

**EVIDENCE BASED  
PEDIATRIC EMERGENCY MEDICINE:  
ARE YOU PRACTICING IT?**

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Golisano Children's Hospital, Syracuse, NY*



IS THERE TRUTH IN .....





OUR ACE IN THE HOLE



**EM JOB DESCRIPTION:**

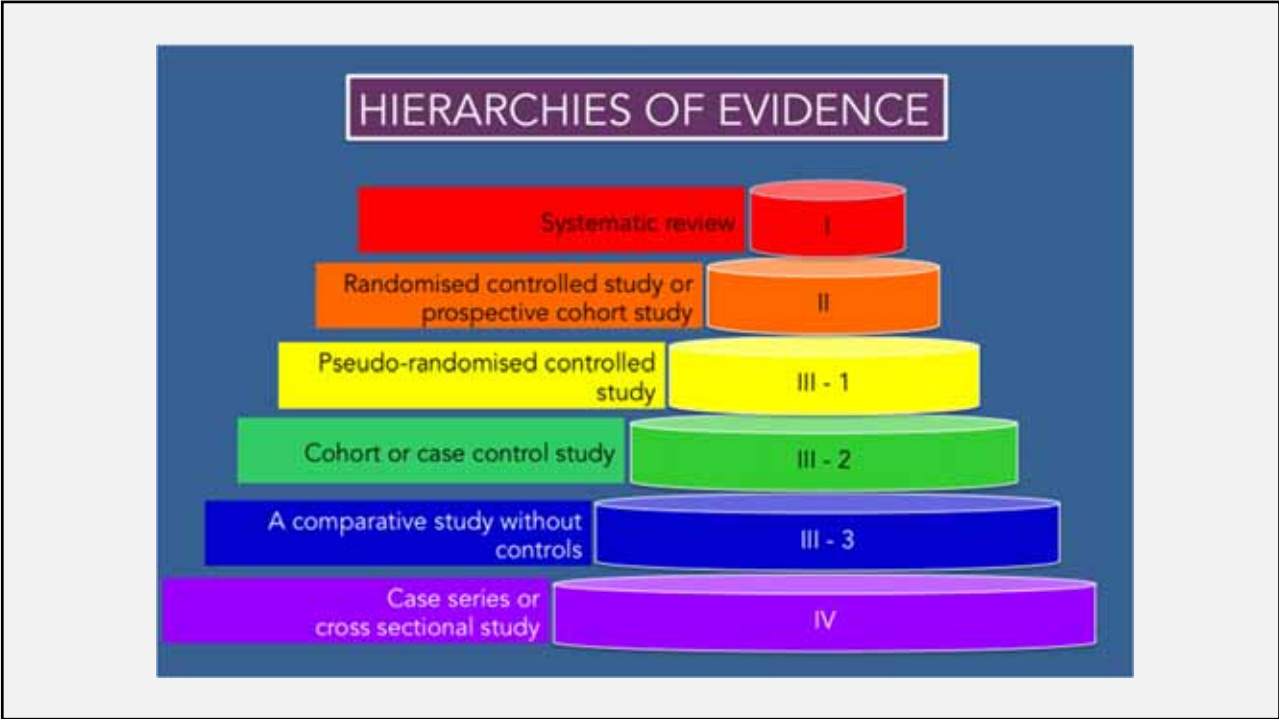
**“A FRONT ROW SEAT TO THE END (OR BEGINNING) OF THE WORLD”**



**WHAT IS  
“EVIDENCE BASED  
MEDICINE?”**

- Evidence-based medicine is the conscientious explicit and judicious use of current best evidence in making decisions about the care of individual patients

• *Evidence based medicine: what it is and what it isn't BMJ 1996;312:71*



## THE FEBRILE NEONATE



## SCENARIO

- A *3 week old* presents with a temperature of *38.5C* for 1 day
- Normal birth history
- No sick contacts
- Clinical choices:
  - Viral testing only?
  - Septic Work Up only?
    - Admit if labs are abnormal
    - Discharge if labs are normal

**IS THIS AN EVIDENCE  
BASED CONCEPT?**

- **All infants less than 30 days** with a temperature greater than 38.3 C should receive a full septic workup and admission
- Key concepts:
  - You can't trust these kids clinically
  - Laboratory results may be unreliable
  - The stakes are very high if you're wrong

ORIGINAL STUDIES

**Predicting Severe Bacterial Infections in Well-Appearing Febrile Neonates**

*Laboratory Markers Accuracy and Duration of Fever*

*Silvia Bressan, MD, Barbara Andreola, MD, Francesca Cattelan, MD, Tiziana Zangardi, MD, Giorgio Perilongo, MD, and Liviana Da Dalt, MD*

Pediatric Infect Dis J 2010;29: 227–232

## OBJECTIVES

- To assess the diagnostic accuracy of
  - WBC
  - absolute neutrophil count (ANC)
  - C-reactive protein (CRP)
- in detecting severe bacterial infections (SBI) in well-appearing neonates with early onset fever without source (FWS)
- ***In relation to fever duration***

## METHODS

- Observational study
- Previously healthy neonates 7 - 28 days of age, consecutively hospitalized for FWS for less than 12 hours to a tertiary care Pediatric Emergency Department, over a 4-year period
- Laboratory markers were obtained ***upon admission in all patients and repeated 6 to 12 hours after admission in those with normal values on initial determination***

## RESULTS

- 99 patients studied
- SBI documented in **25 (25.3%)** neonates
- 62 patients presented had laboratory markers on initial determination

## RESULTS

	AROC Initially	AROC at 12 Hours
CRP	.78	.99
ANC	.77	.85
WBC	.59	.79



## CONCLUSIONS

- In well-appearing neonates with early onset FWS, laboratory markers are more accurate and reliable predictors of SBI *when performed after > 12 hours of fever duration*
- ANC and especially CRP resulted better markers than the traditionally recommended WBC

## PRESENT DAY NEONATAL FEVER

- ALL infants should receive
  - CBC, electrolytes
  - Blood, urine and CSF cultures (including HSV)
  - IV Cefotaxime and Ampicillin
  - IV Acyclovir
- ALL are admitted

## THE FEBRILE INFANT



### CLINICAL PRACTICE

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## Prevalence of Occult Bacteremia in Children Aged 3 to 36 Months Presenting to the Emergency Department with Fever in the Postpneumococcal Conjugate Vaccine Era

Matthew Wilkinson, MD, Blake Bulloch, MD, and Matthew Smith, MD

Academic Emergency Medicine 2009 16: 220–  
225

## CLINICAL QUESTION

- What is the prevalence of occult bacteremia (OB) in *well-appearing, previously healthy children aged 3 to 36 months* who present to the emergency department (ED) with *fever without source in the post-pneumococcal conjugate vaccine (PCV) era?*

## METHODS

Retrospective study of children presenting to an urban PED over a 3 year period

Children were included if they were

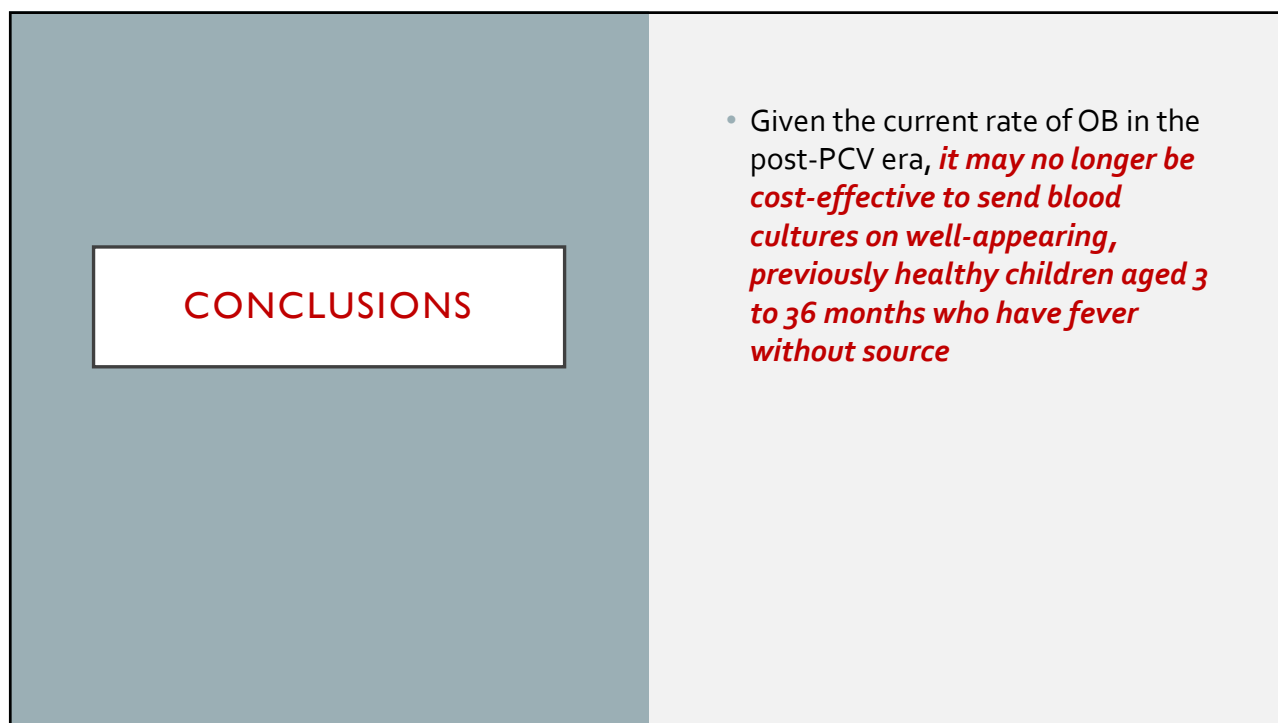
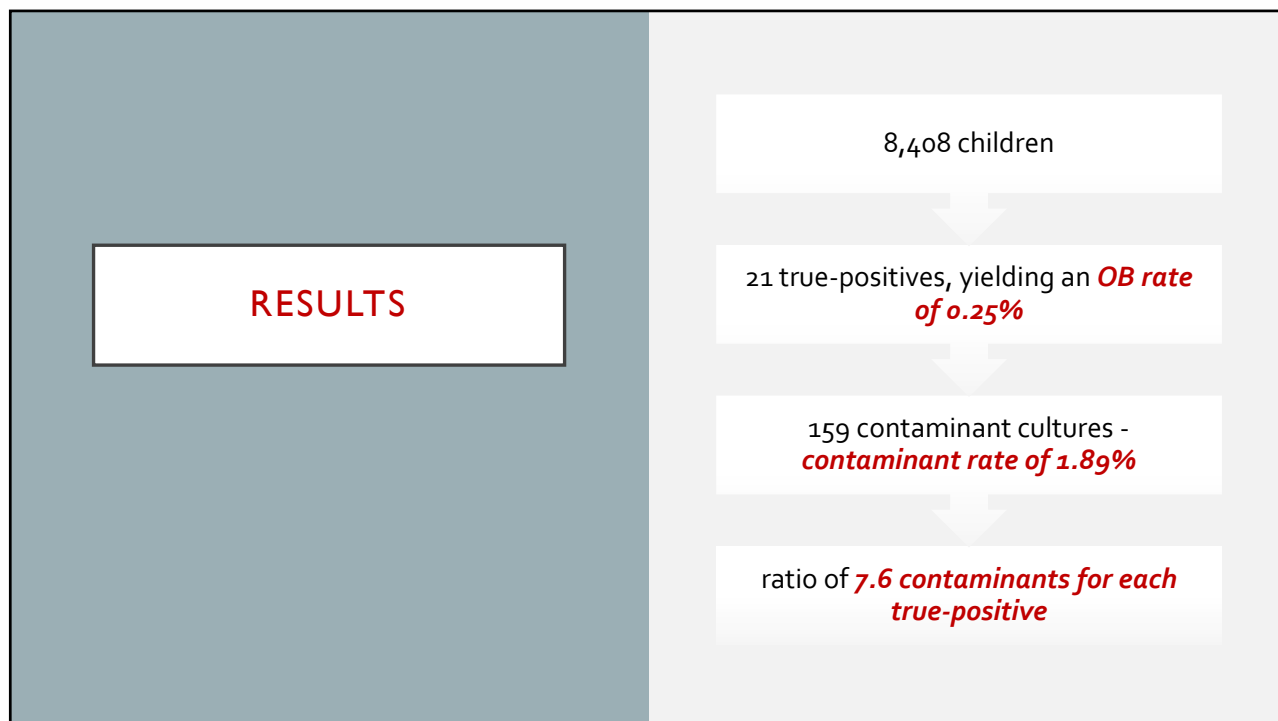
aged 3 to 36 months

febrile

had no source of infection

had a blood culture drawn

Discharged from the ED



WHAT IF YOU DID GET A WBC?

Does Extreme Leukocytosis Predict Serious Bacterial Infections  
in Infants in the Post-Pneumococcal Vaccine Era? The  
Experience of a Large, Tertiary Care Pediatric Hospital

*Dana Danino, MD,\* Ayelet Rimon, MD,\* Dennis Scolnik, MB, ChB,† Galia Grisaru-Soen, MD,‡  
and Miguel Glatstein, MD\*§*

Pediatric Emergency Care 2015 31:391

## CONCLUSIONS

- All well-looking febrile infants with *WBC greater than 25,000/mm<sup>3</sup> should undergo a chest radiograph* unless there are clear physical findings that indicate a different etiology
- *Urine culture* should be considered in girls

Original article

### Value of white cell count in predicting serious bacterial infection in febrile children under 5 years of age

Sukanya De,<sup>1,2</sup> Gabrielle J Williams,<sup>1,2</sup> Andrew Hayen,<sup>1,3</sup> Petra Macaskill,<sup>1</sup>  
Mary McCaskill,<sup>4</sup> David Isaacs,<sup>5</sup> Jonathan C Craig<sup>1,2,6</sup>

Archives Disease of Children 2014 99:493

## CONCLUSIONS

### What is already known

- ▶ The white blood cell and absolute neutrophil counts are frequently used in the initial evaluation of febrile children for suspected serious bacterial infections.
- ▶ Existing guidelines for evaluation of febrile children endorse the use of specific white cell count thresholds to guide management.
- ▶ Reports of the accuracy of these tests are contradictory, based on small studies limited in their design, conducted mostly in the prepneumococcal vaccine era.

### What this study adds

- ▶ The white blood cell and absolute neutrophil counts are inaccurate markers of serious bacterial infection in children less than 5 years old presenting with fever.
- ▶ A white cell count threshold of  $15 \times 10^9/L$  misses half of all serious bacterial infections while misclassifying a quarter of self-limiting illnesses.
- ▶ Recommendations regarding white cell count testing for febrile children need careful re-evaluation.

## THE ROAD TO HELL IS PAVED WITH.....?



RSV AND FEBRILE  
INFANTS:  
A CAUTIONARY TALE

- *A positive NP aspirate for RSV in a febrile young infant <2 months essentially rules out bacteremia/SBI*
- *Therefore, no further testing is necessary*

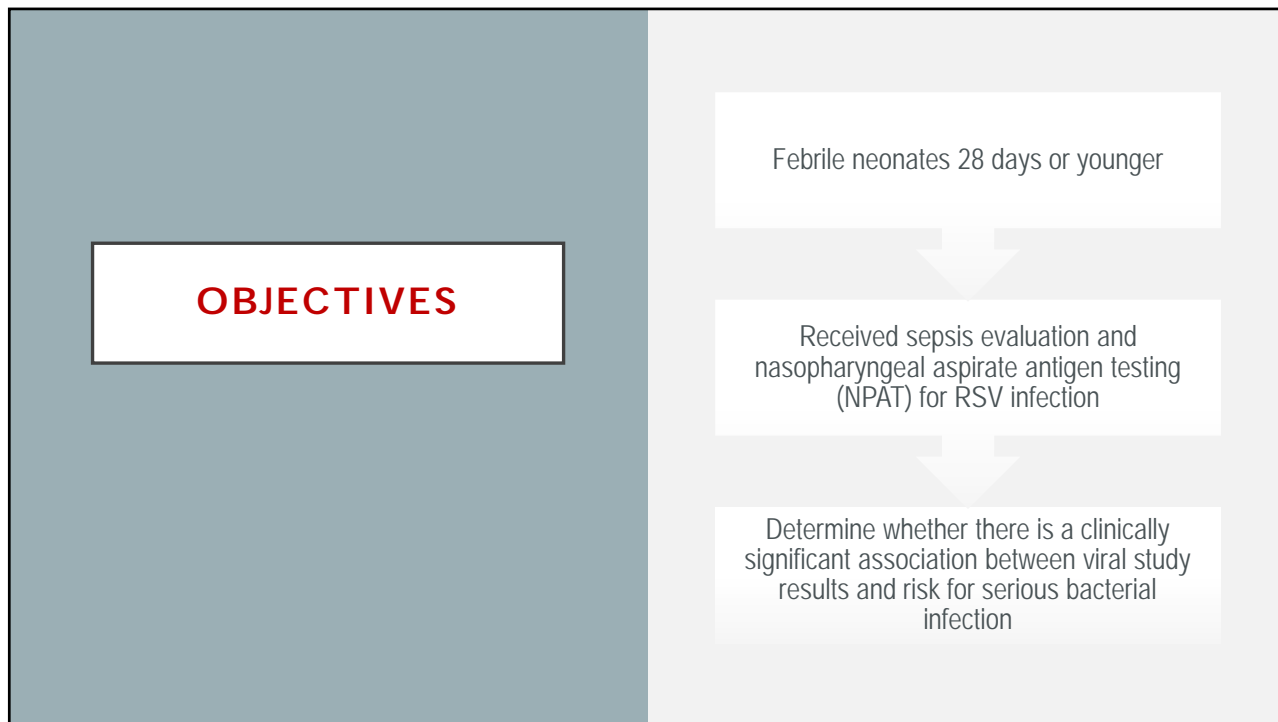
ORIGINAL ARTICLE

Meta-analysis to Determine Risk for Serious Bacterial Infection  
in Febrile Outpatient Neonates With RSV Infection

*William Bonadio, MD, Felix Huang, MD, Sinthumathi Natesan, MBBS, Chukwujekwu Okpalaji, MBBS,  
Alicia Kodosi, MD, Sabrina Sokolovsky, DO, and Peter Homel, PhD*

Pediatric Emergency Care 2016;32: 286–289





## RESULTS

- Prevalence of + RSV in 387 febrile neonates was 6%
- 378 (98%) had both a sepsis evaluation and RSV NPAT

POSITIVE SBI	
POSITIVE RSV	4/22 (18.1%)
NEGATIVE RSV	58/356 (16.2%)

## CONCLUSIONS

Rates of + SBI are **not** significantly different between febrile neonates 28 days or younger **with and without + RSV**

Respiratory viral infection status is **not an accurate clinical determinant in distinguishing SBI risk in febrile neonates**

### ORIGINAL ARTICLES

www.jpeds.com • THE JOURNAL OF PEDIATRICS



#### Risk of Bacterial Coinfections in Febrile Infants 60 Days Old and Younger with Documented Viral Infections

Prashant Mahajan, MD, MPH, MBA<sup>1,\*</sup>, Lorin R. Browne, DO<sup>2</sup>, Deborah A. Levine, MD<sup>3</sup>, Daniel M. Cohen, MD<sup>4</sup>, Rajender Gattu, MD<sup>5</sup>, James G. Linakis, MD, PhD<sup>6</sup>, Jennifer Anders, MD<sup>7</sup>, Dominic Borgialli, DO, MPH<sup>8</sup>, Melissa Vitale, MD<sup>9</sup>, Peter S. Dayan, MD, MSc<sup>10</sup>, T. Charles Casper, PhD<sup>11</sup>, Octavio Ramillo, MD<sup>12</sup>, Nathan Kuppermann, MD, MPH<sup>13</sup>, and the Febrile Infant Working Group of the Pediatric Emergency Care Applied Research Network (PECARN)<sup>7</sup>

*J Pediatr* 2018;203:86-91

**STUDY DESIGN**

- Compared patient demographics, clinical, and laboratory findings, and prevalence of SBIs between virus-positive and virus-negative infants

**4778 ENROLLED INFANTS = 2945 VIRAL TESTED****1200 (48.1%) were  
*virus positive***

- 44 of the 1200 had SBIs (3.6%)

**1745 *virus negative***

- **222 had SBIs (12.7%)**

## RESULTS

- Rates of specific SBIs in the virus-positive group vs the virus-negative group were
  - *UTIs (33 of 1200 = 2.8%); vs 186 of 1745 (10.7%)*
  - Bacteremia (9 of 1199 (0.8%) vs 50 of 1743 (2.8%)
- Negative viral status was significantly associated with SBI in multivariable analysis

## CONCLUSIONS

- Febrile infants  $\leq 60$  days of age with viral infections are at *significantly lower, but non-negligible risk for SBIs*, including bacteremia and bacterial meningitis

# MENINGITIS



## THIS IS SPINAL TAP?



- When performing a spinal tap, the infant should *“kiss his toes”* in the fetal position



ARTICLES

## Positioning for Lumbar Puncture in Children Evaluated by Bedside Ultrasound

Pediatrics 2010; 125: e1149–e1153

### CONCLUSIONS

- The interspinous space of the lumbar spine was maximally increased with *children in the sitting position with flexed hips*

Lateral (L1)	Lateral Flexion (L2)	<del>Lateral Flexion with Neck Flexion (L3)</del>	Sitting (S1)	Sitting Flexion (S2)
Neutral	Hip flexion	Hip and neck flexion	Neutral	Hip flexion

FIGURE 1  
Positions for measurement of lumbar interspinous space.

- In the lateral recumbent position, *neck flexion does not increase the interspinous space and may increase morbidity*

PEDIATRICS/ORIGINAL RESEARCH

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The Effect of Bedside Ultrasonographic Skin Marking on Infant Lumbar Puncture Success:  
A Randomized Controlled Trial

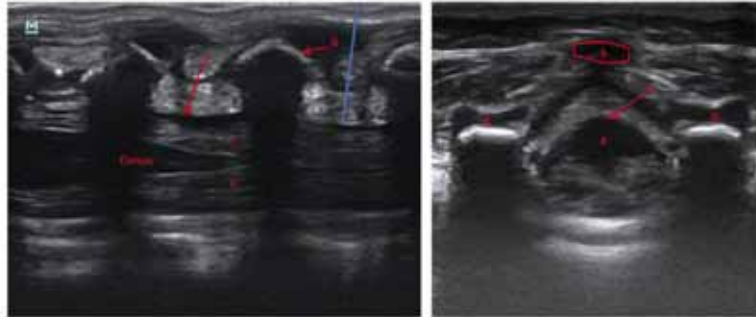


Jeffrey T. Neal, MD\*; Summer L. Kaplan, MD; Ashley L. Woodford, BS; Krishna Desai, BS;  
Joseph J. Zorc, MD, MSCE; Aaron E. Chen, MD

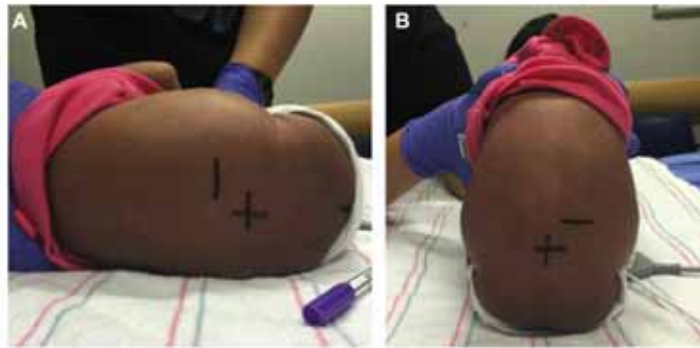
Ann Emerg Med. 2017;69:610-619

**METHODS**

- Prospective, randomized, controlled trial in an academic pediatric emergency department (ED)
- *Infants younger than 6 months*
- The conus medullaris and most appropriate intervertebral space were identified and marked



**Figure 1.** Identification of anatomic landmarks with bedside ultrasonography. Longitudinal plane (left) vs transverse plane (right); dura (a), spinous process (b), cauda equina (c), transverse process (d), subarachnoid space (e); example of depth measurement (blue line).



**Figure 2.** Ultrasonographic skin marking. Clinicians performing the LP were handed a diagram that described the following skin markings: a large straight line marking the termination of the conus and a cross marking the intervertebral space and midline for the first attempt. The images above demonstrate these markings in A, the lateral decubitus; and B, sitting position.



## RESULTS

- 128 patients enrolled
- ***The first-attempt success rate was higher for the ultrasonography arm (58%) versus the traditional arm (31%)***
- Success within 3 attempts was also higher for the ultrasonography arm (75%) versus the traditional arm (44%)

## CONCLUSION

- Ultrasonography-assisted site marking improved infant lumbar puncture success in a tertiary care pediatric teaching hospital
- This method has the potential to reduce unnecessary hospitalizations and exposures to antibiotics in this vulnerable population

## ORIGINAL ARTICLE

## The Sonographic Appearance of Spinal Fluid at Clinically Selected Interspaces in Sitting Versus Lateral Positions

Yaffa M. Vitberg, MD, Peggy Tseng, MD, and David O. Kessler, MD, MSc, RDMS

Pediatr Emer Care 2018;34: 334–338

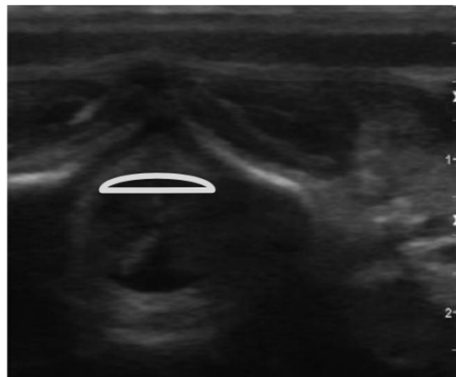
### METHODS

- Infants < 3 months
- PEM physicians marked infants' backs at the level they would insert a needle using the landmark palpation technique
- *A PEM sonologist imaged and measured the spinal fluid in 2 orthogonal planes at this marked level in lateral then sitting positions*
- Fluid measurements were repeated by a second blinded PEM sonologist

## RESULTS

- 46 infants enrolled
- Ultrasound *verified the presence of fluid at the marked level as determined by the landmark palpation technique in 98% of cases*
- Ultrasound identified additional suitable spaces 1 space higher (82%) and 2 spaces higher (41%)

LATERAL



SITTING

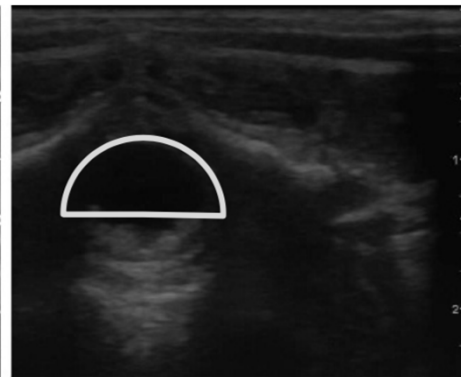


FIGURE 3. Dorsal fluid pocket in lateral versus sitting positions for a representative subject.

## LATERAL VS SITTING POSITIONS

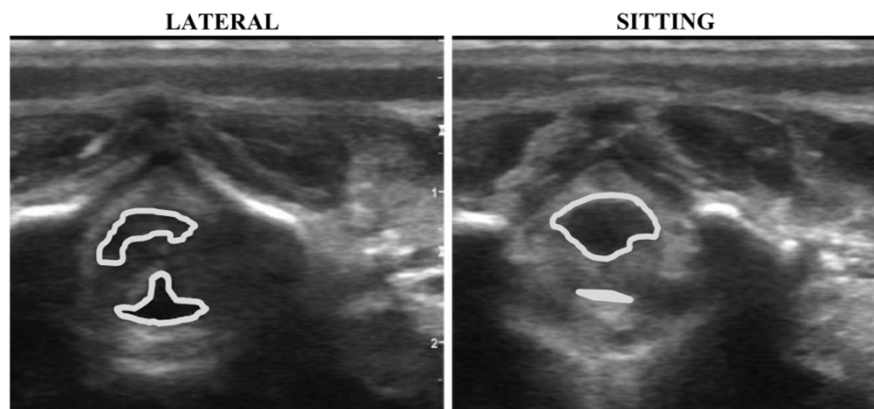
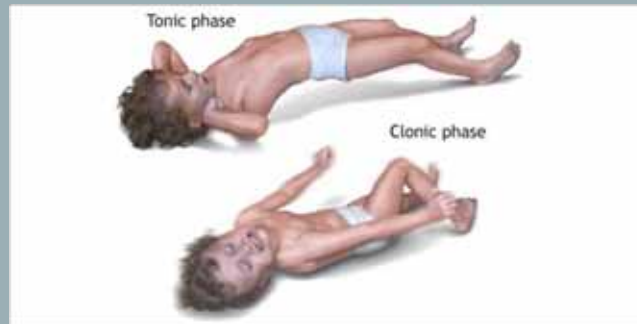


FIGURE 2. Spinal fluid area measurements in lateral versus sitting positions for a representative subject.

## CONCLUSIONS

- Ultrasound can verify the presence of fluid at interspaces determined by the landmark palpation technique and identify additional suitable spaces at higher levels
- *There were statistically greater fluid measurements in sitting versus lateral positions*

## FEBRILE CONVULSIONS



**ONCE UPON A TIME**

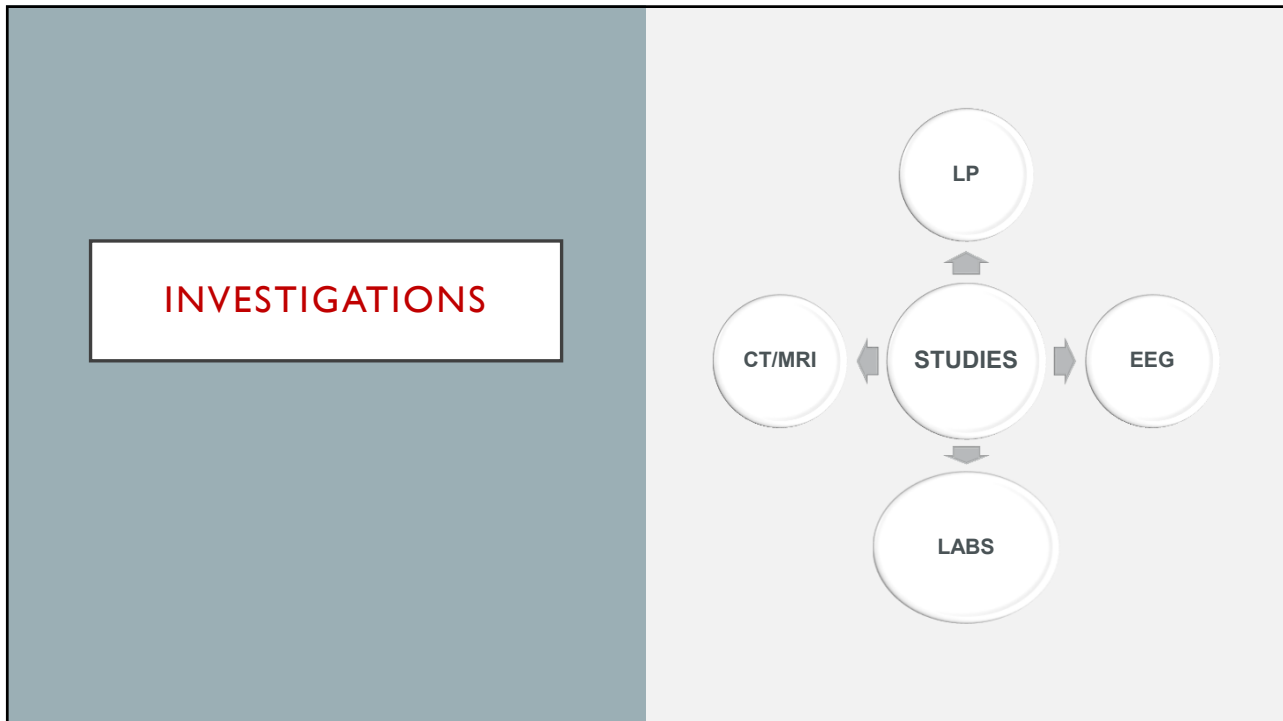
- All children who suffered a febrile convulsion should receive a:
  - Full septic workup
  - An EEG
  - A CT scan
  - Probable admission

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FROM THE AMERICAN ACADEMY OF PEDIATRICS  
Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

# Clinical Practice Guideline—Febrile Seizures: Guideline for the Neurodiagnostic Evaluation of the Child With a Simple Febrile Seizure

PEDIATRICS 2011 | 127:389

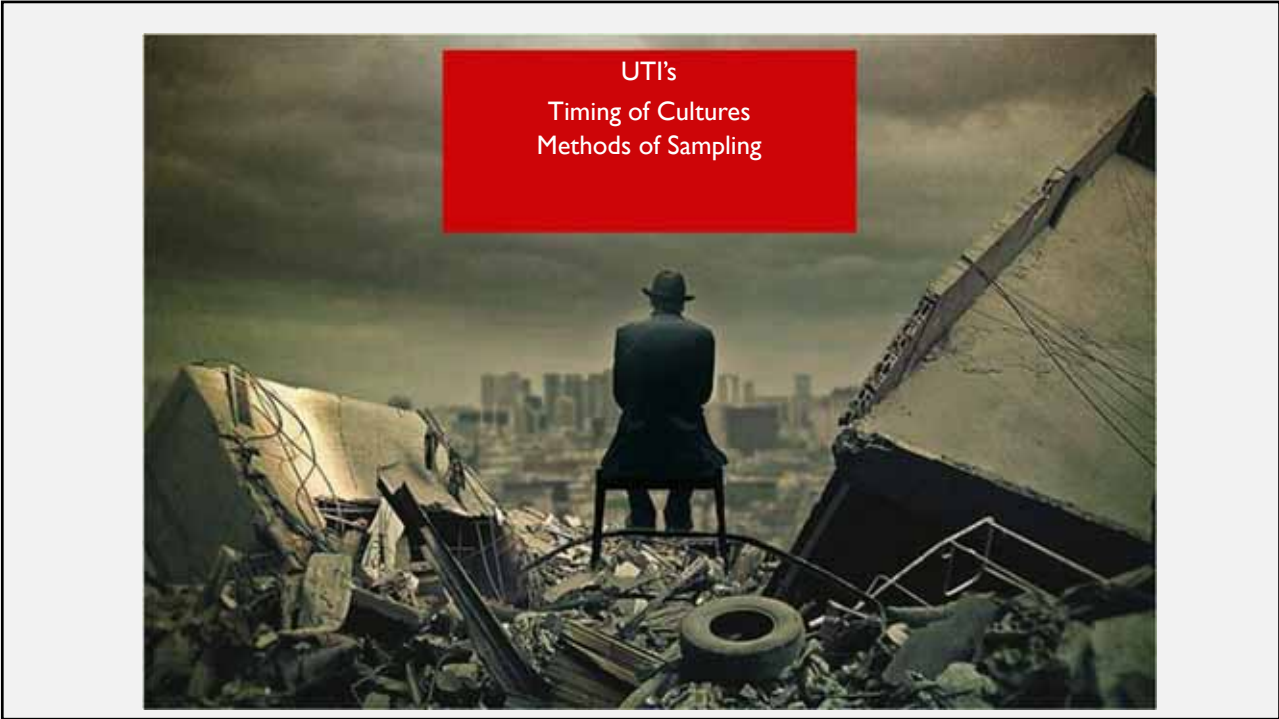


## CONCLUSIONS

- Clinicians evaluating infants or young children after a simple febrile seizure should *direct their attention toward identifying the cause of the child's fever*
- Meningitis should be considered in the differential diagnosis
- For any infant between 6 and 12 months of age who presents with a seizure and fever, *a lumbar puncture is an option when the child is considered deficient in Haemophilus influenzae type b (Hib) or Streptococcus pneumoniae immunizations*

## CONCLUSIONS

- A lumbar puncture is an option for children who are *pretreated with antibiotics*
- In general, a simple febrile seizure *does not usually require further evaluation, specifically electroencephalography, blood studies, or neuroimaging*



A WORD ABOUT.....UTI' S





THE JOURNAL OF PEDIATRICS • www.jpeds.com

ORIGINAL  
ARTICLES

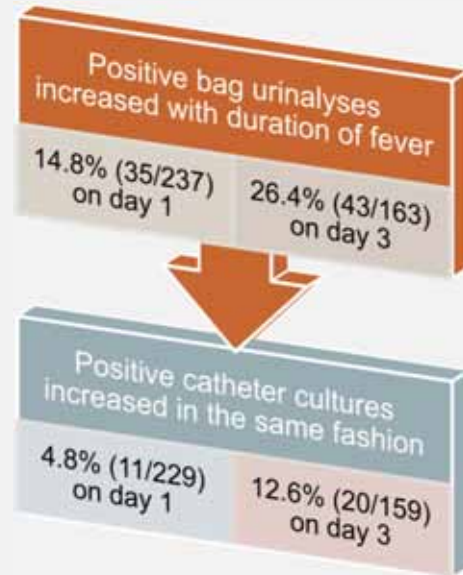
## Duration of Fever Affects the Likelihood of a Positive Bag Urinalysis or Catheter Culture in Young Children

J Pediatr 2010;156:629-33

### STUDY DESIGN

- Prospective study of 818 infants and children age 3-36 months with documented *fever without source*
- Following the documentation of fever from < 1 to > 5 days, bag specimens were collected for urinalysis
- The primary outcome was the *yield of positive bag dipsticks by day, defined as positive for nitrates or more than trace leukocyte esterase*
- The secondary outcome was *positive catheter cultures* on each day of fever

## RESULTS



## CONCLUSIONS

- The yield of positive bag urinalyses and catheter cultures increased significantly in children with fever of 3 days or longer duration

## Evaluation of a New Strategy for Clean-Catch Urine in Infants

Mélanie Labrosse, MD, PhD,\* Arielle Levy, MD, MEd,\* Julie Autmizguine, MD, MSc,<sup>1,2</sup> Jocelyn Gravel, MD, MSc<sup>4</sup>

PEDIATRICS Volume 138, number 3, September  
2016:e20160573

### METHODS

- A prospective cohort study among infants <6 months needing a urine sample
- CCU samples were collected using a standardized stimulation technique. Invasive technique was performed after CCU for three specific conditions
- Determined associations between successful urine samples and 4 predictive factors (age, sex, low oral intake, and recent voiding)

TAPPING THE SUPRAPUBIC AREA



MASSAGING THE LUMBOSACRAL AREA



## RESULTS

- 126 infants included (64 boys, median age: 55 days)
- CCU procedure was effective in 62 infants (49%; median time: 45 seconds)
- Infants 0 to 29 days; 30 to 59 days, and 60 to 89 days had more successful procedures, compared with infants >89 days
- Contamination proportion 16% in the CCU group
  - not statistically different compared with the invasive method group

## UTI PRESENT DAY

- *Recommended* culture candidates
  - FWLS females under age 2
  - FWLS males under 6 months
  - FWLS uncircumcised males under 1 year
- Debatable worth in *first 24* hours of fever
  - *Definitely* more indicated after 3 days
- Remember a culture positive UTI in a child less than 2 years is a *PYELONEPHRITIS*, not a simple cystitis



**TIRED OF COUGHING INFANTS  
AND CHILDREN?**

## IDSA GUIDELINES

## Executive Summary: The Management of Community-Acquired Pneumonia in Infants and Children Older Than 3 Months of Age: Clinical Practice Guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America

John S. Bradley,<sup>1,\*</sup> Carrie L. Byington,<sup>2,\*</sup> Samir S. Shah,<sup>3,\*</sup> Brian Alverson,<sup>4</sup> Edward R. Carter,<sup>5</sup> Christopher Harrison,<sup>6</sup> Sheldon L. Kaplan,<sup>7</sup> Sharon E. Mace,<sup>8</sup> George H. McCracken Jr.,<sup>9</sup> Matthew R. Moore,<sup>10</sup> Shawn D. St Peter,<sup>11</sup> Jana A. Stockwell,<sup>12</sup> and Jack T. Swanson<sup>13</sup>

CID 2011 | 53:617

### WHO SHOULD BE HOSPITALIZED?

- Children and infants who have respiratory distress and hypoxemia
- Infants less than 3–6 months of age with suspected bacterial CAP
- Children and infants with suspected or documented CAP caused by a pathogen with increased virulence, such as community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA)

## DIAGNOSTIC TESTING

- *Blood cultures should not be routinely performed* in nontoxic, fully immunized children with CAP managed in the outpatient setting
- Sensitive and specific tests for the *rapid diagnosis of influenza virus and other respiratory viruses* should be used in the evaluation of children with CAP
- Antibacterial therapy is not necessary for children, either outpatients or inpatients, with a positive test for influenza virus in the absence of clinical, laboratory, or radiographic findings that suggest bacterial coinfection

## DIAGNOSTIC TESTING

- *Routine measurement of the complete blood cell count is not necessary in all children with suspected CAP managed in the outpatient setting*, but in those with more serious disease it may provide useful information for clinical management in the context of the clinical examination and other laboratory and imaging studies
- *Acute-phase reactants*, such as the erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) concentration, or serum procalcitonin concentration, *cannot be used as the sole determinant to distinguish between viral and bacterial causes of CAP*



## DIAGNOSTIC TESTING

- *Routine chest radiographs are not necessary* for the confirmation of suspected CAP in patients well enough to be treated in the outpatient setting (after evaluation in the office, clinic, or emergency department setting)

## ANTI-INFECTIVE TREATMENT

- Antimicrobial therapy is not routinely required for *preschool-aged children with CAP*, because viral pathogens are responsible for the great majority of clinical disease
- *Amoxicillin* should be used as first-line therapy for previously healthy, appropriately immunized infants and preschool children with mild to moderate CAP suspected to be of bacterial origin
- *Macrolide* antibiotics should be prescribed for treatment of children (primarily school-aged children and adolescents) evaluated in an outpatient setting with findings compatible with CAP caused by atypical pathogens

**ANTI-INFECTIVE TREATMENT**

- Treatment courses of 10 days have been best studied, although shorter courses may be just as effective, particularly for more mild disease managed on an outpatient basis

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Guidance for the Clinician in Rendering Pediatric Care

CLINICAL PRACTICE GUIDELINE

**Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis**

Pediatrics 2014 | 34:e1474–e1502

## AAP DIAGNOSTIC GUIDELINES

- When clinicians diagnose bronchiolitis on the basis of history and physical examination, *radiographic or laboratory studies should not be obtained routinely*

## AAP TREATMENT GUIDELINES

- Clinicians should *not administer albuterol* (or salbutamol) to infants and children with a diagnosis of bronchiolitis
- Clinicians should *not administer epinephrine* to infants and children with a diagnosis of bronchiolitis
- *Nebulized hypertonic saline should not be administered* to infants with a diagnosis of bronchiolitis in the emergency department

## REAL LIFE TREATMENT DECISIONS

- Beta 2 Agonists
  - ***SOME WILL RESPOND***----“no one ever died from one albuterol treatment”
  - Will help the infant with beta 2 agonist reversible bronchospasm
- Epinephrine (nebulized)
  - May stave off intubation

## AAP TREATMENT GUIDELINES

- Clinicians should ***not administer systemic corticosteroids*** to infants with a diagnosis of bronchiolitis in any setting



TREATMENT OF VIRAL GASTROENTERITIS



**ONCE UPON A TIME**

- Antiemetics were contraindicated in the treatment of viral gastroenteritis

- Compazine
- Phenergan
- Atropine

***THEN ALONG CAME ONDANSETRON***

ORIGINAL ARTICLE

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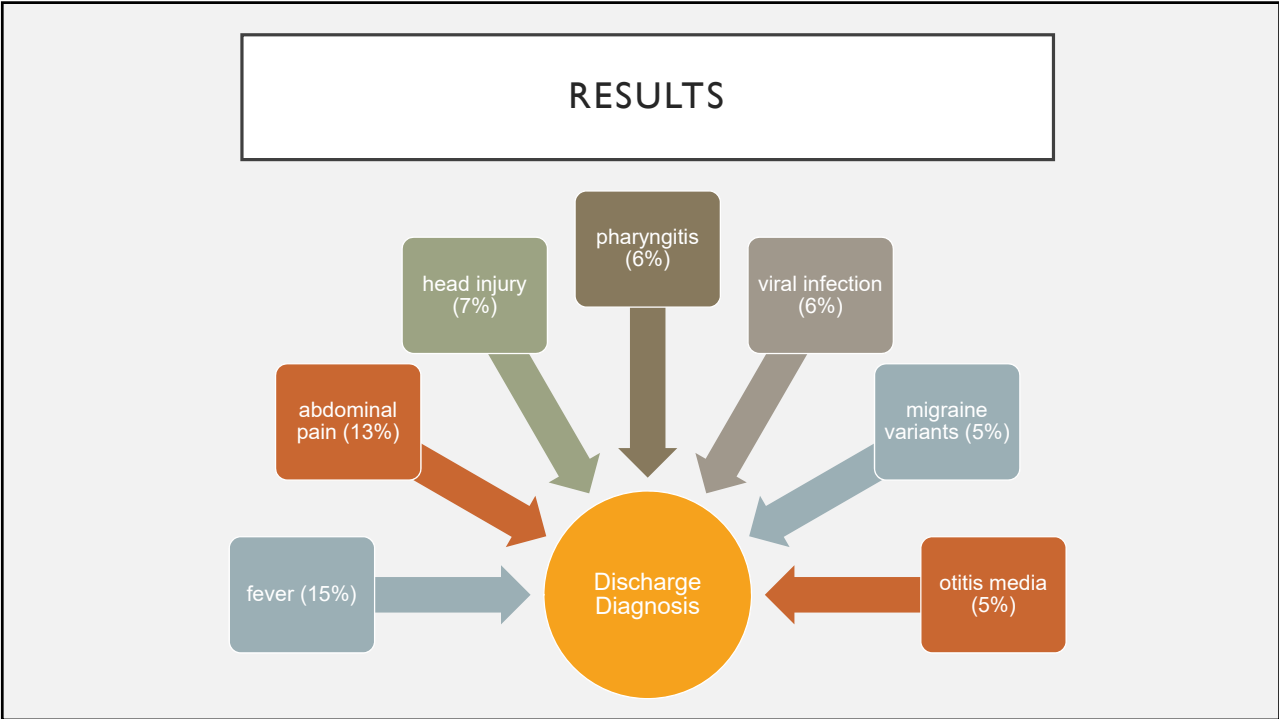
Ondansetron Use in the Pediatric Emergency Room for Diagnoses Other Than Acute Gastroenteritis

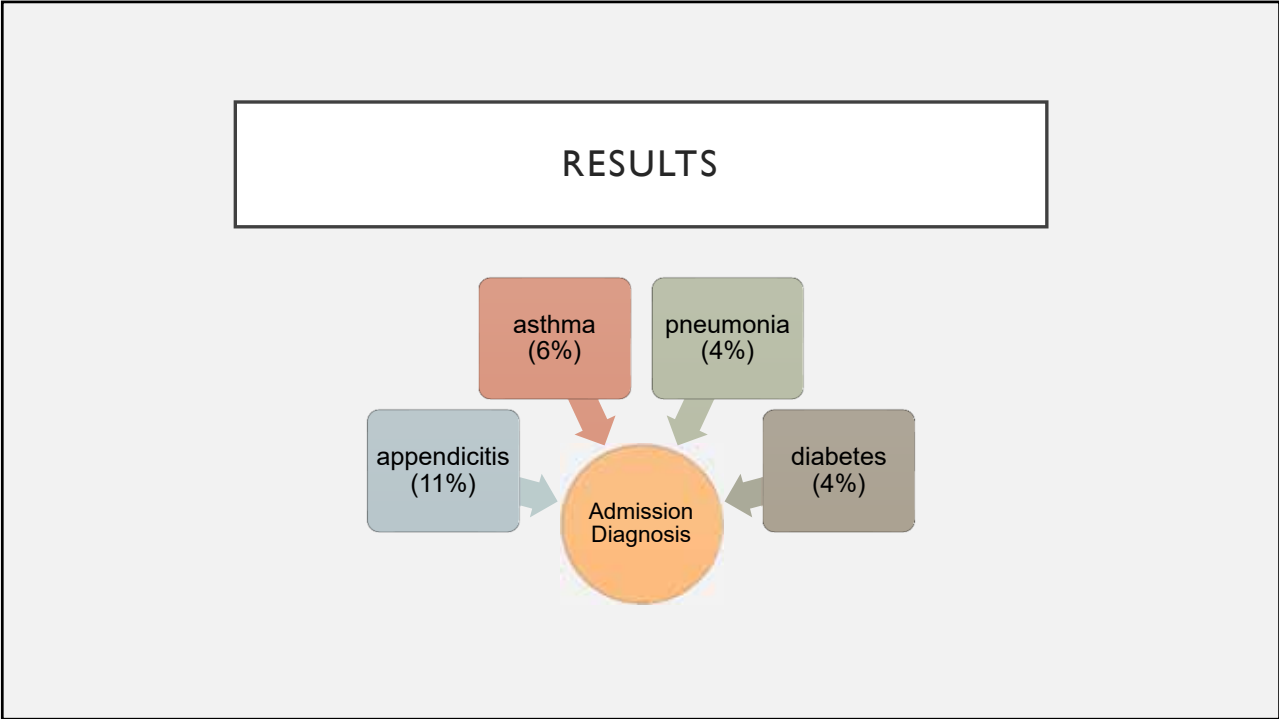
*Jesse J. Sturm, MD, MPH, Amanda Pierzchala, MD, Harold K. Simon, MD, and Daniel A. Hirsh, MD*

Pediatric Emergency Care 2012 28:247

## RESULTS

- During the study period, 32,971 patients received ondansetron in the PED, **12,620 (38%) were non-GE patients**
- The non-GE patients
  - older (8.3 years versus 4.3 years,  $p < 0.001$ )
  - had a higher average initial triage level
  - 79% received ondansetron enterally
  - 71% were discharged home
  - 37% of the discharged patients received a prescription for ondansetron





**DON'T FORGET THE ULTIMATE ANTIEMETIC**

*Positive Cheetos Sign*



## ORIGINAL ARTICLE

## The Use of a Triage-Based Protocol for Oral Rehydration in a Pediatric Emergency Department

Marissa A. Hendrickson, MD,\*† Jennifer Zaremba, DNP, RN, PCNS-BC,† Andrew R. Wey, PhD,‡  
Philippe R. Gaillard, PhD,§ and Anupam B. Kharbanda, MD, MPH||

Pediatr Emer Care 2018;34:227–232

### ZO PO GO

#### METHODS

- Evaluated a protocol prompting triage nurses to assess dehydration in gastroenteritis patients and *initiate ondansetron and ORT if indicated*
- Otherwise well patients aged 6 months to 5 years with symptoms of gastroenteritis were eligible

**RESULTS**

- 128 (81 postintervention and 47 preintervention) patients were analyzed; average age was 2.1 years
- *Ondansetron use increased from 36% to 75%*
- *Time to ondansetron decreased from 60 minutes to 30 minutes*
- Documented ORT increased from 51% to 100%

**RESULTS**

- *Blood testing decreased from 37% to 21%*
- *Intravenous fluid decreased from 23% to 9%*
- *There were no significant changes in ED length of stay, admissions, or unscheduled return to care*

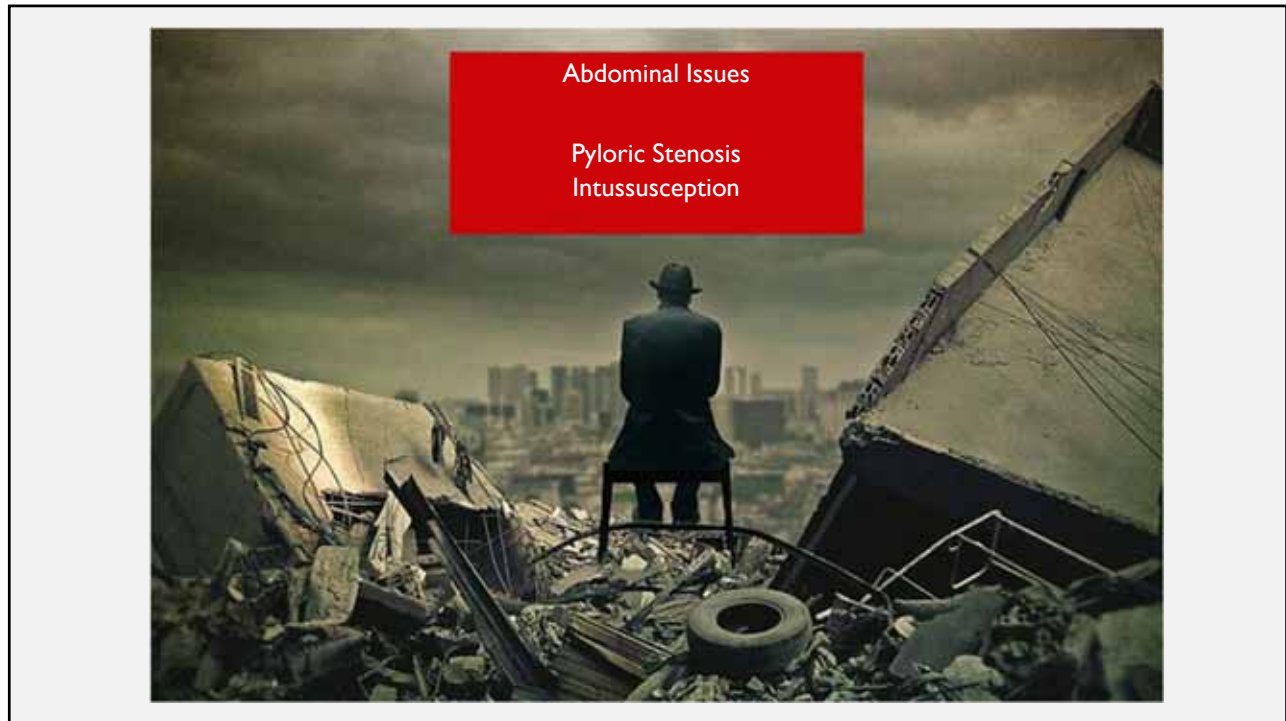
## CONCLUSIONS

- A triage nurse initiated protocol for early use of oral ondansetron and ORT in children with evidence of gastroenteritis is associated with increased and earlier use of ondansetron and ORT and decreased use of IV fluids and blood testing without lengthening ED stays or increasing rates of admission or unscheduled return to care

DON'T FORGET THE  
ULTIMATE ANTIEMETIC



*Positive Cheetos Sign*



## ABDOMINAL CRISES OF INFANCY

**ONCE UPON A TIME**

- All infants with pyloric stenosis
  - Had classic signs (ie “the olive”)
  - Had metabolic alkalosis
  - Necessitated a barium swallow
- Infants with intussusception
  - Had currant jelly stools
  - Had profound vomiting

**The Changing Clinical Presentation of Hypertrophic Pyloric Stenosis: The Experience of a Large, Tertiary Care Pediatric Hospital**

Miguel Glatstein, MD<sup>1</sup>, Gary Carbell, Sirisha Kusuma Boddu, MD<sup>1</sup>, Annalucia Bernardini, MD<sup>1</sup>, and Dennis Scolnik, MB, ChB<sup>1</sup>

Clinical Pediatrics  
50(3) 192–195  
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DOI: 10.1177/0009922810384846  
<http://clp.sagepub.com>  


Clinical Pediatrics 50(3) 192–195 2011

## STUDY CONCLUSIONS

- Reviewed the clinical and laboratory data from cases of hypertrophic pyloric stenosis (HPS) diagnosed at their institution from 2006 – 2008
- A total of 118 patients were included in this study
- *An “olive” was palpated in only 13.6% of cases*

## STUDY CONCLUSIONS

- This is in contrast to older studies, where more than 50% of the patients were reported to have a palpable “olive” depending on when the study was conducted
- In patients from this institution, *hypochloremia was present in 23% and alkalosis in 14.4%, which are less frequent than the incidence of these abnormalities in older studies*
- The reason for this change appears to be the *frequent use of ultrasound*

## ORIGINAL ARTICLE

## Intussusception

*Clinical Presentations and Imaging Characteristics*

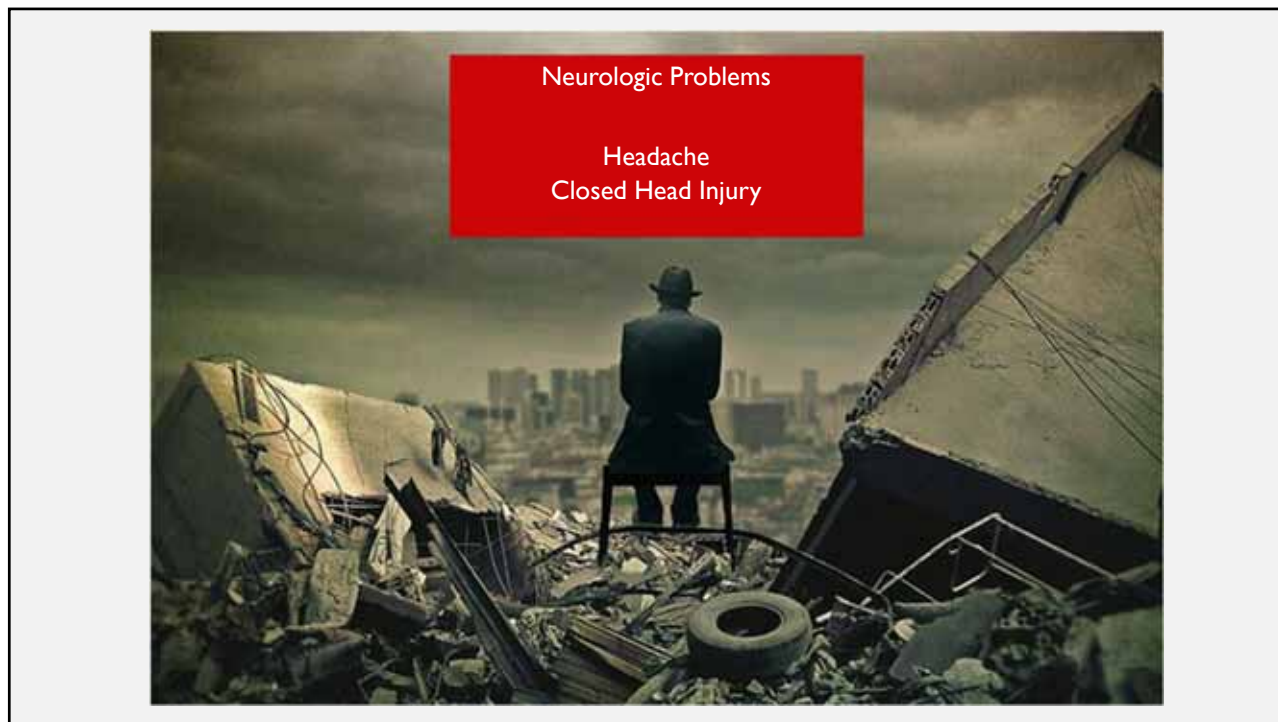
*Katherine Mandeville, MD,\* Ming Chien, MD,\* F. Anthony Willyerd, MD,\* Gerald Mandell, MD,†  
Mark A. Hostetler, MD,\* and Blake Bulloch, MD\**

Pediatric Emergency Care 2012 28: 842

## CLINICAL SIGNS BY AGE

**TABLE 1.** Characteristics of Children With Intussusception

Signs/Symptoms	<12 mo	12–36 mo	>36 mo	All Patients
Abdominal pain (n = 189)	90%	96%	97%	93% ( $P < 0.041$ )
Emesis (n = 214)	94%	79%	64%	85% ( $P < 0.001$ )
Guaiaac-positive stool (n = 98)	83%	60%	67%	76% ( $P = 0.027$ )
Grossly bloody stools (n = 185)	83%	41%	37%	65% ( $P < 0.001$ )
Irritability (n = 196)	71%	51%	14%	58% ( $P < 0.001$ )
Bilious emesis (n = 187)	48%	24%	31%	39% ( $P = 0.004$ )
Lethargy (n = 199)	47%	26%	13%	36% ( $P < 0.001$ )
Diarrhea (n = 193)	38%	34%	41%	37% (NS)
Constipation (n = 167)	13%	24%	25%	18% (NS)
Temperature $>38.5^{\circ}\text{C}$ (n = 216)	8%	10%	6%	8.3% (NS)
Abdominal tenderness (n = 211)	36%	48%	61%	43% ( $P = 0.017$ )
Abdominal mass (n = 212)	33%	23%	22%	28% (NS)
Abdominal distention (n = 209)	25%	18%	21%	23% (NS)



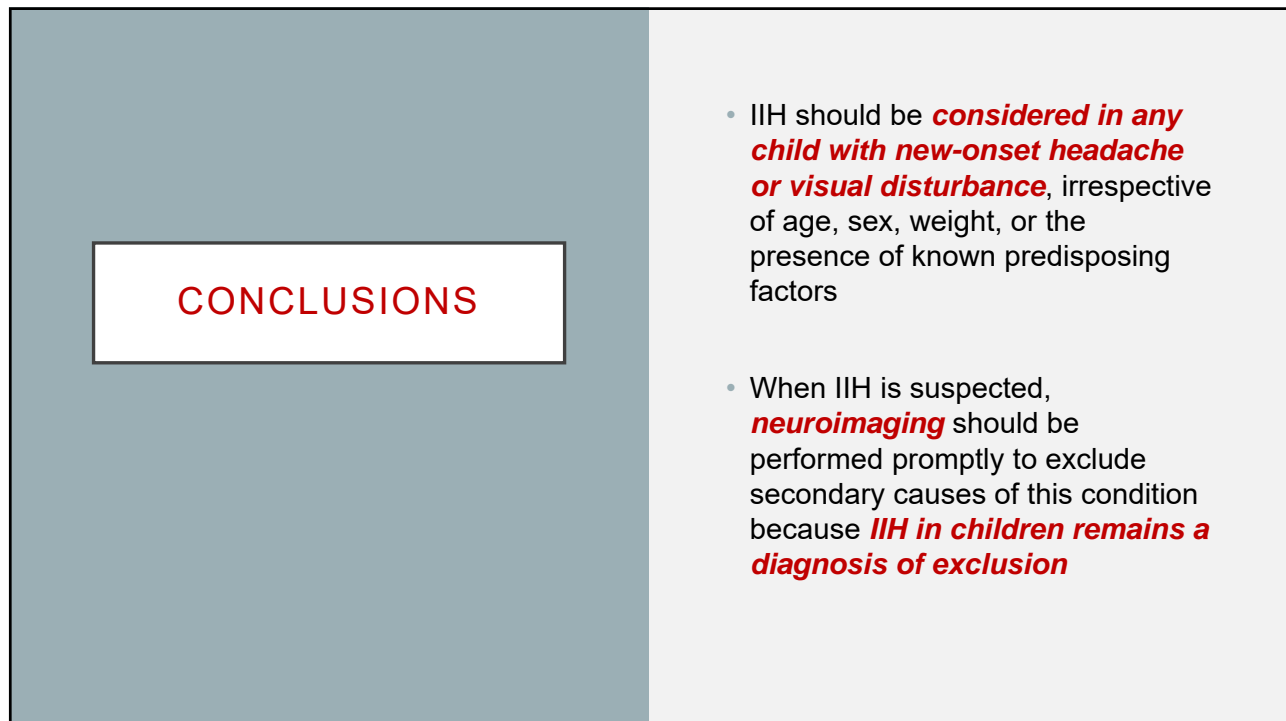
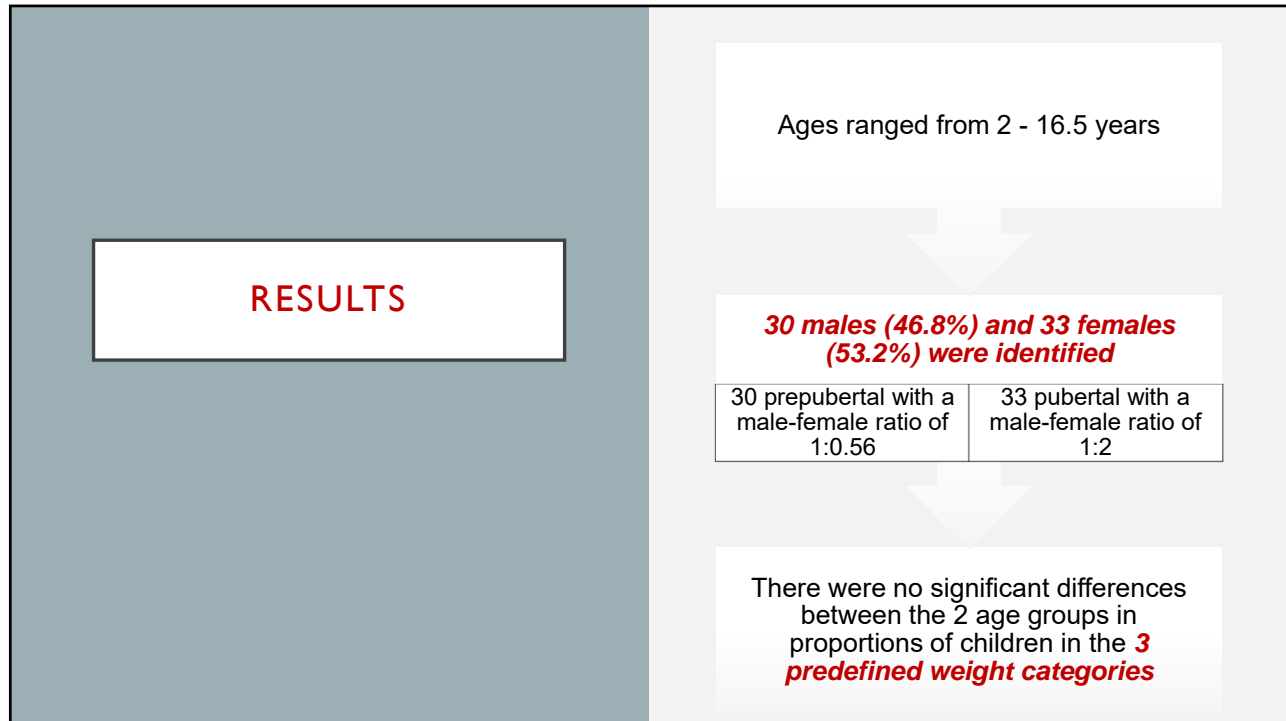
ORIGINAL ARTICLE

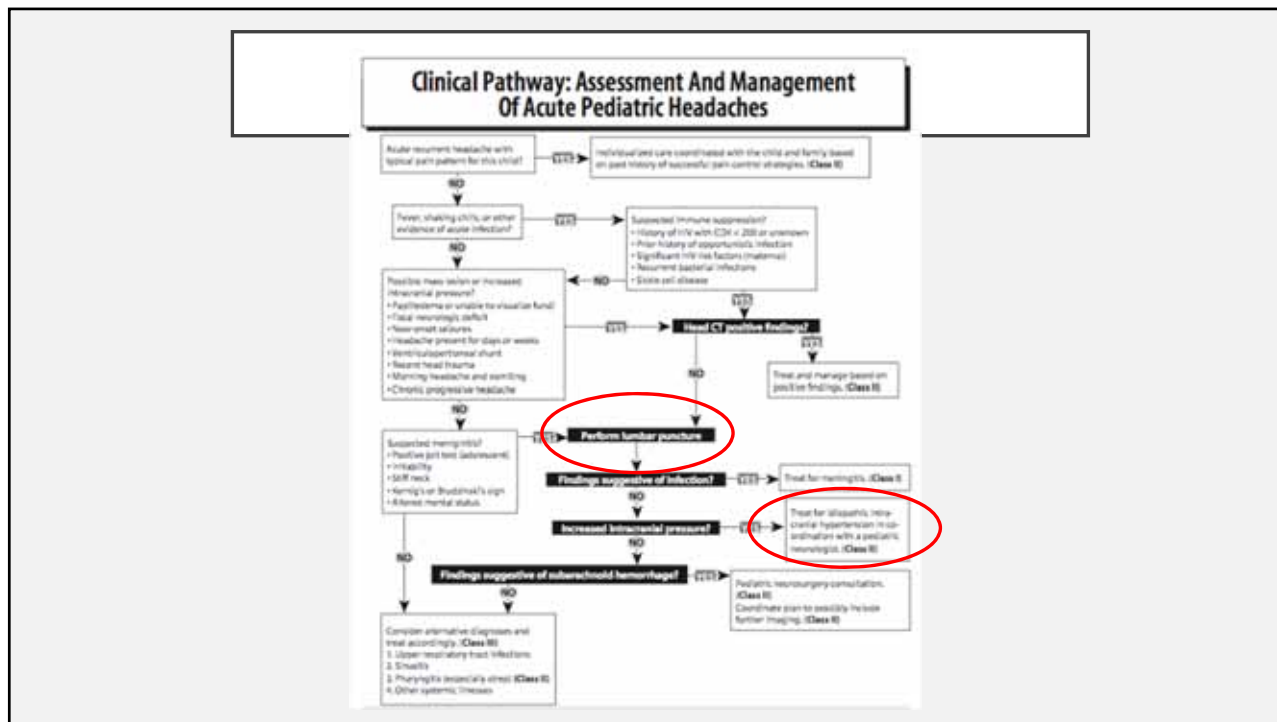
Clinical Characterization of Idiopathic Intracranial Hypertension in Children Presenting to the Emergency Department  
*The Experience of a Large Tertiary Care Pediatric Hospital*

*Miguel M. Glatstein, MD,\* Asaf Oren, MD,† Gil Amariyio, MD,† Dennis Scolnik, MB, ChB,‡§  
Amir Ben Tov, MD,† Aiala Yahav, MD,† Arik Alper, MD,† and Shimon Reif, MD†*

Pediatr Emer Care 2015;31: 6-9







## CLOSED HEAD INJURY: TO SCAN OR NOT TO SCAN?

Articles

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➔ **Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study**

*Nathan Eppanaram, James F Holmes, Peter S Deyan, John D Hoyle Jr, Shireen M Atabaki, Richard Holzklos, Francis M Nadel, David Monroe, Rachel M Stanley, Damien A Bergoni, Mohamed K Boudoug, Jeff F Schunk, Kimberly S Quoye, Preshant Mahajan, Richard J Aherstein, Kathleen A Lillis, Michael G Tanski, Elizabeth S Jacobs, James M Callahan, Marc H Gorenlik, Todd F Glass, Lori F Lee, Michael C Bachman, Arthur Coogan, Elizabeth C Pivaw, Michael J Gerardi, Kriss A Melville, J Paul Muzikbas, Donald H Warran, Sally Jo Zuppan, J Michael Dean, Sandra L Wootton-Gorges, for the Pediatric Emergency Care Applied Research Network (PECARN)*

Lancet 2009 374: 1160



**A QUICK AND DIRTY  
BATTLE YOU NEED TO  
WIN**

**THE CHILD WITH A CHI  
REFERRED FOR A CT  
SCAN**

- These kids always arrive at the busiest times
- The children (and parents) are tired and hungry
- Your Hx and PE take all of 10 minutes
- Regardless of what you tell them, THEY WANT A CT SCAN

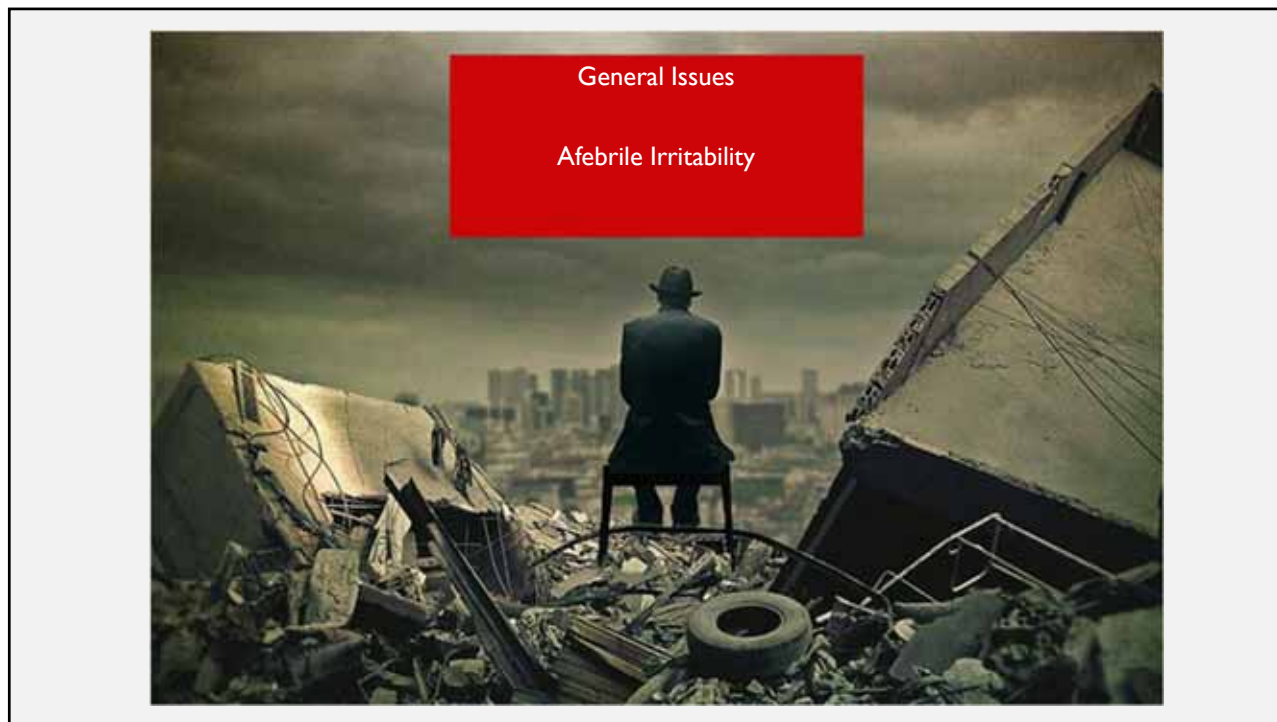
**THE CHILD WITH A CHI  
REFERRED FOR A CT  
SCAN**



- What to say to these parents
  - “There have been large multicenter studies which provide guidelines for the evaluation of CHI in infants and children”
  - “This child does NOT meet criteria for a CT Scan”
  - “Radiation is harmful”
  - “The child will more than likely grow up to necessitate CT scanning in the future”
  - “You will probably have to sedate the child to do the study”

**If All Else Fails, And They  
Demand An MRI.....**





**THE IRRITABLE  
INFANT**

- You all know the checklist:
  - Intracranial mishaps
    - Meningitis/ Subdurals
  - Corneal Abrasion
  - Rib Injuries
  - Hernias
  - Hair Tourniquets

***WHAT ELSE?***

ARTICLE

## The Crying Infant: Diagnostic Testing and Frequency of Serious Underlying Disease

Stephen B. Freedman, MDCM, MSc, FRCPC, Nesrin Al-Harthy, MD, Jennifer Thull-Freedman, MD, MSc

Pediatrics 2009 123: 841-848

**RESULTS**

```
graph TD; A[237 patients] --> B["12 (5.1%) children had serious underlying etiologies with urinary tract infections being most prevalent (n =3)"]; B --> C["Of the 574 tests performed, 81 (14.1%) were positive"]; style A fill:#fff,stroke:#333; style B fill:#fff,stroke:#333; style C fill:#fff,stroke:#333;
```

237 patients

12 (5.1%) children had serious underlying etiologies with **urinary tract infections being most prevalent** (n =3)

Of the 574 tests performed, 81 (14.1%) were positive

## RESULTS

***Among children <1 month of age, the positive rate of urine cultures performed was 10%***

## CONCLUSIONS

- History and physical examination remains the ***cornerstone*** of the evaluation of the crying infant and should drive investigation selection
- Afebrile infants in the first few months of life should undergo ***urine evaluation***
- Other investigations should be performed on the basis of clinical findings



COOL NEW SIGNS AND PROCEDURES

The cartoon shows a man with a thoughtful expression, resting his chin on his hand. A thought bubble above him contains the text "I love this job." The entire scene is set against a light blue background.



## Case report

## Handstands: a treatment for supraventricular tachycardia?

Michelle Hare, Shammi Ramlakhan

Archives Diseases of Children 2015 100:54



**Figure 1** Initial rhythm strip (paper speed 25 mm/s). Regular narrow complex tachycardia. Rate 250 bpm with rate-related ST depression. Negative retrograde p waves suggest an underlying atrioventricular re-entrant tachycardia.



**Figure 2** Posthandstand rhythm strip. Sinus tachycardia at a rate of 125 bpm.

CME REVIEW ARTICLE

# Nasal Foreign Body Removal in Children

*James R. Kiger, MD, Timothy E. Brenkert, MD, and Joseph D. Losek, MD*

Pediatric Emergency Care 24: 785 2008

## FOLEY EXTRACTOR TECHNIQUE



Bypass Obstruction



Inflate Balloon



Withdraw

### Is Pronation Less Painful and More Effective Than Supination for Reduction of a Radial Head Subluxation?

**EBEM Commentators**  
Tracie Potts, MD  
Heather Merrill, MD  
*Central Michigan University College of Medicine  
Department of Emergency Medicine  
Saginaw, MI*

Annals of EM 2013 61:291

OLD SCHOOL

NEW SCHOOL





CHANGING PHILOSOPHIES

福 HAPPINESS	敬 RESPECT	信 TRUST
強 STRENGTH	愛 LOVE	望 HOPE

STATE-OF-THE-ART REVIEW ARTICLE

## Parent Presence During Complex Invasive Procedures and Cardiopulmonary Resuscitation: A Systematic Review of the Literature

R. Scott Dingeman, MD<sup>a,b</sup>, Elizabeth A. Mitchell, BS<sup>c</sup>, Elaine C. Meyer, RN, PhD<sup>d,e</sup>, Martha A. Q. Curley, RN, PhD, FAAN<sup>e,f</sup>

Pediatrics 2007;120;842-854

### EVIDENCE YIELD (KEY WORDS)

Search Terms	Results, n
Pediatric resuscitation	93
Pediatric codes	3
Pediatric and CPR	373
Family presence and resuscitation	66
Parental presence and resuscitation	7
Parent presence and resuscitation	1
Parental presence and invasive procedures	7
Parent presence and invasive procedures	1
Family-witnessed resuscitation	8
Medical-legal and pediatrics	27



PUTTING AN END TO PEDIATRIC  
PAINFUL PROCEDURES

PAIN MANAGEMENT AND SEDATION/EDITORIAL

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## Who Owns Deep Sedation?

Steven M. Green, MD, Baruch Krauss, MD, EdM

*From the Department of Emergency Medicine, Loma Linda University Medical Center & Children's Hospital, Loma Linda, CA (Green); and the Division of Emergency Medicine, Children's Hospital Boston and Department of Pediatrics, Harvard Medical School, Boston, MA (Krauss).*

Annals Of EM 57:470 2011

### THE GOAL: "PAINLESS" PEDIATRIC EMERGENCY MEDICINE

68 references

**TAKE HOME POINTS**

- Neonates with fever still deserve a *full work up and admission*
- WBC counts are *NOT* helpful in older infants
- Positive RSV testing *does not rule out SBI in young infants*
- SFC deserve *no advanced testing*
- Positive urine cultures *increase with each day of fever*

**TAKE HOME POINTS**

- There are *standardized treatment protocols for pneumonia and RSV available in print*
- *No one ever died* from and albuterol treatment
- Zofran is everywhere (*so are Cheetos!*)
- *Lethargy and Vomiting = Intussusception*
- Afebrile irritable young infants deserve *urine testing*
- All children deserve *high quality pain management*

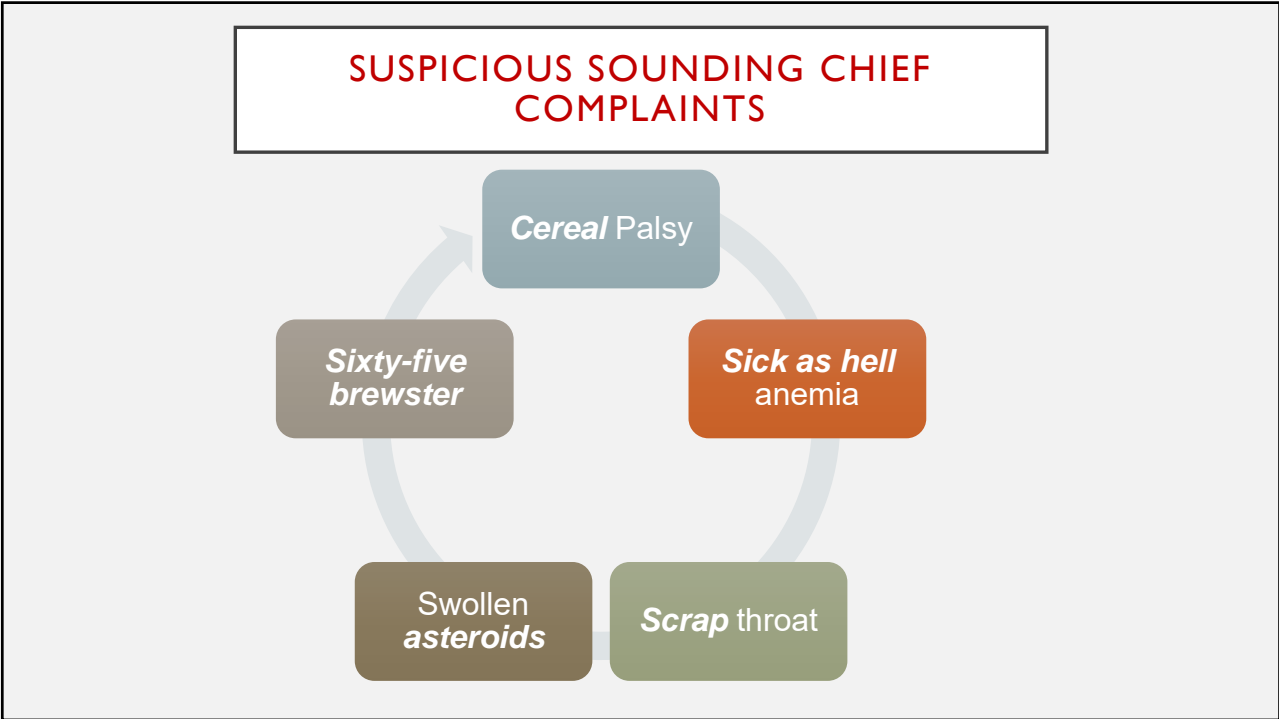
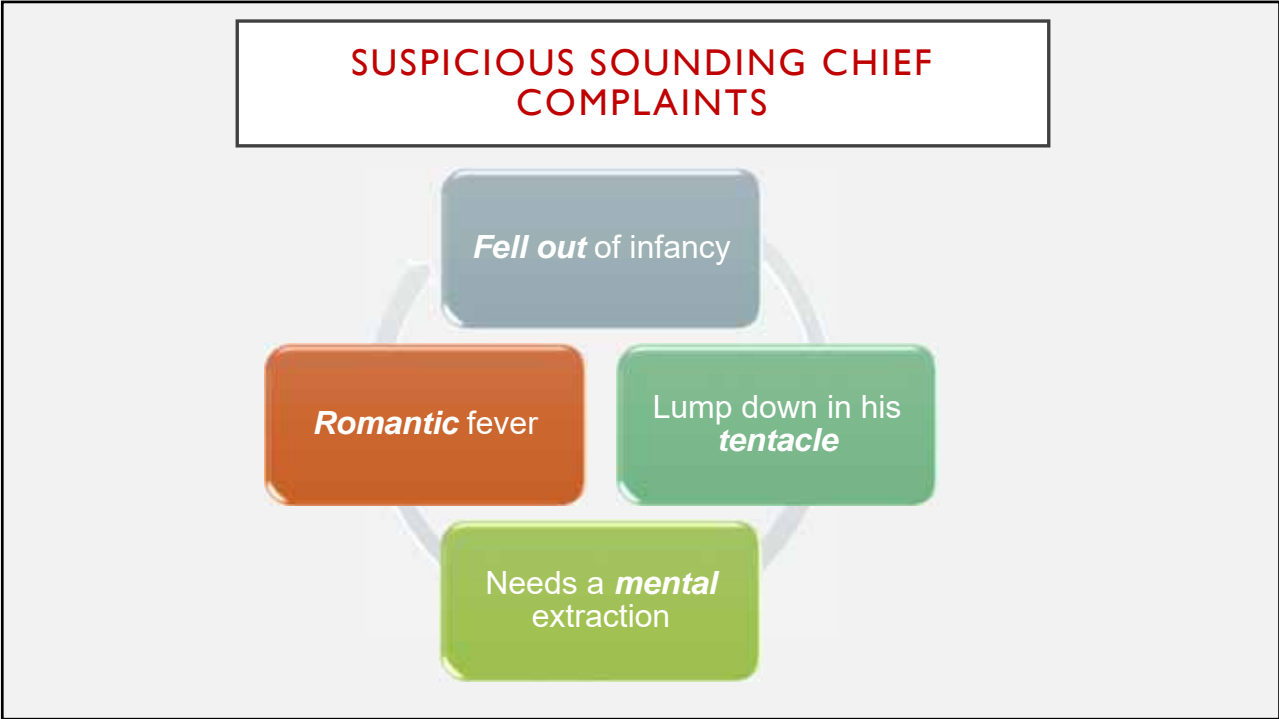


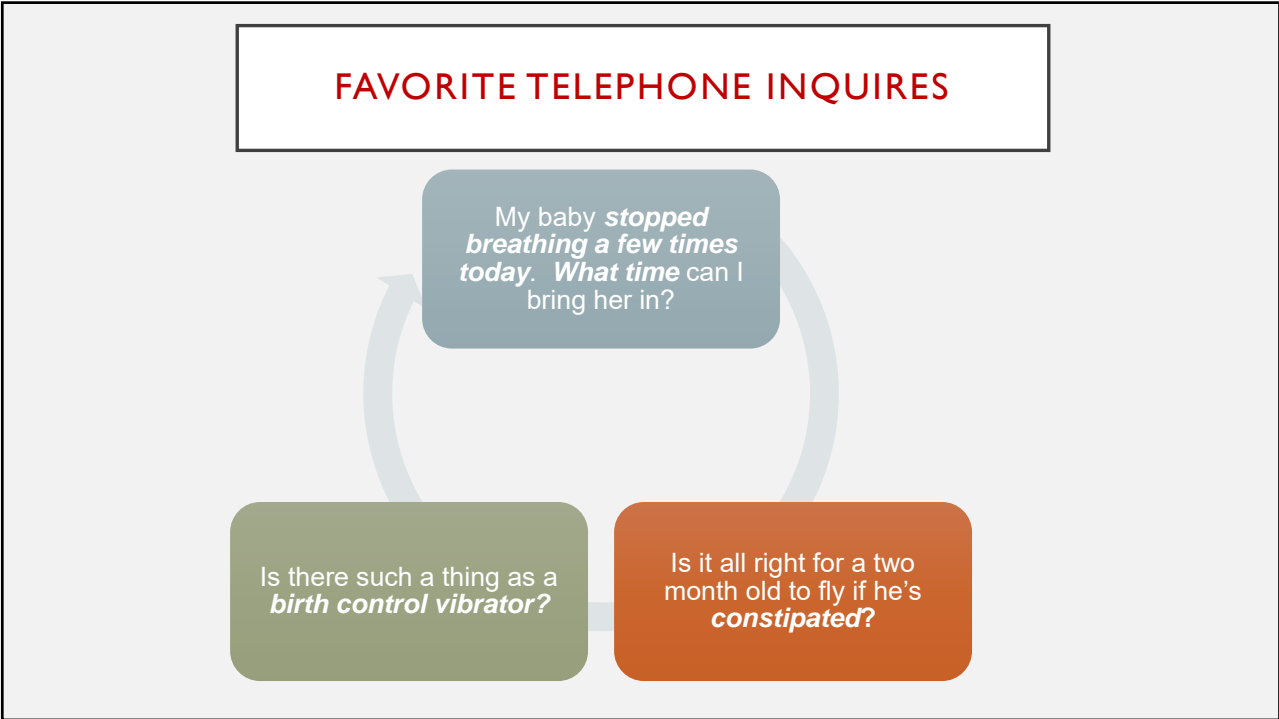
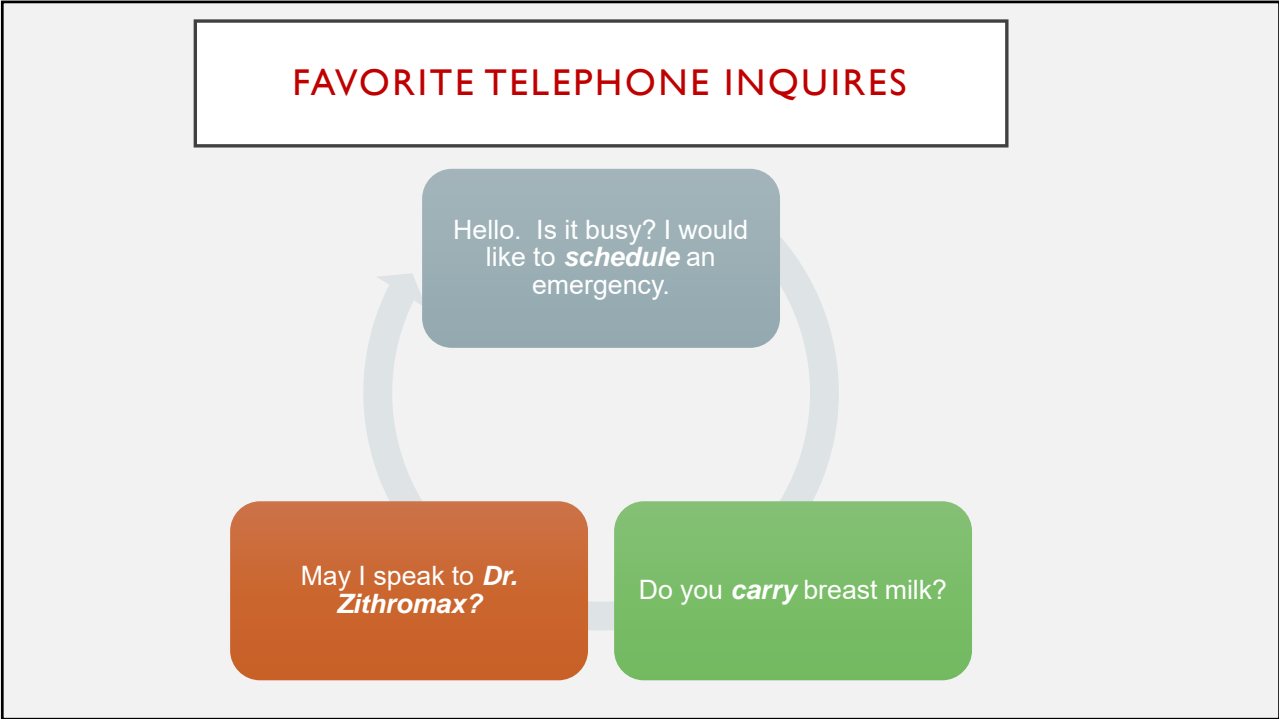
**LIFE IS STRANGER THAN FICTION**



**“BELIEVE ME, I COULDN’T MAKE THIS  
STUFF UP!”**







## FAVORITE TELEPHONE INQUIRES

I was *beating my daughter with a belt* and got my fingers caught in the buckle and they're hurting, they are bleeding. What can I do?

Should a five year old child be *wiping his own butt*?

Do children born with *microcephaly* have headaches from their heads being so small?

THANKS!

