PEDIATRIC ALS GUIDELINES

SOUTHWESTERN CT

Last Updated: March 2002

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ROUTINE BASIC LIFE SUPPORT – (BLS) CARE

1. Assure scene safety.

2. Assess airway (C-Spine precautions in clinical situations of traumatic etiology)

   If not patent:
   a. Reposition head.
   b. Jaw thrust.
   c Chin lift/head tilt.
   d. Perform obstructed airway procedure.

3. Assess breathing:

   a. Assure patent airway, suction as needed.
   b. Administer oxygen as needed.
   c. Ventilate with bag-valve-mask as needed.

4. Assess circulation:

   a. Check for pulse.
   b. If no pulse, initiate chest compressions.
   c. Control bleeding as needed.
   d. Skin perfusion signs.

5. Determine level of consciousness:

   a. Alert
   b. Responds to verbal stimuli.
   c. Responds to painful stimuli.
   d. Unresponsive.

6. Initiate transport.

7. Maintain warmth.

8. Perform focused history and physical exam.

ROUTINE PARAMEDIC LEVEL CARE

Routine paramedic care is given on each call regardless of nature, events, or situation.

1. Assess scene safety.

2. Assure or initiate BLS care.

3. Assess airway and intervene as necessary:

   A. Maintain C-Spine precautions in clinical situations of traumatic etiology.
   B. Pulse oximetry as available.

4. Assess circulation and intervene as necessary:

   A. Apply cardiac monitor for critical patients.
   B. Establish vascular access according to guidelines.

5. Initiate transport.

6. Maintain warmth.

7. Treat patient according to appropriate patient care guidelines.

ACCEPTABLE METHODS OF AIRWAY MANAGEMENT

1. Oral/Nasal Pharyngeal Airway. (Nasopharyngeal airway >4 mm.)
2. Bag-valve-mask ventilation, mouth-to-mask.
3. Endotracheal Intubation
4. Invasive Airway (according to sponsor hospital guidelines).
5. RSI (according to sponsor hospital guidelines).

NOTE: Ventilation is recommended as a first maneuver for the neonate, infant, or small child. (For neonate see Neonatal Resuscitation, Guideline #12) Intubation is reserved for those not responding to or not being maintained with a bag-valve-mask.

Appropriate basic life support airway management should be initiated first and as soon as possible.

If intubation is used, it is according to training and sponsor hospital guidelines and it should be limited to two (2) attempts unless otherwise noted.

The Esophageal Gastric Tube Airway or Esophageal Obturator Airway is not to be used in the patient <10 years of age or <5 feet tall.

ADMINISTRATION OF OXYGEN

1. Indications:

   a. Suspected hypoxia or respiratory distress from any cause.
   b. Shock.
   c. Major trauma.
   d. Carbon monoxide poisoning.
   e. Burns.
   f. Altered mental status.
   g. Any dysrhythmia.

2. Administration:

   High flow (10-15 LPM) via mask for any of the above indications. If patient is not tolerating well, may use as blow by.

NOTE: If a patient is not breathing adequately on his own, the treatment of choice is VENTILATION, not just oxygen.

VASCULAR ACCESS

Intravenous Access:

The paramedic should NOT attempt to start an intravenous line unless he or she can palpate or visualize a vein. Intravenous access should be limited to two attempts. (Consider intraosseous infusion early in critical patient, i.e., cardiac arrest, shock)

Blood drawing should occur according to sponsor hospital guidelines.

1. Indications:

    a. Cardiac arrest.
    b. Clinical impression indicating possible need for IV medication administration.
    c. Shock or compensated shock.
    d. Respiratory failure or arrest.
    e. Altered mental status.

2. Acceptable access sites:

    a. Extremities.
    b. Neck. (>six (6) years of age)
    c. Umbilical vein according to sponsor hospital guidelines.

3. Catheters/Cannulas:

    a. Catheter over the needle and scalp vein needles.
    b. Sizes may range from 14 gauge to 24 gauge.

4. Solutions:

    a. 0.9% Sodium Chloride/Normal Saline (NS).
    b. Ringer's Lactate (RL).
    c. D10%.

Intraosseous Infusion

Intraosseous infusion is acceptable in the case of cardiac arrest and shock for patients six (6) years of age or less. In all other cases, I.O. access is according to sponsor hospital guidelines.

GUIDELINE MEDICATIONS FOR THE PEDIATRIC POPULATION

Adenosine (Adenocard®)

Albuterol (Ventolin®, Proventil®)

Atropine Sulfate*

Calcium Chloride

10% Dextrose

25% Dextrose

Diazepam (Valium®)

Diphenhydramine Hydrochloride (Benadryl®)

Epinephrine 1:1,000*

Epinephrine 1:10,000*

Glucagon

Lorazepam (Ativan®) (needs refrigeration)

Lidocaine (Xylocaine®)*

Midazolam (Versed®)

Morphine

Naloxone (Narcan®)*

Sodium Bicarbonate

Succinylcholine (Two week shelf life without refrigeration.)

* May be given via endotracheal tube.

GENERAL OPERATING PROCEDURES

The following pediatric treatment guidelines are for the use of the paramedic in the field and the medical control physician. They have been developed to ensure quality, standardized medical care. The guidelines are specific for advanced life support intervention. Patient assessment and basic life support procedures have been enumerated herein, and are always to be initiated as appropriate.

Without medical direction, the paramedic shall not deviate from the guidelines relating to drug dosage, route of administration, or repetition.

There may be situations where multiple clinical impressions exist. The paramedic should follow routine paramedic care and contact medical direction to review options.

It is important that prehospital time be at a minimum for pediatric patients. Early transport will be a priority.

With few exceptions, i.e. unconscious patient, a parent should be allowed to accompany a child in the patient compartment.

Those aspects of the following treatment procedures requiring on-line medical direction are indicated by CAPITALIZATION. Local medical control may opt to include any of these as a portion of the off-line protocols for their sponsored services.

GUIDELINE #1 - PEDIATRIC ACUTE RESPIRATORY DISTRESS

1. Routine BLS care.

2. Routine paramedic care.

3. Croup or suspected Epiglottitis:

   a. Transport in position of comfort - Do Not Agitate.

   b. If child becomes unconscious:

      1. Ventilate with bag-valve-mask.
      2. Do not attempt endotracheal intubation unless unable to ventilate.

4. In all patients not suspicious for Epiglottitis who have moderate to severe respiratory distress (wheezing, suprasternal/intercostal retractions, nasal flaring, diminished breath sounds and/or central cyanosis):

   a. Administer bronchodilator (according to sponsor hospital guidelines) at least every 20 minutes. If patient becomes unconscious do not attempt to intubate unless unable to ventilate.

b. If unable to use bronchodilator or if patient remains in severe respiratory distress, CONTACT MEDICAL DIRECTION FOR ANY OF THE FOLLOWING OPTIONS:

   1. EPINEPHRINE 1:1000 0.01 CC/KG (0.01 MG/KG) SubQ, TIMES: ONE (1) DOSE. (MAX DOSE 0.3 CC SubQ)

   2. REPEAT BRONCHODILATOR VIA NEBULIZER.

   3. OTHER TREATMENT MODALITIES.

5. Other causes of respiratory distress (unknown etiology) CONTACT MEDICAL DIRECTION.

GUIDELINE #2 - PEDIATRIC OBSTRUCTED AIRWAY

1. Conscious child:

   a. BLS airway maneuvers.

2. Unconscious child - unable to ventilate and/or cyanotic without air exchange:

   a. BLS airway maneuvers.

   b. ALS intervention.
   Direct visualization, use Magill forceps as needed.

   NOTE: In an unconscious patient, if there is a strong suspicion of Epiglottitis and if the patient is unable to be ventilated and if an enlarged epiglottis is visualized, ONE attempt at intubation is allowed if the airway can be visualized.

3. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. NEEDLE CRICOTHYROIDOTOMY.

   B. OTHER TREATMENT MODALITIES.

GUIDELINE #3 - PEDIATRIC RESPIRATORY FAILURE OR ARREST

1. Routine BLS care.

2. Routine paramedic care.

3. Preoxygenation with bag-valve-mask.

4. Endotracheal intubation.

   NOTE: If there is a strong suspicion of Epiglottitis and if the patient is unable to be ventilated and if an enlarged epiglottis is visualized, ONE attempt at intubation is allowed if the airway can be visualized. If unable to intubate or ventilate, prepare for surgical airway and see Guideline #2, "Pediatric Obstructed Airway."

5. May use nasogastric/orogastric tube if necessary according to sponsor hospital guidelines.

6. Transport.

7. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. SEDATION OR MUSCLE RELAXATION PER SPONSOR HOSPITAL GUIDELINES. (IF THERE IS APPARENT COMPLETE AIRWAY OBSTRUCTION, CONSIDER ATTEMPT AT SURGICAL AIRWAY MANAGEMENT. SEE GUIDELINE #2, "PEDIATRIC OBSTRUCTED AIRWAY.")

   B. NALOXONE (NARCAN®) .01 MG/KG IM/IV/ET.

   C. NEEDLE CHEST DECOMPRESSION.

   D. OTHER TREATMENT MODALITIES.

GUIDELINE #4 - ANAPHYLAXIS/ALLERGIC REACTION

A. Stable hemodynamics with no respiratory distress or airway complaints and skin manifestation only.

1. Routine BLS care.

2. Routine paramedic care.

B. Mild to moderate respiratory distress or airway complaints.

1. Administer Epinephrine 1:1,000: 0.01 cc/kg (0.01 mg/kg) SubQ, times: one (1) dose. (Max. dose 0.3 cc SubQ)

2. IF BRONCHOSPASM OCCURS, ADMINISTER BRONCHODILATOR WHILE CONTACTING MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. REPEAT EPINEPHRINE EVERY 15 MINUTES AS NEEDED. MAX SINGLE DOSE 0.3 MG (0.3 CC 1:1000).

   B. DIPHENHYDRAMINE HYDROCHLORIDE (BENADRYL®) 1 MG/KG IM or IV OVER 1 MINUTE, 50 MG MAX.

   C. OTHER TREATMENT MODALITIES.

C. Unstable hemodynamics or severe respiratory distress:

1. Administer Epinephrine 1:1000: 0.01 cc/kg (0.01 mg/kg) SubQ, times: one (1) dose. (Max. dose 0.3 cc SubQ)

2. IF BRONCHOSPASM OCCURS, ADMINISTER BRONCHODILATOR WHILE CONTACTING DIRECTION FOR THE FOLLOWING OPTIONS:

   A. EPINEPHRINE INITIAL DOSE: 0.1 CC/KG (0.01 MG/KG) IV/IO. MAXIMUM SINGLE DOSE: 0.3 MG (3 CC 1:10,000) TO BE ADMINISTERED AT A RATE OF 0.5 CC/MIN, TITRATING TO CLINICAL EFFECT.

1. ET DOSE: 0.01 0.1 MG/KG OR 0.01 0.1 CC/KG 1:1000. MAX 0.3 3 CC TITRATING TO CLINICAL EFFECT.

2. IF PATIENT WITHOUT ET INTUBATION OR VASCULAR ACCESS, EPINEPHRINE 0.01 MG/KG (0.01 CC/KG) 1:1,000 SQ. MAX 0.3 MG (0.3 CC 1:1000).

   B. MAY REPEAT EPINEPHRINE EVERY 5 MINUTES.

   C. DIPHENHYDRAMINE HYDROCHLORIDE (BENADRYL®) 1 MG/KG IM or IV OVER 1 MINUTE, 50 MG MAX.

   D. FLUID BOLUS (20 CC/KG IV NSS OVER 15 -20 MINUTES.)

   E. MAST (PASG).

   F. EPINEPHRINE DRIP 0.1-0.3 UG/KG/MIN. INCREASE AS NEEDED TO 1 UG/KG/MIN.

   G. OTHER TREATMENT MODALITIES.

NOTE: Epinephrine may cause transient third degree heart block, sinus arrest, other arrhythmias and hypertension. Monitor BP every 1 minute during and immediately after each dose, and every 5 minutes during transport.

GUIDELINE #5 - PEDIATRIC ALTERED MENTAL STATUS

1. Routine BLS care.

2. Routine paramedic care.

3. Transport while performing quick glucose test, if available. If blood glucose level is less than 60, or if no glucose level is available and patient is a known diabetic or with history consistent with hypoglycemia administer:

   a. D25 2cc/kg IV.
   b. D10 5cc/kg IV.
   c. If IV not available, administer Glucagon: if >20 kg, 1 mg IM, if <20 kg, 0.01 mg/kg.

4. If a narcotic overdose is suspected and respiratory insufficiency present:

   a. Administer Naloxone (Narcan®) .01 mg /kg IV/IM.

5. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. ADDITIONAL DOSAGE DEXTROSE.

   B. OTHER TREATMENT MODALITIES.

GUIDELINE #6 – PEDIATRIC SEIZURES

1. Routine BLS care.

2. Routine paramedic care.

   Consider etiology (hypoglycemia, drug overdose, poisoning, trauma, febrile seizure) and treat accordingly.

   NOTE: If post-traumatic, transport now.

   If new baby see neonate guideline #12.

3. If seizure persists (greater than ten minutes):

   a. Begin infusion Normal Saline or Ringer's Lactate.

   b. Transport while performing quick glucose test if available. If blood glucose level is less than 60, or if no glucose level is available and patient is a known diabetic, administer:

      1. D25 2cc/kg IV or
      2. D10 5cc/kg IV.

4. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. LORAZEPAM (ATIVAN®)0.05 MG/KG.
   DIAZEPAM (VALIUM®) 0.1 MG/KG IV.

   B. RECTAL ADMINISTRATION OF DIAZEPAM 0.5 MG/KG (0.1 CC/KG).

   C. OTHER ANTI-CONVULSANT MEDICATIONS.

   D. DEXTROSE AS ABOVE.

   E. OTHER TREATMENT MODALITIES.

NOTE: Respiratory arrest post Diazepam administration is more prevalent in children.

GUIDELINE #7 - PEDIATRIC MULTISYSTEM TRAUMA

1. Routine BLS care.

2. Rapid transport

3. Routine paramedic care.

4. If patient has altered mental status with head injury, ventilate as follows with cricoid pressure if not intubated:

<3 years:	25-30 bpm
>3-6 years:	25 bpm
>6 years:	20 bpm

5. If signs and symptoms of shock or compensatory shock appear during transport: (If transport is delayed, may begin prior to transport)

   a. Fluid bolus:

      1. Normal Saline or Ringer's Lactate IV 20 cc/kg.
      2. If IV not obtainable, IO according to training and sponsor hospital guidelines.
      3. If no response, repeat fluid bolus 20 cc/kg after 10 minutes.

6. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. MAST (PASG). NOT TO BE USED FOR PENETRATING TRAUMA TO THE CHEST OR ABDOMEN OR IN PATIENTS <10 YEARS OF AGE OR <5 FEET TALL.

   B. OTHER TREATMENT MODALITIES.

GUIDELINE #8 - PEDIATRIC TRAUMATIC CARDIAC ARREST

1. Routine BLS care.

2. Routine paramedic care.

3. Rapid transport, maintain warmth.

4. Fluid bolus:

   Normal Saline or Ringer's Lactate IV 20 cc/kg over 10-15 minutes. If IV not obtainable; IO according to training and sponsor hospital guidelines.

5. If inadequate response, repeat fluid bolus.

6. Treat cardiac arrest according to algorithm while transporting.

7. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. ADDITIONAL FLUID BOLUS.

   B. NASOGASTRIC TUBE.

   C. MAST (PASG) NOT TO BE USED FOR PENETRATING TRAUMA TO THE CHEST OR ABDOMEN OR IN PATIENTS <10 YEARS OF AGE OR <5 FEET TALL.

   D. OTHER TREATMENT MODALITIES.

NOTE: If arrest due to trauma, consider tension pneumothorax, tamponade. Consider medical causes if mechanism of injury is not consistent with clinical presentation.

GUIDELINE #9 - PEDIATRIC CARDIAC ARREST

1. Routine BLS care.

2. Routine paramedic care.

3. Asystole

   a. If witnessed asystole apply external pacer. If <15 kg, use pediatric pads.

   b. Epinephrine IV/IO: 0.01 mg/kg (1:10000; 0.1 mL/kg)

      For administration by ET give Epinephrine 0.1 mg/kg (1:1000; 0.1 mL/kg)

   c. If no response, repeat Epinephrine every 3-5 minutes IV/IO/ET: 0.1 mg/kg (1:1000; 0.1 mL/kg)

   d. Begin transport while administering fluid bolus Normal Saline or Ringer's Lactate 20 cc/kg.

   e. CONTACT MEDICAL DIRECTION FOR ANY OTHER TREATMENT MODALITIES.

4. Ventricular Fibrillation/Pulseless V-Tach

   a. Defibrillate at 2 watt/sec/kg.

   b. If no response, defibrillate at 4 watt/sec/kg.

   c. If no response, defibrillate at 4 watt/sec/kg.

   d. If no response, Epinephrine IV/IO: 0.01 mg/kg (1:10000; 0.1 mL/kg)

      For administration by ET give Epinephrine 0.1 mg/kg (1:1000; 0.1 mL/kg)

   e. Defibrillate at 4 watt/sec/kg.

   f. If no response, Lidocaine (Xylocaine®) 1 mg/kg IV/IO/ET.

g. If no response, defibrillate at 4 watt/sec/kg.

h. If no response, repeat Epinephrine every 3-5 minutes IV/IO/ET: 0.1 mg/kg (1:1000; 0.1 mL/kg)

i. If no response to above, CONTACT MEDICAL DIRECTION FOR TRANSPORT AND FURTHER ORDERS AS ALGORITHM IS CONTINUED.

j. If no response, defibrillate at 4 watt/sec/kg.

k. If no response, Lidocaine 1 mg/kg IV/IO/ET (1.5 mg).

l. If no response, defibrillate at 4 watt/sec/kg.

5. <u>EMD/Pulseless Electrical Activity (PEA)</u>

Consider and treat: hypoxia, acidosis, hypovolemia, tension pneumothorax, cardiac tamponade, hypothermia.

a. Epinephrine IV/IO: 0.01 mg/kg (1:10000; 0.1 mL/kg)

For administration by ET give Epinephrine 0.1 mg/kg (1:1000; 0.1 mL/kg)

b. If no response, repeat Epinephrine every 3-5 minutes IV/IO/ET: 0.1 mg/kg (1:1000, 0.1 mL/kg)

c. Begin transport while administering fluid Bolus Normal Saline or Ringer's Lactate 20 mg/kg over 10-15 minutes.

d. If no response to Epinephrine and if heart rate < 80 bpm, consider:

1. Atropine 0.02 mg/kg IV/IO/ET (minimum dose = 0.1 mg, maximum dose = .5 mg child, 1.0 mg adolescent). NOTE: Not to be given if age less than one (1) month old.

2. Epinephrine drip 0.1-0.3 ug/kg/min. Increase as needed to 1 ug/kg/min.

6. CONTACT MEDICAL DIRECTION

GUIDELINE #10 - PEDIATRIC TACHYDYSRHYTHMIA

1. Routine BLS care.
2. Routine paramedic care.
3. Consider Valsal Maneuver
4. Transport.
5. IF HEMODYNAMICALLY UNSTABLE, CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A ADENOSINE (ADENOCARD®) 0.1 MG/KG IV PUSH. MAXIMUM 6 MG.

   B. LIDOCAINE (XYLOCAINE®)1 MG/KG BOLUS (WIDE COMPLEX).

   C. CARDIOVERSION 0.5 WATT/SEC/KG.

   D. OTHER TREATMENT MODALITIES.

GUIDELINE #11 - INFANT/CHILD BRADYCARDIA

1. Routine BLS care.

2. Routine paramedic care.

3. Early transport.

4. Symptomatic bradycardia (rate: <60 with unstable hemodynamics):

   a. Ventilate with adequate oxygenation.

   b. If bradycardia persists despite adequate oxygenation and hyperventilation:

      1. Endotracheal intubation.

      2. Chest compressions.

      3. Epinephrine IV/IO: 0.01 mg/kg (1:10000; 0.1 mL/kg)

         For administration by ET give Epinephrine 0.1 mg/kg (1:1000; 0.1 mL/kg)

      4. Repeat Epinephrine every 3-5 minutes IV/IO/ET: 0.1 mg/kg (1:1000; 0.1 mL/kg)

      5. If no response: Atropine 0.02 mg/kg IV/IO/ET (minimum dose: 0.1 mg, maximum dose: 0.5 mg child, 1.0 mg adolescent). May repeat, times: one (1).

5. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. EXTERNAL CARDIAC PACEMAKER (<15 KG USE PEDIATRIC PADS).

   B. OTHER TREATMENT MODALITIES.

GUIDELINE #12 - NEONATAL RESUSCITATION

1. Position neonate in head down position. Check for meconium. Suction mouth and nares with bulb syringe. If thick meconium, and the baby is not vigorous (defined as strong respiratory effort, good muscle tone, and a heart rate >100 bpm) insert an ET tube and apply suction as the tube is slowly withdrawn. Repeat as necessary until little additional meconium is recovered or until the baby's heart rate drops to less than 100 by palpated umbilical pulse.

2 Dry body, remove wet linen, and maintain temperature.

3. If the baby does not have adequate respirations, additional stimulation should be briefly provided: Stimulate:

   a. Rub back, or
   b. Rub or flick bottom of feet.

4. Routine paramedic care.

5. If inadequate response (apnea/gasping, cyanosis despite 100% free-flow oxygen, or heart rate <100):

   a. Provide positive pressure ventilation.

   b. If heart rate is <60 despite adequate ventilation, begin chest compressions. PRIOR TO BEGINNING CHEST COMPRESSION, THE ADEQUACY OF VENTILATION MUST BE CHECKED.

      If heart rate is >60 continue ventilation until the baby has an adequate spontaneous respiratory effort and the heart rate is >100.

6. IF INADEQUATE RESPONSE, CONTACT MEDICAL DIRECTION FOR THE FOLLOWING OPTIONS:

   A. UMBILICAL VEIN CATHETERIZATION PER SPONSOR HOSPITAL GUIDELINE.

   B. FLUID BOLUS RINGER'S LACTATE OR NORMAL SALINE 10 CC/KG OVER 10-15 MINUTES.

C. EPINEPHRINE IV/IO/ET: 0.1 to 0.3 ML/KG 1:10000 (0.01 to 0.03 MG/KG).
D. REPEAT EPHINEPHRINE EVERY 3-5 MINUTES AS INDICATED.

E. SODIUM BICARBONATE 0.5 mEq/KG IV FOR PROLONGED CARDIAC ARREST.

F. DEXTROSE D10 2 CC/KG OVER 1-2 MINUTES IF HYPOGLYCEMIC (HEEL STICK GLUCOSE <60 mg/dl) OR IF AT RISK, I.E. DIABETIC MOTHER OR SMALL FOR GESTATIONAL AGE.

G. OTHER TREATMENT MODALITIES.

GUIDELINE #13 - RECTAL ADMINISTRATION OF DIAZEPAM FOR STATUS EPILEPTICUS (OPTIONAL GUIDELINE)

1. Assure Routine Paramedic Care

2. CONTACT MEDICAL DIRECTION FOR THE FOLLOWING:

   A. ADMINISTRATION OF DIAZEPAM (VALIUM®) FOR CLINICAL INDICATION.

   B. ADMINISTRATION OF MEDICATION VIA THE RECTAL ROUTE.

      It should be understood that permission for administering Diazepam does not constitute medical direction for administering per rectum. Administering medication per rectum requires specific medical control.

PROCEDURE:

1. Draw up the contents of the vial into 2 tuberculin syringes. Each TB syringe will contain 5 mgs in 1 cc.

2. Remove the needle from the syringe and lubricate the tip.

3. Gently insert the syringe into the patient's rectum. This may be facilitated by using a finger.

4. Administer Diazepam. The dose should be 0.5 mg/kg (0.1 cc per kg) with a maximum dose of 10 mgs.

5. Remove syringe and squeeze patient's buttocks or tape together for 5 minutes to ensure medication does not leak out.

6. Monitor patient's respiratory status and vital signs, watching carefully for any signs of respiratory depression or hypotension.

GUIDELINE #14 - INTRAOSSEOUS CANNULATION (OPTIONAL GUIDELINE)

MEDICAL CONTROL ORDER REQUIRED. THIS PROCEDURE SHOULD NOT DELAY TRANSPORT.

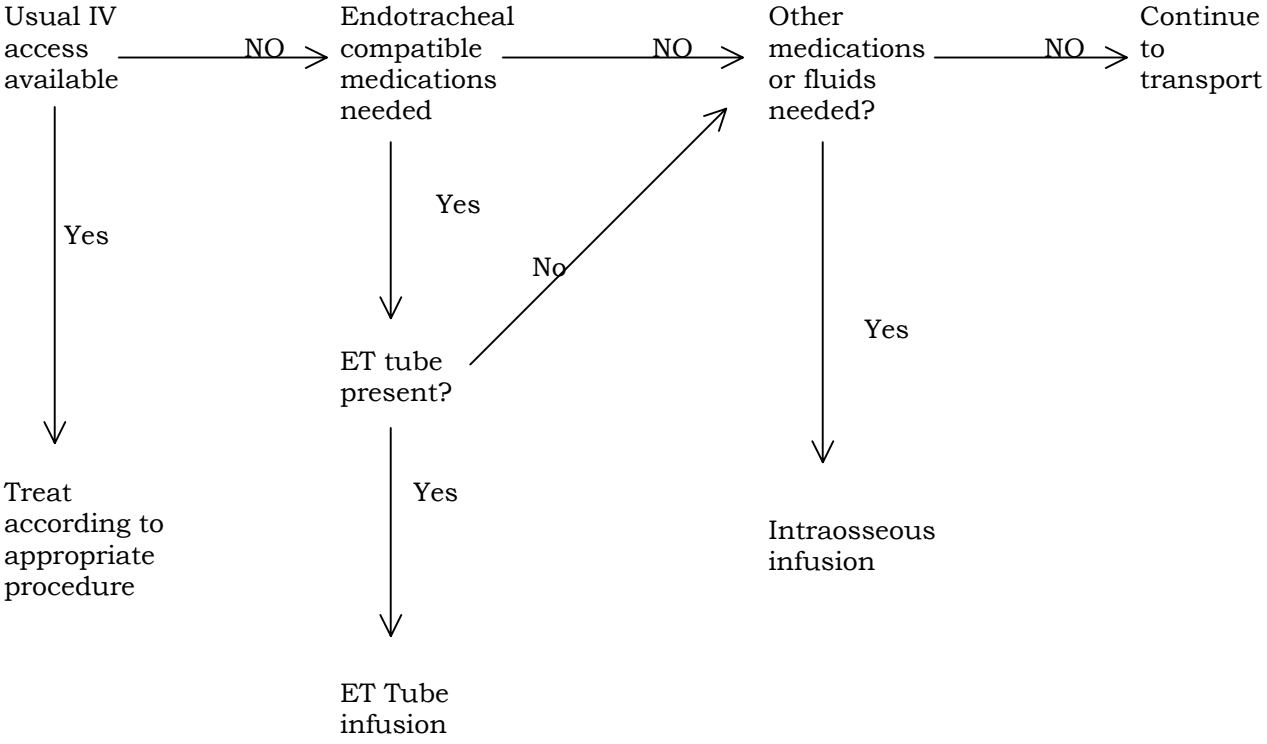
Indications:

1. Patient six (6) years of age and under**.**

2. BLS has been initiated and airway is controlled.

3. IV access is not available after either two (2) attempts or within 90 seconds, and
   a. full arrest, or
   b.imminent arrest secondary to dysrhythmia or hypovolemic shock of any etiology, or
   c.status epilepticus

Decision Tree:



Intraosseous Cannulation

Procedure:

1. Aseptic technique.

2. Allow the leg, with slight flexion at hip and knee, to fall outward.

3. Palpate the flat anterior tibial surface about 2 to 3 cms. below the tibial tuberosity and just medially. Stabilze skin and bone by grasping with thumb and forefinger of nondominant hand.

4. Direct the intraosseous needle slightly off perpendicular caudally.

5. Firm pressure and twisting motion along the needle axis will effect entrance to the marrow cavity as indicated by:

   a.Lack of further resistance, and/or
   b.Maintenance of needle position without support, and/or
   c.Ability to aspirate marrow after stylet removal.
   d.Resistance to IV flow should be relieved by a small bolus of fluid applied through a syringe.

6. The needle may be stabilized by laying a clamp along the flat of the tibia, grasping the needle at skin level and immobilizing the clamp to the leg with the tape.

7. All fluids and drugs utilized in pediatric life support may be infused via the intraosseous route.

8. If unsuccessful with a single attempt at intraosseous cannulation, transport on medical direction while continuing with BLS and ALS procedures.