Registry.
- **Design/Methods:** Multicenter retrospective cohort study. We studied children ages 2-17 years with an ICD9/10 diagnosis of asthma and two or more doses of inhaled beta agonist given during the ED visit.

Intravenous Magnesium for Status Asthmaticus in the Emergency Department: Variation in Treatment and Outcomes Using the PECARN Registry

- **Results:**

- 35,930 children, median age of 6.1 years (IQR 3.8, 9.8).
- 3,994 (11.1%) received IVMg.
  - Of children with a severe initial asthma score, 1,179 (**34.3%**) received IVMg.
  - Median time from triage to IVMg administration was **148** minutes (IQR 79, 236) and median ED LOS in children receiving IVMg was 357 minutes (IQR 276, 455).
  - Of the 15,139 children hospitalized after ED treatment, 3,696 (**24.4%**) received IVMg in the ED.
  - Revisit rates within 7 days for children discharged from the ED did not appear to be increased for children receiving IVMg (2/298, 0.7%) compared to those not receiving IVMg (464/20451, 2.3%), difference -1.6% (95% CI -2.25, 0.16), odds ratio 0.29 (95% CI 0.07, 1.17).

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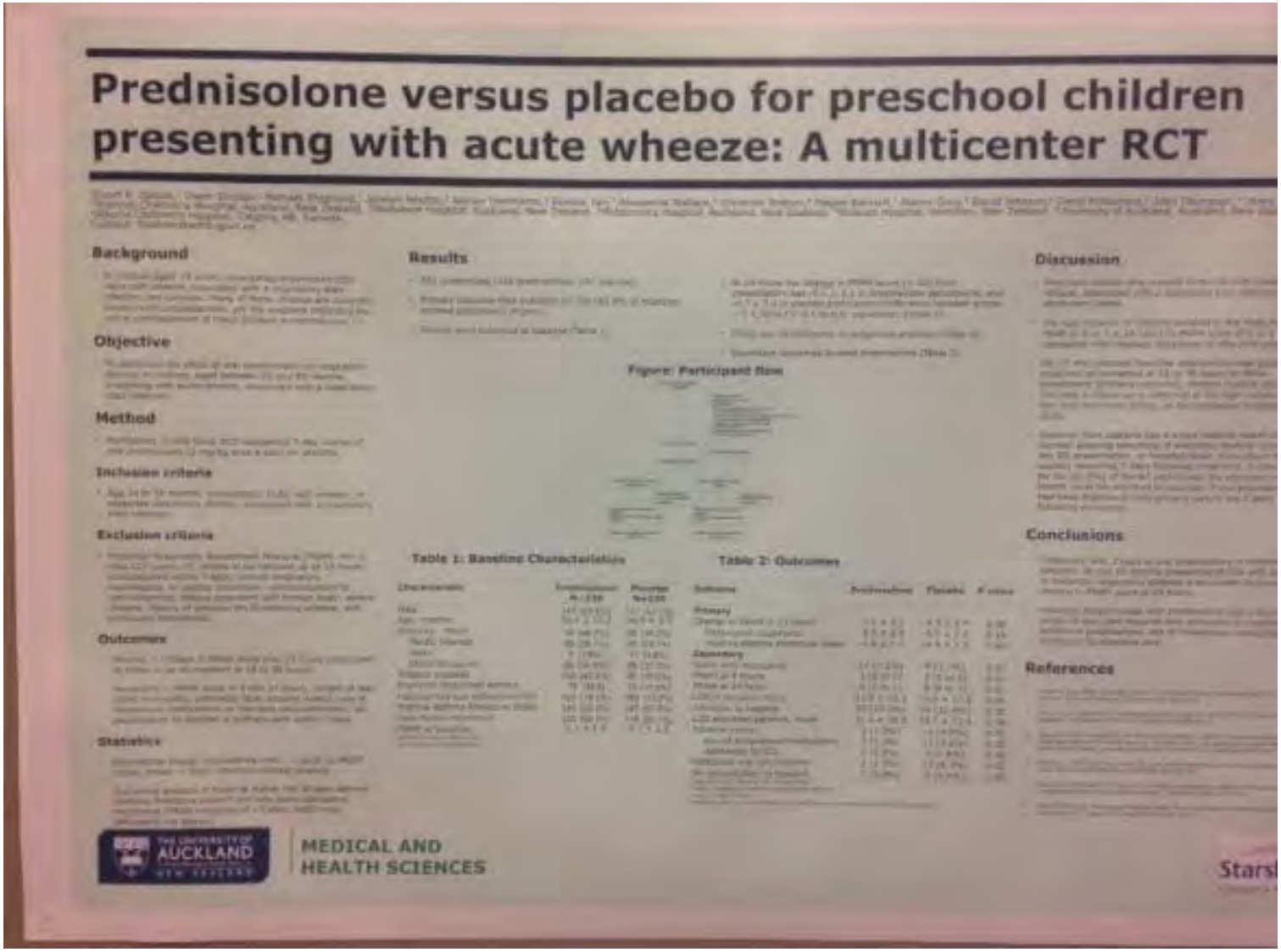
Intravenous Magnesium for Status Asthmaticus in the Emergency Department: Variation in Treatment and Outcomes Using the PECARN Registry

- **Conclusion(s)**
  - In PECARN Registry EDs, IVMg is used late in ED treatment for a minority of severely ill asthmatic children, with rates varying widely across centers. Of the small numbers of children discharged after receiving IVMg in the ED, few returned to the ED within 7 days. Further research should assess early use of IVMg prospectively as an intervention with the potential to reduce hospitalization.

Prednisolone versus placebo for preschool children presenting with acute wheeze: A multicenter RCT



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Prednisolone versus placebo for preschool children presenting with acute wheeze: A multicenter RCT

- S.R. Dalziel et al..
- **Background: :** In children aged <5 years, emergency department (ED) visits with wheeze, associated with a respiratory tract infection, are common. The evidence regarding the use of corticosteroids in these children is contradictory.
- **Objective:** To determine the effect of oral prednisolone on respiratory distress in children, aged between 24 and 59 months, presenting with acute wheeze, associated with a respiratory tract infection.
- **Design/Methods:** Multicenter, double-blind, randomized controlled trial comparing a 3-day course of oral prednisolone (2 mg/kg once a day) vs placebo in children aged between 24 and 59 months. The primary outcome was the PRAM score at 24 hour

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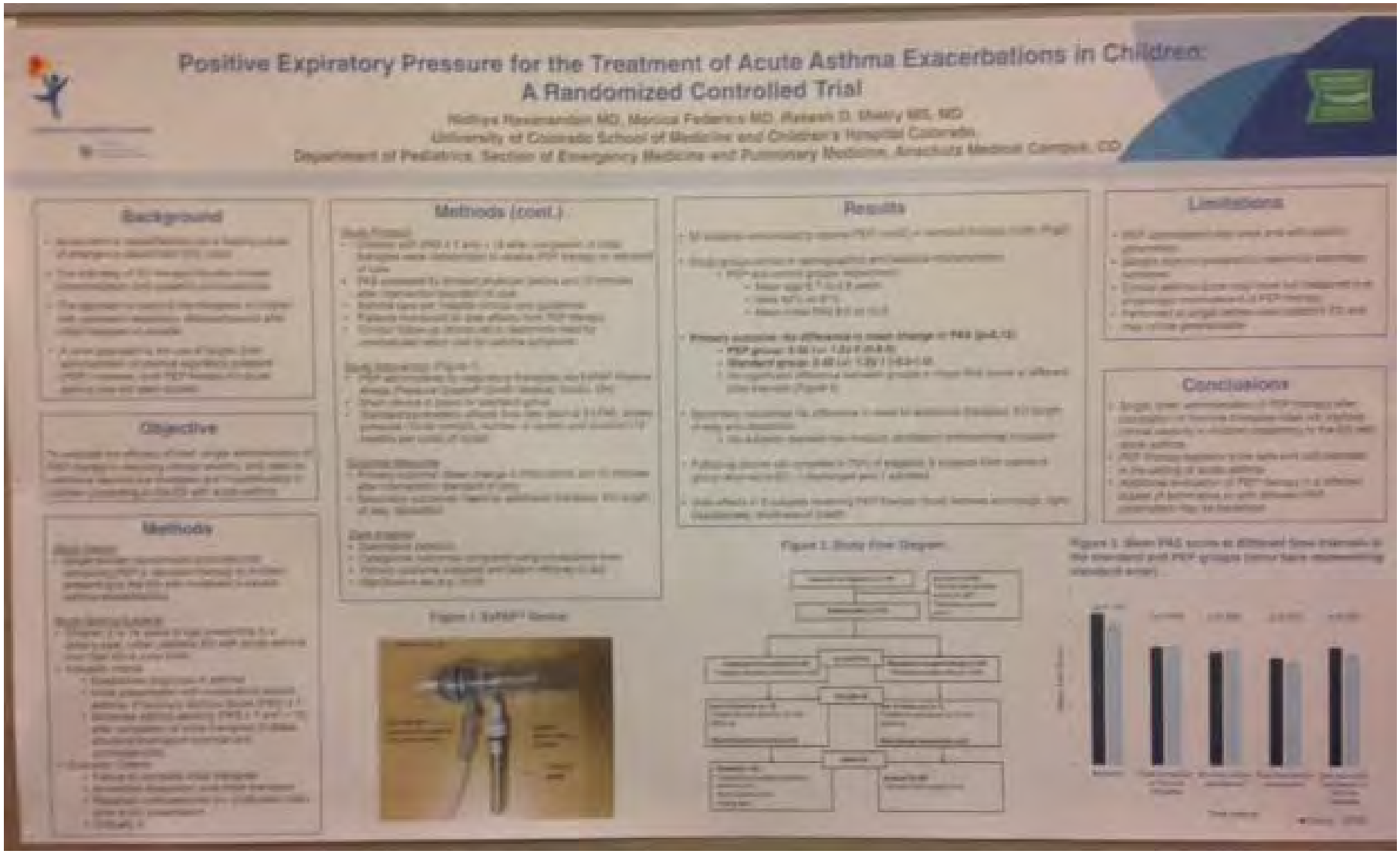
Prednisolone versus placebo for preschool children presenting with acute wheeze: A multicenter RCT

- **Results:**
- 492 children (246 prednisolone, 246 placebo)
- 147 (30.6%) had a previous physician diagnosis of asthma; mean PRAM score at presentation was 5.7 (¦1.9).
- Median (IQR) PRAM score at 24 hours was 0 (0 to 1) in prednisolone participants and 0 (0 to 1.5) in placebo participants, p=0.01.
- 55 (23.0%) prednisolone and 74 (31.1%) placebo children were admitted (RR=0.66, 95%CI 0.44 to 1.00, p=0.05).
- Median (IQR) LOS was 6.8 (4.5 to 13.8) hours in prednisolone participants and 7.7 (5.0 to 22.9) hours in placebo participants, p=0.03.

Prednisolone versus placebo for preschool children presenting with acute wheeze: A multicenter RCT

- **Conclusion(s)**
  - Treatment with 3-days of oral prednisolone in children aged between 24 and 59 months presenting to EDs with wheeze in moderate respiratory distress is associated with a statistical, but not clinical, significant improvement in PRAM score at 24 hours. However, those treated with prednisolone had a decreased length of stay, and required less admission to hospital, use of intravenous medications or admission to intensive care.

Positive Expiratory Pressure for the Treatment of Acute Asthma Exacerbations in Children: A Randomized Controlled Trial



Positive Expiratory Pressure for the Treatment of Acute Asthma Exacerbations in Children: A Randomized Controlled Trial

- N. Navanandan et al..
- **Background:** Intermittent positive expiratory pressure (PEP) has not been evaluated as a therapy for acute asthma
- **Objective: :** To determine if brief, single administration of PEP reduces clinical severity, need for additional second-line therapies, and rates of hospitalization in children presenting to the emergency department (ED) for acute asthma exacerbations
- **Design/Methods:**
  - **Single-blind randomized controlled trial**
  - **Children with moderate asthma severity [pulmonary asthma score (PAS) > 7 and < 12] after completion of initial therapies [albuterol/ipratropium bromide and corticosteroids] were randomized to receive PEP or standard therapy.**
  - **The primary outcome was change in mean PAS score before and 15 minutes after intervention, as evaluated by a blinded assessor.**

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Positive Expiratory Pressure for the Treatment of Acute Asthma Exacerbations in Children: A Randomized Controlled Trial

- **Results:**
- 52 patients, 26 subjects each study group.
- Mean initial PAS (9.0 vs. 10.5).
- There was no significant difference in mean change in PAS in the PEP compared to the standard group (-0.92 vs. -0.40, mean difference 0.52, 95% CI -0.18-1.18).
- There was also no significant difference between groups in mean asthma score at all assessment periods, need for additional second-line therapies, hospitalization rates and ED length of stay.

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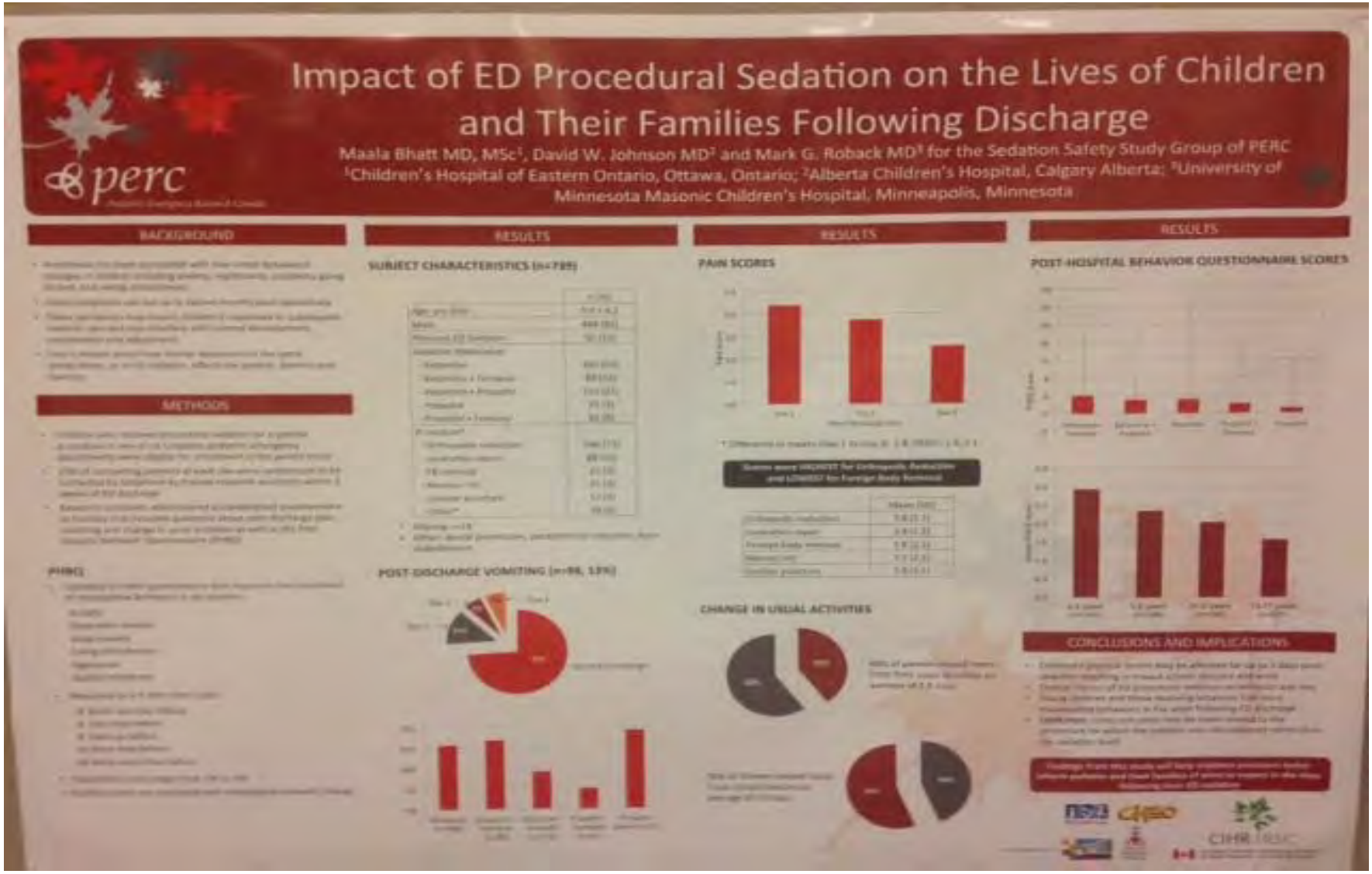
Positive Expiratory Pressure for the Treatment of Acute Asthma Exacerbations in Children: A Randomized Controlled Trial

- **Conclusion(s)**
  - Single, brief, administration of PEP therapy after first-line therapies does not significantly improve clinical asthma severity in children presenting to the ED with moderate to severe asthma exacerbations, but appears to be safe and well-tolerated. Further study is necessary to identify if a subset of ED asthmatics exists that may benefit from PEP.

Impact of ED procedural sedation on the lives of children and their families following discharge



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Impact of ED procedural sedation on the lives of children and their families following discharge

- M. Bhatt et al.
- **Background:** While there is a good understanding of commonly occurring adverse events associated with ED procedural sedation, less is known about how children and families function following ED discharge.
- **Objective: :** To determine the impact of ED procedural sedation on the daily lives of children and their families
- **Design/Methods**:
  - **Multi-center, prospective cohort of ED procedural sedation in children (0-18yr) presenting to Canadian pediatric EDs (Jul/10-Feb/15).**
  - **A random sample of 15% of patients contacted by telephone within 2 weeks of ED discharge.**
  - **Parents were questioned about their child`physical health, impact on family functioning and maladaptive behaviours following the ED sedation**

Impact of ED procedural sedation on the lives of children and their families following discharge

- **Results:**
- 739 (11.7%) children were contacted
- Sedation medications used were: Ketamine (53%), Ketamine+Fentanyl (12%), Ketamine+Propofol (21%), Propofol (3%), Propofol+Fentanyl (8%)
- Ninety-eight (13%) of patients vomited following ED discharge. The majority (79%) vomited on day 1 post ED discharge while 7% continued to vomit on day 3.
- Forty-percent of parents stayed home from work for an average of 2.9 days while 56% of children stayed home from school/daycare an average of 3.0 days. PHBQ scores were highest for sedations with ketamine and for children ≤ 4 years (2.9 vs. 2.0, $p<0.01$).

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Impact of ED procedural sedation on the lives of children and their families following discharge

- **Conclusion(s)**
  - Children's physical health may be affected by ED procedural sedation for up to 3 days after discharge resulting in missed school, daycare and work. Although the overall impact of ED procedural sedation on behavior was low, young children and those receiving ketamine had more maladaptive behaviors in the week following ED discharge.

Emergency Medicine Poster: Quality Improvement

Dos tandas de 12 posters

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QI. Emergency Medicine

- The Impact of a Clinical Pathway on the Emergency Department Length of Stay in Children with **Appendicitis**
- Changes in Physician-level Variability in Hospitalization Following Implementation of a Standardized Care Process for Children with **Acute Asthma**
- Protocol for reducing time to antibiotics in **febrile neonates** presenting to the emergency department - A Quality Improvement Initiative.
- Improving Timeliness of Antibiotic Delivery in the Emergency Department for **Pediatric Cancer Patients with Febrile Neutropenia**.

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QI. Emergency Medicine

- Decreasing unnecessary care for **bronchiolitis** in a national collaborative of emergency departments and inpatient units.
- Reducing unnecessary IV starts in children with **diabetes** presenting to the emergency department.
- Impact of a Clinical Pathway on Decreasing Lumbar Puncture and Admission in **Low-Risk Febrile 31-60 Day Olds**.
- Standardizing the evaluation of **non-accidental trauma** in a large pediatric emergency department.
- Improving the Pain Experience for Children with **Limb Injury** in the City of Calgary, Alberta: A Multi-Site Quality Improvement Collaborative

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PLATFORM SESSION - QI: Emergency Medicine Martes 9

8 comunicaciones

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ASSESSMENT OF PEDIATRIC CARDIOPULMONARY RESUSCITATION (CPR) QUALITY USING VIDEO REVIEW: A PILOT PROJECT FOR THE ESTABLISHMENT OF THE VIPER COLLABORATIVE

Karen J. O'Connell, MD, MEd
Ryan R. Keane, BS
Niall H. Cochrane, BS
Alexis Sandler
Aaron J. Donoghue MD, MSCE
Ben Kerrey, MD, MS
Paul C. Mullan, MD, MPH

Children's National

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- **Objective:** We aimed to study the quality of pediatric CPR using video review to establish a baseline for a multi-site quality improvement collaborative (Videography in Pediatric Emergency Resuscitation -VIPER)
- **Design/Methods:**
  - Prospective observational unicenter study.
  - Two independent researchers reviewed video recordings of pediatric cardiac arrests from 1/15/14 to 6/2/16.
  - Chest compression rates, ventilation rates, epoch (defined as a single provider compression segment) and pause durations were calculated using median rates/times and reported as beats or breaths per minute (bmp) or seconds (IQR1, 3).
  - A prolonged pause was defined as >10 seconds. Reasons for CPR pauses were described. CPR parameters within AHA recommendations were termed

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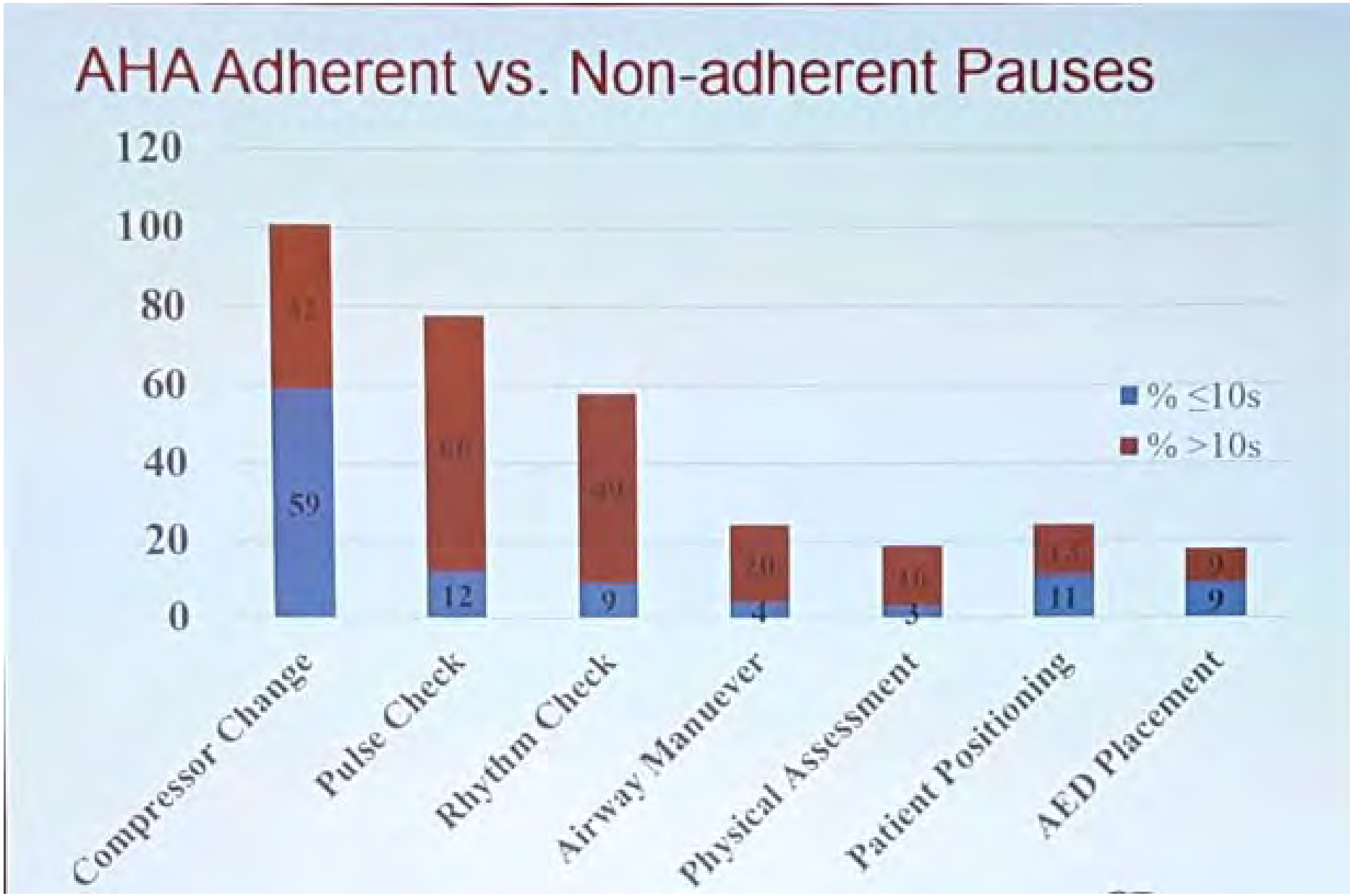
	% (n) Total n=58	P value	% (n) Survival n=12	P value
OHCA	88% (51/58)	P=<0.00*	20% (10/51)	P=0.58
IHCA	12% (7/58)		29% (2/7)	
Age <1 year	55% (32/58)	P=0.45	36% (4/11)	P=0.39
Age > or = 1 year	45% (26/58)		64% (7/11)	

*statistical significance at p<0.05



- **Conclusions**
  - Adherence to AHA guidelines during pediatric CPR was infrequent in our study and consistent with prior studies. Short pause durations and minimal interruptions, however, led to favorable and adherent chest compression fractions.
  - Our findings of few coordinated CPR pauses indicate a need for more purposeful coordinated CC pauses and assessments of response to CPR.