



Arkansas Department of Health

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Governor Mike Beebe

Paul K. Halverson, DrPH, FACHE, Director and State Health Officer

Memorandum

To: Arkansas Licensed Ambulance Services
Medical Directors- Paramedic & Intermediate

From: David Taylor, Section Chief
Section of EMS & Trauma Systems

Date: March 10, 2006

Ref: Adult Intraosseous (Tibial Only), Continuous Positive Airway Pressure (CPAP),
Huber Needles, and Central Venous Device Access

On January 26, 2006 the Arkansas Board of Health and the Arkansas Department of Health & Human Services approved the use of Adult Intraosseous (**Tibial Only**), Continuous Positive Airway Pressure (CPAP), Huber Needles, and Central Venous Access for Arkansas **Paramedic** licensed ambulance services. **The skills are OPTIONAL and are not required.** If an ambulance service elects to participate, they will be required to submit treatment protocols to the Section for review/approval **before** initiation of the treatment/skill. **Paramedic** ambulance services **electing** to provide the above skills/procedures shall follow the procedures below:

Submit treatment protocols to the Section of EMS & Trauma Systems for review/approval prior to initiation of treatment/skill. Protocols must be submitted for each licensed service/medical director. A statement must be attached to protocol stating that appropriate training will be provided to the paramedics prior to utilization of skill/procedures.

Intermediate licensed ambulance services are approved to incorporate the Adult Intraosseous (**Tibial Only**) skill. Intermediate services **electing** to incorporate Adult Intraosseous (Tibial Only) shall follow the procedures below:

Submit treatment protocols to the Section of EMS & Trauma Systems for review/approval prior to initiation of treatment/skill. Protocols must be submitted for each licensed service/medical director. A statement must be attached to protocol stating

that appropriate training will be provided to the Intermediates prior to utilization of skill/procedures.

As a reminder, services are encouraged to submit training programs for continuing education by following current procedures outlined in the Section of EMS Continuing Education Manual/Catalog available at www.healthyarkansas.com/ems.

SAMPLE protocols, training outlines, and revised inspections sheets are attached to assist you in the development of your service's protocols and implementation plan. It is highly recommended that your medical director has direct involvement regarding the establishment of protocols and training programs. The attached protocols are **SAMPLES only** and should be thoroughly reviewed by medical director. If you need further assistance, please contact me at 1-501-661-2262.

Adult Intraosseous Infusion (IO) Sample Protocol

INTRODUCTION:

The technique of intraosseous infusion (IO) was first described over 70 years ago. It has been used extensively since that time for the administration of fluids, medications and blood. The major advantage of IO infusion is that the bone marrow acts as a non-collapsible vein, which can be easily accessed even in cases such as shock where peripheral veins cannot be found. Any medication or fluid, which can be administered IV can be administered IO in the same dose and concentration. Complications are infrequent (0.6%) and consist mostly of pain and extravasation.

TRAINING:

The Adult IO infusion system requires specific training prior to patient use.

INDICATIONS:

Adult patients 18 years (size/weight of patient may be considered) of age or age set by medical direction/device to be utilized)

1. Intravenous fluids or medications needed and a peripheral IV cannot be established in two attempts or 90 seconds AND exhibit one or more of the following:
 - a. An altered mental status (GCS of 8 or less)
 - b. Respiratory compromise (SaO₂ 80% after appropriate oxygen therapy, respiratory rate < 10 or > 40 / min)
 - c. Hemodynamic instability (Systolic BP of < 90).
2. Adult IO may be considered PRIOR to peripheral IV attempts in the following situations:
 - a. Cardiac arrest (medical or traumatic)
 - b. Profound hypovolemia (Shock) with altered mental status
 - c. Urgent need for IV but veins are not readily available

CONTRAINDICATIONS:

- Fracture of the tibia or femur (consider alternate tibia)
- Previous orthopedic procedure (knee replacement) or IO within 24 hours (consider Alternate tibia)
- Pre-Existing Medical Condition (tumor near site or peripheral vascular disease)
- Infection at insertion site (consider alternate tibia)
- Inability to locate landmarks
 - o Significant edema
 - o Excessive tissue at insertion site

CONSIDERATIONS:

Flow rates:

Due to anatomy of the IO space flow rates may be slower than those achieved with IV catheters.

- Rapidly flush (bolus) 10 ml saline with a syringe through the IO
- Use a pressure bag or pump for continuous infusions

PAIN:

Insertion of the IO device in conscious patients causes mild to moderate discomfort and is usually no more painful than a large bore IV. Infusion through the IO site may cause severe discomfort for conscious patients.

- Prior to IO flush (bolus) on an alert patient, SLOWLY administer 50 mg (1/2 amp) Of 2% Lidocaine through the EZ-IO™.

PRECAUTIONS:

- The IO is not intended prophylactic use.

EQUIPMENT:

- IO Driver and Needle Set
- Alcohol or Betadine Swabs
- 10 Syringe
- Normal Saline (or suitable sterile fluid)
- Tape or Gauze
- Pressure Bag
- 2 % Lidocaine (preservative free)

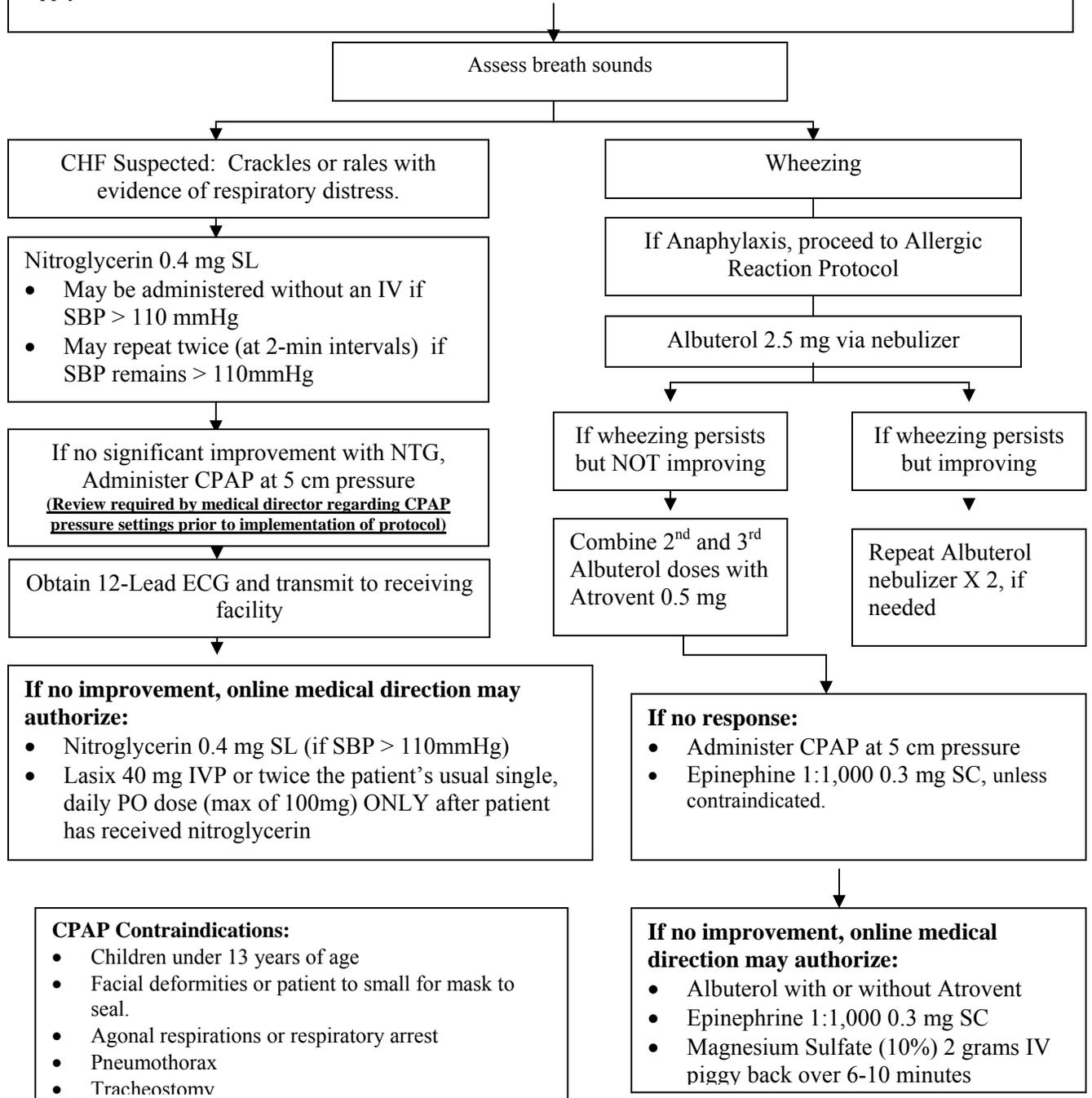
PROCEDURE:

If the patient is conscious, advise them of the EMERGENT NEED for this procedure and obtain informed consent.

- Wear approved Body Substance Isolation Equipment
- Determine IO Indications
- Rule out Contraindications
- Locate insertion site.
- Cleanse insertion site using aseptic technique
- Prepare the IO driver and needle set
- Stabilize leg and insert IO needle set
- Remove Driver from needle set while stabilizing catheter hub
- Remove stylet from needle set, place stylet in shuttle or sharps container
- Confirm placement
- Connect primed extension set
- Conscious patients should now slowly receive 20 – 50 mg 2% Lidocaine (Preservative Free) IO
- Flush or rapidly bolus the IO catheter with 10 ml of normal saline using a 10 ml syringe
- Place a pressure bag (or IV infusion pump) on solution being infused where applicable
- Begin infusion
- Dress site, secure tubing and apply wristband
- Frequently monitor IO catheter site and patient condition

Continuous Positive Airway Pressure Ventilation Respiratory Distress SAMPLE PROTOCOL

Assess and support ABCs. Place the patient in a position of comfort, minimize patient exertion. Apply SP02 ETCO2 monitors. Administer as much oxygen as necessary to alleviate symptoms. Maintain SP02 values of 96% or better. Apply ECG monitor and establish IV access.



For COPD with chronic hypoxia (homeO2), titrate oxygen flow to maintain Spo2 of 88%-92%
Observe for possible depressed ventilation
If ETCO2 rises in response to O2 therapy, the concentration of supplemental oxygen may need to be decreased

Continuous Positive Airway Pressure Ventilation SAMPLE PROTOCOL

Indications:

- Any patient who is complaining of shortness of breath for reasons other than pneumothorax and :
 - Is awake and oriented and able to cooperate;
 - Has the ability to maintain an open airway (GCS>10);
 - Has a respiratory rate greater than 25 breaths per minute;
 - Has a systolic blood pressure above 90 mmHg
 - Uses accessory muscles during respirations

Precautions:

- Exercise extreme caution when administering CPAP if the patient has:
- Impaired mental status and is not able to fully cooperate with the procedure;
- Failed at past attempts at noninvasive ventilation;
- Active upper GI bleeding or history of recent gastric surgery;
- Complains of nausea or is vomiting;
- Excessive secretions

Procedures:

1. Explain the procedure to the patient.
2. Place the patient on continuous pulse oximetry and waveform copnography.
3. Ensure adequate oxygen supply to ventilation device (100 % when starting and until SP02 is > 96%).
4. Place the delivery device over the mouth and nose.
5. Secure the mask with provided straps or the other provided devise
6. Use 5 cm H2O of PEEP
7. Check for air leaks
8. Monitor and document the patient's respiratory response to the treatment
9. Continue to coach patient to keep mask in place and readjust as needed.
10. If respiratory status deteriorates, remove device and provide BVM ventilation with or without endotracheal intubation.

Removal Procedure:

- CPAP therapy should not be removed unless the patient cannot tolerate the mask or experiences continued or worsening respiratory failure.
- BVM ventilation and/or intubation should be considered if the patient is removed from CPAP therapy.

Special Notes:

- Contact medical direction if you know you are going to use CPAP so the receiving hospital can be prepared for patient.
- Upon arrival at the hospital, do no remove CPAP until hospital therapy is ready to be placed on patient.
- Most patients will improve in 5-10 minutes. Of no improvement within this time, consider ventilation with BVM.
- Monitor patient for gastric distention.
- Use nitroglycerine tablets to avoid nitroglycerine spray from being dispersed on medics.

ACCESSING THE IMPLANTED PORT

SAMPLE PROTOCOL

Implanted Infusion Ports:

An infusion “port” or implanted “central catheter” is surgically placed into a large vein in the chest near the collarbone. All parts of the implanted port are placed completely below skin level. Infusion ports are commonly used for long-term, intermittent I.V. therapy.

Assemble Supplies:

Betadine swab sticks	Alcohol swab sticks	Masks
Sterile gloves	Huber needle	Prefilled 10cc NS syringe
2 x 2 gauze		

Procedure:

1. Peel open one corner of the Huber needle package only: extend end of extension tubing only out the opening
2. Attach 10cc syringe to extension tube
3. Place Huber needle package on a secure flat surface and peel back package open.
 - **DO NOT** touch Huber needle until sterile gloves are on
4. Caregiver and patient applies mask or the patient may turn their head away from the port area
5. Open alcohol swab sticks; prep site from center of port and work outward in a circular motion to induced a 2”- 3” area; repeat using all three swab sticks
6. Allow alcohol to air dry and then repeat procedure with three Betadine swab sticks
7. Put on sterile gloves
8. Pick up Huber needle with NS syringe attached; touch only the Huber needle as this is sterile and the syringe is not.
9. Fold wings of Huber needle back and hold securely; remove clear protective sheath from the needle.
10. Locate and stabilize the port site with your thumb and index finger; creating a “V” shape.
11. Access the port by inserting the Huber needle at a 90° angle into the reservoir
12. Once accessed, the needle must not be twisted; excessive twisting will cut the septum and create a drug leakage path
13. Aspirate 10cc of blood and discard. Flush the port with 5-10cc NS
 - **DO NOT** aspirate an arterial port
14. Observe for resistance, selling or discomfort; if present, assess needle placement: remove the Huber and re-access
15. Connect IV tubing, Cover site with Tegaderm and secure the extra tubing with tape to prevent catching on clothes.

Implanted Vascular Access Device (IVAD)

SAMPLE PROTOCOL #2

<u>Access</u>	<u>Key Point</u>
1. Explain procedure to the patient	1. Reduce anxiety for the patient
2. Gather necessary equipment (Huber Needle Box) <ul style="list-style-type: none"> ▪ Central line dressing tray ▪ Huber Needle ▪ 1 ea: 10 and 20 cc syringe ▪ Blood Tubes and Transfer Device ▪ 7 inch extension set ▪ Saline Flush or IV Fluid and drip set 	2. Two sizes of needle will be carried: <ul style="list-style-type: none"> ▪ 20 ga x 1 inch (large pt. with significant tissue over site) ▪ 22 ga x ¾ inch (most patients will accommodate this best)
3. Position patient supine.	3. Air emboli precautions
4. Clean hands with hand sanitizer	4. Standard precautions
5. Palpate area to locate IVAD	5. Confirm IVAD is in proper position to be accessed.
6. Create sterile field by opening dressing kit.	6. Access of IVAD is a sterile procedure
7. Don Sterile gloves and mask. (Note: if patient is coughing, place mask on them also.)	7. Standard sterile precautions.
8. Prep insertion site using alcohol swab sticks. Start at access point and move in concentric circles to a 5 inch diameter. Repeat 3 times.	8. Reduces transmission of microorganisms
9. Prep insertion site using chlorhexadine swab, using back and forth scrubbing motion. Allow to dry.	
10. Stabilize port with thumb and forefinger of the non-dominant hand.	10. Port stabilization allows smooth access which prevents coring of the silicon septum.
11. Access port with the non-coring 90 degree angle needle perpendicular to the port septum. Apply steady pressure until the needle touches the back of the reservoir or is completely inserted. Be sure clamp is closed on extension.	11. Feeling the needle touch the back of the port assures proper access of the IVAD.
12. Secure the site with large occlusive dressing. Be sure to seal the dressing to	12. Reduces the transmission of microorganisms. Sterile technique is no longer required.

the skin around the entire device.

13. Attach 7 inch extension set or hub to Huber needle extension.
 14. Attach the 10 cc syringe. Aspirate 6 -10 cc of blood on an adult. 4 cc on a pediatric patient. Discard this blood
 15. Attach 20 cc syringe. Aspirate 15 – 20 cc of blood for lab draw. Inject blood into vacutainer tubes for transport to ED.
 16. Flush with Saline or attach IV fluids and flush blood from device
 17. Report any swelling or pain at or around access point to ED physician/RN
 18. Discard supplies
14. Assures that all heparin ins removed from the IVAD
 16. Prevents clotting of the device during transport.

De-access

EMS will de-access IVAD only in the event of complications such as swelling or pain at the insertion site or a failed attempt.

1. Don exam gloves and remove dressing
 2. Stabilize port with thumb and forefinger of the non-dominant hand.
 3. Withdraw needle at 90 degrees until click is heard.
 4. Apply light bandage to port
 5. Document the following for every patient:
 - location of port
 - gauge of needle used
 - sterile technique
 - successful access
1. Standard precautions
 2. Prevents unnecessary movement of the port.
 3. Click indicates that needle is seated in the safety position.
 5.
 - Sterile technique and complications are to be documented.

Educational Program: Central Venous Access Huber Needles & Other Central Venous Devices

Purpose

To provide the education component which will cover the indications and process for accessing central venous devices?

Objectives

- Review sterile technique including donning sterile gloves.
- Demonstrate ability to work in/around a sterile technique.
- Understand an Implanted Vascular Access Device (IVAD)
- Understand other central venous devices.
- Demonstrate proper access of site including lab sample, flush, and fluid administration.
- Understand that a properly accessed central venous device allows for administration of medications/fluids as any other peripheral IV line.
- Demonstrate proper de-accessing procedure (Huber Needle only).
- Understand that central line access is intended for use in moderately to critically ill patients and is not to be used as a routine IV therapy by the pre-hospital provider.

Training Procedure

Equipment:

Mannequin

Huber needle (both sizes to demonstrate the difference in the two)

Central line dressing tray

Sterile gloves (non-latex)

1 each 10cc and 20cc syringe

Large occlusive dressing

Implanted Vascular Access Device

Accessing the Port	Key Points
1. Discuss sterile procedure <ul style="list-style-type: none">▪ Sterile field (opening dressing tray)▪ Donning sterile gloves▪ Mask (medic and patient)▪ Assisting with a sterile procedure	1. Review of sterile field.
2. Demonstrate and discuss finding the IVAD.	2. Allow participants feel port on mannequin.
3. Discuss items in Central Line Dressing Tray.	3. Alcohol swabs vs. chlorhexadine.
4. Demonstrate and discuss with EMT proper technique to assist with sterile procedure.	
5. Each paramedic demonstrates donning sterile gloves and mask.	5. Discuss placing mask on patient with cough.
6. Demonstrate proper site preparation.	6. See procedure. (Items 8 and 9)

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| 7. Paramedic demonstrates successful site access and securing of device. | 7. See procedure (Items 10 – 12) |
| 8. Paramedic demonstrates proper lab sample and flushing of device | 8. See procedure (Items 13 – 16) |
| 9. Discuss complications <ul style="list-style-type: none"> ▪ Swelling ▪ Pain ▪ Failed access | 9. ED physician/RN should be notified of any of these (Procedure item 17) |
| 10. Discuss proper documentation of Huber Needle use. | |
| 11. Complete CVL Task Sheet for each paramedic/EMT crew. | |
| 12. Each staff member must complete quiz. | |

Other Central Venous Access Device

- | Accessing the Catheter | Key Points |
|--|--|
| 1. Discuss sterile procedure <ul style="list-style-type: none"> ▪ Non-sterile field ▪ Aseptic review ▪ Assisting with a sterile procedure | 1. Importance of proper access to prevent complications such as infection. |
| 2. Locate device and determine type and necessary equipment for successful access. | 2. Discuss/demonstrate different types of CVL devices, requirements for aspiration, flushing, lab sample, IV infusion. |
| 3. Removal of fluid from catheter to allow for lab sample. | 3. Discuss removal of heparin/NS to get non-diluted lab sample. |
| 4. Obtain lab sample. | 4. Appropriate amount for blood tubes. |
| 5. Troubleshoot inability to draw lab sample. | 5. Review procedure for patient positioning and flush techniques to allow for blood aspiration. |
| 6. Flush catheter | 6. Remove blood from tubing to reduce risk of infection. |
| 7. Attach IV bag. | 7. Discuss gravity should maintain adequate flow. |
| 8. Paramedic demonstrates successful site access and securing of device. | |
| 9. Discuss complications <ul style="list-style-type: none"> ▪ Swelling ▪ Pain ▪ Failed access | 9. ED physician/RN should be notified of any of these |

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| 10. Document access and any complications | 10. Discuss proper documentation of procedure |
| 11. Complete CVL Task Sheet for each paramedic/EMT crew. | |
| 12. Each staff member must complete quiz. | 12. 90% required for validation |