

## ◆ UNIVERSAL CARE – PEDIATRIC

**Goal:** Facilitate appropriate initial assessment and management of the PEDIATRIC EMS patient and link to appropriate specific CPGs, as dictated by the findings within this universal care CPG.

**Inclusion Criteria:** All PEDIATRIC patient encounters with and care delivery by BioTel EMS Providers.

**Exclusion Criteria:** Adult patients, generally defined as older than 14 years of age, unless specified.

**Refer to:** [UNIVERSAL CARE - ADULT](#) for general care guidelines, and to [Airway Management – Pediatric](#).

**Refer to:** [Evaluation and Transport Policy](#) for the definition of a PATIENT in the BioTel EMS System and for other evaluation and transport guidelines.

**Refer to:** [Destination Policy](#) for destination decision-making guidance for PEDIATRIC patients.

**PEDIATRIC AGE DEFINITIONS:** Age definitions for a “pediatric” patient differ, depending on the condition and on receiving hospital criteria. In general, a patient is considered “Pediatric” for most assessment and treatment in this BioTel EMS CPG set if s/he is younger than the 14<sup>th</sup> birthday.

### EXCEPTIONS:

- **CARDIAC ARREST, CPR and AED/Defibrillator Use:**
  - Age 0 to 1<sup>st</sup> birthday: INFANT
  - Age 1 year to Puberty: CHILD
- **TRAUMA (consult BioTel for updated pediatric trauma age cutoffs):**
  - Under 15 years of age (Children’s Dallas and most Adult Trauma Centers); OR
  - Under 14 years of age (Parkland and Medical Center of Plano)
- **LEGAL AGE of CONSENT:**
  - Under 18 years of age (unless emancipated)

All persons meeting the definition of a PATIENT shall be assessed in a manner consistent with standard EMS clinical practice. The **ONLY** exception shall be if it is determined to be unsafe to perform such an assessment.

This section outlines the pediatric-specific aspects of universal care in the BioTel EMS System.

Specific pediatric definition, assessment and treatment considerations are presented in each CPG and Policy.

### Approximate Normal Pediatric Vital Signs by Age

AGE	Approx. Wt. (kg)	Heart Rate (BPM)	Resp. Rate (BPM)	Systolic BP (mm Hg)
Premature	< 3	100 to 190	40 to 60	Difficult to measure
Term Neonate	3 to 4	90 to 190	30 to 60	50 to 70
6 Months	5 to 7	80 to 180	25 to 40	60 to 110
1 Year	10	80 to 150	20 to 40	70 to 110
3 to 4 Years	15	80 to 140	20 to 30	80 to 115
5 to 6 Years	20	70 to 120	20 to 25	80 to 115
7 to 8 Years	25	70 to 110	20 to 25	85 to 120
9 Years	30	70 to 110	20 to 25	90 to 125
11 to 12 Years	35	60 to 110	15 to 20	95 to 135

### Blood Pressure Estimation (mm Hg):

*Normal Mean Systolic BP (SBP) estimate:*  $80 + (2 \times \text{age in years})$

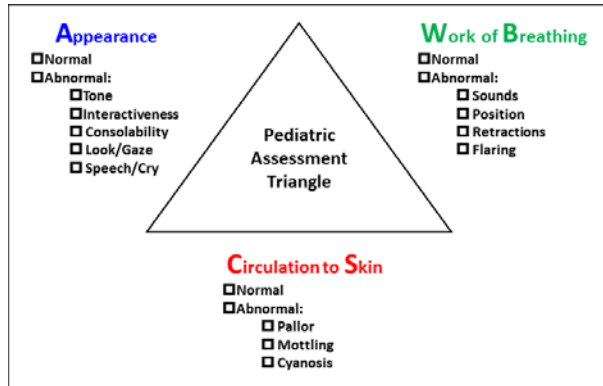
*Hypotension definition:* SBP *less than*  $70 + (2 \times \text{age in years})$

**NOTE:** Hypotension is a very late, ominous sign of pediatric shock

### Weight Estimation (kg):

- Length-based resuscitation tape
- “Handtevy®” method (see Table above)
- ((Age in years X 2) + 8 (or 10))
- Mobile app, such as PediSTAT

1. **Scene safety:** Same as for adults
2. **PPE:** Same as for adults
3. **Spinal Motion Restriction (SMR):** Same as for adult, except:
  - a. Torso padding (top of shoulders to buttocks) for young children
  - b. Placeholder
4. **Primary Survey: Pediatric Assessment Triangle (PAT)** (Adapted from Pediatric Education for Prehospital Providers, 3<sup>rd</sup> edition)



- a. PAT Impression:
  - a. All Components Normal: Stable
  - b. Breathing Abnormal: Respiratory Distress
  - c. Breathing + Appearance Abnormal: Respiratory Failure
  - d. Circulation Abnormal ± Appearance Abnormal: Shock
  - e. Appearance Abnormal: CNS/Metabolic
  - f. All Components Abnormal: Cardiopulmonary Failure
- b. Disability:
  - a. Pediatric GCS

EYE OPENING (4)	
Spontaneous	4
To Speech	3
To Pain	2
None	1
VERBAL RESPONSE (5)	
Coos, Babbles	5
Irritable Cry	4
Cries to Pain	3
Moans to Pain	2
None	1
BEST MOTOR RESPONSE (6)	
Spontaneous Movement	6
Withdraws to Touch	5
Withdraws from Pain	4
Abnormal Flexion	3
Abnormal Extension	2
None	1
TOTAL (3 to 15)	

- c. Exposure & Environmental Control: Prevention of heat loss/hypothermia is absolutely critical
5. **Secondary Survey:** Same as for adults
  - a. Do not delay transport of critically ill or injured patients; tailor to patient presentation or complaint
6. **Baseline Vital Signs:** Same as for adults (at least two sets, at least 5 minutes apart and documented):
  - a. NOTE: Do not omit POC Glucose in any sick infant or child
  - b. NOTE: Hypotension is a late, ominous sign of pediatric shock
7. **Acutely ill or injured patients, altered LOC, and any patient with advanced airway:** Same as for adults
  - a. Continuous ECG monitoring
  - b. Continuous pulse oximetry (SpO<sub>2</sub>) monitoring
  - c. Continuous waveform capnography (ETCO<sub>2</sub>) monitoring

8. **12-Lead ECG Acquisition:** [Syncope/presyncope CPG](#) and... need other indications for this
9. **OPQRST History for pain or similar symptom:** Same as for adults
10. **SAMPLE History for all patients, when possible:** Same as for adults, plus:
  - a. Pregnancy/birth/neonatal history (neonates and young infants)
  - b. Placeholder for additional elements
11. **Specific patient considerations:**
  - a. Anatomic, physiologic, emotional and developmental differences
    - i. Hypothermia/heat loss
    - ii. Multi-system trauma very common
  - b. Intentional injury (abuse/neglect): Refer to [Child/Elderly/Disabled Abuse/Neglect Reporting Policy](#)
  - c. Children with Special Healthcare Needs
  - d. Consent Issues: Legal Age of Consent is 18, unless Emancipated
    - i. Refer to [Evaluation and Transport Policy](#)
12. **Specific treatment considerations:**
  - a. **WEIGHT-BASED Medication dosing**
  - b. Vascular access
    - i. IV preferred for non-critical patients
    - ii. IO may be preferable for critically ill or injured patient
      1. Any age patient, as long as appropriate equipment is available
    - iii. 20 mL/kg (up to 1000 mL (1L) maximum) is the standard pediatric IV/IO fluid bolus:
      1. EXCEPTION: If cardiogenic shock is suspected, administer only 5 or 10 mL/kg
      2. Reassess patient for clinical response after each bolus
  - c. Pediatric equipment, especially airway management
  - d. No traction splint for femur fracture (stabilize and pad)
  - e. Currently, there is no Field Termination for pediatric patients in the BioTel EMS system
13. **Cardiac arrest considerations:**
  - a. **Survival determinants:** Same as for adults, with focus on high-quality CPR
  - b. **CPR method for at least 2 Rescuers:**

<b>Component</b>	<b>Infant (under 1 year of age) Excludes: <a href="#">Newly Born</a></b>	<b>Children 1 year of age - Puberty</b>
Compressions-to-Breaths	15:2 Avoid over-ventilation	15:2 Avoid over-ventilation
Compression Rate	100 to 120 per minute	100 to 120 per minute
Compression Depth	At least $\frac{1}{3}$ chest depth (1.5" or 4 cm)	At least $\frac{1}{3}$ chest depth (2" or 5 cm)
Hand Placement	2 thumb-encircling hands, midline, just below nipple line	1 or 2 hands, midline, lower $\frac{1}{2}$ of sternum
After Advanced Airway	1 breath every 6 seconds (10 breaths per minute)	1 breath every 6 seconds (10 breaths per minute)

- c. **CPR fraction:** Same as for adults – minimize interruptions to chest compressions
- d. **Chest recoil:** Same as for adults – allow full recoil between compressions and do not lean on chest
- e. **Metronomes:** Same as for adults – they should be used for all CPR incidents
- f. **AED: Focus should be on high-quality CPR – do not delay resuscitation for AED placement**
  - i. Infants under 1: AED may be used (pediatric equipment preferred, if available)
  - ii. Children 1 to puberty: AED may be used (pediatric equipment preferred, if available)
- g. **Manual monitor-defibrillator:** Same as adults (for shock doses, refer to [VF/pVT CPG](#))
- h. **Suspected asystole:** Same as adults
- i. **Advanced Airway:** Unless active regurgitation, do not attempt for at least 3 CPR cycles (6 minutes)
- j. **Patient movement during CPR:** Same as for adults
  - i. Infant or child must be on a firm surface (e.g. floor or table) for effective CPR
- k. **Patient transport during CPR or with ROSC:** Same as for adults