Wabasso Ambulance Association

MN EMSRB - EMS #253

BLS Pediatric Care Guidelines
Revision 1 - January 2010

ADOPTION STATEMENT

The goal of prehospital emergency medical services is to deliver a viable patient to appropriate definitive care as soon as possible. Optimal prehospital care results from a combination of careful patient assessment, essential prehospital emergency medical services and appropriate medical consultation.

These BLS Pediatric Patient Care Guidelines were developed to standardize the emergency patient care that EMS providers, through medical consultation, deliver at the scene of illness or injury and while transporting the patient to the closest appropriate hospital. These guidelines will help EMS providers anticipate and be better prepared to give the emergency patient care ordered during the medical consultation.

As Medical Director for the Wabasso Ambulance Service, I approve and adopt these guidelines for use in all patient care encounters.

_____ _____

Medical Director **Date**

_____ _____

Service Director **Date**

I. General Guidelines

A. Pediatric definition and normal weights and vital signs

1. Age limits for pediatric and adult medical protocols must be flexible. It is recognized that the exact age of a patient is not always known.
2. For 8 years of age and younger, pediatric orders should always apply.
3. Ages 8 – 18 years, judgment should be used, although pediatric orders will usually apply.
4. Infant: 1 month – 1 year of age
5. Neonatal: 0 – 4 weeks of age

Average For Age	***Lbs.***	***(kg)***	***Pulse***	***Blood Pressure (systolic)***	***Resp.***
Premature	3	(1.5)	100 – 180	50 – 60	40 – 60
Newborn	7.5	(3.5)	100 – 160	60 – 90	40 – 60
1 Year	22	(10)	110 – 170	70 – 110	20 – 30
3 Years	33	(15)	80 – 160	80 – 110	20 – 30
6 Years	44	(20)	60 – 130	90 – 115	20 – 30
8 Years	55	(25)	60 – 120	90 – 115	12 – 25
12 Years	88	(40)	60 – 120	95 – 120	12 – 25
15 Years	125	(55)	60 – 120	100 – 130	12 – 20

CONSIDER LENGTH BASED CALCULATION SYSTEMS FOR PEDIATRIC PATIENTS

B. General Pediatric Assessment and Care

This provides general guidelines for initial assessment and care of the pediatric patient.
The General Pediatric Trauma Assessment and Care guidelines are found on page 17.
The specific guidelines for Newborn Resuscitation are found on page 10.
Use of a length-based resuscitation tape is recommended to assist in determination of appropriate equipment size, vital signs and drug dosages.

1. **Perform scene survey** -
   a) Assess for hazardous conditions.
   b) Ensure scene safety.
   c) Call for additional assistance if needed. (This includes ALS response or intercept.)

2. **Observe Standard Universal Precautions**

3. **Form a first impression of the patient's condition**
   a) Pediatric Assessment Triangle (PAT)
      Three Components:
      (1) Appearance
      (2) Work of Breathing
      (3) Circulation to Skin

4. **Determine Patients Level of Consciousness (LOC)**
   a) **AVPU**
      *(1) **A**lert*
      *(2) **V**oice*
      *(3) **P**ain*
      *(4) **U**nresponsive*

5. **Spine Injury Consideration**
   a) If significant mode of injury, decreased level of consciousness or loss of consciousness, distracting injury, or cervical spine trauma is suspected, manually stabilize the cervical spine.
   b) See General Pediatric Trauma Assessment and Care for more information on caring for the injured patient (page 17).

6. **Assess Airway** - Patency, protective reflexes and possible need for advanced airway management.
   a) Look, listen and feel for signs of airway obstruction.
   b) **Open the airway** – Head tilt/chin lift (if no suspected spinal trauma) or modified jaw thrust if spinal trauma is suspected.
      (1) Suction airway if necessary.
      (2) Consider placing an oropharyngeal or nasopharyngeal airway adjunct if the airway cannot be maintained with positioning and the patient is unconscious.
      (3) Consider placing pad under infant/child's shoulder to aid in airway positioning.

7. **Assess Breathing**
   a) Rate, work of breathing, adequacy of ventilations, auscultation and inspection.
   b) Inspect skin, lips and nail beds for cyanosis.
   c) Obtain pulse oximeter reading.

d) If inadequate ventilations, reposition airway and reassess.
e) If inadequate ventilation after repositioning airway, suspect foreign body obstruction and refer to Foreign Body Obstruction protocol (page 11).
f) Assess for signs of respiratory distress, failure, or arrest. Refer to appropriate protocol for treatment options.
g) **If child is not breathing or breathing is inadequate:**
    (1) Assist ventilations using a BVM, high-flow (100%) oxygen, and nasal or oral airway.
h) If child is breathing, with low O2 saturation and/or signs of hypoxia:
    (1) If pulse oximeter reading is <90%, administer high-flow oxygen via non-rebreather mask or blow-by as tolerated
i) **If child is breathing adequately:**
    (1) Consider high-flow oxygen with non-rebreather mask or blow-by as tolerated.

8. Assess Circulation and Perfusion

a) Determine heart rate
b) Skin color and temperature
c) Capillary refill time and quality of central and peripheral pulses.
d) **If no pulse or perfusion or evidence of poor perfusion and HR is <60/minute begin CPR sequence on page 14**.
e) With adequate perfusion and HR >60/min administer high flow (100%) oxygen via non-rebreather or blow-by.
f) Assess and treat for shock
    (1) Obtain vascular access
    (2) Administer fluid bolus of NS at 20 ml/kg set to maximum flow rate
        (a) Reassess after initial bolus
        (b) If signs of shock persist, repeat fluid bolus to maximum total of 60 ml/kg.
g) Control bleeding
h) Keep the patient warm and consider Trendelenburg position (elevation of the long board when spinal injury is suspected)
i) Anticipate vomiting and prepare to suction airway as needed

9. **Make Transport Decision –** (If not already done)
    a) Notify receiving hospital according to Trauma and Destination Guidelines.
    b) Do not delay transport for further assessment or treatment.
    c) Parents should be allowed to stay with child during evaluation and transport if appropriate for the situation.

10. **Focused History and Physical Exam**
    a) Head-to-Toe assessment (Toe-to-Head)
    b) SSAMPLE History
        (1) Signs
        (2) Symptoms
        (3) Allergies
        (4) Medications
        (5) Past medical history
        (6) Last meal
        (7) Events
    c) Consider all potential non-traumatic causes
        (1) Hypothermia
        (2) Overdose
        (3) Underlying medical conditions
        (4) Check blood glucose levels
11. **Continuous Monitor and Assessment**
    a) Vital Signs
    b) Neurological status
        (1) AVPU
        (2) Pupillary response
        (3) Distal function and sensation (Circulation, Movement and Sensation - CMS)

12. **Treat all life threatening conditions as they become identified**

13. **Follow specific treatment guidelines as appropriate**

14. **ALS intercept requested and transport to meet ALS**

C. Hospital Destination Guidelines

1. Children with life threatening emergencies should be transported to the nearest hospital with appropriate pediatric and/or trauma capabilities.
    a) Pediatric capabilities include 24-hour in-house pediatric emergency and intensive care physicians.
    b) Pediatric trauma capabilities include verified Level I and Level II trauma centers prepared for children.
    c) In areas of the state where pediatric center or trauma capabilities are greater than 30 minutes away, ambulance services with their medical directors should plan in advance for the destination determination of critically ill or injured children.

2. **Children with acutely unstable airways or in cardiac arrest require transport to the closest hospital.**

3. Medical control may divert certain categories of pediatric trauma or critical pediatric patients to Level I trauma facilities or pediatric centers. Early contact with medical control, with accurate triage information is important in the seriously ill or injured pediatric patient.

4. Consider direct transport of a critically ill child to a pediatric center or a critically injured child to a trauma center if the child meets **any** of these physiological criteria:
    a) **Neurological:**
        *(1) The child has decreased mental status – responsive to verbal stimulation or less on the **AVPU** scale (**A**lert – **V**erbally responsive – **P**ain response – **U**nresponsive)*
        (2) Seizures not responsive to therapy
    b) **Respiratory distress:**
        (1) Respiratory Rate:
            (a) <20 or >60 breaths/minute in infancy (under 6 months)
            (b) <16 or >50 breaths/minute in a toddler (6-24 months)
            (c) <10 or >40 breaths/minute in a preschooler (2 – 5 years)
            (d) <10 or >30 breaths/minute in a school age child
        (2) Increased work of breathing
        (3) Worsening or not improving respiratory distress despite therapeutic interventions
        (4) High flow O2 needed to maintain oxygen saturations ≥ 94%
    c) **Circulatory Compromise:**
        (1) Heart Rate (HR) bradycardia or tachycardia
            (a) <80 or >200 in infancy (under 6 months)
            (b) <65 or >180 in a toddler (6 – 24 months)
            (c) <60 or >160 in a preschooler (2 – 5 years)
            (d) <60 or >120 in a school age child
        (2) Shock or diminished perfusion
            (a) Capillary refill ≥ 3 seconds
            (b) Systolic blood pressures:
                (i) <60 mm Hg in infancy (under 6 months)
                (ii) <70 mm Hg in a toddler (6 – 24 months)
                (iii) <75 mm Hg in a preschooler (2– 5 years)
                (iv) <80 mm Hg in a school age child
        (3) Dysrhythmia

II. Newborn Resuscitation

Resuscitation efforts should focus on improving respiratory status and maintaining body temperature.

A. Evaluation and Treatment Priorities

1. **During delivery, suction mouth <u>then</u> nose before delivery of body.**
   a) This is especially important if there is meconium in the amniotic fluid.
2. **Dry infant and maintain warm environment.**
   a) Wrap the baby in a thermal blanket.
   b) Cover the infant's head to preserve warmth.
3. **Assess Airway**
   a) Open and position the airway in the "sniffing" position.
      (1) Suction airway again using bulb syringe, mouth first then nasopharynx.
      (2) Avoid hyperextension of the neck.
      (3) ***If thick meconium is present in apneic and/or hypotonic infant:***
         (a) Initiate suctioning before the infant takes first breath.
            (i) Suction the airway while withdrawing the suction tube
            (ii) Repeat suction only if meconium is not cleared and infant remains apneic and/or hypotonic, then ventilate infant with BVM
         (b) If infant becomes bradycardic (<60), discontinue suctioning and provide ventilation immediately.
4. **Assess Breathing and adequacy of ventilation.**
   a) Stimulate the infant by rubbing the back or flicking the soles of the feet.
   b) If evidence of central cyanosis**:**
      (1) Oxygen 100% via blow-by administration.
   c) If infant is apneic:
      (1) BVM at 40-60 breaths/minute with 100% oxygen.

5. **Assess Heart Rate** – Auscultation or palpation of brachial artery or umbilical cord stump.
   a) If heart rate is <60 and signs of poor perfusion are persistent after 30 seconds of assisted ventilation with 100% oxygen initiate the following:
      (1) Continue ventilation
      (2) Begin chest compressions and CPR: rate of 100 compressions per minute (hard and fast)
      (3) Stop CPR when heart rate >60 with signs of improved perfusion
   b) If heart rate is 60 – 100/ minute
      (1) Continue ventilation
      (2) Assess skin color – If cyanosis use blow-by oxygen
   c) If heart rate is >100/minute
      (1) Continue assisted ventilation until patient is breathing adequately on own and is vigorous.
6. **Reassess the infant frequently**
   a) Pulse, respiratory rate, tone, color, and response.

7. **Contact direct medical control for additional instructions**
   a) Continued care of mother.
   b) Place two clamps 6 and 8 inches from baby, cut umbilical cord between clamps.
   c) Transport delivered placenta to hospital with the baby

8. **ALS intercept requested and transport to meet ALS.**

B. Apgar scoring

SCORE	***0***	***1***	***2***
Heart Rate	Absent	<100	>100
Respiratory Effort	Absent	Slow, Irregular	Good, crying
Muscle Tone	Limp/Flaccid	Some Flexion	Active Motion of Extremities
Reflex, Irritability	No Response	Grimace or Some Motion	Coughs, Sneezes, Active Cry
Color	Blue/Pale	Pink body, Extremities Blue	Completely Pink

III. Respiratory / Airway compromise

A. Foreign Body Obstruction – Conscious Patient

1. Do not intervene on patients with a partial obstruction and good air exchange.
    a. Avoid any agitation
    b. Position comfortably
    c. Consider alternate methods of O_2 delivery (i.e., blow-by O_2)
    d. DO NOT attempt invasive airway maneuvers
2. If patient airway remains obstructed and patient has poor air exchange; cannot talk, cough or cry with or without cyanosis:
    a) Child (ages 1-year and onset of puberty
        (1) Administer abdominal thrusts until object is dislodged or child becomes unconscious.
        (2) If the child becomes unconscious, position to open airway; perform head-tilt/chin –lift or jaw thrust if trauma is suspected. Remove foreign object if visible: DO NOT PERFORM BLIND SWEEP
        (3) Begin sequence for Unconscious Patient

    b) Infant (less than 1 years old)
        (1) Administer 5 back blows followed by 5 chest thrusts until obstruction is dislodged or infant becomes unconscious.
        (2) If the infant becomes unconscious, position to open airway; perform head-tilt/chin –lift or jaw thrust if trauma is suspected. Remove foreign object if visible: DO NOT PERFORM BLIND SWEEP
        (3) Begin sequence for Unconscious Patient

3. Do not delay transport to the closest hospital. Request ALS intercept if available.

B. Foreign Body Obstruction – Unconscious Patient

1. Assess ABC's and open airway using a head tilt/chin lift.
2. Remove obstruction if visible: DO NOT PERFORM BLIND SWEEP
3. Attempt to ventilate patient using a BVM device with high-flow, 100% oxygen. If unsuccessful, reposition airway and attempt BVM assisted ventilation again.
4. If patient is not breathing and you are unable to ventilate
    a) Begin CPR sequence
    b) Each time the airway is opened for ventilations, check the pharynx (ages 1 year old and up) repeat the following sequence until adequate ventilations are achieved.
        (1) Continue CPR sequence until the object is removed, ventilations are successful or child/infant recovers spontaneously
5. If you successfully remove the airway obstruction
    a. Look, listen and feel for air movement: at least 5 seconds, no longer than 10 seconds
    b. If no air exchange, attempt two ventilations and confirm chest rise
    c. If no chest rise, and/or breaths do not go in, reposition and try again
    d. If ventilations are successful, check for pulse; at least 5 seconds; no longer than 10 seconds
    e. If the child has a pulse, but is not breathing, ventilate (child or infant 1:3-5 seconds) using a bag-valve-mask BVM device with high-flow oxygen
    f. If child is not breathing, has no pulse; begin CPR
6. Do not delay transport to closest hospital. Request ALS intercept if available.

C. Upper Airway Compromise (Croup/ Non-foreign Body)

1. Calm patient. Keep patient in a position of comfort, often upright on parent's lap.
2. Be alert for tracheal or esophageal obstruction
3. Assess rate and quality of respirations: note if retractions present
4. For cyanosis and severe stridor:
    a) High-flow oxygen, if mask agitates patient use blow-by oxygen technique
5. **Do not try to visualize pharynx.**
6. For respiratory arrest or cyanosis with decreased LOC assist with BVM
7. Do not delay transport to closest hospital. Request ALS intercept if available.

D. Asthma – Breathing Patient

1. High-flow oxygen and expedite transport.
    a) Goal is to **improve air exchange** and maintain adequate oxygenation (>90%). The patient may not achieve 100% O_2 sats.
2. Inhalation Therapy:
    a) 2.5mg Albuterol via nebulizer.
    b) May assist patient with their own prescribed Metered Dose Inhaler (MDI), under medical direction.
3. If no improvement with patient in moderate to severe distress:
    a) Administer nebulized Albuterol 2.5mg. May repeat x 1.
4. Do not delay transport to closest hospital. Request ALS intercept if available.

E. Asthma – Non Breathing Patient or Agonal Patient

1. Oral airway with BVM at 12-20 per minute. DO NOT HYPERVENTILATE **ALLOW ADEQUATE TIME FOR LUNG DEFLATION**.
2. Do not delay transport to closest hospital. Request ALS intercept if available.

F. Anaphylaxis

1. Establish and maintain airway, high flow O_2
2. If Severe S/S (hives, airway constriction, vomiting, and/or known allergic response)
    a) Administer the following:
        *(1) Patient > 30kg (66lbs.) – **EpiPen** (0.3mg Epinephrine Autoinjector)*
        *(2) Patient 15kg to 30kg (33-66lbs.) – **EpiPen JR IM** (0.15 mg Epinephrine Autoinjector)*
        (3) Patient <15kg – Contact medical control
3. If patient's systolic pressure drops below minimum for age (see table, page 5) or pulse pressure widens (diastolic < ½ systolic) or decreased LOC:
    a) Administer a 20ml/kg bolus of IV /IO Normal Saline.
    b) May repeat bolus if no improvement.
    c) Treat for shock as indicated in Assess Circulation and Perfusion section, page 7
4. If after 5 minutes there is no improvement:
    a) Repeat Administration of one of the following:
        *(1) Patient > 30kg (66lbs.) – **EpiPen** (0.3mg Epinephrine autoinjector)*
        *(2) Patient 15kg to 30kg (33-66lbs.) – **EpiPen JR IM** (0.15 mg Epinephrine Autoinjector)*
        (3) Patient <10kg – Contact medical control
5. If patient's anaphylaxis includes lower airway (wheezing) consider Albuterol 2.5mg neb.
6. If sting or poisonous bite, immobilize the limb and cool with an ice pack
7. Do not delay transport to closest hospital. Request ALS intercept if available.

IV. Cardiac Emergencies

A. General guidelines for all Cardiac emergencies

1. Open airway using head-tilt/chin-lift method or jaw thrust if trauma is suspected and assess ABC's.
2. After appropriate ventilation (100% oxygen with BVM), and visible chest rise, check for pulse. If ventilation is not achieved after second attempt and readjustment; follow section for Obstructed Airway on page 11.
3. For poor perfusion despite oxygenation and ventilations, perform chest compression when heart rate <60 / minute and evidence of poor perfusion at a rate of 100/minute (hard/fast).
    - *(1) Child (1 yr to the onset of puberty)*
        - (a) CPR with one hand or two (30:2 for one rescuer / 15:2 for two rescuer)
    - *(2) Infant*
        - (a) CPR for single rescuer, use two fingers below nipple line and 2-rescuer technique use two thumb-encircling technique (30:2 for one rescuer / 15:2 for two rescuer)
4. For cardiac arrest:
    a) If unwitnessed arrest 5 cycles / 2 minutes of CPR then use AED or defibrillator.
    b) If witnessed arrest/collapse use AED or defibrillator immediately
5. Airway adjuncts if needed to obtain adequate ventilations and oxygenation
6. Obtain IV/IO access.
7. Do not delay transport to closest hospital. Request ALS intercept if available.

B. Use of Automatic External Defibrillators (AED's)

Bystander, 1st Responders & BLS services:

1. Ages < 1 years old:
    a) AED's are not recommended.
        - *(1) Emphasis is placed on adequate ventilation of infant and CPR if indicated.*
2. Ages 1-8 years old:
    a) Use pediatric pads/paddles and appropriate energy selection.
    b) If pediatric pads are not available, use adult pads and energy levels. **Ensure pads do not overlap or touch.** Pads may be placed with one on front/one on back of chest in smaller children.
3. Ages > 8 years old:
    a) Use adult pads and energy levels on AED.
4. Do not delay transport to closest hospital. Request ALS intercept if available.

ILCOR Recommendations

- Currently there is insufficient evidence to support a recommendation for or against the use of AEDs in children <1 year of age.
- For a lone rescuer responding to a child without signs of circulation, the task force continues to recommend provision of 2 minutes or 5 cycles of CPR before any other action, such as activating the emergency medical services (EMS) system or attaching the AED.
- Defibrillation is recommended for documented ventricular fibrillation (VF)/pulseless ventricular tachycardia (VT) (Class I).

V. Medical

A. Unconscious - Altered Mental Status

1. Establish and maintain airway, high-flow oxygen, assist ventilations as needed
2. If perfusion is inadequate, or HR drops <60/minute; begin CPR sequence on page 14
3. Protect cervical spine if trauma possible
4. Place patient on cardiac monitor
5. Obtain history
6. IV/IO Normal Saline TKO
7. Check blood glucose, follow steps for Hypoglycemia for levels <60
8. Do not delay transport to closest hospital. Request ALS intercept if available.

B. Hypoglycemia (and/or Known Diabetic Patient)

1. Check blood glucose. If you are unable to check the blood glucose and the patient is symptomatic, proceed with steps 2 through 4.
2. If patient is conscious, symptomatic and able to swallow effectively:
   a) Administer oral glucose or other form of sugar:
      (1) Patients 4months of age and greater, and BG <60 administer oral glucose up to 20 g
      (2) Newborn to 4months with BG <45 administer oral glucose up to 15 g or allow breast or bottle feeding.
   b) If patient's condition is improving, wait 5-15 minutes, re-check glucose level.
3. If patient is unable to swallow, or patient's condition is not improving after oral therapy
   a) IV/IO Normal Saline
4. Do not delay transport to closest hospital. Request ALS intercept if available.

C. Seizures

1. Establish and maintain airway, high-flow O_2.
2. Obtain vascular access
3. Cardiac monitor, check body temperature and cool if indicated
4. Check blood glucose, treat accordingly.
   (1) If low blood glucose, follow steps indicated in Hypoglycemia section above if the patient is not seizing, and is conscious with the ability to swallow.
5. Do not delay transport to closest hospital. Request ALS intercept if available.

D. Sudden Infant Death Syndrome

1. General:
   a) Infants usually less than six (6) months of age
2. Treatment guidelines:
   a) Initiate CPR unless there are obvious signs of death; rigor mortis (stiff limbs), livor mortis (blood settling in the lower portions of the body) Follow protocol for cardiac arrest.
   b) Support the parents. Avoid questions or comments suggesting blame, remain non-judgmental
   c) Observe carefully and note:
      (1) Location and position of child
      (2) Ambient temperature
      (3) Objects immediately surrounding the child: including type of mattress and bedding; do not remove or move objects
      (4) Behavior of all people present and the explanations provided
      (5) Vomitus in mouth or foreign body present
   d) Document all observations and report them to receiving hospital
   e) Contact local law enforcement if not already done so

E. Hypothermia

1. Assess ABC's
    a) Check pulse for 30-60 seconds to adequately confirm pulselessness or severe bradycardia in the hypothermic patient.
    b) Monitor EKG
    c) CPR as indicated
        (1) Defibrillate VF/VT once
        (2) Ventilate with warmed, humidified oxygen
        (3) Establish IV and infuse with warm NS
        (4) Determine Core Temperature
            (a) >30 degrees C (86 degrees F)
                (i) Continue CPR
                (ii) Repeat defibrillation for VF/VT as core temperature rises
                (iii) Active rewarming procedures
            (b) <30 degrees C (86 degrees F)
                (i) Continue CPR
        (5) Rapid transport
    d) Protect from further heat loss
        (1) Remove wet garments
        (2) Insulate around with blankets to prevent further heat loss
    e) Avoid rough handling of the patient
2. Do not delay transport to closest hospital. Request ALS intercept if available.

Hyperthermia

3. Ensure adequate Airway
4. Oral rehydration (if able to maintain airway)
    a) Water or electrolyte solution (examples: Gatorade or Pedialyte)
5. Attempt cooling techniques
    a) Remove from heat source
    b) Remove clothing and cover with wet sheets
    c) Sponge or splash with cool water
    d) Fan to increase evaporation and subsequent heat loss
    e) If vitals are stable, cold packs to axilla and groin
6. IV fluids: NS 20 ml/kg fluid bolus via large bore catheter.
7. Monitor EKG
8. Do not administer Acetaminophen
9. Treat Associated Symptoms
10. Do not delay transport for cooling in the field.
11. ALS intercept requested and transport to meet ALS.

VI. Trauma

A. General Pediatric Trauma Assessment & Care

This provides general guidelines for initial assessment and care of the injured pediatric patient.
The General Pediatric Assessment and Care guidelines are found on page 6.
The specific guidelines for Newborn Resuscitation are found on page 10.

Use of a length-based resuscitation tape is recommended to assist in determination of appropriate equipment size, vital signs and drug dosages.

1. **Perform scene survey**
   a) Assess for hazardous conditions
   b) Mechanics of Injury (MOI)
   c) Ensure scene safety
   d) Call for additional assistance if needed. (This includes ALS response or intercept.)
   e) Triage multiple patients as appropriate.
2. **Observe Standard Universal Precautions.**
3. **Form a first impression of the patient's condition.**
   a) Pediatric Assessment Triangle (PAT)
      Three Components:
      (1) Appearance
      (2) Work of Breathing
      (3) Circulation to Skin

4. **Determine Patients Level of Consciousness (LOC)**
   a) **AVPU**
      *(1) **A**lert*
      *(2) **V**oice*
      *(3) **P**ain*
      *(4) **U**nresponsive*
5. **Spine Injury Consideration**
   a) If significant MOI, decreased level of consciousness or loss of consciousness, distracting injury, or cervical spine trauma is suspected, manually stabilize the cervical spine.
6. **Assess Airway** - Patency, protective reflexes and possible need for advanced airway management.
   a) Look for signs of airway obstruction.
   b) **Open the airway** – Head tilt/chin lift (if no suspected spinal trauma) or modified jaw thrust if spinal trauma is suspected. IF jaw thrust does not open the airway, use the head tilt/chin lift method. **Opening the airway is a priority.**
      (1) Suction airway if necessary.
      (2) Consider placing an oropharyngeal airway adjunct if the airway cannot be maintained with positioning and the patient is unconscious.
      (3) Consider placing pad under infant/child's shoulder to aid in airway positioning.
7. **Assess Breathing**
   a) Rate, work of breathing, adequacy of ventilations, auscultation and inspection.
   b) Inspect skin, lips and nail beds for cyanosis.
   c) Obtain pulse oximeter reading.

d) If inadequate ventilations, reposition airway and reassess.
e) If inadequate ventilation after repositioning airway, suspect foreign body obstruction and refer to Foreign Body Obstruction protocol (page 11).
f) Assess for signs of respiratory distress, failure, or arrest. Refer to appropriate protocol for treatment options.
g) **If child is not breathing or breathing is inadequate:**
    (1) Assist ventilations using a BVM, high-flow (100%) oxygen, and nasal or oral airway.
h) If child is breathing, with low O2 saturation of <90% and/or signs of hypoxia:
    (1) Administer high-flow oxygen via non-rebreather mask or blow-by as tolerated
i) If child is breathing adequately:
    (2) Consider high-flow oxygen with non-rebreather mask or blow-by as tolerated.

8. Assess Circulation and Perfusion
    a) Determine heart rate
    b) Skin color and temperature
    c) Capillary refill and quality of central and peripheral pulses
    d) Control hemorrhage – Direct pressure, elevation, pressure point or pressure dressing as needed.
    e) If no pulse or perfusion and/or HR is <60/minute with evidence of poor perfusion.
        (1) Initiate chest compression and ventilations.
    f) Assess and treat for shock as indicated in the Assess Circulation and Perfusion section on page 7
        (1) Obtain vascular access
        (3) Administer fluid bolus of NS at 20ml/kg set to maximum flow rate
            (a) Reassess after initial bolus
            (b) If signs of shock persist, repeat fluid bolus to maximum total of 60 ml/kg.

9. Transport
    a) Notify receiving hospital according to Trauma and Destination guidelines.
    b) Do not delay transport for further assessment or treatment.
    c) Immobilize the patient on a pediatric backboard or age/size appropriate device to immobilize the head, neck and spine.

10. ALS intercept requested and transport to meet ALS.

11. Focused History and Physical Exam
    a) Head-to-Toe assessment (Toe-to-Head)
    b) SSAMPLE History
        (1) Signs
        (2) Symptoms
        (3) Allergies
        (4) Medications
        (5) Past medical history
        (6) Last meal
        (7) Events
    c) Consider all potential non-traumatic causes
        (1) Hypothermia
        (2) Overdose
        (3) Underlying medical conditions

12. Continuous Monitor and Assessment

a) Vital Signs

b) Neurologic status

(1) AVPU

(2) Pupillary response

(3) Distal function and sensation (Circulation, Movement and Sensation - CMS)

13. Treat life threatening conditions as they become identified

14. Follow specific treatment guidelines as appropriate.

B. Burns

1. General Burn Care

Transport of all burn patients is recommended unless cleared by medical control.

a) Ensure scene safety; perform scene survey and general pediatric assessment.

b) Stop burning process.

(1) Thermal Burns – use water

(2) Dry Chemical – brush off and then flush with copious amounts of water

(3) Caustic Liquid – flush with copious amounts of water

(4) Electrical – Remove from source.

c) Prevent Hypothermia secondary to burn care

d) Determine burn severity

(1) Superficial partial-thickness (1st degree) ex. Sunburn red

(2) Deep partial-thickness (2nd degree) ex. Blisters

(3) Full thickness (3rd degree) charred and non-tender

e) Estimate % burned (below)

f) Transport all burn patients with:

(1) Burns to face, hands, feet or genital area

(2) 20-30% total body surface area burn partial thickness

(3) All full thickness of any size

g) Remove jewelry on affected areas

h) Watch for signs of inhalation injury

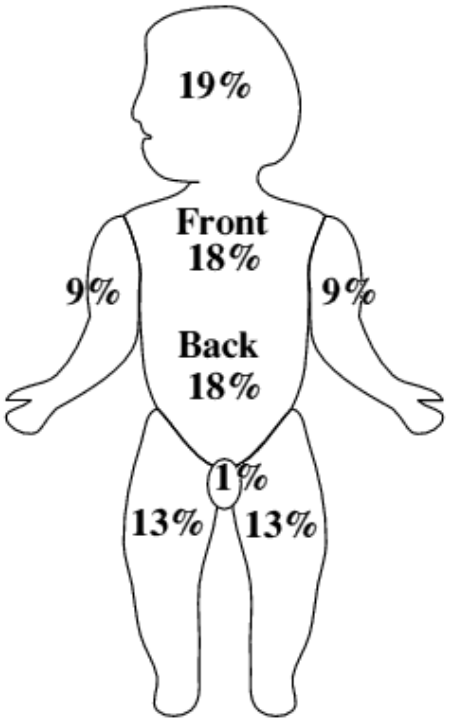
i) 100% oxygen administration

j) IV/IO access

k) Burn sheets applied to burned area or dry sterile dressings

2. Burn Chart (Pediatric)

1. Refer to adult burn chart >10 years old



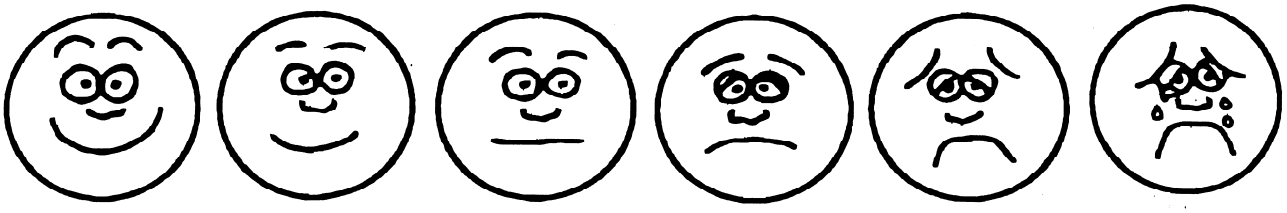
1%

3. Palmar Method
    1. The palm of the patient's hand (including fingers) can be used to estimate 1% of total body surface area (TBSA) for infants and children.
    2. Approximately 0.5% for children >15 yrs old

C. Pediatric Pain Rating Scale

1. Use the Wong-Backer scale to rate pain in a cooperative, communicative child.
2. Use the FLACC scale to rate pain in a non-cooperative, non-communicative child.
3. Use the Visual Analog scale to rate pain in a cooperative, communicative child who is older than 7 years old.

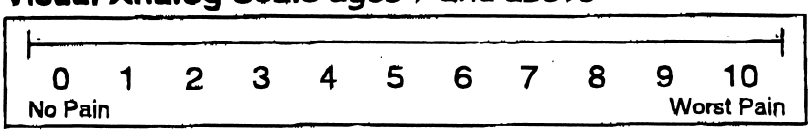
Wong-Baker Faces Pain Rating Scale



FLACC Scale

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractable	Difficult to console or comfort
Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.			

Visual Analog Scale *ages 7 and above*



C. Drowning and Near Drowning

1. Protect and immobilize possible cervical spine injuries
2. Establish and maintain airway
3. Cardiac monitor.
4. Check temperature
5. Evaluate, protect against and/or treat hypothermia per guidelines
6. All near-drowning patients who required rescue breathing (mouth-to-mouth or bag valve mask ventilation) or had any change in level of consciousness should be transported. Near-drowning patients not being transported should be cleared by medical control.
7. Do not terminate resuscitation of a drowning patient in the field without contacting medical control
8. Do not delay transport to closest hospital. Request ALS intercept if available.

D. Child Abuse - Neglect

1. Consider child abuse:
    a) Any injury without a consistent history or explanation.
    b) Injury in a non-mobile child.
    c) Significant injury reportedly resulting from a household fall.
    d) Unconscious/ child with no history, or a history of a insignificant fall.
    e) Severity of injury is inconsistent with the history.
2. Initiate appropriate medical treatments
3. Obtain and document detailed history – use quotes if possible
4. Avoid questions or comments suggesting blame or mechanism of injury
5. Observe carefully and note:
    a) Location and position of child
    b) Surroundings, scene, and situation.
    c) Who is/was present at the time of injury
6. If concern for child abuse, notify law enforcement as soon as possible

VII. Children with Special Health Care Needs (CSHCN)

Available from National EMSC office on-line at
http://www.childrensnational.org/files/PDF/DepartmentsandPrograms/CHAI/EMSC/products/Prehospital_Protocols_for_CSHCN__EP000987_2002.pdf
Guidelines include:

A. General Patient Care
B. Tracheostomy
C. Ventilators
D. Apnea Monitors
E. Central Lines
F. CSF Shunts
G. Feeding Tubes
H. Internal Pacemakers/Defibrillators
I. Vagus Nerve Stimulator
J. Colostomy

VIII. Poisons and overdoses

For specific Information contact the Poison Control Center at 1-800-222-1222

A. General care

1. External Contamination Only:
    a) Protect medical and rescue personnel.
    b) Remove contaminated clothing.
    c) Brush off any solid material from skin.
    d) Flush contaminated skin or eyes with copious amounts of water.
    e) Contact medical control before transport to allow adequate preparation time.

2. Internal Ingestion: Major Overdose, Altered Level of Consciousness or Depressed CNS:
    a) Establish and maintain airway, administer high-flow (100% oxygen)
    b) If patient shows signs of poor perfusion, or HR <60/minute, begin CPR sequence page 14
    c) If unconscious/unresponsive attach AED
    d) Obtain vascular access (20ml/kg NS)IV/IO Normal Saline TKO
    e) Check blood glucose
    f) If unconscious/unresponsive attach AED
    g) Request ALS intercept if available

B. Cholinergic agents

Carbamates, Parathion, Diazinon, Malathion, nerve agents, certain mushrooms and organophosphate insecticides.

1. "SLUDGE" – Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis **OR** "DUMBBELS" – Diarrhea, Urination, Miosis, Bronchorrea, Bradycardia, Emesis, Lacrimation, Salivation/Sweating.)
2. Evaluate and treat per poisons and overdoses general guidelines.
3. ALS intercept requested and transport to meet ALS.

C. Unknown and/or Poly Drug Ingestion

1. Evaluate and treat per poisons and overdose general guidelines
2. DO NOT induce vomiting, anticipate nausea and vomiting and prepare suction
3. Bring empty bottles or containers to the hospital to aid identification; do not bring hazardous materials, or open/unsealed containers.

D. Beta Blocker overdose with Bradycardia

Propranolol, Atenolol, Cervedilol, Lobetolol, Metoprolol

1. Evaluate and treat per poisons and overdoses general guidelines.
2. Hypotension:
    a) IV/IO Normal Saline 20 ml/kg fluid challenge. May repeat x1 in 10 min.
    b) Treat for shock as indicated in the Assess Circulation and Perfusion section Page 7

3. Bradycardia
    a) External Pacemaker, as per medical control.
4. Hypoglycemia
    a) Check blood glucose
    b) If low blood glucose administer oral glucose slowly if patient is conscious with the ability to swallow, refer to hypoglycemic section on page 15

E. Carbon Monoxide Poisoning

Carbon monoxide reduces blood oxygenation by displacing oxygen from hemoglobin. The responder must exercise caution, and not expose themselves to fumes. CO is heavier than air and settles to the ground and lower levels, making children more vulnerable to its effects.

1. Evaluate and treat following poisoning and overdose general guidelines for internal ingestion.
2. Administer high flow oxygen to all suspected victims of carbon monoxide poisoning.
    a) Via non-rebreather or BVM, with nasal/oral adjunct for the unresponsive patient.
    b) Blow-by is not recommended for suspected CO poisoning.
    c) Anticipate nausea and vomiting, and prepare suction.
    d) Request ALS intercept if available

F. Children Found at Methamphetamine Lab Sites

Any child found in an environment where methamphetamine is made or used is at risk for toxicity. Children found in these settings may also be at risk for various types of abuse or neglect, which should be addressed in a medical as well as social services evaluation. The ongoing safety of the child must be considered when making a judgment about the need for an acute assessment.

Decontamination is necessary to prevent cross-contamination of toxic substances found at Meth lab sites. Decontamination simple means thoroughly washing in order to remove any potentially harmful residue from persons removed from a hazardous site. Decontamination is necessary to protect the individual from continued exposure, as well as to prevent possible secondary contamination of other persons, equipment and facilities with which a contaminated individual might come in contact. All persons removed from a clandestine lab should be properly decontaminated at the scene and dressed in clean clothing prior to any additional questioning or evaluation. Decontamination is necessary regardless of the age of the person removed from the lab and whether or not the lab was in use at the time of removal.

The best recommendation for a child is to have a facility such as a tent or camper available at the scene in which the child can be given a warm shower and then dressed in age and gender appropriate clothing to minimize the psychological impact of the decontamination process.

All the child's clothing should be removed and the child should be thoroughly washed with soap and water in a warm shower as soon as possible. Care should be taken with a child's personal possessions, which may contain chemical/drug contamination. In cases of gross chemical/drug contamination is it necessary to remove a child's clothing and provide clean attire prior to removing the child from scene (grossly soiled clothing must remain at the scene and should be handled as evidence by law enforcement.) Also the child should not come into your care with any personal items from their homes including, but not limited to:

- Blankets
- Toys
- Bottles and/or formula
- Diapers
- Contact lenses

Only items provided by responders on scene or by medical professionals at evaluation should come with the child to the hospital. There may be an exception for certain personal items such as eyeglasses, which will have to be cleaned by professionals at the scene. Decisions regarding specifics of decontamination are most appropriately made by trained HAZMAT personnel at the scene.

1. All children found at methamphetamine lab sites should be transported as soon as possible for medical screening exam at an appropriate emergency department.

2. For children with obvious injury or illness, or toxin exposure, begin treatment and transport to the nearest appropriate hospital.
    a) Patients who are tachycardic hyperthermic or severely agitated; see cocaine section refer to Poisons and Overdoses, General Care section page 24
3. For all children who are not obviously injured or ill:
    a) Perform a basic assessment
    b) Check vital signs (temperature, blood pressure, pulse, and respiration)

4. Child welfare personnel should evaluate placement options and implement short-term shelter for child.

IX. Appendix

A. Pre Hospital Pediatric Destination Guideline Development

Advanced planning by the medical director of each service or the regional medical direction consortium should inventory the capabilities of receiving hospitals for each service or region and consider the service needs (and mutual aid) for the primary service area. This worksheet is designed to assist in this assessment.

Pediatric trauma patients should be transported according to trauma triage protocols. Considerations for transporting pediatric trauma patients are included below. All critical pediatric patients should be taken to the nearest hospital with pediatric capabilities. Centers with pediatric capabilities will vary in different regions of the state.

In general patients in **cardiac arrest** or with an **unmanageable airway** should be taken to the nearest facility. Longer transport (up to 30 minutes travel time) to reach a pediatric center should be considered in the transport of a critically ill child. The length of time to reach a pediatric center should be considered in the choice of where to transport the pediatric patient.
The hospital capabilities to consider should include:

- Airway
    - Is someone always available who is able and willing to intubate children?
    - Does the emergency department have a triage protocol for identifying children in severe respiratory distress?
    - Do they have a pediatric rapid sequence induction training (including PALS / CALS training)?
    - Are these always available?
- Vascular access
    - Does the department regularly start IV's on children?
    - Down to what age are they comfortable?
    - Are personnel trained in the use of IO?
- Protocols
    - Does the department have a pediatric transfer protocol?
        - Criteria to transfer based on vital signs and specific injury pattern.
        - Mechanisms to contact referring hospitals and transport services (ground or helicopter)
    - Does the department have pediatric treatment protocols?
- Trauma capability per American College of Surgeons and the MN state proposed trauma plan – MDH)
    - Are surgeons readily available?
        - In house or on call?
        - Are they experienced at and comfortable with treating children?
    - Are operating rooms staffed and available?
    - Are there additional surgical specialists available (i.e., orthopedic specialists or neurosurgeons)
- Does this hospital have a Pediatric emergency department?
    - Staffed 24 hrs/day?
- Does this hospital have a PICU?
    - Staffed by intensivist 24hrs/day?
- Backup
    - Is anesthesia backup available?
        - In house or on call?
    - Is pediatric backup available?
        - In house or on call?