Pediatric Status Epilepticus Algorithm

* in children over 1 month of age

Recognition of Status Epilepticus

An unresponsive patient with either one of the following has convulsive status epilepticus:

- Seizure >5 min and/or ongoing seizure on presentation to EMS/ED

- 2 or more seizures without full recovery of consciousness between seizures

Initial Management

- Initiate ABCs, cardiorespiratory and BP monitoring
- O_2 10-15 L/min via non-rebreather mask
- Prioritize giving the first dose of benzodiazepine as early as possible, followed by checking blood glucose
- Monitor for respiratory depression, hypotension, arrhythmias
- Give acetaminophen 15 mg/kg/dose (MAX 650 mg) PR if febrile
- **Consider other investigations:**
  - Electrolytes, blood gas, calcium, CBC, serum glucose
  - Other: anticonvulsant drug levels, LFTs, blood & urine culture

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**Phase 1
5-15 min**

Prehospital

1. Give Midazolam IM/intranasal (IN) (see dosing table).
2. Check blood glucose:
   If blood glucose <3.3 mmol/L (<60 mg/dL):
   Treat with D25W 2 mL/kg/dose IV (MAX 100 mL/dose) OR D10W 5 mL/kg/dose IV (MAX 250 mL/dose).
3. If still seizing after 5 minutes, give Midazolam second dose. MAX cumulative dose 10 mg in prehospital setting.

Emergency Department (ED)

1. Give benzodiazepine if two doses not already given prior to ED arrival (see dosing table).
2. Check blood glucose if not already done. Treat hypoglycemia as above. Reassess blood glucose in 5 minutes.
3. Give second benzodiazepine dose for ongoing seizures 5 minutes after first dose. When IV/IO access available, switch to IV/IO route.

CAUTION: Do not give more than 2 doses of benzodiazepines.

First Line Agents

No IV/IO	
Midazolam IM or IN	≤13 kg: 0.2 mg/kg/dose 13-40 kg: 5 mg/dose >40 kg: 10 mg/dose MAX 10 mg/dose

IV/IO	
Lorazepam IV/IO	0.1 mg/kg/dose MAX 4 mg/dose
Midazolam IV/IO	0.1 mg/kg/dose MAX 10 mg/dose

❗ **Reassess ABCs, monitor for respiratory depression. If still seizing give one of these second-line agents:**

**Phase 2
15-20 min**

Drug	Dose	Age	Comments/Cautions
Levetiracetam	60 mg/kg/dose IV/IO (MAX 3000 mg/dose) Infuse over 5 minutes	Any age	↓side effects/drug interactions, low risk of psychosis
Fosphenytoin	20 mg phenytoin equivalent (PE)/kg/dose IV/IO/IM (MAX 1000 mg PE/dose) Infuse over 10 minutes	Any age	↓BP, ↓HR, arrhythmia; avoid in toxicologic seizures; choose alternate drug if on phenytoin at home or consider partial loading dose of 10 mg PE/kg/dose
Valproic Acid	40 mg/kg/dose IV/IO (MAX 3000 mg/dose) Infuse over 10 minutes	≥2 years	In Canada, only available via Health Canada Special Access Program; caution in patients with liver dysfunction, mitochondrial disease, urea disorder, thrombocytopenia or unexpected developmental delay
Phenytoin	20 mg/kg/dose IV/IO (MAX 1000 mg/dose) **Infuse over 20 minutes**	Any age	↓BP, ↓HR, arrhythmia; avoid in toxicologic seizures; choose alternate drug if on phenytoin at home or consider partial loading dose of 10 mg kg/dose; use only if Fosphenytoin not available
Phenobarbital	20 mg/kg/dose IV/IO (MAX 1000 mg/dose) **Infuse over 20 minutes**	**<6 mos**	Respiratory depression, especially in combination with benzodiazepines

❗ **Reassess ABCs, monitor for respiratory depression. If still seizing:**

Administer alternative second line agent (e.g., if fosphenytoin given, use levetiracetam)

Pediatric Referral Centre Discussion:

- Need for intubation vs. bag-mask ventilation; hypercapnia is common and resolves with seizure cessation and non-invasive respiratory support
- Additional work up including full septic work up, use of antibiotics/antivirals, brain imaging
- Persistent altered LOC possibly related to non-convulsive status epilepticus or severe underlying brain disorder
- Third line agent: infusion of midazolam, pentobarbital, propofol OR ketamine

DEPARTMENT OF
HEALTH AND HUMAN SERVICES

DIVISION OF CHILD AND FAMILY SERVICES
Helping people. It's who we are and what we do.

☐

Date: June 16, 2022

From: Nevada Executive Committee to Review the Death of Children Sub-Committee to Collaborate with the Bureau of Health Care Quality and Compliance (HCQC)

Re: Tips for Identifying Child Abuse or Neglect

The Nevada Executive Committee to Review the Death of Children (Executive Committee) was established in 1994 with the primary goal of preventing child maltreatment and child deaths in Nevada by making recommendations for law, policy and practice changes, staff training, and public education.

Recommendations are submitted to the Executive Committee by state regional multidisciplinary child death review teams. The regional review teams review the cases of child deaths in their county (NRS 432B.403) and make recommendations to the Executive Committee based on the data/trends that are found during case review. The following recommendation was presented and reviewed by the Executive Committee.

Hospitals should adopt a consistent internal policy for assessment of children when they present with suspicious or serious injuries.

The Executive Committee reached out to the Bureau of Health Care Quality and Compliance (HCQC) to see if there would be interest in collaboration with the Executive Committee to achieve this goal. HCQC agreed to participate, and a sub-committee was formed in July 2021 to explore the best approach to achieving this recommendation. It was ascertained that the primary purpose of the sub-committee was to establish a process or protocol for non-pediatric medical facilities in cases where children present to these facilities with suspicious or serious injury, to increase resources and findings to these medical facilities when needed, and then implement this process/protocol into a set of standardized policies.

The sub-committee began discussing what questions needed to be asked & answered so a policy outline could be developed. The sub-committee then sought out representation from pediatric emergency facilities across the state to assist in the development of a protocol for non-pediatric medical facilities. Through this partnership, two child abuse tip sheets were developed to assist medical providers with assessing, testing, and when to refer to a pediatric hospital. The sub-committee is now seeking input from medical providers and facilities across the state and ask that you distribute these tip

sheets to your network of providers to begin using as well as providing any feedback.

We welcome further collaboration, and should you be interested in learning more, or if you have questions, please feel to join us at our next meeting, which will be held via Microsoft Teams on July 28, 2022 from 12:00-1:00 PM; the link to join is here Click here to join the meeting. The meeting agenda and other documents can be found here 2022MeetingsAndAgendas (nv.gov). If you would like to speak further about this topic, please email Jessica Freeman at jfreeman@dcfs.nv.gov and a representative of the sub-committee will get back to you.

Respectfully,

The Nevada Executive Committee to Review the Death of Children Sub-Committee to Collaborate with the Bureau of Health Care Quality and Compliance (HCQC)

Suspected Child Abuse Tip Sheet
If your facility cannot perform the below tests or exams, please refer to a facility that is equipped to do so.

Please remember, per NRS 432B.220, as a medical provider, you are a mandated reporter, and if you suspect child abuse and neglect, please report to your local child welfare agency and/or law enforcement.

- Clark County Department of Family Services: 702-399-0081
- Washoe County Human Services Agency: 833-900-7233
- Division of Child and Family Services (Rural Nevada): 833-571-1041
    - If unable to get through to the central line, a report can be made to the direct county:
        - Carson City 775-684-1930
        - Elko 775-753-1300
        - Ely 775-289-1640
        - Fallon 775-423-8566
        - Fernley 775-575-1844
        - Pahrump 775-727-8497
        - Winnemucca 775-623-6555
        - Yerington 775-463-3151

Think About Child Abuse/Neglect If:

1. History
   - No history of trauma or denial of trauma despite severe injury
   - Implausible history for the type or degree of injury or behavior that is developmentally improbable to have caused the injury
   - Delay in care that is unexplained or excessive
   - Injuries that are said to have occurred with in-home resuscitation
   - Caregiver histories that change or are conflicting
   - Severe injury that is blamed on the child, other children, or pets
   - Persistent and chronic vomiting with no diarrhea or fever and/or fussiness

2. Physical Exam
   - TEN-4 FACES P   Bruising or petechiae or injuries to:
   - T - trunk
   - E - ears
   - N - neck
   - 4 - age 4 years or younger AND any bruising on a child less than 4 months
   - F - frenulum tears
   - A - auricular area
   - C - cheek
   - E - eyes
   - S - sclera-hemorrhages
   - P - patterned bruising or bruises of different ages
       - "Kids that don't cruise rarely bruise"

   - Oral injuries:
       - lip lacerations in non-ambulatory infants;
       - lingual or frenulum tears especially in non-ambulatory infants;
       - tongue lacerations in non-ambulatory infants;
       - bruising or wounds of the buccal mucosa, gums, or palate in non-ambulatory infants;
       - missing or fractured teeth with an implausible history
   - Burn injuries:
       - scalds in children younger than 5 years that do not fit the pattern of an intentional spill;
       - cigarette burns;
       - immersion burns showing a sharp upper line of demarcation affecting both sides of the body symmetrically and/or the perineum and the lower extremities;

- burns with a sharply demarcated edge
- Head injuries:
  - apnea or seizures on presentation
- Abdominal injuries:
  - abdominal tenderness, abdominal distension, enlarged liver or spleen, abdominal wall bruising

3. Radiology Findings
   - metaphyseal corner (or bucket handle) fractures
   - rib fractures
   - sternum, scapula, or spinous process fractures
   - long bone fracture in non-ambulatory infants
   - multiple fractures in various stages of healing
   - evidence of healed fractures without explanation
   - bilateral acute long bone fractures
   - digital fractures in a child under 36 months of age
   - vertebral body fractures and subluxations without a history of high force trauma
   - epiphyseal separations
   - severe skull fractures (multiple, stellate, or depressed) in a child under 18 months of age
   - any skull fracture other than one that is an isolated, unilateral, nondiastatic, linear, parietal skull fracture

If you have suspicions or there are any of the above findings contact your nearest pediatric specialty center that has expertise in caring for children with concern for abuse.

REFERENCES:
Physical Child Abuse: Recognition
UpToDate: December 2021
Stephen C. Boos, MD, FAAP

TEN-4 FACES P: A Mnemonic to Help You Spot Signs of Child Abuse
ACEP Now: Volume 39 Number 08 August 19, 2020
Caitlin Hinton and Allison Trop, MD, FACEP

Physical Child Abuse Order Set Elements

If your facility cannot perform the below tests or exams, please refer to a facility that is

equipped to do so.

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    - Pahrump 775-727-8497
    - Winnemucca 775-623-6555
    - Yerington 775-463-3151

If a patient's clinical condition precludes performing these studies/examinations immediately, they should be undertaken as soon as medically appropriate.

Laboratory Studies

- CBC with differential, CMP, lipase, urinalysis with microscopic, urine drug screen
  - All children less than 7 years of age;
  - Children 7 years of age or older if clinically indicated

    - If fractures, add:
      - Ca, Mg, phos, alk phos, intact parathyroid hormone level, 25 hydroxyvitamin D

    - If bruising or intracranial hemorrhage, add:
      - vWF antigen and activity, PT and INR, PTT, Factor VIII level, and Factor IX level.
      - If intracranial hemorrhage add d-dimer and Factor XIII level, urine organic acids, and plasma amino acids

- Lab abnormalities should be evaluated in the context of the age of the child, the child's physiology and specialty consultation should be obtained for questions.

Ophthalmology Exam

- Ophthalmology Exam for all children less than 5 years of age within 24 to 72 hours.
- Ophthalmology Exam for children 5 years of age or older as clinically indicated

Imaging Studies

- All children less than 24 months of age:
  - o skeletal survey 21 view

- Children aged 2-6 years:
  - o skeletal survey 21 view if neurological impairment, distracting injury, or highly suspicious index fracture

- Children less than 24 months of age who are asymptomatic but share a home with an abused child:
    - skeletal survey 21 view

- Children over 2 years of age who are asymptomatic but share a home with an abused child:
    - History, physical and imaging studies as indicated

- Abdominal and pelvic CT with IV contrast (no oral contrast):
    - any child who is symptomatic;
    - a positive physical exam; or
    - a child that has hematuria with:
        - greater than or equal to 50 RBCs/HPF;
        - AST > 200;
        - ALT > 125, or
        - elevated lipase

- Head CT without contrast:
    - Child of any age with signs suggesting intracranial injury
    - All Infants < 6 months of age
        - Some studies recommend MRI of the brain if study can be done and interpreted in a few hours
    - Infants 6-12 months with external head injuries **OR** skull fracture **OR** skeletal fracture highly suggestive of abuse
    - If technically possible, add a 3D reconstruction
    - **In children with abnormal CT scan, a transfer to a more specialized hospital should occur**

Recommended Follow Up as Needed-if patient is not transferred out, please consider these suggestions for follow up:
- Add repeat skeletal 21 view in 2-3 weeks if any concern on initial X-Rays to check for potential healing fractures.
- Add serum copper and ceruloplasmin for any patients with concerns or features of Menkes Disease (sparsy, kinky hair, calvarial wormian bones, anterior rib flaring, failure to thrive, developmental delay).
- Follow up with hematologist/oncologist as appropriate.
- Follow up with ER with any worsening symptoms.
- Follow up with PCP within 1-2 weeks.

FINAL, July 13, 2011

PEDIATRIC EMERGENCY CARE FACILITY RECOGNITION
Emergency Department with Pediatric Level I Capabilities

Application Instructions

1) Prior to beginning the application process, please submit a **letter of intent** signed by your Chief Executive Officer to the State EMS Director (to the address in # 4 below) stating that your organization plans to apply for Level I Pediatric Emergency Care Facility recognition.

2) Before you begin the application, please take a moment to carefully review all requirements in this application and in the Pediatric Emergency Care Facility Standards document.

I. Application Form – This is the signature page

II. Checklist Section – This is the list of required equipment, supplies, personnel and policies in a table format with columns for initials of those who verify items that are present in the facility.

The Checklist Section supports the Emergency Department Pediatric Plan and it lists required equipment, supplies, personnel and policies needed to be recognized as a Level I Pediatric Emergency Care Facility. Supporting documentation is requested when there is a checkmark in the column labeled "DOC" at the top of the Checklist Section of this application.

Please organize in an appendix any appropriate supporting documentation (schedules, policies, procedures, protocols, guidelines, plans, etc.) Please reference the section of the Pediatric Emergency Care Facility Standards for which you are providing documentation in organizing the application.

3) Complete the application form and obtain the appropriate signatures.

4) Submit the original ink-signed application plus three (3) additional copies of the signed application form and the Emergency Department Pediatric Plan (including supporting documentation) to:

Office of EMS
Pediatric Emergency Care Facility Recognition Program
Attention Angela Quackenbush
100 Sunnyside Road
Smyrna, DE 19977

5) *The application should be submitted in a single-sided format and unstapled.*
Please remember to clearly label any supporting documentation provided.

6) For questions regarding the application process, specific criteria items, and/or supporting documentation, please contact the Delaware Emergency Medical Services for Children (EMSC) Program in the Office of EMS at 302-223-1208 or 302-223-1350.

Review of Applications

1) Applications will be reviewed by the Office of EMS to assure all required documents are included.

2) Feedback on the application will be provided in writing prior to scheduling a visit.

*Note: The term "pediatric" throughout this document refers to all children age 12 and younger.

Recognition as a Pediatric Emergency Care Facility

1) Upon achieving recognition as a Level I Pediatric Emergency Care Facility in the State of Delaware an official letter from the Director of the Division of Public Health and a Certificate of Recognition will be issued to the facility.

2) If the application is incomplete, or if pediatric emergency care standards are not met to the level required for recognition, a letter will be sent to the facility with deficiencies identified.

3) Facilities may appeal the denial of recognition by submitting a written request to the Director of EMS in the Office of EMS.

4) A facility may appeal the denial of Recognition within 90 days of receiving the denial letter. After the 90 day time frame a new application would be required to apply for Recognition.

5) A facility may continue to submit applications multiple times until a Certificate of Recognition is issued by the Division of Public Health.

6) Recognition may be renewed by submitting a renewal application every three years. A separate application will be available for facilities renewing their recognized pediatric emergency care status.

7) Facilities may not be able to meet a Pediatric Emergency Care Facility requirement due to extenuating circumstances. As a result, **Withdrawal of Recognition status may occur.** In this situation, the hospital will notify the Delaware Division of Public Health's Director of EMS by phone (302-223-1350) and through written notice to the attention of State EMS Director, Pediatric Emergency Care Facility Recognition Program at least 60 days prior to withdrawal, if possible. In the notification please include information on the rationale for the decision.

RECOGNITION OF PEDIATRIC EMERGENCY CARE FACILITY LEVEL I
SECTION I - APPLICATION FORM

Facility Name	
Facility Address	

The above-named facility certifies that each requirement in this Level I Pediatric Emergency Care Facility request for Recognition is met and will be operational during the three year Pediatric Emergency Care Facility Recognition period to the best of the facilities ability.

Chief Executive Officer	Typed Name:	
	Signature:	Date:
Medical Director of Emergency Services	Typed Name:	
	Signature:	Date:
Nurse Manager or Director of Emergency Services	Typed Name:	
	Signature:	Date:
Pediatric Nurse Coordinator Contact	Name:	
	Phone Number:	
	Fax:	
	E-mail:	
	Signature:	Date:
Pediatric Physician Coordinator Contact	Name:	
	Phone Number:	
	Fax:	
	E-mail:	
	Signature:	Date:

D= Desired   E=Essential   NR=Not Required   ✔=Documentation Required
* = available in <1 hour

PEDIATRIC EMERGENCY CARE FACILITIES LEVEL I CHECKLIST				
1. PERSONNEL*(Available in less than 1 hour)	Level I	DOC	Have Y/N	Reviewer Initials
Physician with pediatric emergency care experience on duty 24/7 (provide a schedule)	E	✔		
RN with pediatric training (provide a schedule)	E	✔		
Respiratory therapist	E	✔		
Trauma coordinator	E	✔		
Nurse educator	E	✔		
Trauma team*	E	✔		
Pediatric Physician Coordinator	E	✔		
Pediatric Nurse Coordinator	E	✔		
Social Services	E			
Child Abuse support services	E			
Child life support	E			
On-line medical control for pre-hospital	E			
Respiratory care	E			
Pediatric Critical Care Committee	E			
Pediatric Trauma Committee	E			
Child development services	E			

Specialist consultants*(Available in less than 1 hour)[1]	Level 1	DOC	Have Y/N	Reviewer Initials
Pediatrician*	E	✔		
Radiologist	E	✔		
Anesthesiologist*	E	✔		
Cardiologist	E	✔		
Critical Care Physician (on site)	E	✔		
Nephrologist	E	✔		
Hematologist/oncologist	E	✔		
Endocrinologist	E	✔		
Gastroenterologist	E	✔		
Neurologist	E	✔		
Pulmonologist	E	✔		
Psychiatrist/Psychologist	E	✔		
Infectious Disease Physician	E	✔		

Surgical Specialists*(Available in less than 1 hour)	Level 1	DOC	Have Y/N	Reviewer Initials
Anesthesia and surgical suite promptly available	E	✔		
Secondary surgeon	E	✔		
Pediatric surgeon*	E	✔		
Neurosurgeon	E	✔		

Orthopedic surgeon	E	✓		
Otolaryngologist	E	✓		
Urologist	E	✓		
Plastic surgeon	E	✓		
Oral/maxillofacial surgeon	E	✓		
Gynecologist (transfer agreement if not available)	E	✓		
Microvascular surgeon (transfer agreement if not available)	E	✓		
Hand surgeon (transfer agreement if not available)	E	✓		
Ophthalmologist	E	✓		
Cardiac surgeon[2]	E	✓		
Pathologist	E	✓		
Pediatric Dentist	E	✓		
Intensivist onsite	E	✓		

Rehabilitation Program	Level 1	DOC	Have Y/N	Reviewer Initials
Physical Therapy	E			
Physical Medicine/Rehabilitation Physician	E			
Occupational Therapy	E			
Speech Therapy	E			
Special Education	E			

2. POLICIES, PROCEDURES, AND PROTOCOLS	Level 1	DOC	Have Y/N	Reviewer Initials
Illness and injury triage	E	✓		
Pediatric patient assessment and reassessment	E	✓		
Documentation of pediatric vital signs	E	✓		
Immunization Assessment	E	✓		
Sedation and Analgesia for Procedures (including medical imaging)	E	✓		
Pediatric pain assessment and management	E	✓		
Informed consent for procedures, treatments (when parent/guardian is not present)	E	✓		
Social and mental health evaluations	E	✓		
Physical and/or chemical restraint of patients	E	✓		
Child maltreatment and sexual assault	E	✓		
Death of the Child in the ED	E	✓		
Do-not-resuscitate orders	E	✓		
Family centered care policies, including but not limited to:	E	✓		
▪ Involving families in patient care decision making and in medication safety processes	E	✓		
▪ Consideration of family presence during all aspects of emergency care, including	E	✓		

	Level 1	DOC	Have Y/N	Reviewer Initials
resuscitation				
▪ Education of the patient, family, and regular caregivers	E	✔		
▪ Discharge planning and instruction	E	✔		
▪ Identifying bereavement counseling resources	E	✔		
Communication system with the patient's medical home or primary health care provider upon discharge	E	✔		
Medical imaging policies (address appropriate dosing for studies consistent with as low as reasonably achievable (ALARA) principles)	E	✔		
All-hazard disaster preparedness plan that includes pediatric specific components	E	✔		

3. EQUIPMENT	Level 1	DOC	Have Y/N	Reviewer Initials
Scale (with weight in kilograms)	E			
EMS communication equipment*	E			
Organized emergency cart	E			
Printed or electronically available drug doses/length-based resuscitation tape	E			
Resuscitation board	E			
Infant scale	E			
Warming device for infants	E			
Warming device for children	E			
Pediatric restraint equipment (to use for painful or difficult procedures)	E			
Portable radiography	E			
Slit lamp	E			
Neonatal/infant incubators	E			
Phototherapy equipment	E			
Pacemaker capability internal	E			
Pacemaker capability external	E			
Thermal control for patient and/or resuscitation room	E			
Age appropriate pain scale assessment tools	E			
*May listen to EMS calls but are not permitted to provide EMS medical direction				

Monitoring Equipment	Level 1	DOC	Have Y/N	Reviewer Initials
Electrocardiography monitor/defibrillator with pediatric paddles or pads and hard copy capabilities	E			
Cardiopulmonary monitor with pediatric and	E			

hard copy capability, visible/audible alarms, routine testing and maintenance				
Pulse oximeter (neonatal, pediatric, and adult probes)	E			
Blood pressure cuffs (neonate, infant, child, adult, thigh)	E			
Rectal thermometer probe (28 degrees – 42 degrees, Celsius)	E			
Hypothermia thermometer	E			
Otoscope, ophthalmoscope, stethoscope	E			
Doppler ultrasound device	E			
Non-invasive blood pressure monitoring (infant, child, and adult)	E			
Continuous End tidal CO2 monitor	E			
End tidal CO2 detector	E			
Monitor for central venous pressure, arterial lines, temperature	E			
Monitor for pulmonary arterial pressure and intracranial pressure	E			
Transportable monitor	E			

Airway and Ventilation Equipment and Supplies	Level 1	DOC	Have Y/N	Reviewer Initials
Bag-mask device (infant size: 450 mL; adult size 1000 mL) with oxygen reservoir. Self inflating	E			
Neonatal, infant, child, and adult masks to fit bag mask device	E			
Oxygen delivery device with flow meter	E			
Clear oxygen masks (standard and non-rebreathing) for neonatal, infant, child, and adult	E			
Nasal cannula (infant, child and adult)	E			
Suction devices – catheters (6 – 14 fr) and yankauer-tip/suction equipment	E			
Nasopharyngeal airways (infant, child, and adult)	E			
Nasogastric tubes (sizes 6-18 fr)	E			
Laryngoscope handles (pediatric and adult)	E			
Laryngoscope blades:				
• curved 2,3	E			
• straight or Miller 0,1,2,3	E			
Endotracheal tubes:				
• uncuffed (2.5-3.0)	E			
• cuffed (3.5 – 8.0)	E			
Stylets for endotracheal tubes (infant, child, adult)	E			
Lubricant (water soluble)	E			
Magill forceps (pediatric and adult)	E			
Peak Flow Meters	E			

Inhalation therapy equipment - Nebulizer	E		
Tracheostomy tubes (2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5 mm)	E		
Chest tubes:			
■ Infant (10fr – 12fr)	E		
■ Child (16fr – 24fr)	E		
■ Adult (28fr – 40fr)	E		
Oxygen blender	E		
Pediatric endoscopes and bronchoscopes available	E		
Respired gas humidifiers and bronchoscopes available	E		
Pediatric ventilators	E		
Difficult airway kit, Alternate airway device	E		
Laryngeal Mask Airways (LMA) (size 1, 1.5, 2, 2.5, 3, 4, 5)	E		

Vascular Equipment and Supplies	Level 1	DOC	Have Y/N	Reviewer Initials
Arm Boards (infant, child and adult sizes)	E			
Butterfly needles (19-25 gauge)	E			
Catheters for intravenous lines (14-24 gauge)	E			
Needles (18-27 gauge)	E			
Intraosseous (IO) needles or device (pediatric and adult sizes)	E			
IV pressure bags for IO infusions	E			
Umbilical vessel catheters (3.5fr and 5.0fr) and cannulation tray	E			
IV administration sets with calibrated chambers and extension tubing	E			
Extension tubing, stopcocks, T-connectors	E			
Infusion device, able to regulate rate and volume of solution	E			
IV Solutions: Normal saline, dextrose 5%, and dextrose 10%	E			
Central venous access kit, (4.0 – 7.0fr) (4-7 fr)	E			
IV fluid/blood warmer	E			
Blood gas kits	E			
Rapid Infusion Pumps	E			

Specialized Pediatric Trays	Level 1	DOC	Have Y/N	Reviewer Initials
Lumbar puncture kit including:				
■ Neonatal (22 gauge)	E			
■ Pediatric (22 gauge)	E			
■ Adult (18-21 gauge)	E			
Urinary catheterization kits	E			

Foley catheters (sizes 6 – 22 fr)	E			
Venous cut down equipment	E			
Resuscitative Thoracotomy tray	E			
Tracheostomy tray	E			
Peritoneal lavage tray	E			
Needle cricothyrotomy set	E			
Intracranial pressure monitor tray	E			
Newborn delivery kit (including umbilical clamps, scissors, bulb syringe, towel, and blanket)	E			
Shunt Tap kit	E			
Compartment pressure testing equipment	E			
Incision & Drainage (I & D) Tray	E			
Epistaxis Tray or supplies and equipment	E			
Dental Tray or supplies and equipment	E			
Plastics Tray or supplies and equipment	E			
Thoracostomy Tray	E			

Fracture Management Devices	Level 1	DOC	Have Y/N	Reviewer Initials
Cervical stabilization equipment for pediatric and adult patients	E			
Spine board (child and adult)	E			
Extremity splints	E			
Femur splints (child and adult)	E			

Medication Classes	Level 1	DOC	Have Y/N	Reviewer Initials
Analgesics	E			
Antibiotics/antimicrobial agents	E			
Anticonvulsants	E			
Antidotes and activated charcoal	E			
Antiemetic agents	E			
Antihypertensive agents	E			
Antipyretics	E			
Bronchodilators	E			
Corticosteroids	E			
All current PALS medications	E			
Rapid sequence intubation medications	E			
Sedatives and anti-anxiety medications	E			
Inotropic agents	E			
Vasopressor agents	E			
Vaccines	E			

4. FACILITIES	Level 1	DOC	Have Y/N	Reviewer Initials
Emergency Department				
One identified area with capacity and equipment for pediatric resuscitation	E			
Access to two or more carts or bags with capacity and equipment to resuscitate injured pediatric patients	E			
Access to helicopter landing site within stretcher transport distance	E			

Hospital Support Services	Level 1	DOC	Have Y/N	Reviewer Initials
Pediatric inpatient care	E			
Pediatric intensive care unit	E			
Child life specialist	E			

Operating Room	Level 1	DOC	Have Y/N	Reviewer Initials
Operating room team available 24/7	E			
One RN physically present in OR 24/7	E			
Second operating room available and staffed (within 30 minutes)	E			
Thermal control equipment	E			
X-ray capability (including C-arm)	E			
Endoscopes (all varieties)	E			
Craniotomy equipment (including ICP monitoring equipment)	E			
Invasive and noninvasive monitoring equipment	E			
Ventilation equipment	E			
Pediatric airway control equipment	E			
Defibrillator, monitor (including internal and external paddles)	E			
Laparotomy tray	E			
Thoracotomy tray and chest retractors (of appropriate size)	E			
Synthetic grafts (all sizes)	E			
Spinal and neck surgical halos immobilization equipment	E			
Fracture table with pediatric capability	E			
Auto-transfuser with pediatric capability	E			
Pediatric Drug Dosage Reference	E			
Tracheostomy tubes (neonatal through adolescent)	E			

Recovery Room	Level 1	DOC	Have Y/N	Reviewer Initials
RNs and other essential personnel on call 24 hrs/day	E			
Staff competent in the post-anesthesia care of the pediatric patient	E			
Airway control equipment	E			
Thermal control equipment to ambient room temperature	E			
Radiant warmer	E			
Blood warmer	E			
Resuscitation cart	E			
Immediate access to sterile surgical supplies for emergency	E			
Pediatric drug dosage reference	E			
E* If surgery is performed on pediatric patients				

Laboratory Services	Level 1	DOC	Have Y/N	Reviewer Initials
Hematology	E			
Chemistry	E			
Drug levels/toxicology	E			
Microbiology	E			
Blood Bank	E			
Arterial blood gases	E			
Bedside Blood Glucose monitoring/testing	E			
Bedside Blood Gas testing	D			

Medical Imaging	Level 1	DOC	Have Y/N	Reviewer Initials
Radiology (24 hours per day)	E			
Computed tomography scan (24 hours per day)	E			
Ultrasound (available 24 hours per day)	E			
Magnetic Resonance Imaging (on call 24 hours per day)	E			
Nuclear medicine (on call 24 hours per day)	E			
Fluoroscopy/contrast studies (on call 24 hours per day)	E			
Access to Angiography on call 24 hours per day	D			

Other	Level 1	DOC	Have Y/N	Reviewer Initials
Pediatric Echocardiography	E			
Pediatric Cardiac Catheterization	E			
Electroencephalography	E			
Access to:				
▪ Poison Control Center	E			

	Level 1	DOC	Have Y/N	Reviewer Initials
▪ Hemodialysis capability/transfer agreement	E			
▪ Rehabilitation medicine/transfer agreement	E			
Acute spinal cord injury management capability/transfer agreement	E			

5. ACCESS, TRIAGE, TRANSFER AND TRANSPORT	Level 1	DOC	Have Y/N	Reviewer Initials
Prehospital Care Report receiving process	E			
Transfer agreements for:				
▪ In-patient pediatric care if not provided within the institution	N/A			
▪ ICU pediatric care	N/A			
▪ Major trauma care	E			
▪ Burn care	E			
▪ Hemodialysis	E			
▪ Spinal injury care	E			
▪ Rehabilitation care	E			
Hyperbaric oxygen chamber policy and procedure agreement	E			
Accept all critically ill patients from lower-level facilities within the state	E			
Access to a pediatric transport team	E			

6. EDUCATION, TRAINING RESEARCH, AND QUALITY ASSESSMENT AND IMPROVEMENT	Level 1	DOC	Have Y/N	Reviewer Initials
Education and Training				
Public education, injury prevention	E			
Assure staff training in resuscitation and stabilization or a similar course approved by the Director of Public Health and/or by the EMSC Advisory Committee	E	✓		
Current CPR certification for all nurses	E			
Annual Pediatric Mock Codes	E	✓		
Ongoing Pediatric Continuing Education for RNs and RRTs from the ED	E	✓		
Offer educational resources for training all levels of health professionals within the state	E			

Research	Level 1	DOC	Have Y/N	Reviewer Initials
Support state EMSC and Level II Care Center research efforts and data collection	E			
Participate in and/or maintain trauma registry	E			

Participate in regional pediatric critical care education	E			

Quality Assessment and Improvement	Level 1	DOC	Have Y/N	Reviewer Initials
Structured QI program with indicators and periodic review	E	✔		
Participate in regional quality review by EMSC and/or Local EMS agency	E			

7. ADMINISTRATIVE SUPPORT AND HOSPITAL COMMITMENT	Level 1	DOC	Have Y/N	Reviewer Initials
Make available clinical resources for training prehospital personnel	E			
Provide emergency care and stabilization for all pediatric patients	E			
Support networking education/training for health care professionals	E			
Participate in pediatric emergency care network	E			
Assure availability of:	E			
▪ Social services	E			
▪ Child abuse support services	E			
▪ Child life support	E			
▪ On-line medical control for pre-hospital	E			
▪ Respiratory care	E			
▪ Pediatric Critical Care Committee	E			
▪ Pediatric Trauma Committee	E			
▪ Child development services	E			

D= Desired   E=Essential   NR=Not Required ✔=Documentation Required
* = available in <1 hour

Initials	Printed Name

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[1] All medical specialists should have pediatric expertise as evidenced by board certification, fellowship training, or demonstrated commitment and continuing education in their subspecialty area.

[2] Or substituted by a current signed transfer agreement with an institution with cardiothoracic surgery and cardiopulmonary bypass capability.

* If pediatric operating room services are available at the facility.

ED Readiness Checklist

This checklist is based on the American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), and Emergency Nurses Association (ENA) 2018 joint policy statement "Pediatric Readiness in the Emergency Department ⤢ ".

Use this tool to check if your hospital's ED has the most critical components listed in this joint policy statement.

- Download the 2020 ED Checklist here▢
  (updated April 5, 2021)
  This version is intended to be printed and used to take inventory of your ED.
- Download the 2020 ED Interactive Checklist here▢ *(updated March 17, 2021)*
  *This version provides direct links to Toolkit resources, where applicable; this interactive document is **not** the Checklist in its entirety.*

National Pediatric Readiness Project

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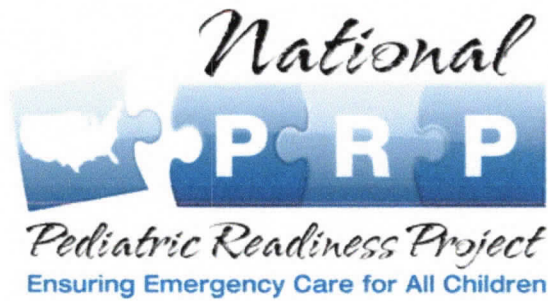
EIIC MISSION

To optimize outcomes for children across the emergency care continuum by leveraging quality improvement science and multidisciplinary, multisystem collaboration. Learn more about our impact

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Pediatric Readiness in the Emergency Department

This checklist is based on the American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), and Emergency Nurses Association (ENA) 2018 joint policy statement "Pediatric Readiness in the Emergency Department," which can be found online at:
https://pediatrics.aappublications.org/content/pediatrics/142/5/e20182459.full.pdf

Use this tool to check if your hospital emergency department (ED) has the most critical components listed in the joint policy statement.

Administration and Coordination of the ED for the Care of Children

☐ Physician Coordinator for Pediatric Emergency Care (PECC)*
- Board certified/eligible in EM or PEM (preferred but not required for resource limited hospitals)
- The Physician PECC is not board certified in EM or PEM but meets the qualifications for credentialing by the hospital as an emergency clinician specialist with special training and experience in the evaluation and management of the critically ill child.

☐ Nurse Coordinator for Pediatric Emergency Care (PECC)*
- CPEN/CEN (*preferred*)
- Other credentials (e.g., CPN, CCRN)

* An Advanced Practice Provider may serve in either of these roles. Please see the guidelines/toolkit for further definition of the role(s).

Physicians, Advanced Practice Providers (APPs), Nurses, and Other ED Healthcare Providers

☐ Healthcare providers who staff the ED have periodic pediatric-specific competency evaluations for children of all ages. Areas of pediatric competencies include any/all of the following:
- Assessment and treatment (e.g., triage)
- Medication administration
- Device/equipment safety
- Critical procedures
- Resuscitation
- Trauma resuscitation and stabilization
- Disaster drills that include children
- Patient- and family-centered care
- Team training and effective communication

Guidelines for QI/PI in the ED

☐ The QI/PI plan includes pediatric-specific indicators
- Data are collected and analyzed
- System changes are implemented based on performance
- System performance is monitored over time

Please see the guidelines/toolkit for additional details.

ED Policies, Procedures, and Protocols

Policies, procedures, and protocols for the emergency care of children. *These policies may be integrated into overall ED policies as long as pediatric-specific issues are addressed.*

☐ Illness and injury triage
☐ Pediatric patient assessment and reassessment
☐ Identification and notification of the responsible provider of abnormal pediatric vital signs
☐ Immunization assessment and management of the under-immunized patient
☐ Sedation and analgesia, for procedures including medical imaging
☐ Consent, including when parent or legal guardian is not immediately available
☐ Social and behavioral health issues
☐ Physical or chemical restraint of patients
☐ Child maltreatment reporting and assessment
☐ Death of the child in the ED
☐ Do not resuscitate (DNR) orders
☐ Children with special health care needs
☐ Family and guardian presence during all aspects of emergency care, including resuscitation
☐ Patient, family, guardian, and caregiver education
☐ Discharge planning and instruction
☐ Bereavement counseling
☐ Communication with the patient's medical home or primary care provider as needed.
☐ Telehealth and telecommunications

All-Hazard Disaster Preparedness

The written all-hazard disaster-preparedness plan addresses pediatric-specific needs within the core domains including:

☐ Medications, vaccines, equipment, supplies and trained providers for children in disasters
☐ Pediatric surge capacity for injured and non-injured children
☐ Decontamination, isolation, and quarantine of families and children of all ages
☐ Minimization of parent-child separation
☐ Tracking and reunification for children and families
☐ Access to specific behavioral health therapies and social services for children
☐ Disaster drills include a pediatric mass casualty incident at least every two years
☐ Care of children with special health care needs

Evidence-Based Guidelines

☐ Evidence-based clinical pathways, order sets or decision support available to providers in real time

Inter-facility Transfers

☐ Written pediatric inter-facility transfer agreements

☐ Written pediatric inter-facility transfer guidelines. These may include:

- Criteria for transfers (e.g., specialty services)
- Criteria for selection of appropriate transport service
- Process for initiation of transfer
- Plan for transfer of patient information
- Integration of family-centered care
- Integration of telehealth/telecommunications

Guidelines for Improving Pediatric Patient Safety

Pediatric patient and medication safety needs are addressed in the following ways:

☐ Children are weighed in kilograms only

☐ Weights are recorded in kilograms only

☐ For children who require emergency stabilization, a standard method for estimating weight in kilograms is used (e.g., a length-based system)

☐ Infants and children have a full set of vital signs recorded

- A full set of vital signs includes temperature, heart rate, respiratory rate, pulse oximetry, blood pressure, pain, and mental status when indicated in the medical record

☐ CO_2 monitoring for children of all ages

☐ Process for safe medication delivery that includes:

- Prescribing
- Administration
- Disposal

☐ Pre-calculated drug dosing and formulation guides

☐ 24/7 access to interpreter services in the ED

☐ Timely tracking and reporting of patient safety events

Guidelines for ED Support Services

☐ Medical imaging capabilities and protocols address age- or weight-appropriate dose reductions for children

☐ All efforts made to transfer completed images when a patient is transferred from one facility to another

☐ Collaboration with radiology, laboratory and other ED support services to ensure the needs of children in the community are met

Please see the guidelines/toolkit for additional details

Guidelines for Medication, Equipment and Supplies

Pediatric equipment, supplies, and medications are appropriate for children of all ages and sizes (see list below), and are easily accessible, clearly labeled, and logically organized.

☐ ED staff is educated on the location of all items

☐ Daily method in place to verify the proper location and function of pediatric equipment and supplies

☐ Medication chart, length-based tape, medical software, or other systems is readily available to ensure proper sizing of resuscitation equipment and proper dosing of medications

☐ Standardized chart or tool used to estimate weight in kilograms if resuscitation precludes the use of a weight scale (e.g., length-based tape)

Medications

☐ Analgesics (oral, intranasal, and parenteral)

☐ Anesthetics (eutectic mixture of local anesthetics; lidocaine 2.5% and prilocaine 2.5%; lidocaine, epinephrine, and tetracaine; and LMX 4 [4% lidocaine])

☐ Anticonvulsants (benzodiazepines, levetiracetam, valproate, carbamazepine, fosphenytoin, and phenobarbital)

☐ Antidotes (common antidotes should be accessible to the ED, e.g., naloxone)

☐ Antipyretics (acetaminophen and ibuprofen)

☐ Antiemetics (ondansetron and prochlorperazine)

☐ Antihypertensives (labetalol, nicardipine, and sodium nitroprusside)

☐ Antimicrobials (parenteral and oral)

☐ Antipsychotics (olanzapine and haloperidol)

☐ Benzodiazepines (midazolam and lorazepam)

☐ Bronchodilators

☐ Calcium chloride and/or calcium gluconate

☐ Corticosteroids (dexamethasone, methylprednisolone, and hydrocortisone)

☐ Cardiac medications (adenosine, amiodarone, atropine, procainamide, and lidocaine)

☐ Hypoglycemic interventions (dextrose, oral glucose)

☐ Diphenhydramine

☐ Epinephrine (1mg/mL [1M] and 0.1 mg/mL [IV] solutions)

☐ Furosemide

☐ Glucagon

☐ Insulin

☐ Magnesium sulfate

☐ Intracranial hypertension medications (mannitol, 3% hypertonic saline)

☐ Neuromuscular blockers (rocuronium and succinylcholine)

☐ Sucrose solutions for pain control in infants

☐ Sedation medications (midazolam, etomidate and ketamine)

☐ Sodium bicarbonate (4.2%)

☐ Vasopressor agents (dopamine, epinephrine and norepinephrine)

☐ Vaccines (tetanus)

Additional Recommendations for High-Volume EDs (>10,000 Pediatric Patient Visits per Year)

☒ Alprostadil (prostaglandin E1)

Central venous catheters
- ☐ 4.0F
- ☐ 5.0F
- ☐ 6.0F
- ☐ 7.0F

Chest tubes
- ☐ infant (8–12F catheter)
- ☐ child (14–22F catheter)
- ☐ adult (24–40F catheter) OR
  pigtail catheter kit (8.5–14F catheter)

☐ Hypothermia thermometer

☐ Inotropic agents (e.g., digoxin and milrinone)

Laryngoscope blade
- ☐ size 00

Lumbar puncture tray, spinal needles
- ☐ infant
- ☐ child

Noninvasive ventilation
- ☐ continuous positive airway pressure OR high-flow nasal cannula

Self-inflating bag-mask device
- ☐ pediatric

☐ Tube thoracostomy tray

Tracheostomy tubes
- ☐ size 0
- ☐ size 1
- ☐ size 2
- ☐ size 3
- ☐ size 4
- ☐ size 5
- ☐ size 6

Umbilical vein catheters
- ☐ 3.5F
- ☐ 5.0F

☐ Video laryngoscopy

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WEIGHING PEDIATRIC PATIENTS IN KILOGRAMS

Description

"Of all the ways that pediatric patients can be harmed during treatment, medication errors are the most common and most preventable".[1] Developmental differences and dosing complexities unique to pediatrics put children at high risk for both medication errors and for serious consequences as a result of these errors.[1,2] In contrast to adult medication doses (which are often standard, unit-doses), pediatric medication doses are weight-based; based specifically upon the patient's weight in kilograms. Determining the correct dose of a pediatric medication typically requires multiple calculations, and adult concentrations of drugs must often be diluted for pediatric administration. A 2009 analysis of 479 medication errors involving wrong weights discovered that over 25% were due to "confusion between pounds and kilograms".[3] Weighing and documenting pediatric weights only in kilograms has been repeatedly recommended in the literature as a strategy to decrease medication errors not only in the emergency department, but throughout the inpatient encounter.[1,4,5,6,8,9]

ENA Position

It is the position of the Emergency Nurses Association that:

1. Pediatric weights only be measured and documented in kilograms .[1,4,5,6,8,9]

2. Scales used to weigh pediatric patients only be configured to record weights in kilograms .[5]

3. Pediatric weights are recorded in a prominent place on the medical record.[8]

4. Electronic medical records are standardized to allow only kilograms for pediatric weight entries.

5. The pediatric patient's actual weight is considered part of the mandatory nursing assessment unless they require resuscitation or emergent stabilization.

6. For the pediatric patient who require resuscitation or emergent stabilization, a standard method of estimating weight in kilograms is used (e.g., length-based system).[6,7]

7. The pediatric patient's weight in kilograms is included in any inter or intra disciplinary patient handoff report.

Background

Emergency departments are one of the top three areas where high medical error rates with serious consequences are known to occur.[10,11] Medication errors due to an incorrect weight recorded in the emergency department may easily be passed on to inpatient units and can perpetuate throughout the patient's inpatient encounter.[3,5] Research has demonstrated that up to

18% of serious preventable medication errors are the result of not having essential information at the time of prescribing, dispensing, and administering medications.[5] Medication errors are often system failures; as potential sources of errors are detected, the systems should be updated.[12] A weight in kilograms is a critical data point for calculating an accurate drug dosage for a pediatric patient.

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