Creating Pediatric Systems of Care: NPRP & EMSC regulations

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Important ED definitions based on *Pediatric Volume*

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All measures reported were given for each of these 4 ED categories.

Today I will be discussing trends in the 4 categories - from low to high or high to low peds volume EDs

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Low: <1,800 annual peds patients (≤ 5/day)

Medium: 1,800 – 4,999 annual peds patients (6-13/day)

Medium to High: 5,000 – 9,999 annual peds patients (14-26/day)

High: ≥ 10,000 annual peds patients (≥ 27/day)

What the survey evaluated (aka what does that score mean?)

Hospitals with high peds ready scores (top quartile):

- **peds crit illness: 4x lower mortality**
- **Peds trauma: 2x lower mortality**

Ames Pediatrics 2019; Newgard JAMA peds 2021

- Description of hospital and ED configurations
- Whether trauma center
- In-patient services available
- Presence of physician and/or nursing pediatric emergency care coordinator (PECC)
- Types of providers in the ED and pediatric competencies required
- Pediatric ED Guidelines (QI, safety, procedures /policies /protocols)
- Family centered care
- Pediatric disaster planning
- Interfacility guidelines and agreements
- Guidelines for equipment, supplies and medications for peds patients in the ED

Results

Demographics

- **290 hospitals responded** (median weighted NPR score 74.1)
  - The lower the pediatric volume, the lower the weighted scores overall
  - We did better than we have in the past and beat the national average

Based on Pediatric Volume

- **Low**: n 101, median score **66.5**
- **Medium**: n 104, median score **76.2**
- **Medium-High**: n 57, median score **88.0**
- **High**: n 28, median score **94.1**

Hospital demographics

- **Most frequent hospital type**: General (83.4%) & critical access (9.7%) hospitals
  - Of note: tertiary children's hospitals only accounted for 2.1%
- **Most common ED type**: general ED (i.e., no separate PED area) – 95.5%
- 26.2% are trauma centers, with 84.2% of them using ACS and 55.6% state/LEMSA for accreditation
  - Of the 76 trauma centers: 9 level I peds trauma & 14 level II peds trauma centers

In-patient services: NICUs and adult care are common, pediatric beds are more limited, especially PICU and peds SDUs

- Newborn Nursery: 68.2% (43.6-91.1%)

- NICU: 51.4% (25.7-89.3%)

Pediatric

- ICU: 12.8% (3-57%)
- SDU: 5.2% (0-25%)
- Ward: 34.7% (9-89%)

Adult

- ICU: 91.% (70-98%)
- SDU: 62.4% (42-81%)
- Ward: 93.8% (79-98%)

Guidelines for Admin & Coordination of the ED for Care of the Children

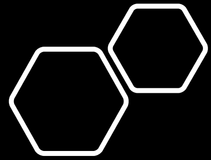
(Pediatric Emergency Care Coordinator – PECC)

Having a PECC = ED 4X more likely to have QI plan/policies/procedure

- **Physician PECC**: 50.3% (31 – 82%)
- **Nurse PECC**: 44.8% (25 – 75)
- **Pediatric Emergency Coordinators (physician and RN)**
  - **↓ low → ↑ high peds volume EDs**
  - Most frequently coordinate care for a single ED, but there are some that are PECCs for multiple ED's (↑ in low/med peds volume EDs)

Physicians who staff the ED

- **Physician present 24/7: 99.3%**
  - EM is most common (93.0%)
  - PEM (3–54%), Pediatrics (4-32%), surgery (5-11%) trained
    - ↓ in low → ↑ in high peds volume EDs
  - FP (4 -22%), IM (7-12%), other training (7-16%), and non-board eligible (7-16%)
    - ↑ in low → ↓ in high peds volume EDs
- **Physician credentialling for peds specific competencies: 63.4%** (53-79%)
    - ↓ in low → ↑ in high peds volume EDs



RN, & other Health Care Providers who staff the ED

- **RN Peds emergency care CE requirements (PALS, ENPC) & Hosp specific competency (e.g. triage, pain assessment):** High in all pediatric volume EDs
  - Maintenance of specialty (CEN, CPEN): low across all volumes
- **PA/NP care for children in the ED: 67.6%** (similar across all volumes)
  - **Peds emergency care CE required**: 80.3% (75-92%): ↓ low → ↑ high peds volume EDs

All guidelines for Pediatric QI/PI in the the ED

↓scores in Low → ↑scores in High peds volume EDs

- **Presence of a Pediatric QI/PI in the ED: 54.5% (39 – 93%)**
  - Patient care review process: **97%** (95-100%)
  - Collection & Analysis of peds emergency data (e.g., admissions, transfers, deaths, return visits): **90%** (82-100%)
  - Development of plan for improvement in peds emergency care: **87%** (77-96%)
  - Identification of peds QI indicators (eg steroids in asthma exacerbation): **81%** (67 – 90%)
  - Reevaluation of performance using outcome-based measures**: 80%** (67-85%)

Guidelines for improving pediatric patient safety in the ED had pretty great results overall (all >90%)

- **Highest performing**
  - Temp, HR, and RR recorded on ALL children (99.7%)
  - Pulse Ox avail for all ages (99.7%)
  - 24/7 access to interpreter (99.7%)

- **Lowest performing (**lowest scores in low peds volume EDs**)**
  - Process in place for precalculated drug dosing for all children 91.4% (84-100%)
  - Children's weight recorded ONLY as kg in the med record 91.4% (86-100%)
  - Level of consciousness (e.g., AVPU) assessed in all children 90.7% (87-94%)
  - EtCO2 available for all children 90.3% (83-100%)

Guidelines for pediatric policies, procedures, and protocols for the ED (PPP)

↓scores in Low → ↑scores in High peds volume EDs

- Child maltreatment: 93.4% (89-98%)
- Peds assessment/reassessment: 85.9% (**75**-96%)
- Reduced radiation based on age/weight: 82% (**71**-96%)
- Social services for all ages of children: 78.3% (**62**-100)
- Triage policy for ill/injured children: 77.6% (**66**-89%)
- Death of child in the ED: 76.9% (**64**-93%)
- Behavioral health issues: 76.9% (**63**-96%)
- Written guideline for transfer of children with behavioral health issues to an appropriate facility: 71.7% (**60**-96%)
- UNDER-immunization assessment and management: **51.5**% (43-68%)

Guidelines for Pediatric ED PPP cont

- Process to promote *family centered care*: 71.4% (**58**-100%)
- Pediatric considerations in *disaster plans* (e.g., peds surge, patient tracking and reunification, peds decontamination): **60.7%** (48-86%)
  - 8 follow up specific questions specific to peds disaster
  - All questions scored higher as the peds volume increased
- *Interfacility guidelines* that outline procedural/admin policies with other hospitals for transfer of children of all ages: 79% (**68**-82%)
  - All those who had guidelines performed very well on the 8 follow up questions (>95% overall in each category)
- *Written IFT agreement* with other hospitals: 74.8% (**60.4**-89.5%)
- **All IFT related questions ↓ scores in Low → ↑ scores in med-med/high peds volume EDs**)

Guidelines for pediatric equipment, supplies & meds in the ED

- **Performed very well in most categories**
  - Trained on location of equip & meds **98.3%**
  - Standardized tool to estimate weight rapidly (i.e., LBRT) **99.3%**

- **Performed lowest**
  - Daily method to verify location/stocking of peds equip/supplies: **89%** (81-100)

For specific equipment, overall fantastic performance with a few easy gaps to close

- **Monitoring equip (BP, defib, pulse ox, etco2)**
  - Neonatal BP cuff - 11 hospitals without (3.8%)
  - Continuous EtCO2 – 16 hospitals without (5.5%)

- **Fluid resuscitation equip in ED**
  - IV admin sets with calibrated chambers or an infusion pump with ability to regulate rate and volume (e.g., Buretrol) – 8 hospitals without (2.8%)

- **Resp/airway mgmt. equipment**
  - Lowest score – infant non-rebreather 92.1% (89-96%)
  - Only piece of equipment to score 100% was 5.0 ETT
  - Everything else was 94.5-99.7% overall

- **The smaller the size of the equipment and the lower the peds volume, the more likely they were to be missing equipment** (e.g., 2.5 ETT, peds Magill forceps, laryngoscope blades, BVM, non-rebreather, etc.)

- General hospitals, general ED's, and ED docs are most frequent in CA
- There are limited pediatric admitting capabilities, and these decrease as the acuity of the child increase
- ED who see less pediatric patients performed lower in almost all categories
- Only ½ of our CA hospitals have PECCs (which have been shown to improve peds outcomes) – *this is actionable as any size ED can assign the role – the following are all linked to assigning the role of a PECC*
  - Only ½ of our CA hospitals have pediatric QI/PI plans
  - We do pretty well in pediatric safety in the ED
  - We could do better in pediatric policies, procedures, and protocols
  - Low volume ED's could use more peds IFT planning
  - With a little effort, we could close the gap on peds equipment

Summary

EMSC Regulations

Address these issues & can help get all of your LEMSA's hospitals better prepared for children.

Implementation of the regulations can help close the gap in preparedness between low and medium-high volume EDs.

22 CA ADC 100450.224

Title 22 Social Security
Division 9. Prehospital EMS
Chapter 14. EMSC

EMSC Program Approval Includes

(EMSA approval required)

- Goals and objectives
- Personnel involved
- Injury and Illness prevention planning: coordination, education, data
  - Policies for prehospital peds
    - 911 non-txp & txp, IFT, CCT
    - Personnel training
    - Ambulance equipment
- QI plan with process outcome measures
- Copies of peds destination policies

- **List of**
  - Peds facilities: crit care and trauma
  - Designated participating hospitals in EMSC system of care
  - Peds rehab facilities
- **Description of**
  - Field communication to receiving facility
  - Data collection methods: EMS provider/EMSC hospitals to LEMSA/EMSA
  - How LEMSA integrates PedRC in neighboring jurisdiction
  - Peds surge planning

Pediatric Receiving Centers (PedRCs)

- Uniform Requirements for All
- Basic PedRC
- General PedRC
- Advanced PedRC
- Comprehensive PedRC

Uniform requirements

- **IFT for peds patients**
- **Process for consultation** (phone, telehealth or on-sight) for emergency care and stabilization, transfer and transport
- **Consultation requirements**
  - Peds specialists
  - PICU
  - Support services
  - RTs who respond to ED
- **Peds equipment requirements**
- **Personnel requirements**
  - Physician PECC requirements
  - RN PECC requirements
- **PECC designated responsibilities**
  - ED QI oversight
  - Hospital liaison for peds care committees
  - Liaison with other PedRCs, LEMSA, bases, prehosp providers, neighboring hospitals
  - ED Peds continuing education and competency evals
  - Peds disaster preparedness
  - Family centered care practice

Hospital type breakdown –

each has separate requirements not fully described here

- **Basic PedRC**
  - General acute care hospital with basic/standby ED permit
  - 24 hour/day ED physician present/available
- **General PedRC**
  - General acute hospital with basic/comprehensive ED permit
- **Advanced PedRC**
  - DHS licensed for: Acute care hospital, pediatric service, basic/comprehensive ED, social services, +/- NICU/PICU
  - Peds Specialties available on call
- **Comprehensive PedRC**
  - California Children's Services approval/criteria met
  - Comprehensive specialized peds medical and surgical care
  - Separate peds ED

Data Management Requirements

- Includes prehospital and hospital data – determined by LEMSA
- All Ped RCs need to participate
- Prehospital needs to be NEMSIS/CEMSIS compliant
- Quarterly data integration

- **Minimum Ped RC data requirements**
  - Arrival time/date to ED
  - DOB
  - Mode of arrival
  - Gender
  - Primary Impression
- **Outcomes for QI**
  - Admitting hospital name
  - Discharge/txf diagnosis
  - Time/date of discharge/transfer
  - External cause of injury
  - Injury location
  - Residence zip code

QI

- LEMSA needs QI program that collaborates with all Ped RCs
- LEMSA responsible for
  - Performance evaluations of local/regional EMSC programs
  - Ensuring participation in QI program by those required

- All Ped RCs need QI program that includes
  - 1157.7 compliance
  - Integration of ED QI activities with prehospital, trauma, inpatient peds, PICU, & hospital wide QI activities
  - Integration of QI findings into education and clinical competency
  - NPRP self assessment Q3 years – shared with LEMSA
  - Multi-disc peds QI committee to review prehospital, ED, inpatient care for
    - **Cardiac/respiratory arrests**
    - **Child maltreatment**
    - **Deaths**
    - **ICU admissions**
    - **OR admissions**
    - **Transfers**
    - **Trauma Admissions**

2022 LEMSA EMSC Survey

- **32 LEMSA's responded**
  - 7 Endorsed a submitted/registered plan
  - 11 Endorsed a desire to submit
  - 17 Have an EMSC representative

- **Obstacles reported:**
  - Bandwidth
  - Lack of staffing
  - COVID
  - No peds hospitals in LEMSA
  - Lack of interest from Hospitals

Is your LEMSA up to the challenge of improving pediatric systems of care?

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