

NASEM Pediatric Disaster Science Symposium: Trials and Mechanistic Science to Increase Rigor

Experience from the Pediatric Emergency Care Applied Research Network (PECARN)

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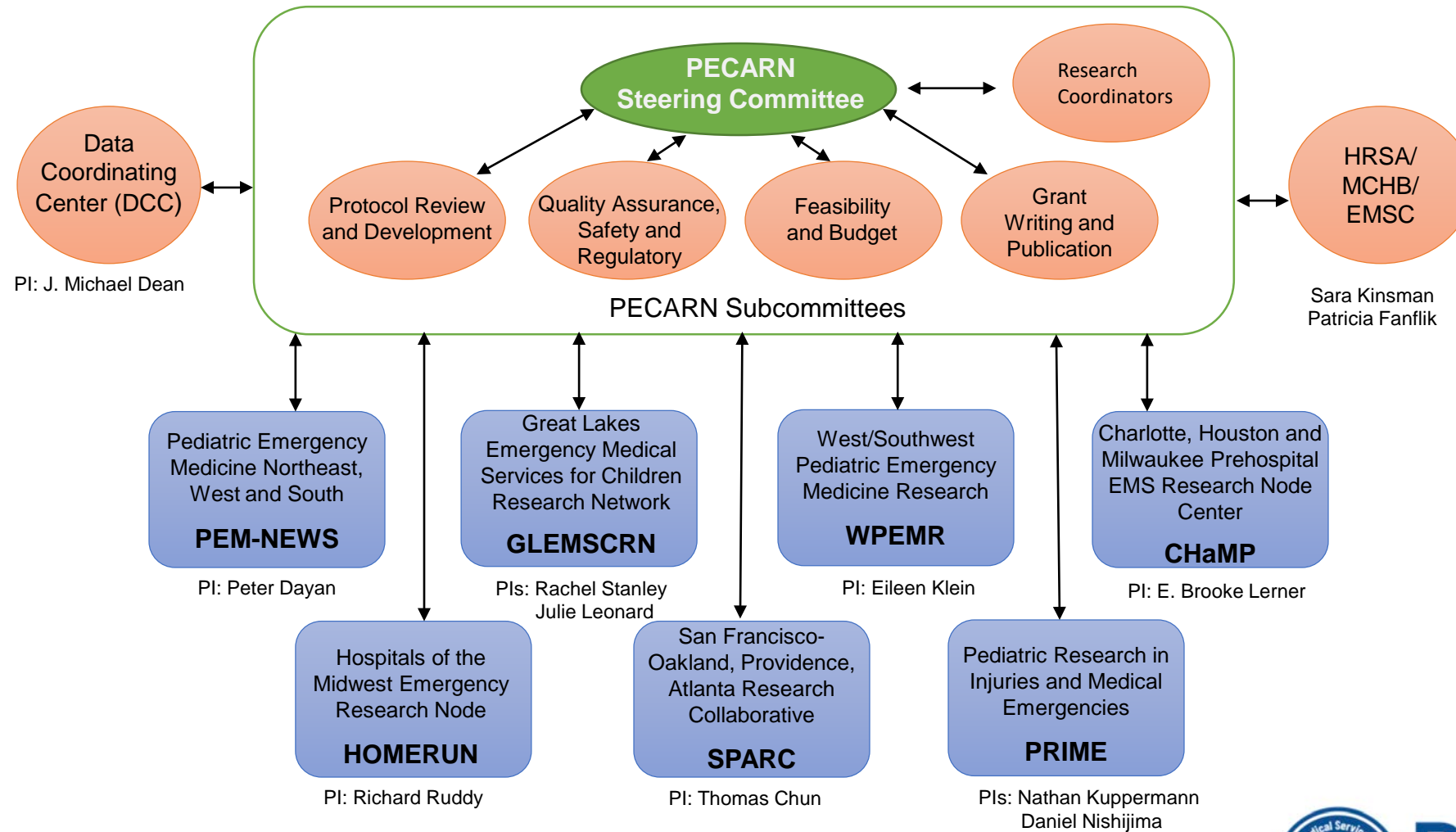
Disclosures

- Research funded by NICHD, NHLBI, PCORI, HRSA, EMSC
- No financial conflicts of interest to report

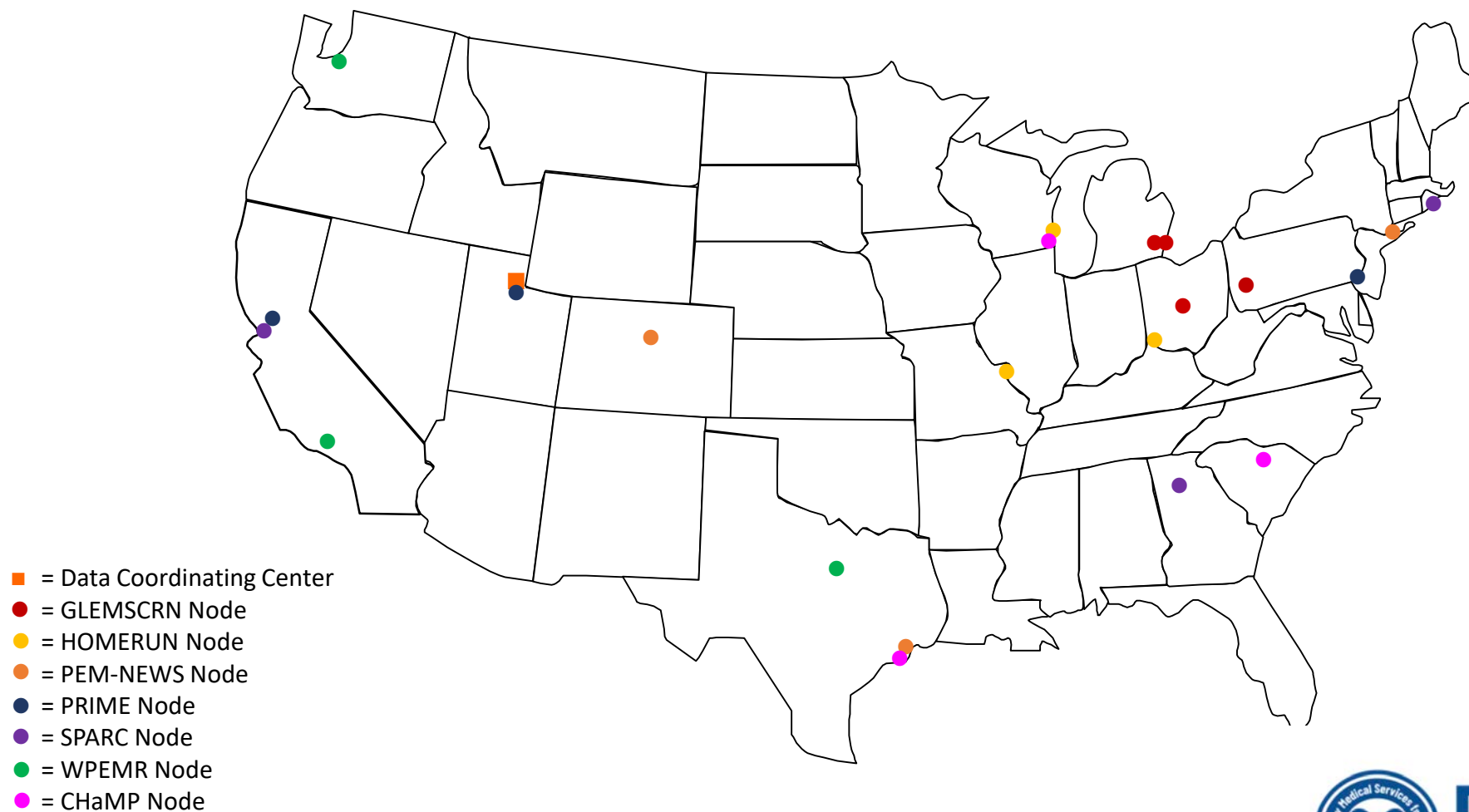
PECARN

- The first federally-funded pediatric emergency medicine research network in the United States – started 2002
- 6 research “nodes” with 18 Hospital Emergency Department Affiliates and a separate data center
 - One other node of 3 pre-hospital agencies
- > 1.3 million acutely ill and injured children yearly
- HRSA/EMSC funds the infrastructure; Studies funded by external funding from NIH and other sources

PECARN – Network Structure



PECARN – Large and diverse sites

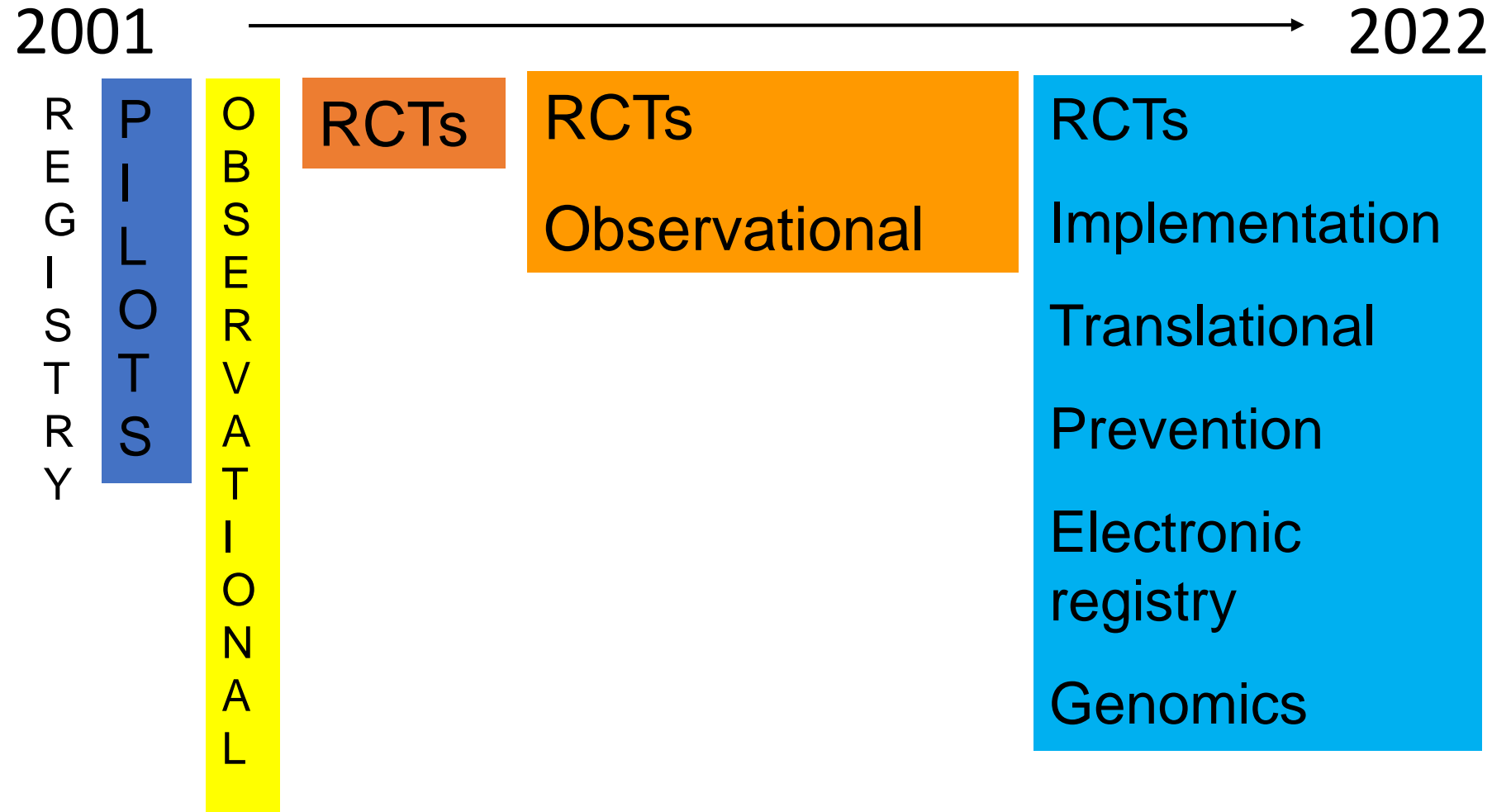


PECARN
Pediatric Emergency Care
Applied Research Network

Past and Current PECARN Research

- Patient safety and error reduction
- Quality of PEM care
- Evaluation of head trauma
- C-Spine trauma/immobilization
- Steroids in acute bronchiolitis
- Mental illness/psychiatric emergencies
- RCT of fluids for DKA
- Magnesium for sickle cell pain
- Therapeutic hypothermia in pediatric cardiopulmonary arrest
- Management of status epilepticus
- Evaluation of abdominal trauma
- Screening for alcohol abuse
- Probiotics for gastroenteritis
- Knowledge translation of TBI rules
- RNA transcription biosignatures to diagnose febrile infants
- TXA for hemorrhagic trauma

PECARN Progress



Rigor in PECARN research

PECARN RESEARCH PRIORITIES	
1. Respiratory Illnesses/Asthma	2. Prediction Rules for High Stakes/Low Likelihood Diseases
3. Medication Error Reduction	4. Injury Prevention
5. Urgency and Acuity Scaling	6. Race, Ethnic, Class Disparities in Health
7. Mental Health	8. Treatment of Infectious Diseases
9. Best practices in patient care	10. Pain & Anxiety Management
11. Education/Training Outcomes	12. Development of Treatment Algorithms
13. Improvement in Health Outcomes for Cardiac Arrest	14. Practice Protocols
15. Seizure Management	16. C-Spine Immobilization
<i>Special Mention: Prehospital Research</i>	

Rigor in PECARN research

Any investigator can submit a 2 page concept



All concepts are routed through a node



Concept presented to steering committee (vote)



Concept developed into protocol/grant with help from
data center and input from subcommittees and
steering committee



Protocol/grant vote by steering committee

Rigor in PECARN research

- Large samples sizes enhance reproducibility
 - *Definitive research*
- Diverse patient cohorts enhance generalizability
- Senior scientists working with clinicians and early investigators
 - *Enhance sustainability*
- Independent data center
 - *Minimizes “analytic bias” from study PIs*
 - *Investigators have learned to live with loss of control*

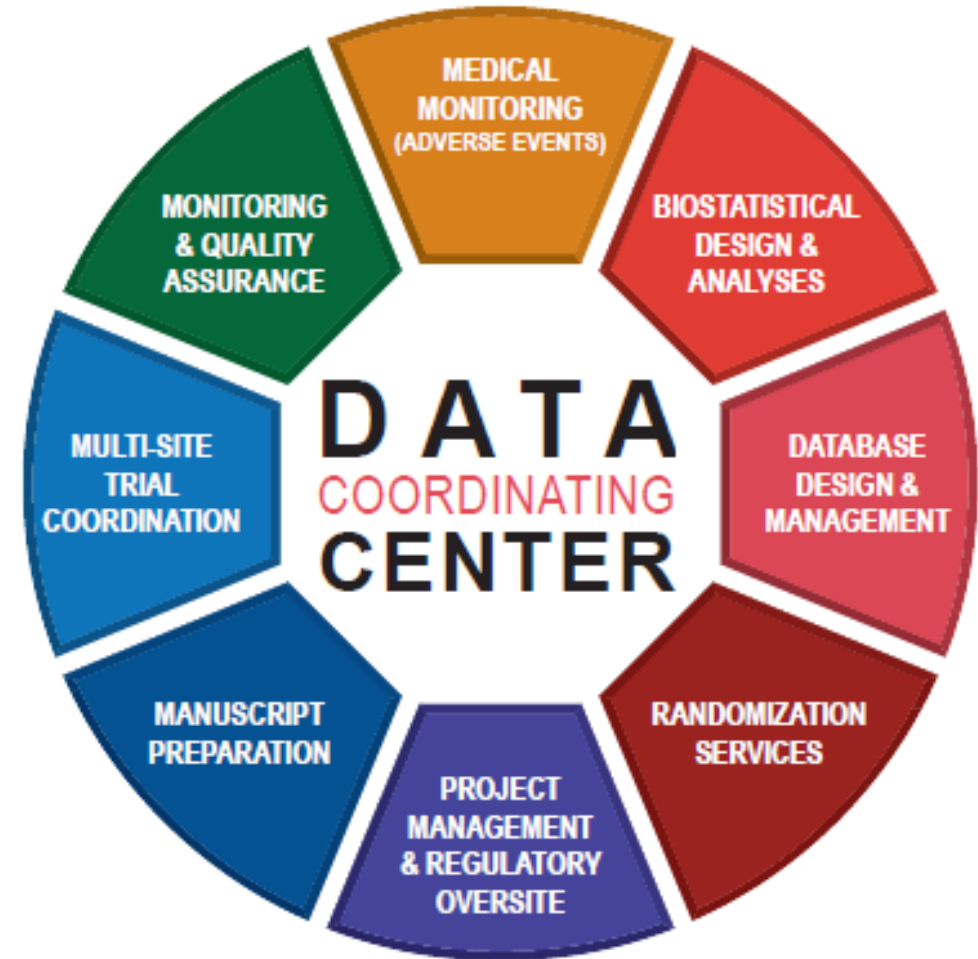
PECARN Data Coordinating Center



🏠 School of Medicine > Pediatrics > Data Coordinating Center

The Data Coordinating Center (DCC), in conjunction with the Clinical Trials Office (CTO), have extensive experience with coordinating single and multicenter observational studies, and randomized controlled trials in rare diseases, pediatrics, and in adult populations

Accelerate research to the bedside



“One stop shopping”

Rigor in PECARN research

- Explicit protocol development
- Uniform standards for clinical research
- Site monitoring requirements
 - *Improvement efforts for poorly performing sites*
 - *Willingness to terminate sites for persistent poor performance*
- Strict data transmission and security requirements
- Central IRB, EFIC studies, above cap funding standard

Results of Rigor

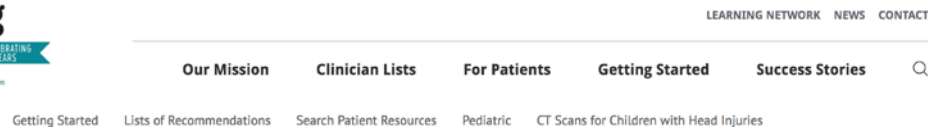
- Widespread implementation
- Adoption by national and international guidelines

FROM THE AMERICAN ACADEMY OF PEDIATRICS | CLINICAL PRACTICE GUIDELINE |
NOVEMBER 01 2014

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

Shawn L. Ralston, MD; Allan S. Lieberthal, MD; H. Cody Meissner, MD; Brian K. Alverson, MD; Jill E. Baley, MD; Anne M. Gadomski, MD; David W. Johnson, MD; Michael J. Light, MD; Nizar F. Maraqa, MD; Eneida A. Mendonca, MD; Kieran J. Phelan, MD; Joseph J. Zorc, MD; Mark A. Brown, MD; Ian Nathanson, MD; Elizabeth Rosenblum, MD; Sinsi Hernandez-Cancio, JD; Shawn L. Ralston, MD; Allan S. Lieberthal, MD; Brian K. Alverson, MD; Jill E. Baley, MD; Anne M. Gadomski, MD; Nizar F. Maraqa, MD; Eneida A. Mendonca, MD; Kieran J. Phelan, MD; Danette Stanko-Lopp, MA; Mark A. Brown, MD; Ian Nathanson, MD; Stephen Sayles, III, MD; Sinsi Hernandez-Cancio, JD

Pediatrics (2014) 134 (5): e1474–e1502.
<https://doi.org/10.1542/peds.2014-2742>



CT Scans for Children with Head Injuries

When they need them—and when they don't

A blow to the head can be scary. But usually it is not very serious. Often there is just a mild concussion, with no serious injuries like bleeding or cracks to the skull.

After a head injury, the doctor may order a test called a CT scan (pronounced "cat" scan). A CT scan takes many X-rays, to create a 3D picture of the brain. But your child may not need a CT scan for a minor head injury. Here's why:

Often, CT scans aren't necessary.

FROM THE AMERICAN ACADEMY OF PEDIATRICS | CLINICAL PRACTICE GUIDELINE |
AUGUST 01 2021

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

Robert H. Pantell, MD, FAAP; Kenneth B. Roberts, MD, FAAP; William G. Adams, MD, FAAP; Benard P. Dreyer, MD, FAAP; Nathan Kuppermann, MD, MPH, FAAP, FACEP; Sean T. O'Leary, MD, MPH, FAAP; Kymika Okechukwu, MPA; Charles R. Woods, Jr, MD, MS, FAAP SUBCOMMITTEE ON FEBRILE INFANTS

LEARNING NETWORK NEWS CONTACT

have indicated they have no financial relationships relevant to this

Dr. Pantell is affiliated with BioFire and IDbyDNA. Dr. Woods is affiliated with UpToDate, Moderna, and Pfizer; the other authors have no conflicts of interest to disclose.

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Disponible en Español

Tomografía (CT scans) para niños con lesiones en la cabeza



Questions?

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[@nkuppermann](https://twitter.com/nkuppermann)

UCDAVIS
HEALTH



PECARN
Pediatric Emergency Care
Applied Research Network