

## Utah Pediatric Medical Emergency Readiness Survey - 2017

### Background

The EMSC Advisory Committee in Utah wanted to assess the capability of Utah hospitals to care for pediatric emergency patients. A previous focus on EMS readiness was successful and revealing. Many EMS units in the state were able to use the information gathered from the survey to upgrade equipment and training to care for pediatric patients in the field. The EMSC Advisory Committee wanted to see if Utah hospitals were ready as well.

In late 2015, Dr. Hillary Hewes, the EMSC medical director, developed criteria, including equipment and protocols, that is was felt would provide a benchmark for determining if a hospital Emergency Department was prepared to treat pediatric patients in five areas: Sepsis, Anaphylaxis, Respiratory Failure, Seizures, and Diabetic Ketoacidosis (DKA). In 2016, the availability of equipment and protocols to treat patients in each category was assessed in all 46 acute care hospitals in Utah. ED managers were contacted one on one by the state trauma coordinator, Bob Jex, RN, to review the criteria in each category. This survey was often conducted as part of the trauma center or resource hospital re-designation process.

Hospitals were categorized as follows:

Level I Trauma Centers	3
Level II Trauma Centers	3
Level III Trauma Centers	5
Level IV Trauma Centers	15
Resource Hospitals	20

Resource Hospitals in Utah are required by rule to work with EMS providers in their community to provide on line medical control, training, performance improvement, on line communication and work with EMS providers to develop written protocols for pre-hospital patient care. Designated trauma centers are deemed to meet Resource Hospital requirements.

The following is a list of each clinical area along with equipment and protocols felt necessary to care for pediatric patients in each emergency:

#### Sepsis-

- Broselow tape
- Ped. IV cath. 24,22,20 gauge
- Pediatric IO needles
- NS 250cc, 500cc, 1 Liter
- 60 cc syringe (for push-pull fluids)
- Pressure bag
- O2 delivery systems (peds nasal cannulas, face masks)
- Ceftriaxone IV, cefepime IV
- Nor-epinephrine, dopamine
- Protocols

**Anaphylaxis-**

- O2 & Intubation equipment
- Ped. IV cath. 24,22,20 gauge
- Pediatric IO needles
- NS 250cc, 500cc, 1 L
- 60 cc syringe
- Pressure bag
- Methylprednisone IV
- Diphenhydramine IV, Ranitidine IV or Famotidine IV
- Epinephrine 1:1000 (IM)
- Broselow tape
- Protocols

**Respiratory Failure-**

- Ped nasal and oral airway
- Peds bag and different sized face-masks (neonate to adult)
- Nebulizer machines
- Non-Rebreather face mask
- Albuterol (for nebulization)
- Racemic epinephrine
- Small suction catheters
- Ped NG tube sizes
- Drugs for intubation (atropine IV, etomidate IV, rocuronium IV)
- Ped Intubation supplies:
  - Miller 1-3 blades
  - Mac 2-4 blades
  - ET tubes 2.5-7.0 cuffed & non-cuffed – stylets, nasal trumpets
  - End tidal CO2 monitor
  - Pediatric defibrillation paddles
  - Broselow tape
  - Protocols

**Seizure-**

- Broselow tape
- Ped. IV cath. 24,22,20 gauge
- Pediatric IO needles
- Pressure bag
- O2 delivery systems (peds nasal cannulas, face masks)
- Lorazepam IV, Midazolam IM/IN, levetiracetam IM
- Fosphenytoin IV, phenobarbital IV
- Protocols

**Diabetic Ketoacidosis (DKA)-**

- Broselow tape
- Ped. IV cath. 24,22,20 gauge
- Pediatric IO needles
- Mannitol or 3% NS
- Regular Insulin IV for drip

- O2 delivery systems (peds nasal cannulas, face masks)
- I-Stat/Glucometer
- NS 250, 500cc, 1 Liter
- Protocols

### **Findings-**

The findings of the surveys were tabulated and prepared as shown in the following table. Of all 46 hospitals surveyed (100%), only one Critical Access Hospital (CAH) did not have all of the equipment on the list; there were no peds paddles for the hospital defibrillator. One rural facility did not have an end tidal CO<sub>2</sub> monitor. Some hospitals did not stock all of the listed medications in the ED, but they were readily available in the hospital pharmacy, which in most instances was only a few steps from the ED. Those hospitals reporting weak pediatric policy and procedures were happy to work with the EMSC medical director to develop and implement state wide protocols for pediatric emergencies.

The findings were presented to the EMSC Advisory Committee in late 2016. Overall, they were gratified at the level of preparedness Utah hospitals have to treat pediatric emergencies. Guidelines have been developed to help those hospitals with weak or lacking protocols.

**Pediatric Preparedness Survey 2016**

Hospital	Trauma Center	Resource Hospital	Findings/ Notes
1	Level IV		Uses Broslow
2		x	None
3	Level IV		None
4	Level IV		Protocols weak
5	Level IV		None
6		x	Protocols, meds in pharmacy
7	Level IV		None
8		x	i-stat in laboratory
9	Level IV		None
10		x	Meds in Pharmacy
11	Level IV		None
12		x	Protocols, meds in pharmacy
13	Level IV		None
14		x	None
15	Level III		None
16	Level IV		None
17		x	None
18		x	Meds in Pharmacy
19	Level IV		None
20	Level I		None
21	Level III		None
22		x	None
23		x	Protocols, Peds Paddles, No Keppra
24	Level III		None
25		x	None
26	Level III		None
27		x	None
28	Level II		None
29		x	Protocols, End tidal CO2 Monitor
30		x	None
31	Level IV		None
32		x	None
33	Level II		None
34		x	Meds in Pharmacy
35	Level IV		None
36	Level I		None
37		x	None
38		x	Protocols
39		x	Protocols
40	Level IV		None
41		x	None
42	Level III		None
43	Level IV		Uses E-Broslow
44	Level IV		None
45	Level I		None
46	Level II		None