Integrating EMS-C into EMS-A

Joelle Donofrio-Odmann, DO FAAP, FACEP, FAEMS

Associate Medical Director, City of San Diego, SDFD

EMS Medical Director, Rady Children's Hospital

Associate Professor, UCSD

UC San Diego School of Medicine

Rady Children's Hospital San Diego

Kids in EMS

Do we really need to consider kids?

But we have so many other obligations… dispatch, stroke, trauma, stemi, OHCA…

Small people and Small % of EMS runs

- Only 13% of EMS runs
- Differing anatomy and physiology with different patterns of illness and injury
- Specialized centers and regionalization of care
- Specialized equipment
- Emotional component
- Legal component – both law suits and legal liability issues (minors, family, capacity)

Systems of care & regionalization

- Who needs to go where, when, and how…
  - EMS plays a critical role

Pediatric Skills Decay Quickly

PMID: 18976342

- 212 paramedics voluntary retraining exercise
- Pediatric airway skills decay quickly
  - **66% (139/211) passed BVM testing**
  - **42% (88/212) passed ETI testing**
- Skill drops significantly within 6 months and is unaffected by the number of pediatric runs/shift
- Only 10% participation (245/2520 invited)
  - Will paramedics seek out education in areas they feel deficient in?

How are your Paramedics Pediatric Resuscitation Skills?

Lammers 2009 PMID: 19499472

- 212 trained and practicing paramedics from 5 agencies in Michigan (91% of available paramedics in the region)
- 3 clinical assessment modules:
  - Infant CPR
  - 6-month-old with hypotension and seizures from dehydration, hypoglycemia and sepsis
  - 7-year-old asthmatic child with respiratory arrest

Cardiac Arrest in Infant

- Basic life support issues
- Basic airway mgmt. issues
- IO access issues
- Medication administration issues

Lammers et al. Simulation-based Assessment of Resuscitation

TABLE 2. Most Common or Significant Performance Deficiencies in the Arrest Clinical Assessment Module

Steps ($n = 72$)	Not Completed	95% CI
Use of basic life support assessment skills		
Check for spontaneous respirations	18%	(12.8%, 23.1%)
Begin bag–mask ventilations within 60 seconds	18%	(12.8%, 23.1%)
Auscultate lungs during bag–mask ventilations	74%	(68.2%, 80.0%)
Check pulse	10%	(6.3%, 14.5%)
Perform chest compressions	5%	(2.2%, 8.2%)
Begin chest compressions within 60 seconds	51%	(44.2%, 57.8%)
Basic airway management		
Select correct size OP airway	71%	(64.6%, 76.9%)
Prepare suction	96%	(93.0%, 98.5%)
Insert OP airway	56%	(49.5%, 62.8%)
Insert OP airway correctly	61%	(54.3%, 67.4%)
Intraosseous access		
Prep IO site	33%	(27.1%, 39.8%)
Insert in correct location	14%	(9.1%, 18.3%)
Aspirate or flush	39%	(32.6%, 45.7%)
Attach IV line to IO needle	18%	(12.8%, 23.1%)
Medication dosing (first round of drugs)		
Use Broselow tape to obtain correct weight	50%	(42.8%, 56.3%)
Give correct volume of epinephrine (either concentration)	69%	(N/A)
Advanced airway management		
Select correct endotracheal tube size	58%	(51.4%, 64.7%)

That was an artificial environment, what if they use their OWN equipment and drugs? (Lammers 2012 PMID: 22251191)

- 45 crews in 5 geographically diverse regions participated invalidated simulation of infant with AMS/seizures/respiratory arrest using **THEIR OWN equipment and drugs**
- Delays in O2 administration
- 54% failed using OPA
- Most crews struggled to locate essential pediatric equipment
- 3 crews found broken or inoperable BVMs leading to delayed ventilation
- Some mistrusted IO device, others used it incorrectly
- Only 51% measured glucose and some found there was no glucometer in the pediatric bags
- Medication error rates: diazepam 47%, midazolam 60%

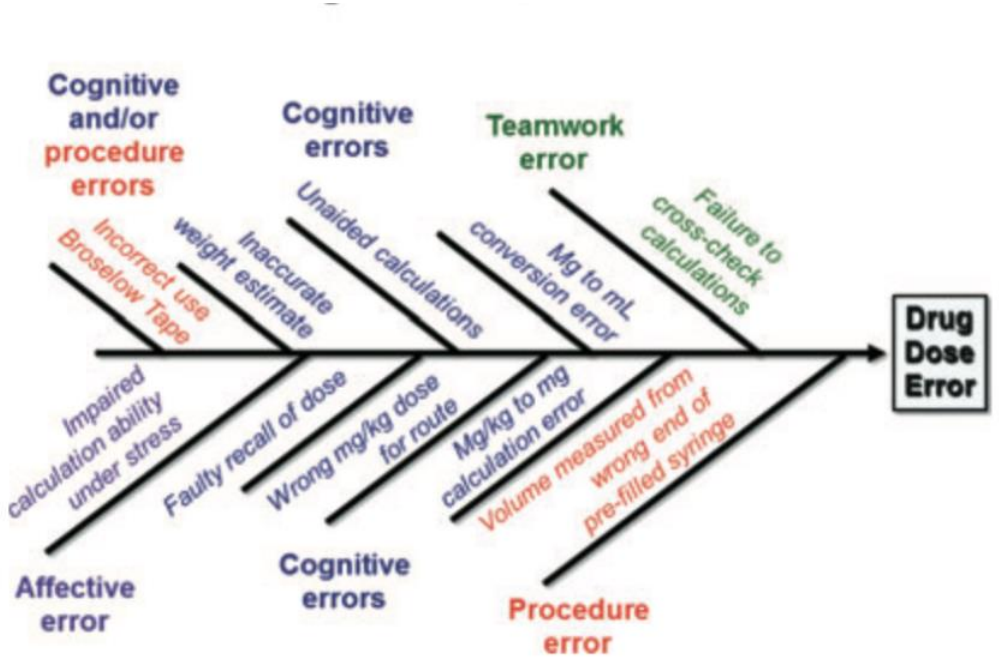


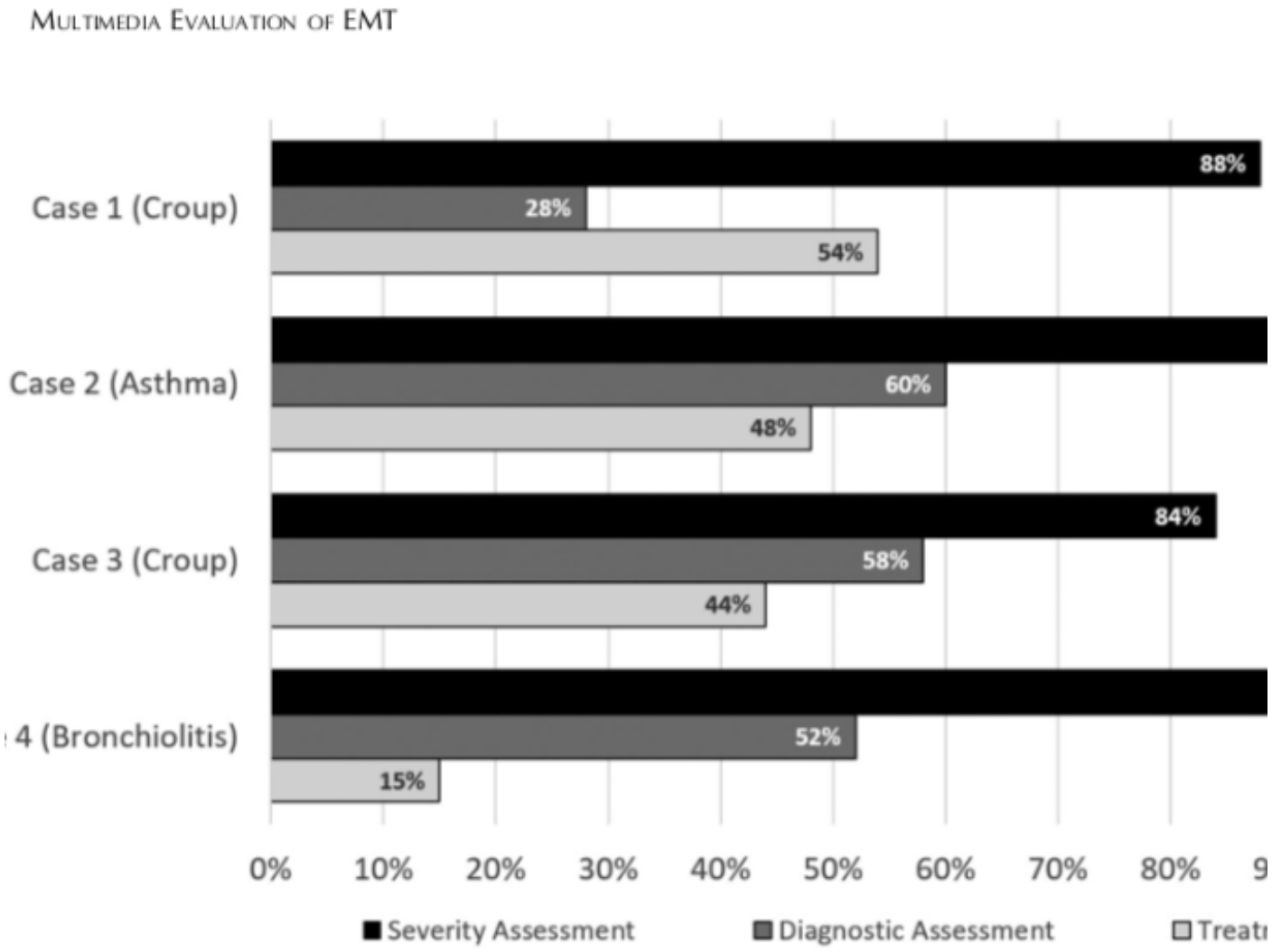
Figure 2. Drug administration errors. Fishbone diagram showing how a variety of factors, individually or combined, can result in a bad outcome.

How about their ability to ASSESS – especially respiratory distress?

Schroter 2020 - PMID: 32870748

- 419 completed all 4 cases
  - 92% correct severity of respiratory distress
  - 50% made correct diagnosis
  - 38% correct intervention

- Increased age, years of experience, self reported comfort with kids, volume of peds patients, or having children of their own NOT associated with assessment performance



age correct broken down by each case.

And what about protocols?

Pediatrics and EMS Medical Direction

Psst… this is a big deal … how do YOU play a role

Physician Oversight of Pediatric Care in Emergency Medical Services

To cite this article: (2017) Physician Oversight of Pediatric Care in Emergency Medical Services, Prehospital Emergency Care, 21:1, 88-88, DOI: 10.1080/10903127.2016.1229826

To link to this article: https://doi.org/10.1080/10903127.2016.1229826

I am the ~~Lorax~~ Med Director, I speak for the ~~trees~~ Children

- **If you have knowledge gaps – get SME**
- **Planning for peds in EMS system**
- **PECC &/or EMS peds advisory committee**

How to put EMSC in your EMSA

TECHNICAL REPORT

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Pediatric Readiness in Emergency Medical Services Systems

Sylvia Owusu-Ansah, MD, MPH, FAAP,[a] Brian Moore, MD, FAAP,[b] Manish I. Shah, MD, MS, FAAP,[c] Toni Gross, MD, MPH, FAAP,[d] Kathleen Brown, MD, FAAP,[e,f] Marianne Gausche-Hill, MD, FACEP, FAAP, FAEMS,[g] Katherine Remick, MD, FACEP, FAAP, FAEMS,[h,i,j] Kathleen Adelgais, MD, MPH, FAAP,[k] Lara Rappaport, MD, MPH, FAAP,[l] Sally Snow, RN, BSN, CPEN, FAEN,[m] Cynthia Wright-Johnson, MSN, RNC,[n] Julie C. Leonard, MD, MPH, FAAP,[o] John Lyng, MD, FAEMS, FACEP, NRP,[p] Mary Fallat, MD, FACS, FAAP,[q] COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, SECTION ON EMERGENCY MEDICINE, EMS SUBCOMMITTEE, SECTION ON SURGERY

Taylor & Francis

Prehospital Emergency Care

ISSN: 1090-3127 (Print) 1545-0066 (Online) Journal homepage: https://www.tandfonline.com/loi/ipec20

Pediatric Readiness in Emergency Medical Services Systems

Position Statement in PEC

Pediatric Readiness in Emergency Medical Services Systems

Brian Moore, MD, FAAP, Manish I. Shah, MD, MS, FAAP, Sylvia Owusu-Ansah, MD, MPH, FAAP, Toni Gross, MD, MPH, FAAP, Kathleen Brown, MD, FAAP, Marianne Gausche-Hill, MD, FACEP, FAAP, FAEMS, Katherine Remick, MD, FACEP, FAAP, FAEMS, Kathleen Adelgais, MD, MPH, FAAP, John Lyng, MD, FAEMS, FACEP, NRP, Lara Rappaport, MD, MPH, FAAP, Sally Snow, RN, BSN, CPEN, FAEN, Cynthia Wright-Johnson, MSN, RNC, Julie C. Leonard, MD, MPH, FAAP, and American Academy of Pediatrics Committee on Pediatric Emergency Medicine, Section on Emergency Medicine EMS Committee and Section on Surgery; American College of Emergency Physicians Emergency Medical Services Committee; Emergency Nurses Association Pediatric Committee; National Association of Emergency Medical Services Physicians Standards and Clinical Practice Committee; National Association of Emergency Medical Technicians Emergency Pediatric Care Committee

Abstract

This is a joint policy statement from the American Academy of Pediatrics, American College of Emergency Physicians, Emergency Nurses Association, National Association of Emergency Medical Services Physicians, and

pediatric readiness in emergency medical services systems.

Abbreviations: ED: emergency department; EMS: emergency medical services. **Key words:** pediatrics; EMS; readiness

PREHOSPITAL EMERGENCY CARE 2020;24:175–179

- 2020 PEC publication with some allstar national Peds EMS leaders
- AAP, ACEP, ENA, NAEMSP, NAEMT Policy Statement and technical report

TECHNICAL REPORT

Recipe book for getting EMSC into your EMSA

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Pe…s in Emergency Me… Systems

Sylvia Owusu-Ansah…ore, MD, FAAP,[b] Manish I. Shah, MD, MS, FAAP,[c] Toni Gross, MD, MPH, FAAP,[d] Kathleen Brown, MD, …-Hill, MD, FACEP, FAAP, FAEMS,[g] Katherine Remick, MD, FACEP, FAAP, FAEMS,[h,i] Kathleen Adelgais, M…port, MD, MPH, FAAP,[j] Sally Snow, RN, BSN, CPEN, FAEN,[m] Cynthia Wright-Johns…onard, MD, MPH, FAAP,[o] John Lyng, MD, FAEMS, FACEP, NRP,[p] Mary Fallat, MD, FACS, FAAP,[a] COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, SECTION ON EMERGENCY MEDICINE, EMS SUBCOMMITTEE, SECTION ON SURGERY

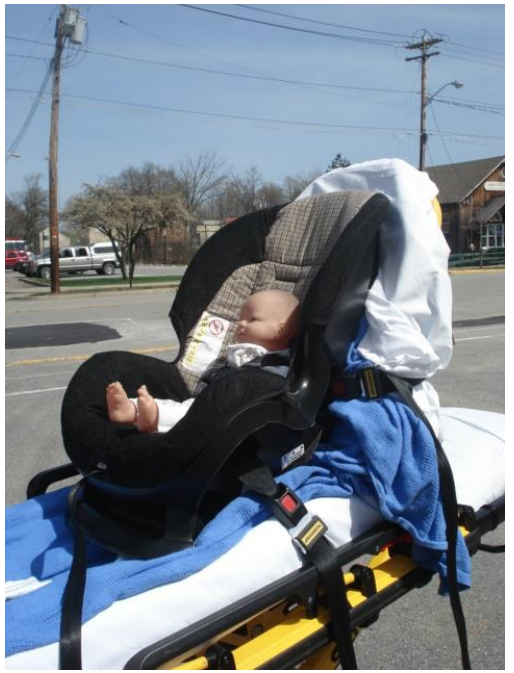
Medical Oversight

- Ensure peds represented in
  - EMS planning
  - Operations
  - Oversight

- Integrate pediatric elements into direct and indirect medical direction

Operations: Include pediatrics in

- EMS operations – development and improvement
- Equipment and supply availability AND provider competence in use
- Evaluation of psychomotor and cognitive competencies
- Safe transport
- Collaboration: outpatient and hospital based peds experts
- Field destination determination
- Collaborate with local ED's for pediatric readiness
- Include children in disaster drills and planning: reunification, tracking
- Include considerations for the family



Education

- Provide periodic peds education
- Ensure assessment and recognition of:
  - resp distress and failure
  - cardiac failure
  - Shock
- Ensure competency in neonatal and pediatric resuscitation competency
- Psychomotor skill competency and practice
  - Airway management: focus on basic
  - IV/IO placement and access
- Provide tools for assessment of
  - Pain assessment and treatment, wt assessment (document in Kg)

Research, Data Management, and QI

- Implement practices to reduce medication errors (HUGE)
- Include pediatric specific measures in QI/QA
- Submit NEMSIS compliant data to the statewide database
- Work with local hospitals to track peds centered outcomes (ex CARES/OHCA)

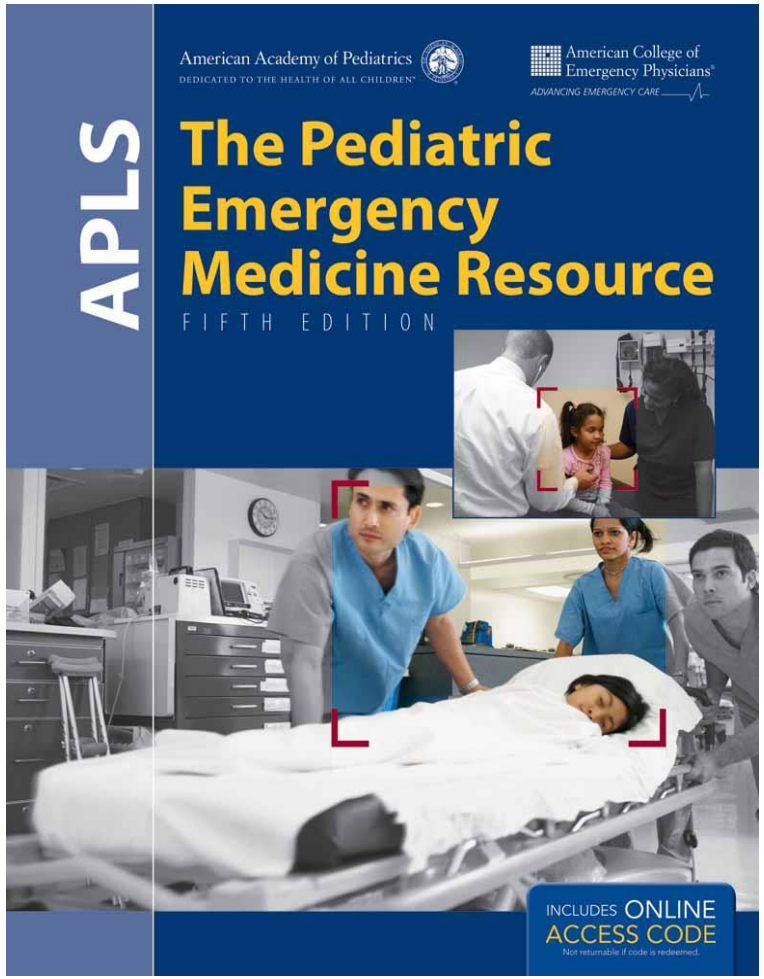

How do I get me some pediatric expertise?
LET ME HIT YOU WTH SOME KNOWLEDGE

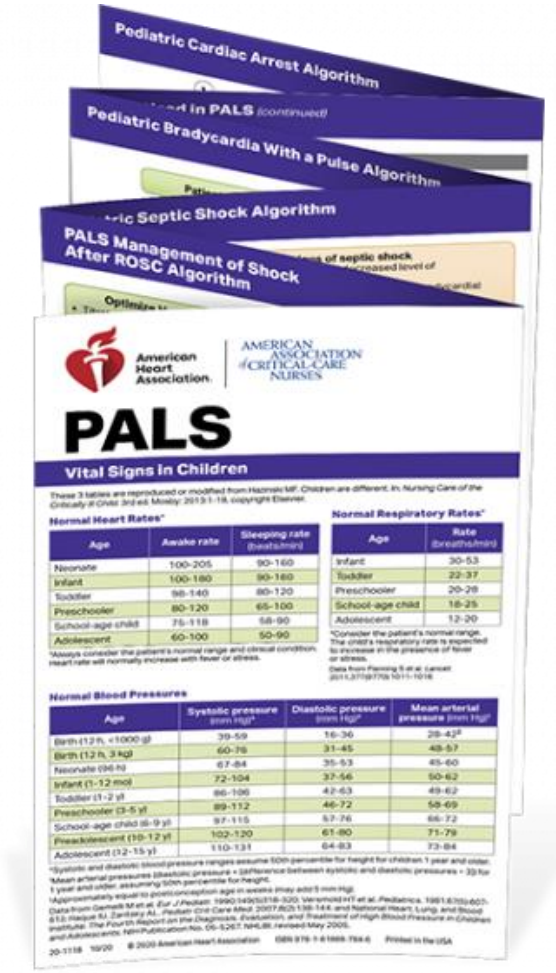
EMS for Children

EMSC … some basics

- Mission: reduce child and youth mortality and morbidity resulting from severe illness and trauma
- Only federal program that focuses on improving the quality of emergency care for children
- Aims to enhance existing EMS systems with a peds focus

HRSA
Maternal & Child Health





What has EMSC done for us?

HRSA
Health Resources & Services Administration

Grants | Loans & Scholarships | Data Warehouse | Train

Home > Grants > Find Funding

Emergency Medical Services for Children Targeted Issues Program

Emergency Department
APPROVED for PEDIATRICS
By Illinois Department of Public Health

Pediatric Disaster Life Support (PDLS©)

A Course in Caring for Children During Disaster

Welcome to

The National Emergency Medical Services for Children Data Analysis Resource Center

A national resource center helping state and territory EMSC managers and EMS offices develop capabilities to collect, analyze, and utilize EMS data.*

*EMSC - Emergency Medical Services for Children

RAISING
THE BAR ON
TRAUMA CARE

EMSC has brought us so much… but pay special attention to

Prehospital Performance Measures

Be Pediatric Ready!

We want every EMS team to be ready help kids in emergencies!

Have Pediatric Emergency Care Coordinators!

Each EMS team will have someone who makes sure kids get the care they need.

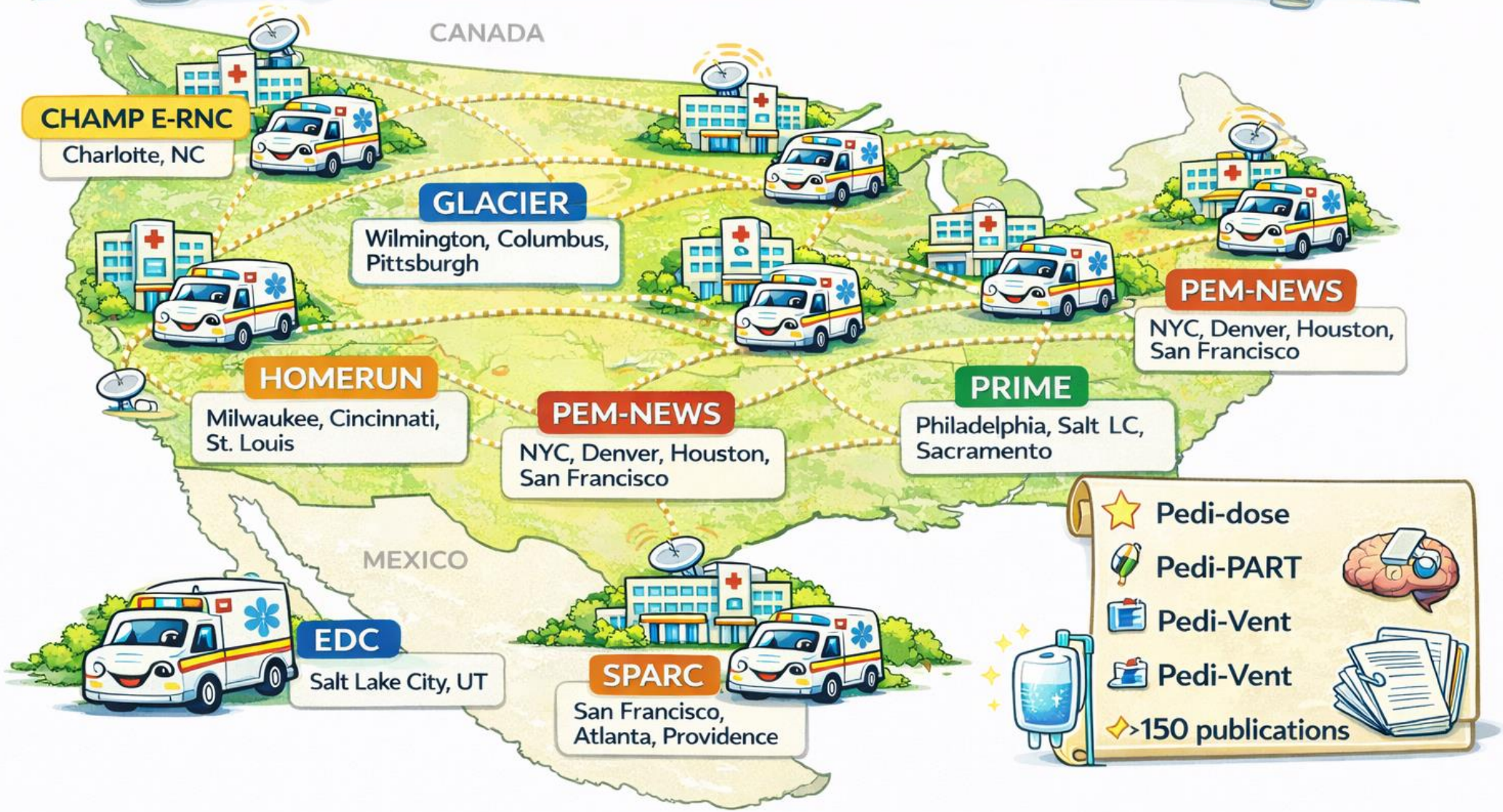
Use Kid-Size Gear!

We'll make sure EMS teams have equipment made just for children.

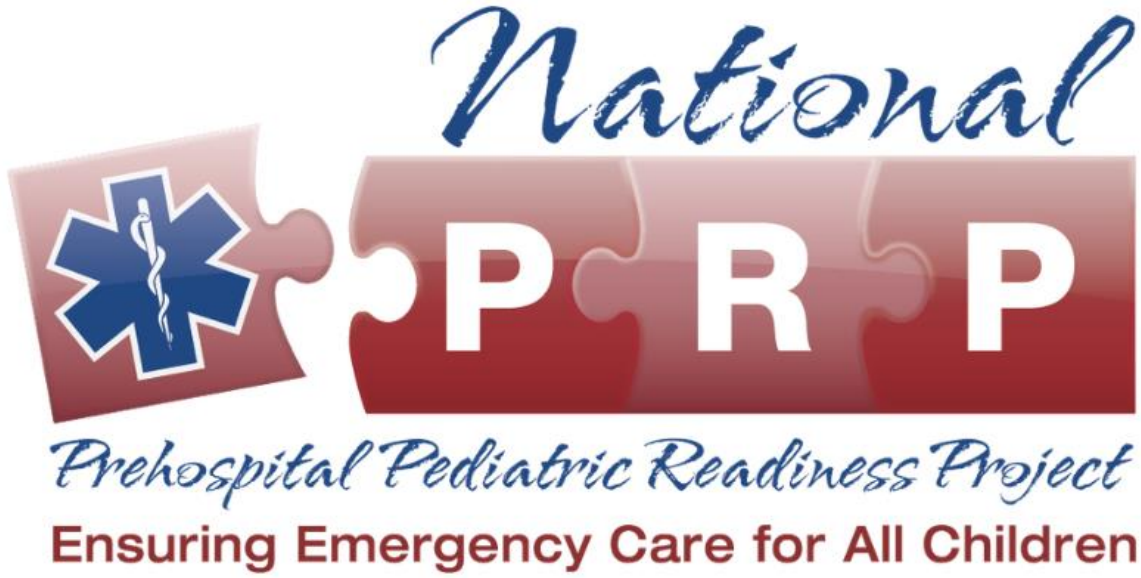
Be Disaster Ready!

EMS teams will have a plan for helping kids when there's a big emergency.

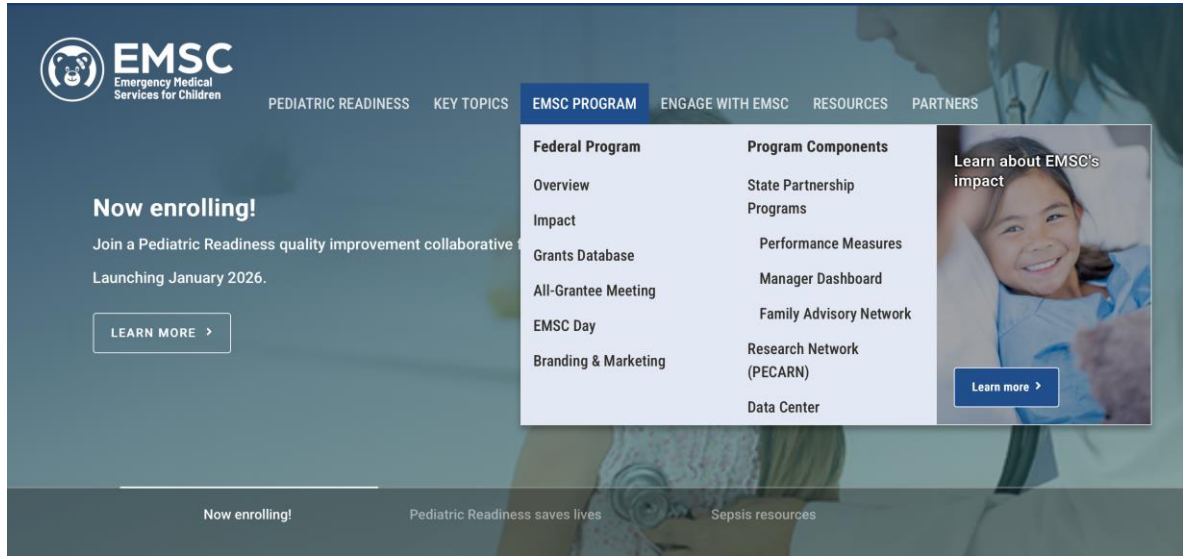
Pediatric Emergency Care Applied Research Network (PECARN)



First, they came for your EDs
Then, in 2020 they came for your EMS systems

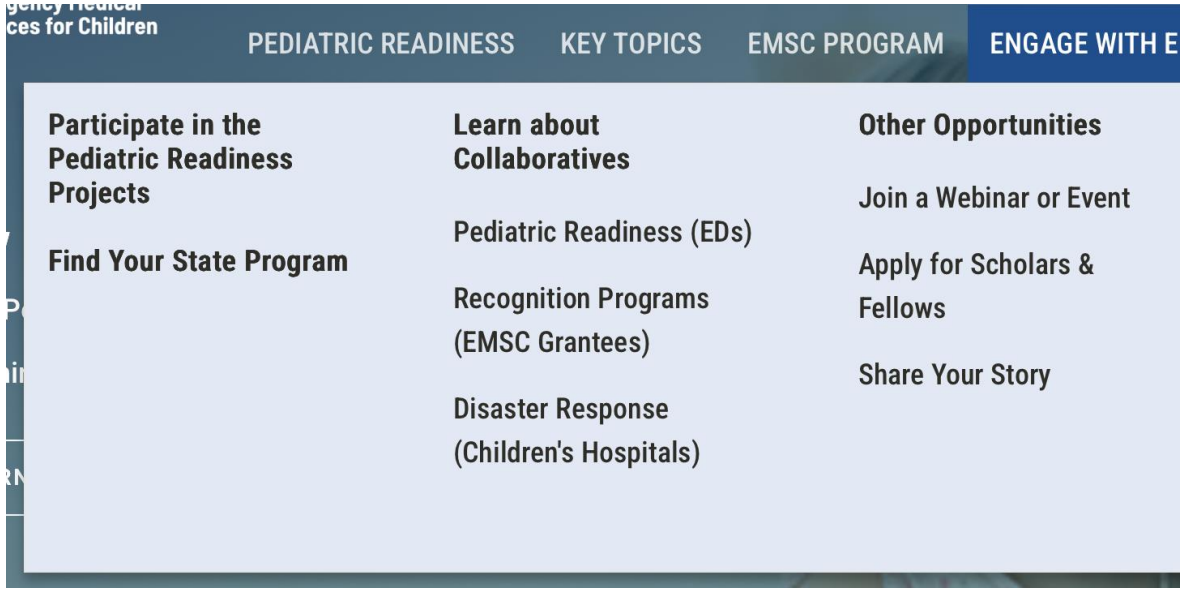


Bookpage this website: https://emscimprovement.center



Bookpage this website:
https://emscimprovement.center

Bookpage this website: https://emscimprovement.center



Free ED and EMS topic specific toolkits

PEAK: Status Epilepticus

PEAK: Suicide

PEAK: Pain

PEAK: Agitation

PEAK: Child Abuse

PEAK: Multisystem Trauma

PEAK: Procedural Sedation

PEAK: Sepsis

Share the love

- **Get yourself a PECC**
  - Have them assist with protocol updates, equipment, sims, competency, etc.
- **Do you have a Pediatric Advisory Committee?**
  - If not, consider creating one

Existing help at your fingertips

- **Courses:** PEPP, PALS, EMSC course, APLS, Handtevy, etc.
- **Connect with your state and local EMSC**
  - Performance measures
  - SME

Reach out and tag a friend

National Association of EMS Physicians

Resources | Career Development | Events | Membership | About Us

Communication and Social Media | Diversity in EMS Task Force | EMS PA/NP Task Force

Home › Membership › Committees

Pediatrics Committee

We advocate for pediatric EMS education, research and policy, and improve the quality of care that children receive wherever and whenever they are in the care of EMS.

1. If you don’t look, you won’t see

2. Think of your most commons and check see if they are covered

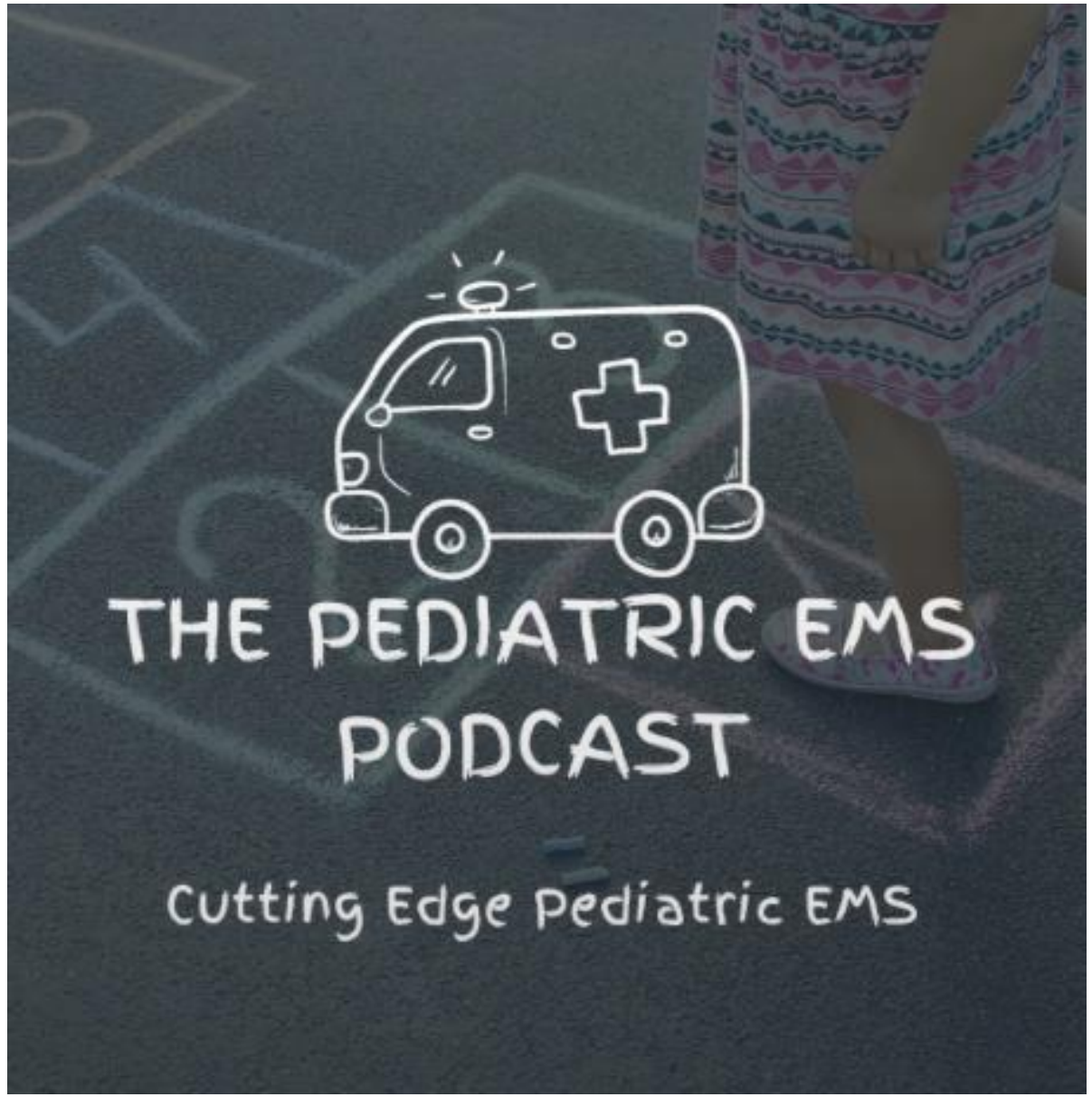
3. Ask for help

4. **Think of this as a system of care** – prehospital assessment, treatment, and getting the patient to the correct place is crucial to improve outcomes

And seriously, QI your agency

- **Where are you and where do you want to go?**
  - OHCA?
  - Pediatric airway?
  - Pediatric respiratory distress?
    - EMS compass measures: B-agonist for asthmatics
  - Vital signs complete?
  - Correct medication dosing?

Joelle Donofrio-Odmann: jdonofrio@health.ucsd.edu


THE PEDIATRIC EMS
PODCAST
Cutting Edge Pediatric EMS

Resource Library

- EMSC Innovation and Improvement Center: https://emscimprovement.center
- NASEMSO model guidelines: https://nasemso.org/wp-content/uploads/National-Model-EMS-Clinical-Guidelines-2017-PDF-Version-2.2.pdf
- NASEMSO EMS Compass QI project: https://nasemso.org/projects/ems-compass/
- Physician Oversight of Pediatric Care in Emergency Medical Services. Prehosp Emerg Care. 2017;21(1):88-88. doi:10.1080/10903127.2016.1229826.
- Brian M, I SM, Sylvia O-A, et al. Pediatric Readiness in Emergency Medical Services Systems. Prehospital Emergency Care. 2020;24(2):175-179. doi:10.1080/10903127.2019.1685614.
- Owusu-Ansah S, Moore B, Shah MI, et al. Pediatric Readiness in Emergency Medical Services Systems. Pediatrics. 2020;145(1):e20193308. doi:10.1542/peds.2019-3308.
- California EMSC regulations: https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I26023012180C493E90B71002535EE5DB&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)
- National EMSC Data Analysis Resource Center: https://www.nedarc.org
- Pediatric Emergency Care Applied Research Network: https://www.pecarn.org
- EMSC Performance Measures: https://www.nedarc.org/performanceMeasures/documents/EMS%20Perf%20Measures%20Manual%20Web_0217.pdf

Additional References

- Youngquist ST, Henderson DP, Gausche-Hill M, Goodrich SM, Poore PD, Lewis RJ. Paramedic Self-efficacy and Skill Retention in Pediatric Airway Management. Academic Emergency Medicine. 2008;15(12):1295-1303. doi:10.1111/j.1553-2712.2008.00262.x.
- Lammers RL, Byrwa MJ, Fales WD, Hale RA. Simulation-based assessment of paramedic pediatric resuscitation skills. Prehosp Emerg Care. 2009;13(3):345-356. doi:10.1080/10903120802706161.
- Lammers R, Byrwa M, Fales W. Root Causes of Errors in a Simulated Prehospital Pediatric Emergency. Academic Emergency Medicine. 2012;19(1):37-47. doi:10.1111/j.1553-2712.2011.01252.x.
- Schroter S, Thomas D, Nimmer M, et al. Multimedia Evaluation of EMT-Paramedic Assessment and Management of Pediatric Respiratory Distress. Prehosp Emerg Care. 2020;84(1):1-11. doi:10.1080/10903127.2020.1817211.
- https://emsa.ca.gov/ems-for-children/