DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

10 articles from 2022 that will change your practice

Sabah Iqbal, MD
Michael Gorn, MD

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Financial Disclosures

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- Dr. Iqbal has no financial disclosures
- Dr. Gorn is a founder and Chief Medical Officer of EM Device Lab. We will not be discussing any related product or clinical information

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POLL

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- 36-day old infant, FT, born NSVD without complications presents in May with rectal temp to 38.3. Feeding well. Looks well. Has a slightly runny nose. What's the plan?
  1. Let's start with a urine by catheterization and maybe some blood work
  2. An RSV PCR should be plenty
  3. No testing needed: the baby looks well.
  4. Transfer to the ED for a full sepsis work up. I don't want this kid on my mind for the rest of my shift...

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Article 1: Never trust a newborn!

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CLINICAL PRACTICE GUIDELINE

American Academy of Pediatrics
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Clinical Practice Guideline: Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old

Robert H. Pantell, MD, FAAP,[a] Kenneth B. Roberts, MD, FAAP,[b] William G. Adams, MD, FAAP,[c] Benard P. Dreyer, MD, FAAP,[d] Nathan Kuppermann, MD, MPH, FAAP, FACEP,[e] Sean T. O'Leary, MD, MPH, FAAP,[f] Kymika Okechukwu, MPA,[g] Charles R. Woods Jr, MD, MS, FAAP[h] SUBCOMMITTEE ON FEBRILE INFANTS

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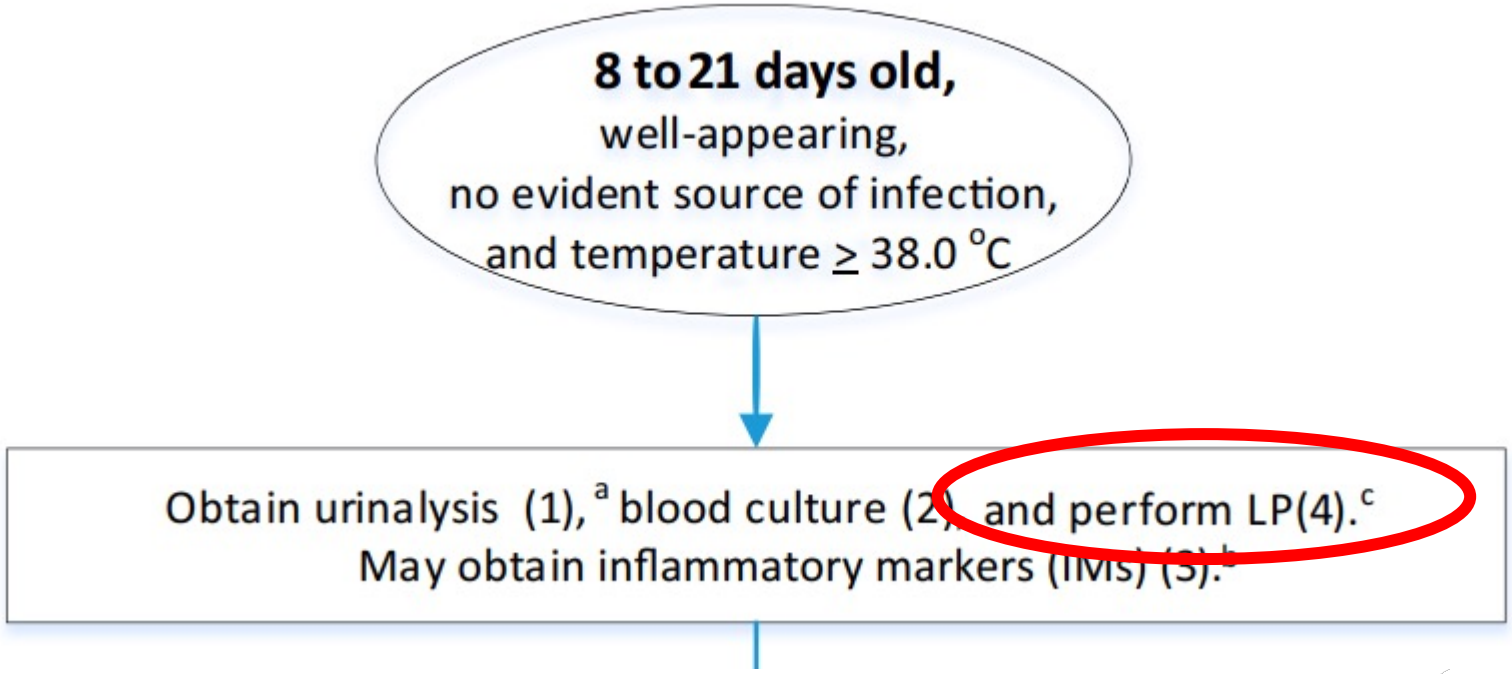
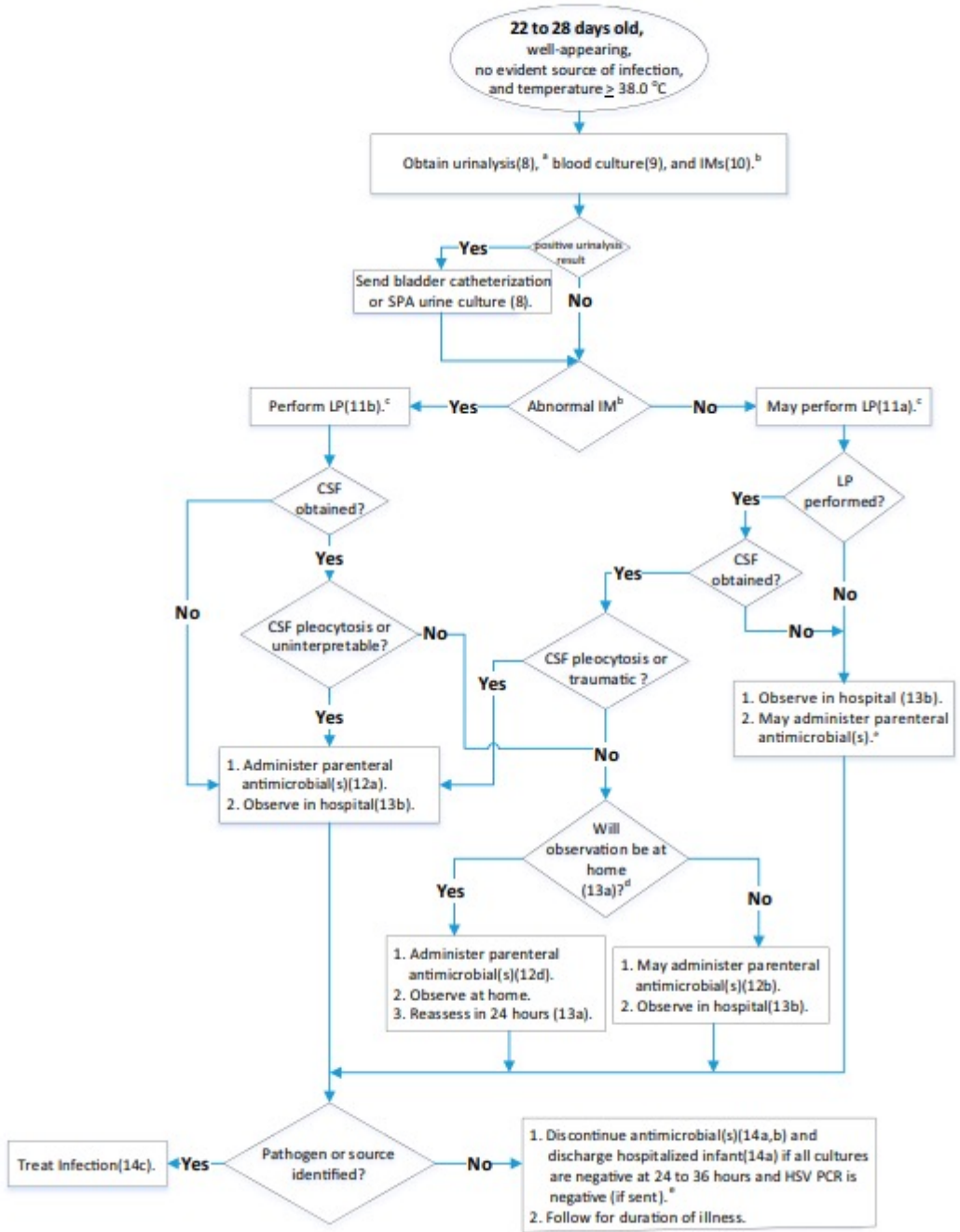
"Never Trust a Newborn"

- 4 decades of changing decision rules: Agency for Healthcare Research and Quality
- Factors
  1. Changing bacteriology
     1. Better food safety = less Listeria
     2. GBS screening has improved
  2. Recognition of costs of care
     1. Secondary infections/hospital errors
     2. Loss of work/pay
  3. Improvements in testing
     1. Procalcitonin, PCR viral testing
  4. Better research *networks*

Final results: 8-21 days



Final results: 8-21 days



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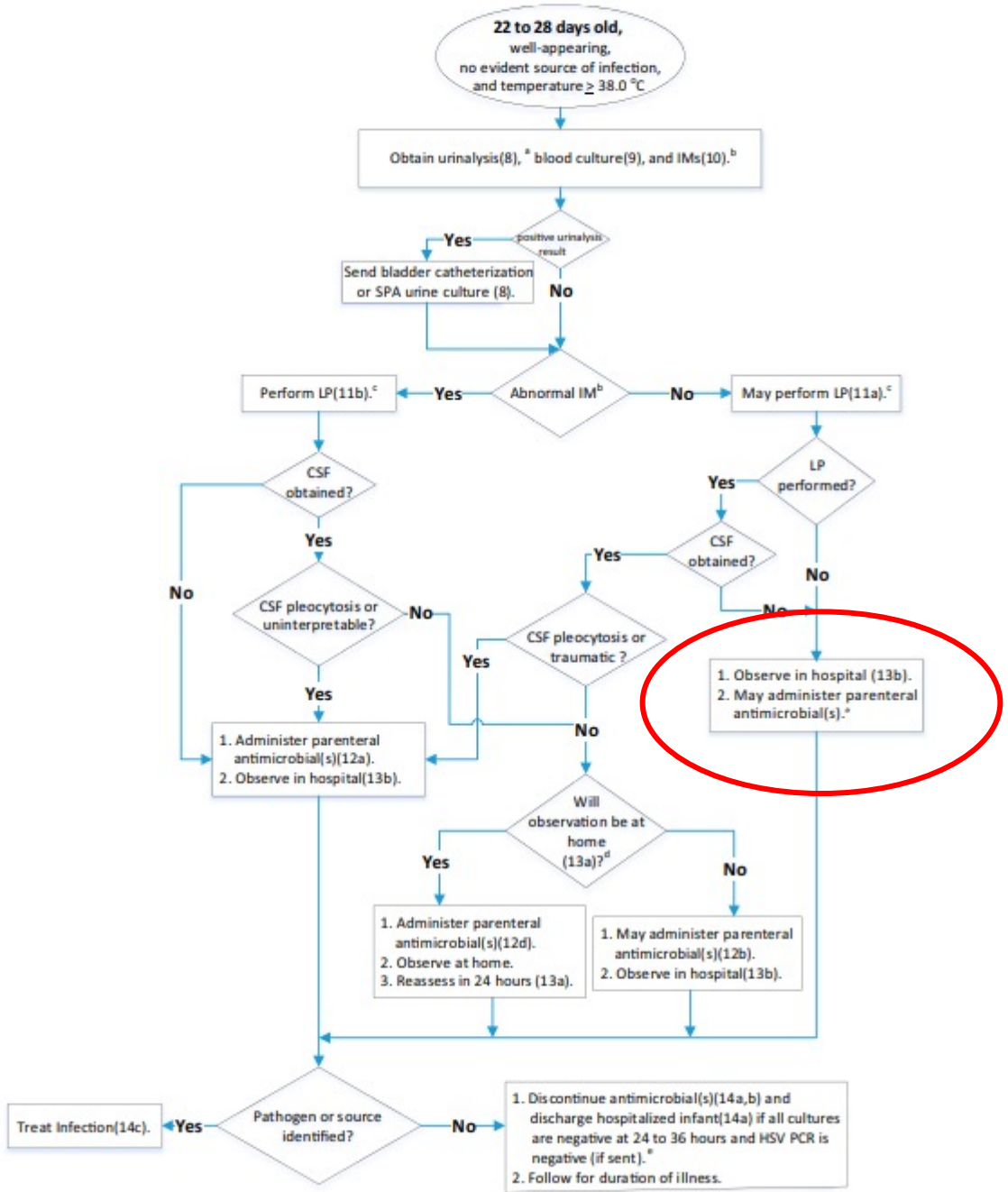

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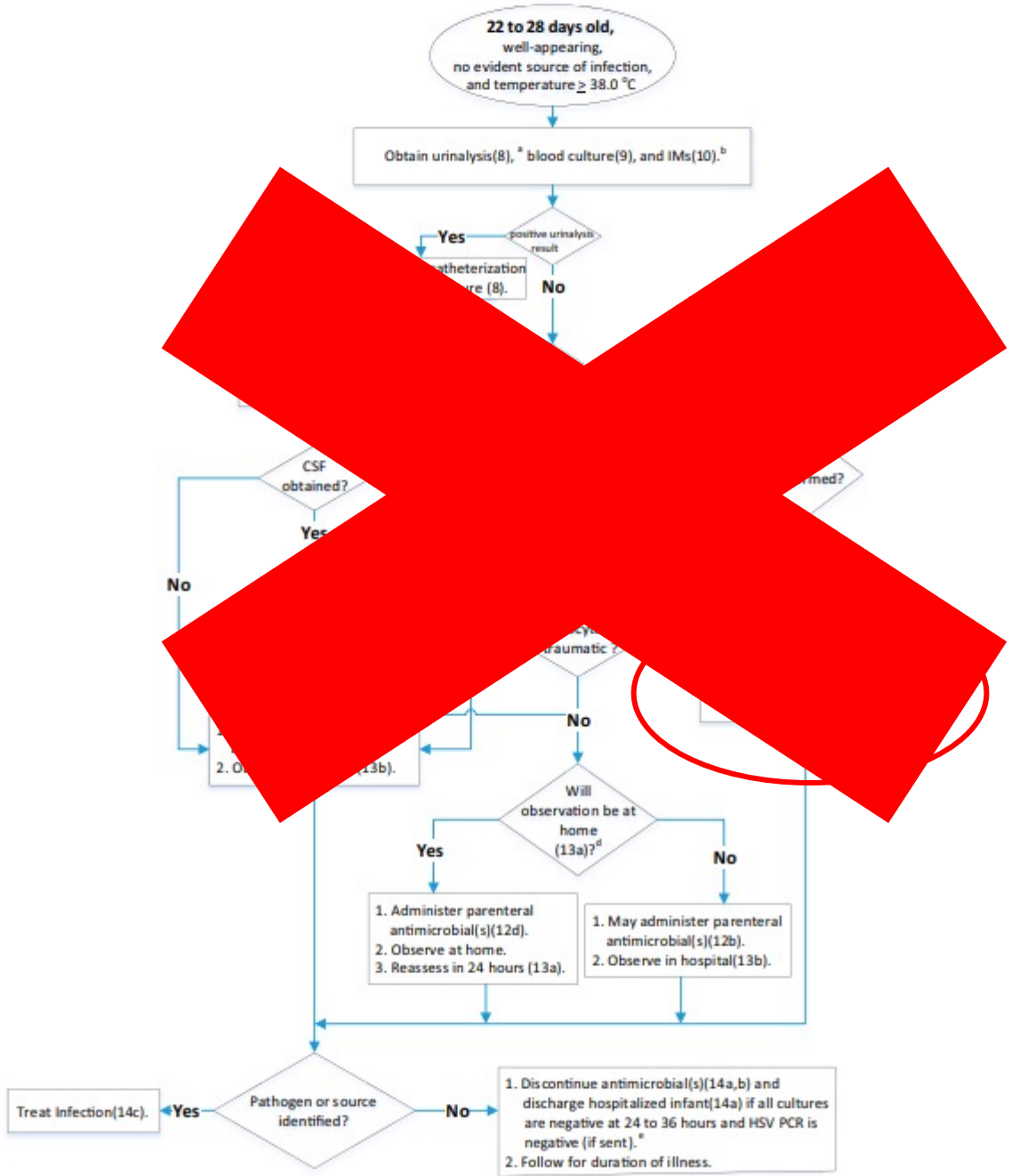

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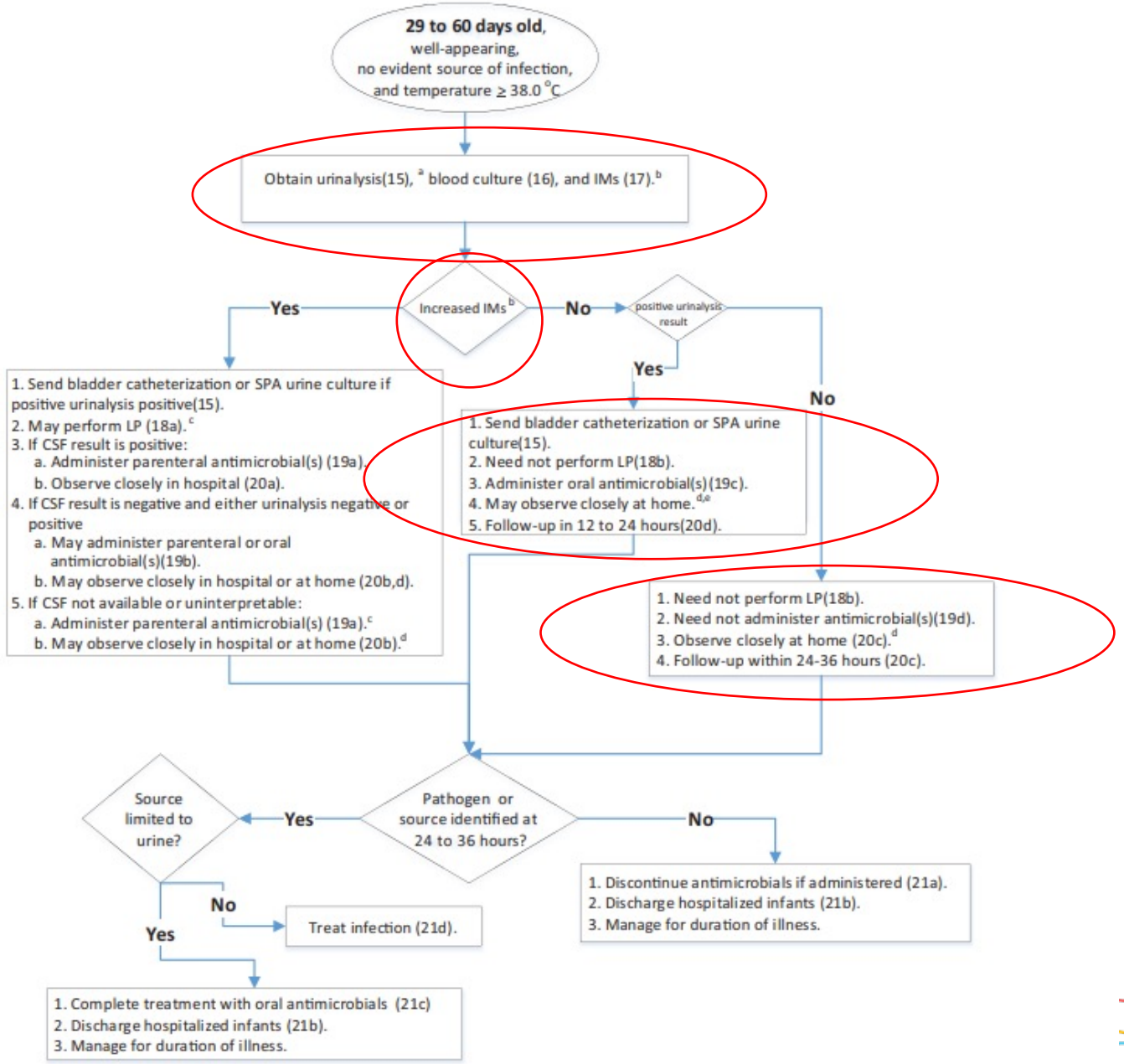

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POLL

- 36 day old infant, FT, born NSVD without complications presents in May with rectal temp to 38.3. Feeding well. Looks well. Has a slightly runny nose. Urine obtained by cath comes back as small leukocytes, small nitrites, trace blood. Now what?
    1. Great. No need for blood work: start some antibiotics
    2. Yikes. What if the UTI has spread and the baby has bacteremia or sepsis or meningitis? Better continue a workup
    3. Transfer. This is pyelonephritis: fever + UTI
    4. I don't think that's a UTI. Let's continue work up in house.

Article #2: Fevers again

Serious Bacterial Infections in Young Febrile Infants With Positive Urinalysis Results

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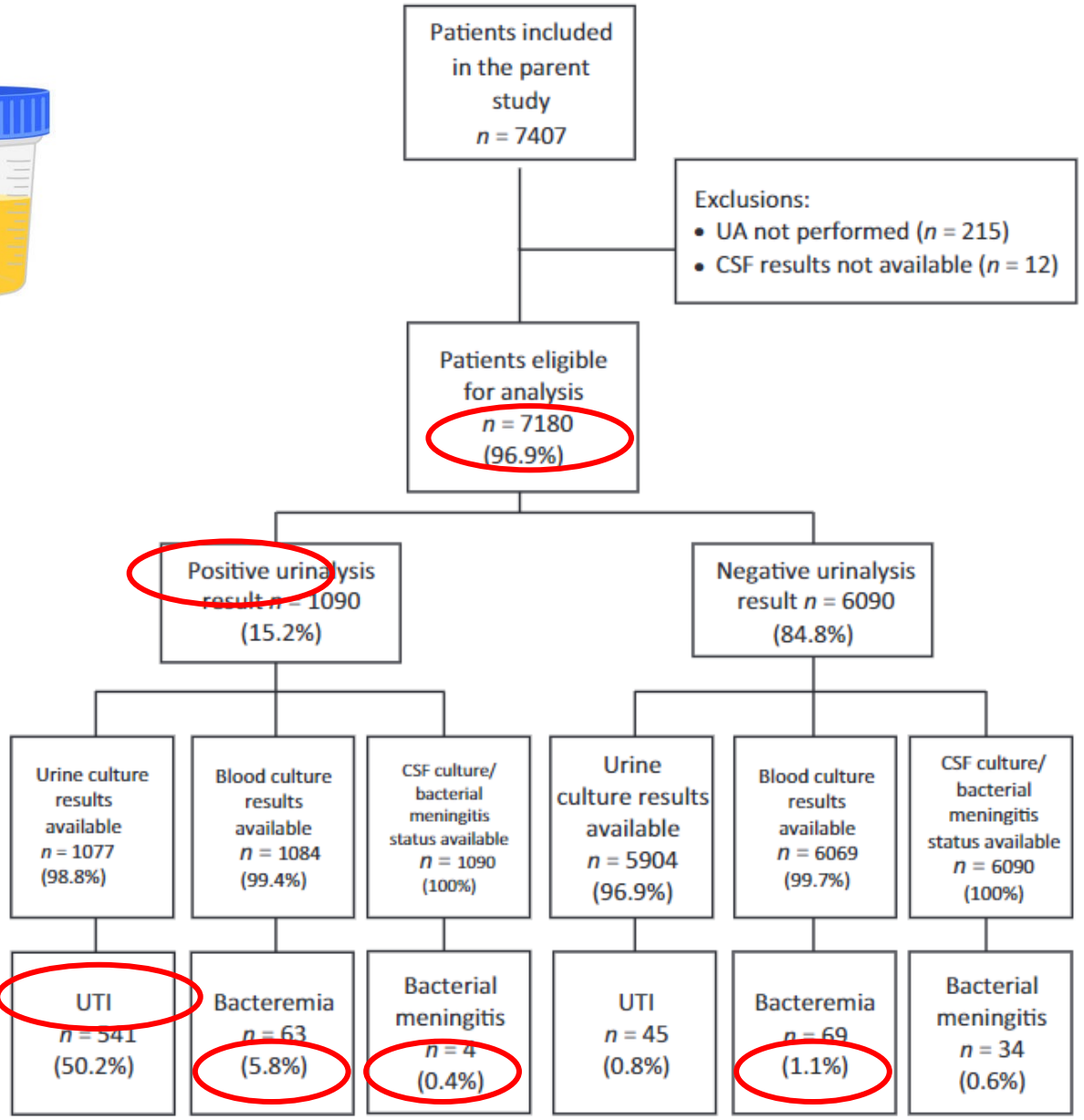

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Final results

- No child over 30 days with pos UA had meningitis
- Negative UA decreases risk of all SBIs

Article 3 – Dex for the win!

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ORIGINAL ARTICLE

Single-Dose Dexamethasone Is Not Inferior to 2 Doses in Mild to Moderate Pediatric Asthma Exacerbations in the Emergency Department

Meghan Martin, MD, Michelle Penque, MD,† Brian H. Wrotniak, PT, PhD,† Haiping Qiao, MBBS, MS,† and Heather Territo, MD†*

Pediatric Emergency Care
June 2022, Volume 38 (6), p e1285–e1290

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Background

- Asthma affects 9.1% or around 6.7 million children in the United States
- Dexamethasone is commonly used for acute asthma exacerbation
- 2 days of oral dexamethasone 0.6 mg/kg (maximum 16 mg) = 5 days of prednisone
- Meta-analysis by Keeney et al - 1 or 2 doses of oral/IM dexamethasone to 5 days of prednisone are equivalent

Dex vs Pred ✓

Dex vs Dex ?

Objectives and Methods

- Noninferiority study comparing 1 vs 2 dose Dexamethasone
- Mild to moderate asthma exacerbation
- Prospective, parallel-group, unblinded randomized clinical trial
- Pediatric Asthma Score 5-7, 8-11 was considered mild to moderate exacerbation
  - Group 1 - oral dexamethasone 0.6 mg/kg (maximum 16 mg)
  - Group 2 – took same dose 24 hours after discharge

Pediatric Emergency Care
June 2022, Volume 38 (6), p e1285–e1290

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Results

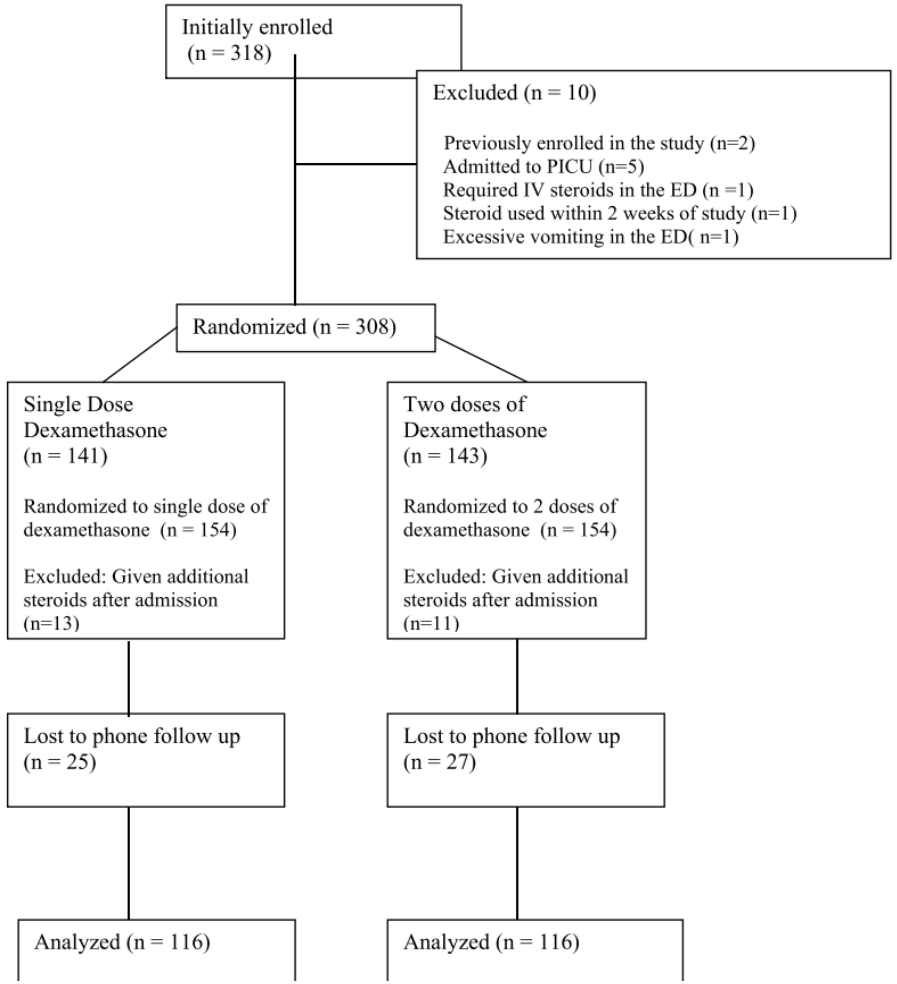

TABLE 1. Comparison of Characteristics Between Dosing Groups

Characteristics	Overall	Group 1 (n = 116)	Group 2 (n = 116)
Age*, mean (SD), y	7.5 (4.2)	6.8 (3.9)	8.2 (4.4)
Sex, n (% female)	92 (39.8)	48 (41.4)	44 (38.3)
Race, n (%)			
White	61 (26.4)	28 (24.3)	33 (26.4)
Black	113 (48.9)	61 (53.0)	52 (48.9)
Asian	10 (4.3)	5 (4.3)	5 (4.3)
American Indian	3 (1.3)	1 (0.9)	2 (1.3)
Other	44 (19.0)	20 (17.4)	24 (19.0)
Anyone smoke in home, n (% yes)	63 (27.3)	32 (30.8)	31 (29.5)
Days of symptoms, mean (SD)	3.3 (8.7)	3.6 (9.7)	3.1 (7.5)
On controller med at home, n (% yes)	104 (45.0)	50 (43.5)	54 (46.6)
No. previous hospital admissions, mean (SD)	1.3 (2.2)	1.4 (1.9)	1.2 (2.5)
PAS score before albuterol, mean (SD)	7.1 (1.6) n = 213	7.2 (1.8) n = 106	6.9 (1.5) n = 107

Overall, there was a difference between the ages of patients, with group 2 being older. There was no between-group differences in sex, race, smokers at home, controller medications, number or symptom days, or previous admissions in life for asthma.

*Between-group difference for age of $P < 0.05$.

81% Compliance with second dose in Group 2

More Results and Conclusion

TABLE 3. Comparison of Events and Adverse Effects Between Groups 1 and 2 by Asthma Severity

	Mild Asthma			Moderate Asthma		
Outcome	**Group 1 (1 Dose; n = 66)**	**Group 2 (2 Doses; n = 82)**	**OR (95% CI)**	**Group 1 (1 Dose; n = 40)**	**Group 2 (2 Doses; n = 25)**	**OR (95% CI)**
Return visit for asthma, n (%)	10 (15.2)	10 (12.2)	1.29 (0.499–3.347)	3 (7.5)	2 (8.0)	0.720 (0.104–4.977)
Days to symptom resolution, mean (SD)	2.5 (1.7) n = 62	2.8 (1.9) n = 73	0.914 (0.754–1.108)	2.4 (2.4) n = 38	2.6 (2.1) n = 24	0.944 (0.749–1.191)
Patients who missed any school, n (%)	30 (54.5) n = 55	34 (44.7) n = 76	1.483 (0.733–3.001)	13 (37.1) n = 35	11 (47.8) n = 23	0.606 (0.204–1.802)
Vomiting since discharge, n (%)	7 (12.7) n = 55	3 (3.9) n = 76	2.696 (0.649–11.197)	3 (7.5)	1 (4.0)	1.770 (0.167–18.772)
Adverse effects, n (%)			$P = 0.364$			$P = 0.786$
None	42 (63.6)	60 (73.2)		24 (60.0)	18 (72.0)	
Decreased appetite	2 (3.0)	5 (6.1)		1 (2.5)	1 (4.0)	
Difficulty sleeping	4 (6.0)	0 (0.0)		3 (7.5)	0 (0.0)	
Mood swings/agitation	4 (6.1)	1 (1.2)		3 (7.5)	2 (8.0)	
Headache	1 (1.5)	0 (0.0)		2 (5.0)	0 (0.0)	
Multiple	11 (16.7)	14 (17.1)		4 (10.0)	2 (8.0)	
Other	2 (3.0)	2 (2.4)		3 (7.5)	2 (8.0)	

The first column shows all patients with mild asthma and compares group 1 with group 2 (18 patients had no PAS score calculated and were not analyzed in this table). Between-group analyses were conducted using simple logistic regression adjusting for age and sex. There was no significant difference for any of the events or adverse effects between groups. The second column shows all patients with moderate asthma and compares group 1 with group 2, with between-group analyses for categorical variables conducted with simple logistic regression adjusting for age and sex. There was no significant difference for any of the events or adverse effects between groups.

There was no significant difference in return visits for asthma symptoms between 1 and 2 doses of dexamethasone for mild to moderate acute exacerbations of asthma.

POLL

- You are treating a 2-year-old boy with croup in your urgent care. He presented in moderate distress and stridor at rest at around 10 am. You have given him Dexamethasone and 2 Racemic Epinephrine nebs. It has now been 3 hours after Dexamethasone, the child appears much better but continues to have some mild stridor at rest.

What do you do?

1. Call an ambulance and transport child to the hospital
2. The nearest children's hospital is 10 minutes away, so you let the parents take the child POV after calling the transfer line
3. Give another Racemic Epinephrine dose and observe in your office

Article 4 – Don’t be afraid of the seal

Use of a Clinical Guideline and Orderset to Reduce Hospital Admissions for Croup

Gabrielle Hester, MD, MS,[a] Amanda J. Nickel, MPH,[b] David Watson, PhD,[b] Walid Maalouli, MD,[d] Kelly R. Bergmann, DO, MS[c]

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Background

- Croup is a common illness in young children
- Typical treatment includes corticosteroids and racemic epinephrine (RE)
- Patients hospitalized for croup rarely need additional intervention
- Median admission rate of 9.1% across US children's hospitals
- 80% of patients do not need further RE or other interventions after admission
- **Opportunity for Clinical Guidelines and a QI project!**

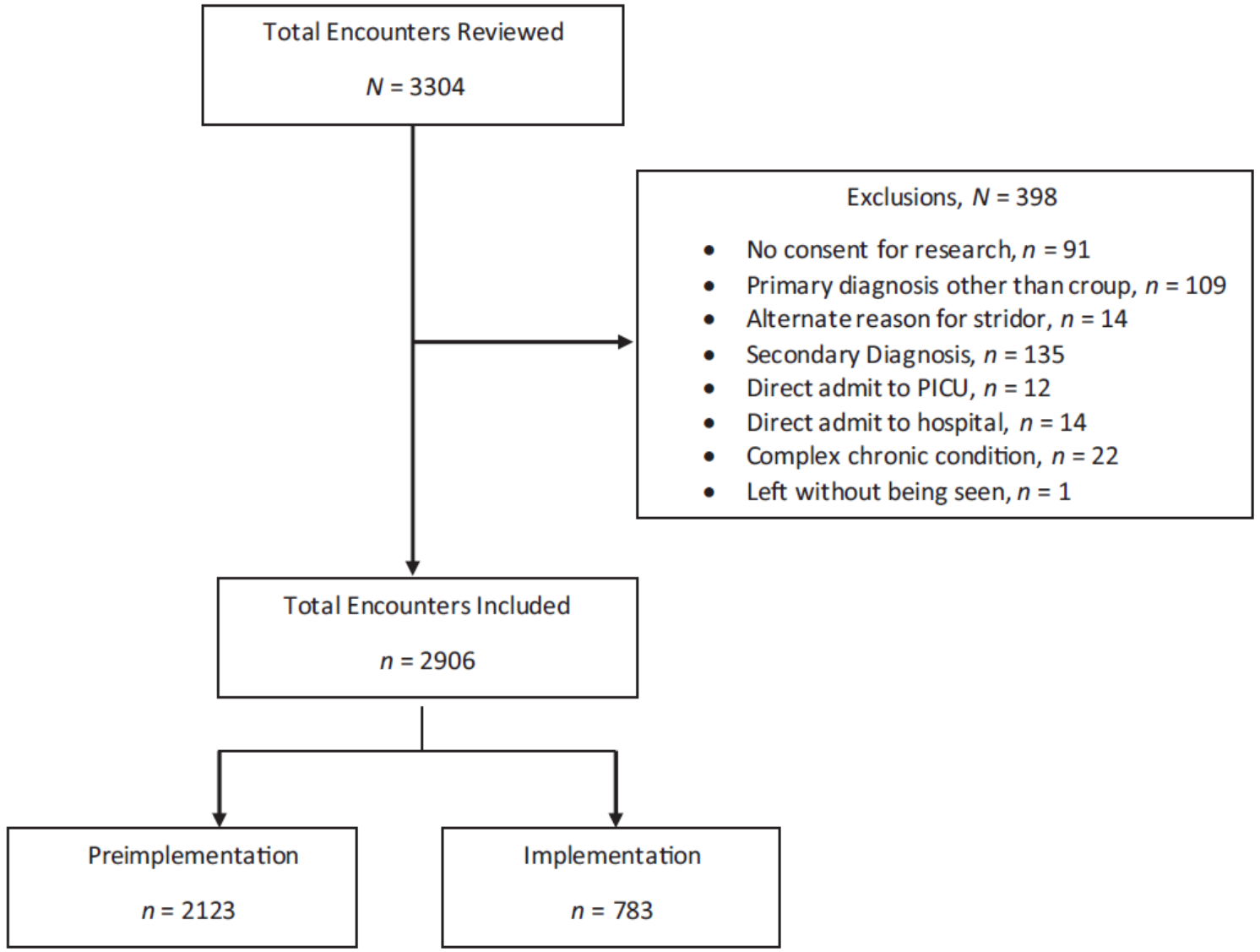
Methods and Procedures

- QI initiative with a single group of clustered interventions, including education, development, and integration of a clinical guideline and orderset.
- Implementation of an evidence-based clinical guideline and orderset for croup (Supplemental Fig 1) embedded in the electronic health record (EHR).
- The study period was divided into a 24-month baseline and a 12-month intervention period

Methods and Procedures

- Protocol
  - Early initiation of systemic steroids
  - Up to a 2-hour ED observation time after each RE dose
  - Consideration for admission after 3 total doses (including outside facilities)
  - Avoid unnecessary imaging
    - Except suspected bacterial tracheitis or foreign body aspiration)
    - Children 3 months to 8 years old with an ED

Results



Results

TABLE 2 Resource Utilization and Revisits Before and After QI Implementation for Croup

	Baseline, $N = 2123$ Mean (SD)or % (n)	Implementation, $N = 783$, Mean (SD) or % (n)	P[a]
Rate of admission	10.22 (217)	5.49 (43)	<.001
Rate of admission, RE ≤2 doses[b]	6.3 (127/2013)	1.7 (13/747)	<.001
Rate of admission, RE >2 doses[b]	81.8 (90/110)	83.3 (30/36)	.99
Neck radiograph obtained	8.7 (184)	7.7 (60)	.39
Length of stay			
Hours if ED discharge	2.5 (1.5)	2.6 (1.4)	.23
Hours if admission	20.7 (14.7)	19.7 (11.8)	.62
All cause revisit or readmission within 72 h	2.9 (62)	1.8 (14)	.09
Transfer to ICU after admission	0.09 (2)	0.13 (1)	.99
Total charges,[c] 1000 dollars	1572.8 (2376.94)	1422.24 (1700.64)	.06

[a]Welch's t test for continuous variables. Pearson χ^2 or Fischer's Exact Test for categorical variables.
[b]Racemic epiephrine (RE) doses given before or during ED encounter.
[c]Inflation-adjusted for April 2021.

Conclusion

- Limiting hospital admission until 3 doses of RE are needed, led to a 37% reduced rate of hospital admission without significant increase in revisits or readmissions
- Improvements were seen in 6 months before COVID-19 and were sustained in an additional 20-month postimplementation period during COVID-19.
- Applications in UC setting?

POLL

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- It's a Saturday night and a 9-year-old has waited 90 minutes for his scalp laceration to be repaired. The mom asks you if she really has to come back next Saturday for the staples to be removed.

- Your answer is:
  1. Yes. You must come back.
  2. Try your pediatrician. Maybe they can remove the staples?
  3. You teach her how to use a staple removal kit and hand her a kit on the way out.

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Article # 5 : Staple Removal at Home

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Scalp Staples Placed in a Pediatric Emergency Department
Feasibility and Benefits of Home Removal

Bruce J. Quinn, MD, Andrea Mancinelli, DO,† Kathleen Rooney-Otero, MD, MPH,‡*
Michelle Martin, APRN, MSN, Lila N. Ghavi, DO,§ Eva M. Wojewoda, MD,* and Brent D. Rogers, MD**

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- Prospective study of 30 children having staples placed in the ED
- Parents got staple remover kit, verbal instructions, and a video discharge with follow-up phone call

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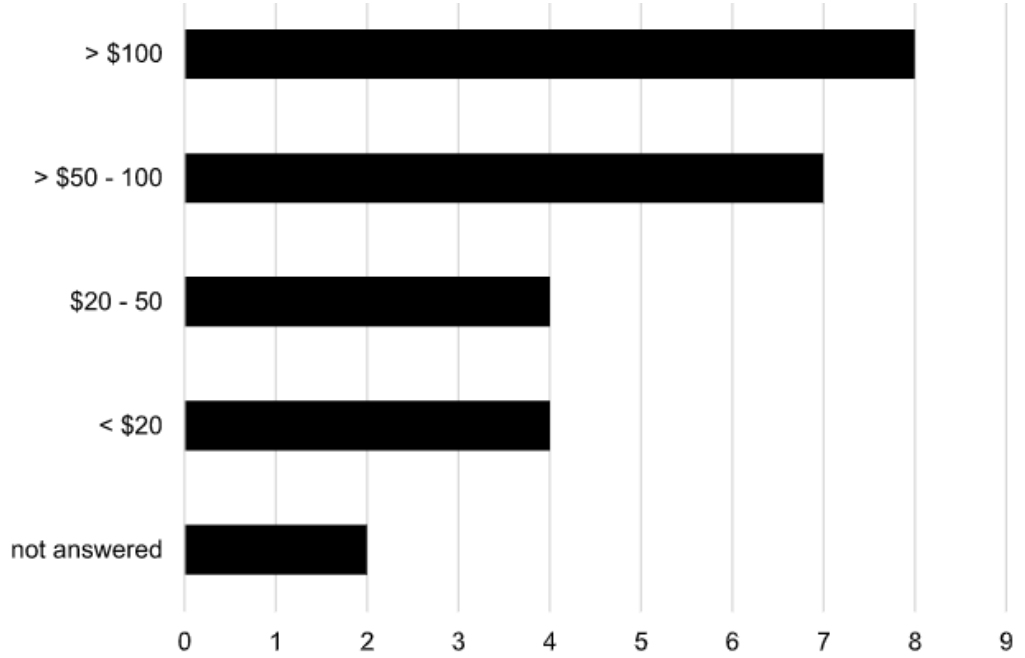
- How many successfully removed the staples at home?
  1. 30
  2. 15
  3. 28
  4. 7

- How many families called the PI for help?
  1. 3
  2. 7
  3. 29
  4. 0

- **Results:**
  - 28 staples removed successfully at home
    - 1 lost to follow up
    - 1 never tried to remove the staples
    - 62% of removers were mothers
    - Majority of removers had only a High School diploma
    - No one called the PI
    - ALL were pleased on follow up phone call
    - Additional benefits:
      - No second visit to ED with long wait
      - Less loss of work/school
      - Less loss of wages



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POLL

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- Speaking of anaphylaxis, what does the evidence say about the use of the following medications

Use or Don't Use??

- Epinephine
- Cetirizine
- Benadryl
- Corticosteroid

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Article 6 – biphasic, not really…

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Safely Reducing Hospitalizations for Anaphylaxis in Children Through an Evidence-Based Guideline

Lukas K. Gaffney, MD, MPH,[a,b] John Porter, MBA,[c] Megan Gerling, MPH,[c] Lynda C. Schneider, MD,[d] Anne M. Stack, MD,[c] Dhara Shah, PharmD, BCPS,[e] Kenneth A. Michelson, MD, MPH[c]

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PEDIATRICS Volume 149, number 2, February 2022:e2020045831

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Background

- Emergency department visits for anaphylaxis have doubled in 10 years
- Hospitalizations have increased sevenfold
- Management varies considerably across institutions
- Hospitalization rates in some locations are as high as 98%, with a median of 40% to 50%.
- Hospitalization rates are <10% in Canada and Australia
- Need for late intervention in anaphylaxis is rare
    - Biphasic anaphylaxis occurs in as few as 5% of patients
    - Most biphasic reactions occur within 4 hours of the initial reaction
    - Late biphasic reactions are most often mild

Background

- Epinephrine is the only medication that is consistently recommended
- No quality evidence supporting the routine use of adjunctive therapies
  - Corticosteroids may be used as or more frequently than epinephrine
  - Data suggests use in patients with asthma, but otherwise no difference
  - Second-generation H1 antihistamines Cetirizine vs Diphenhydramine
  - Less frequent dosing and side effects

Background – Boston Children's Hospital QI

- Developed and revised Evidence Based Guidelines
- Instituted education to get buy-in from all stakeholders for the project
- Goal
  - ED - reduce hospitalization rates safely for children with anaphylaxis to 10%
  - Increase the use of cetirizine as the first-line adjunctive antihistamine for children with anaphylaxis to 90%
  - Decrease corticosteroid use in children with anaphylaxis by 50%.

Methods

- Original Guideline
  - Diphenhydramine and corticosteroids as standard treatment
  - Hospitalization for patients requiring 2 or more doses of epinephrine and for those with hypotension or wheezing at any time

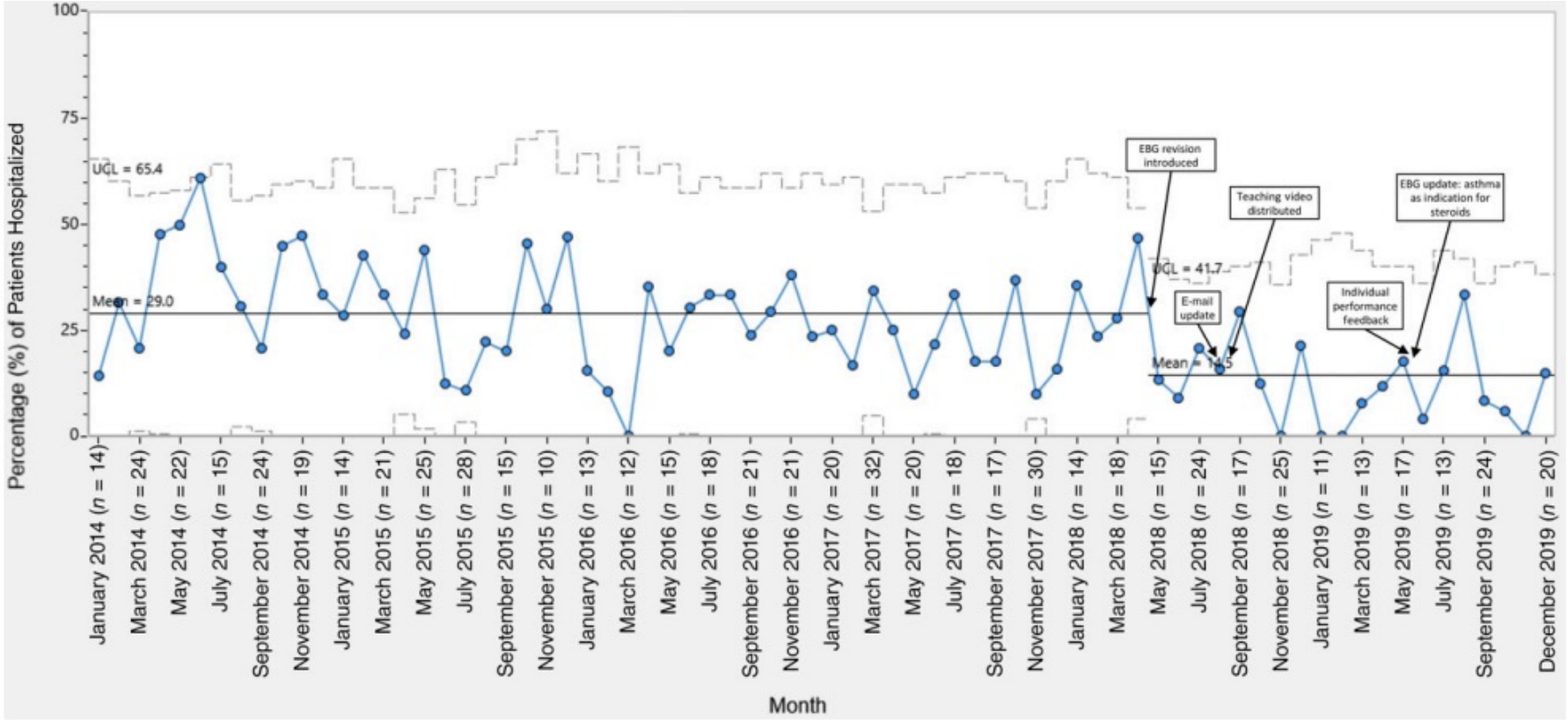
- Revised Protocol
  - Patients received IM epinephrine and oral cetirizine
  - Those with wheezing also receive albuterol and dexamethasone
  - Hospitalization for patients with hypotension at any time, persistent wheezing or other system involvement without improvement, and/or 3 or more doses of intramuscular epinephrine.

Planned Outcomes

- Primary outcome
  - Hospitalization rate

- Secondary outcome
  - Cetirizine use
  - Corticosteroid use overall and in patients with and without asthma

Implementation and Results

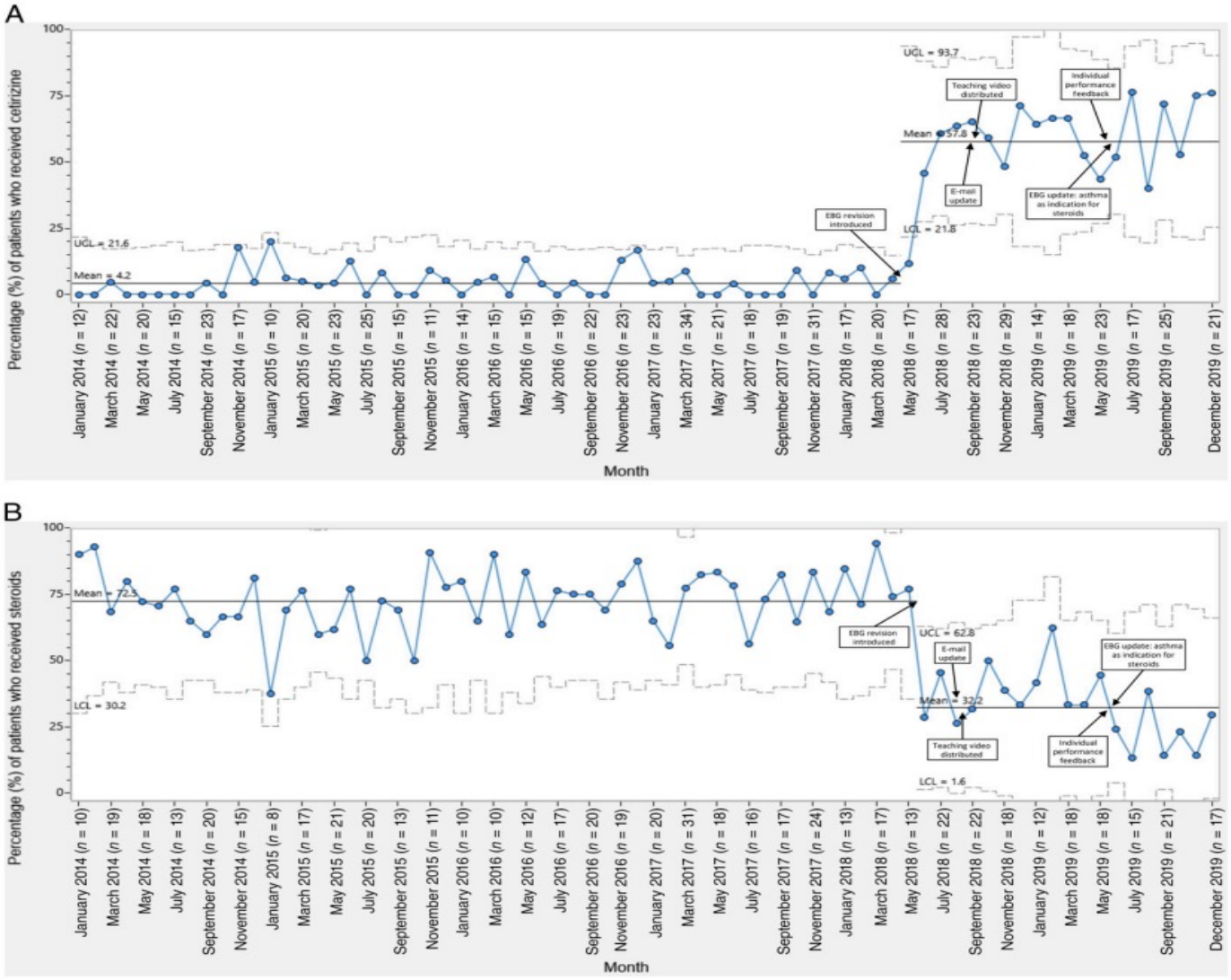


1449 patient encounters, of which 2 were excluded because of underlying conditions

In the prerevision phase, 28.5% of children were hospitalized compared with 11.2% in the implementation phase

17.3% Hospitalization reduction

Implementation and Results



- Cetirizine increased from 4.2% to 59.7%
- Corticosteroids in patients without asthma decreased from 72.6% to 32.4%

- Overall 72-hour, unplanned revisit rates for patients discharged from the ED with a diagnosis of anaphylaxis were 4.2% before and 2.6% after revision

POLL

- 6 mo old FT fully vaccinated black baby girl presents with fevers to 40 for 2 days in December. She has no other symptoms; no runny nose, cough, vomiting, or diarrhea. She is drinking less than usual, but still having a wet diaper at least every 8 hours. No medical history. Examination is normal.
- What's the plan?
  1. Urine testing: UA and cx to evaluate for UTI
  2. Low risk for UTI because she's black: let's focus on viral testing
  3. Urine and blood testing: that fever is too high
  4. Likely viral and she's lower risk for UTIs because she's black and she's well appearing and well hydrated: f/u PMD.

Article #7: Health Disparities

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POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics

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Eliminating Race-Based Medicine

Joseph L. Wright, MD, MPH, FAAP,[a,b] Wendy S. Davis, MD, FAAP,[c] Madeline M. Joseph, MD, FAAP,[d] Angela M. Ellison, MD, MSc, FAAP,[e,f] Nia J. Heard-Garris, MD, MSc, FAAP,[f] Tiffani L. Johnson, MD, MSc, FAAP,[g] and the AAP Board Committee on Equity

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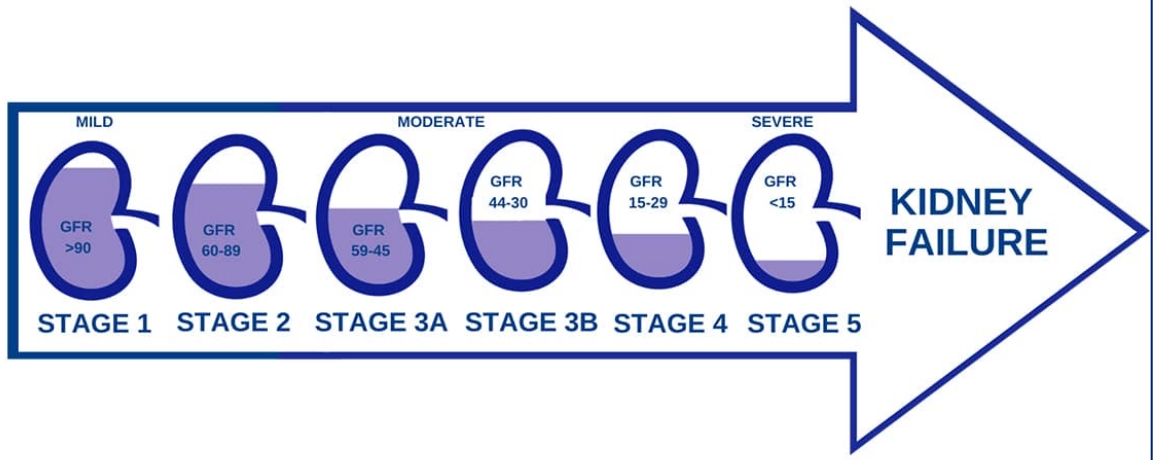
- Race-based GFR values have led to ***DELAYS*** in identification of renal disease in black patients



- Race based guidelines for who is eligible for VBAC automatically assign black women to "unfavorable" status for pelvic shape, leading to an increase in C sections

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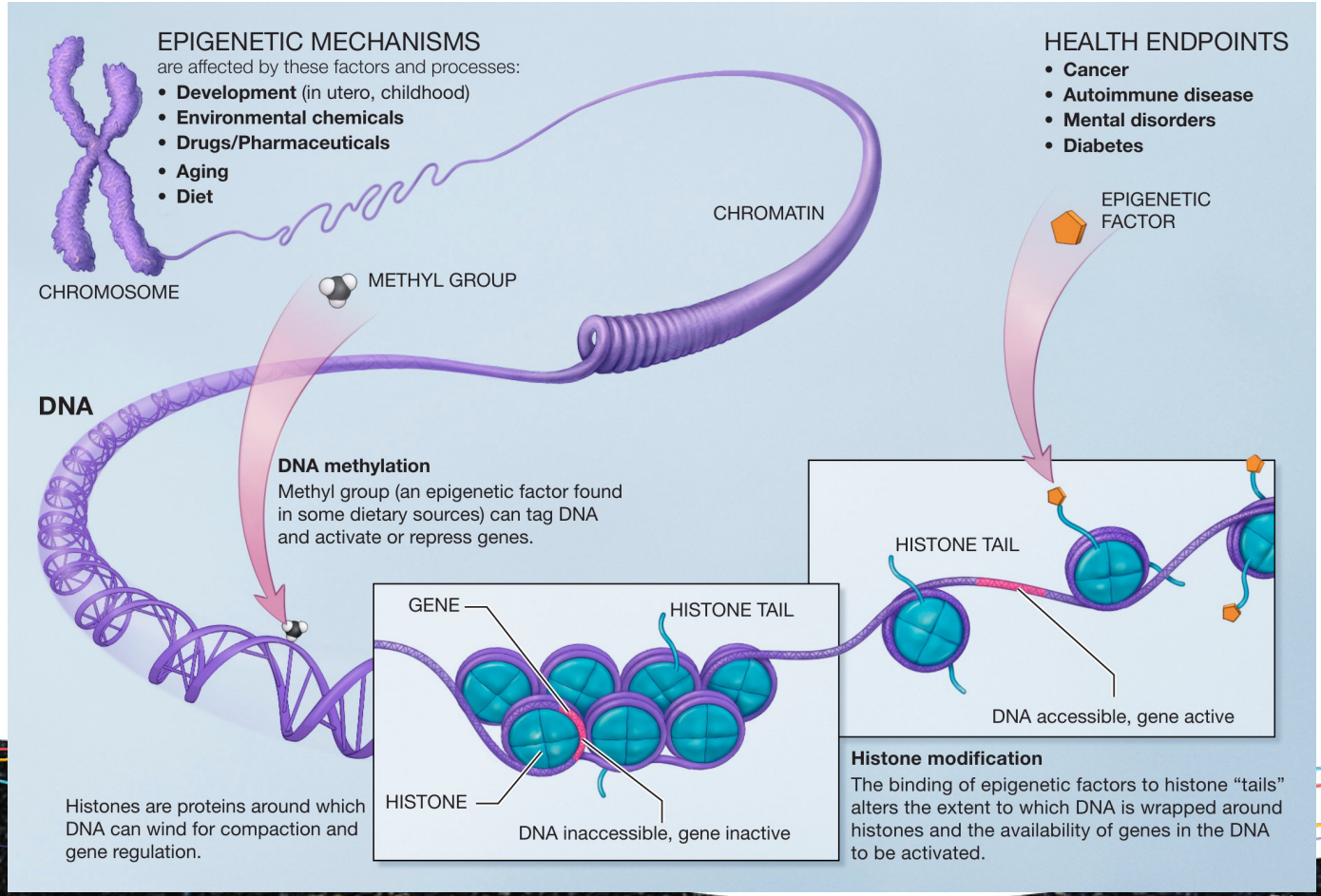
- Robust evidence that "Race" is not what determines outcomes, but epigenetics may be more important



Article #8 – Some concerning facts as we emerge from Covid-19 pandemic

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CORRESPONDENCE

Current Causes of Death in Children and Adolescents in the United States.

Goldstick, Jason E; Cunningham, Rebecca M; Carter, Patrick M

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The NEW ENGLAND JOURNAL of MEDICINE

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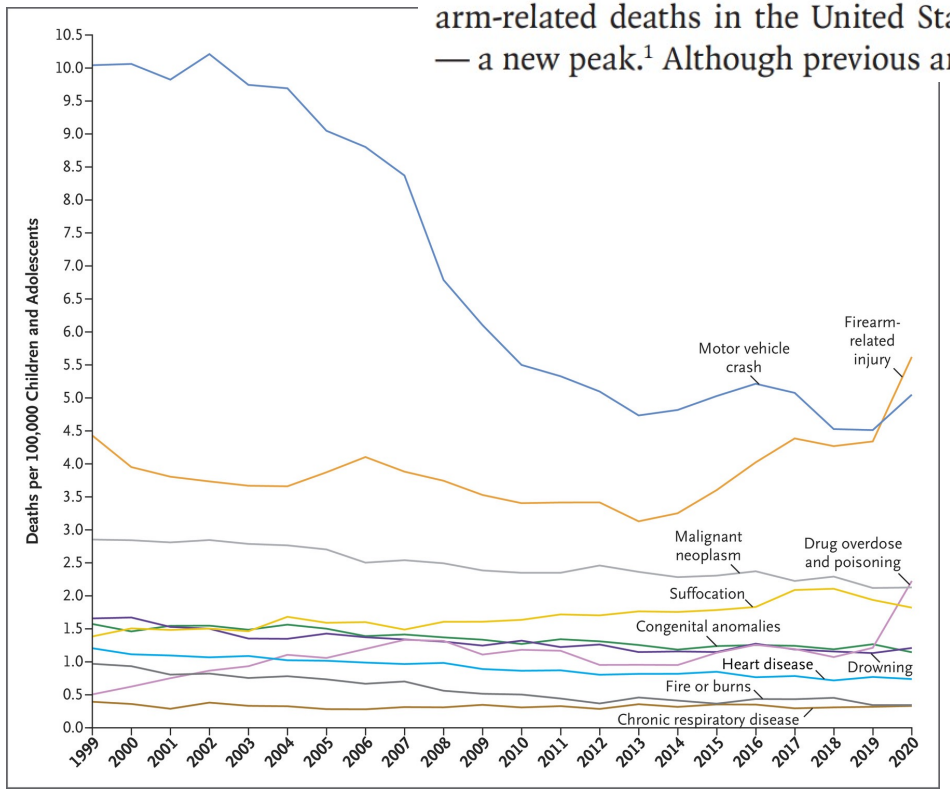
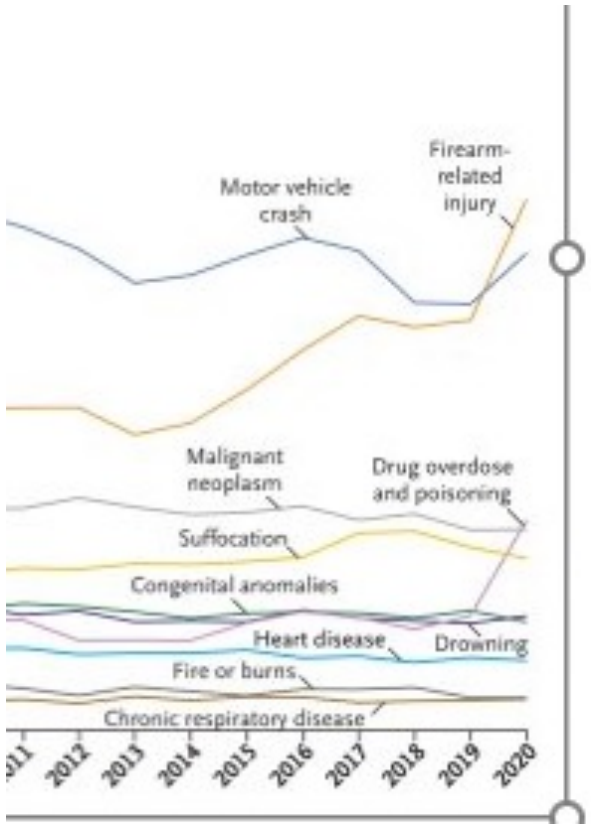
Leading Causes of Death among Children and Adolescents in the United States, 1999 through 2020.

TO THE EDITOR: The Centers for Disease Control and Prevention (CDC) recently released updated official mortality data that showed 45,222 firearm-related deaths in the United States in 2020 — a new peak.[1] Although previous analyses have





2016

#1 Motor Vehicle Crashes

#2 Firearm-related injuries

Leading Causes of Death among Children and Adolescents in the United States, 1999 through 2020.

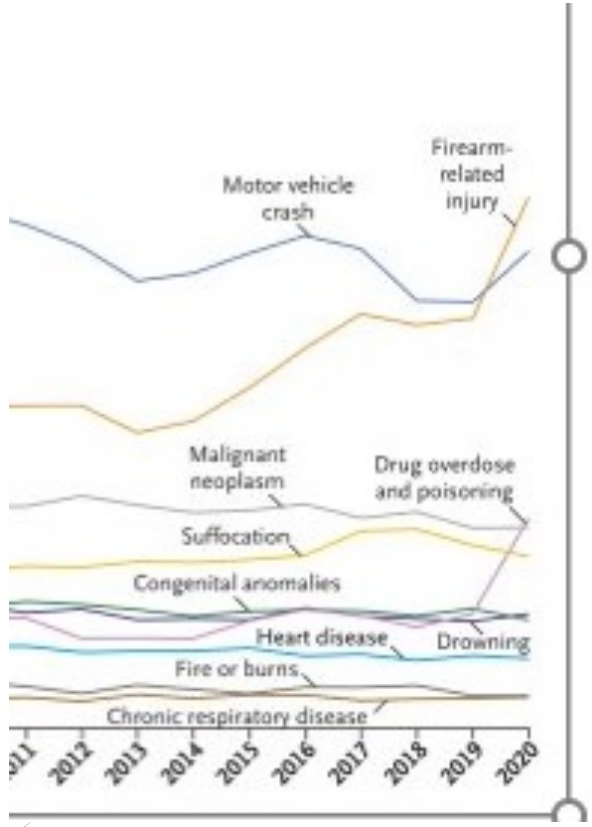
- 2020
  - Firearm - related injuries became the leading cause of death

- 2019 to 2020

  #1 relative increase in the rate of firearm-related deaths was 29.5%
  - suicide, homicide, unintentional, and undetermined
  - more than twice as high as the relative increase in the general population

  #2 Motor Vehicle Crashes

  #3 Drug overdose and poisoning - increased by 83.6%
  - 110.6% increase in unintentional poisonings



Article #9: Electronic d/c papers

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Using an electronic discharge process to improve patient experience and timeliness in a pediatric urgent care setting

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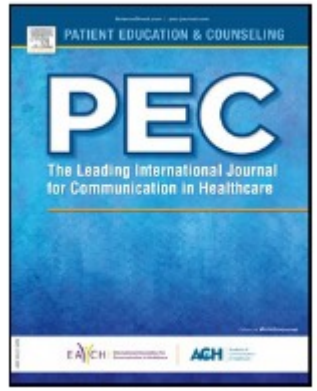

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- Wait times in UC lead to worsening patient experiences.
- Low enrollment in the patient portal
- Study sought to increase both portal sign-ups and e-discharge

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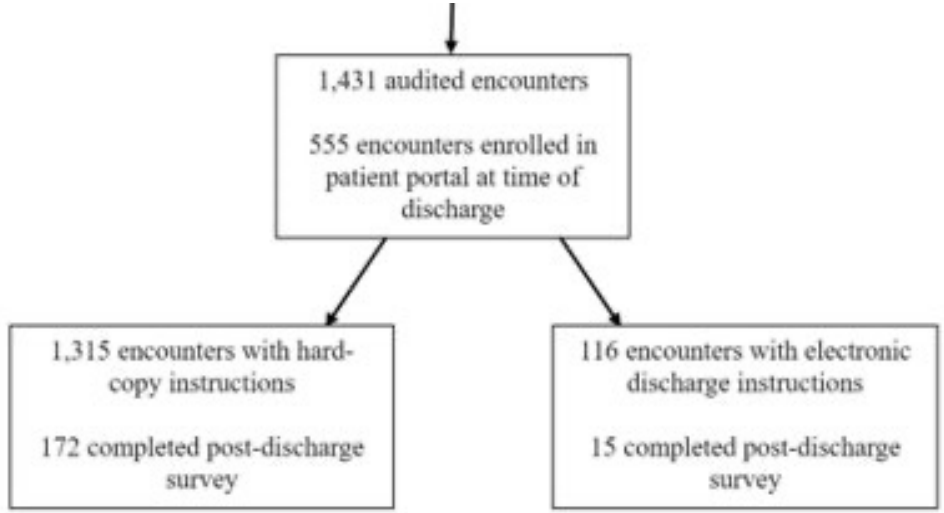
- Final results:
  - Electronic discharge REDUCED LOS
    - Only 21% of portal-activated patients wanted e-discharge
  - No difference in quality, as perceived by the family
  - INCREASE in percentage of positive reviews after implementing e-discharge when all patients included



POLL

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- You are working an evening shift at the UC. You diagnose a 20-month-old girl with 3 days of congestion and fever with otitis media. This is her first infection in 6 months, so you recommend Amoxicillin. Child's mother is hesitant – the child developed a rash while taking Amoxicillin in the past and the pediatrician suspected that it was a possible allergy, but maybe also a viral rash.

- Now what?

1. Given child amoxicillin after shared decision making due to low risk of true allergy
2. Give the child cefdinir or another second line, non-penicillin antibiotic
3. Call the PCP to discuss treatment

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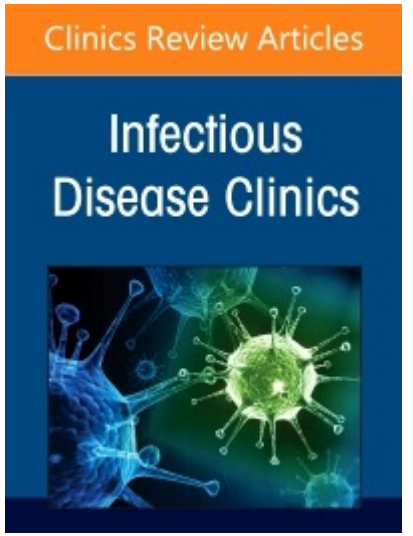
Article 10 – that PCN rash is alright!

Infectious Disease Clinics of North America
Volume 36, Issue 1, March 2022, Pages 219-229

Management of Children with Reported Penicillin Allergies

Tracy N. Zembles PharmD [a], David E. Vyles DO, MS [b], Michelle L. Mitchell MD [c]



The consequences of being labeled with a PCN allergy include the use of alternative antibiotic regimens that may be less effective, more toxic, and/or more expensive than preferred agents

Background - incidence

- About 10% of US population report a PCN allergy
- 95% are not truly allergic
- Reported symptoms are frequently
  - Nonallergic adverse effects, or a
  - Result of viral/antibiotic interactions that lead to a rash
- 90% of people with a true PCN allergy lose their sensitivity after 10 years rendering them no longer allergic

Background - mechanisms

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PCN allergy

- Acute reaction
  - Mediated by IgE occur within 1 hour of exposure
  - Hives, angioedema, wheezing and shortness of breath, and anaphylaxis
- Subacute reaction
  - IgG antibodies
  - 7 to 10 days of treatment or 1 to 2 days after a repeat exposure

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Background - Challenges

- 30 million people in the US with a PCN allergy label, allergy testing for all is not a viable option.
- Multi-faceted approaches are needed to ensure the removal of a PCN allergy
- Primary care clinics, inpatient units, and emergency departments, may be ideal places to de-label patients with PCN allergy.

Risk Based Plan

- Mill et al
  - 818 graded oral challenges on children with reported amoxicillin allergy
  - 94.1% of patients tolerated the medication without an allergic reaction
  - The rest had a minor reaction
- Other studies in inpatient and ER settings suggesting the same
- High-risk symptoms of allergy should be approached with a tiered skin testing process

Risk Stratification

1) What age was your child at the time of diagnosis?

2) What symptoms did your child have to the penicillin medication?

	LOW risk symptoms		HIGH risk symptoms
	Cough		Blisters (mouth)
	Diarrhea		Blood pressure drop
	Dizziness		Difficulty breathing
	Family history of penicillin allergy		Seizures
	Headache		Skin peeling
	Itching (isolated)		Syncope
	Nausea		Swelling (face)
	Runny nose		Swelling (lips)
	Vomiting (single episode)		Swelling (throat)
			Wheezing

3) Did any of these symptoms occur **within one hour** of giving the medication?

Symptom	No	Unsure	Yes
Abdominal pain			
Itching (with rash)			
Rash			
Vomiting (multiple episodes)			

4) Is this patient low or high risk? (*One or more high risk symptoms = high risk*)

LOW HIGH

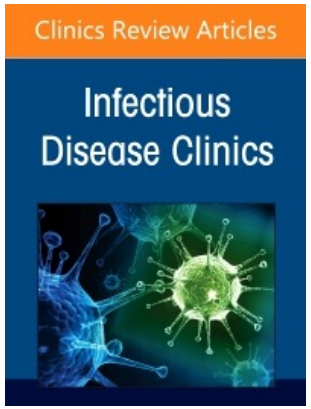
5) Document in the medical record.

Fig. 1. Assessment of penicillin allergy risk level.

Among patients deemed low risk for PCN allergy, multiple studies have shown that an oral challenge is safe and effective.

CLINICS CARE POINTS

- Shared decision making and oral drug challenge is a reasonable strategy to de-label low risk patients with reported penicillin allergy
- Follow up and documentation of outcome and de-labeling
- Skin testing should be administered to high-risk patients
  - UC vs PCP setting?
- Strategies are need to ensure patients understand the results and remain de-labeled



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How you can drive change:

- Manage more infant fevers in-house
  - Lower cost, better for families, less ER visits
- Use electronic resources when you can
- Race is an illusion

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How you can drive change:

- Consider PCN challenge for low risk patients
- 1 dose of Dex is equivalent to 2 for mild to moderate asthma
- Don’t rush to transfer the croupy child. 3 RE is OK.
- Early IM epinephrine and cetirizine with limited corticosteroids in anaphylaxis
  - Consider monitoring before admission, even if multiple IM Epi doses are needed
- Gun related injuries and ingestions have increased in the Covid Era and should be part of discussion with patients and families

Session Evaluation

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- Your feedback is valuable, take a moment to complete the survey for this session.
- To claim CME, you must complete a separate survey available after the convention.