

	<b>APPROVAL DATE</b>  <b>June 2017</b>	<b>MANUAL:</b> <b>Standardized Procedure</b>
		<b>SECTION:</b> <b>Pediatric CHET</b>
		<b>TRACKING #</b> <b>SP 3-06</b>
	<b>TITLE:</b> <b>NEEDLE THORACENTESIS (CLOSED CHEST ASPIRATION)</b>	
<input type="checkbox"/> <b>POLICY</b> <input type="checkbox"/> <b>PROCEDURE</b> <input type="checkbox"/> <b>STANDARD OF CARE</b> <input checked="" type="checkbox"/> <b>STANDARDIZED PROCEDURE</b> <input type="checkbox"/> <b>GUIDELINE</b> <input type="checkbox"/> <b>OTHER</b>		

**I. PURPOSE**

This standardized procedure is designed to establish guidelines that will enable the Advanced Life Support (ALS) Registered Nurse (RN) and Advanced Life Support (ALS) Respiratory Therapist (RT) to perform needle thoracentesis (closed chest needle aspiration while on transport or on RCHSD Campus in an emergency setting.

**II. DEFINITIONS:**

This procedure includes needle thoracentesis (closed chest needle aspiration) to remove air or fluid from the pleural space, thereby improving ventilatory function. Emergency closed chest needle aspiration in the child may be required for relief of symptoms due to tension pneumothorax.

Pneumothorax, when under tension presents a life threatening emergency and thoracentesis must be performed immediately.

1. A child is unstable with the clinical signs of a tension pneumothorax
2. A child is stable and is intubated and has radiographic evidence of a pneumothorax

**III. POLICY:**

A. Standardized Procedure (SP) Function(s): patients requiring needle thoracentesis due to a tension pneumothorax.

Treatment of tension pneumothorax consists of immediate decompression. This should be done without confirmatory chest x-ray since delay can be fatal.

B. Circumstances under which an ALS RN may perform Standardized Procedure function(s):

1. Setting: Rady Children’s Hospital San Diego Campus. Any setting or outlying facility in the process of transferring a patient to a higher level of care via the Rady Children’s Emergency Transport system
2. Scope of Supervision /Collaboration: Overall supervision is provided by the appropriate supervising &/or attending physician
  - a. In the event that an Advanced Life Support policy or procedure is altered via a referring physician (verbal or written order) then the ALS nurse will inform the physician that he/she is not competent to carry out the altered plan and must either adhere to the procedure or relinquish responsibility to the physician.
  - b. When possible, the PICU attending should be contacted before the procedure. In all emergencies, the primary physician will be notified as soon as possible while advanced life support is being initiated.

- c. Under all circumstances the Advanced Life Support team will carry out urgent resuscitation according to the procedure.
  3. Patient conditions requiring physician notification:
    - a. Unsuccessful Procedure
    - b. Profound bleeding
    - c. If patient's condition is unstable
    - d. If there are any complications or unexpected outcomes from the procedure
    - e. In an emergency; as soon as possible while advanced life support is being initiated.
    - f. If any complications result in performance of the procedure
    - g. Prior to departure from referring facility with patient status information
- C. RN/RT requirements:
  1. Education/Training/Experience – below will be documented and maintained in the employee file
  2. Attend the Advanced Life Support didactic training classes (minimum of 40 hours)
    - a. Pass all written and performance tests administered during the course with a minimum of 94% accuracy on the final exam.
    - b. Demonstrate procedure on manikin
  3. Initial Competency Assessment: observed and signed off by team manager
    - a. At completion of ALS Training will demonstrate assessment and proper preparation of the patient and equipment via simulation
    - b. Will function as the Team Leader in the “mega code” testing scenario
  4. Annual competency Assessment:
    - a. Complete 2 successful needle decompressions supervised by an Attending Physician, NP or experienced ALS RN or ALS RT.
    - b. If minimum number of annual procedures not obtained, the following are options for competency maintenance:
      - Attend skills lab offered biannually (procedure review & simulation)
      - Complete Annual Competency validation test
      - 1:1 simulation & demonstration check off
    - c. If consecutive years of failure to obtain minimum number required procedures ALS RN or ALS RT will be required to again complete Initial competency assessment.
    - d. Participation with mock codes (expected: 2 annually)
    - e. RN/RTs authorized to perform Standardized Procedure function(s): A written record of initial and ongoing competency will be maintained in the employee file

#### **IV. PROCEDURE**

##### **A. Database**

1. Subjective
  1. Historical information relevant to present illness.
  2. History including reactions/allergies to medications
2. Objective
  1. Physical examination with focus on pulmonary and cardiovascular systems
3. Assessment
  1. Decision for needle thoracentesis will be based upon subjective and objective data
4. Plan
  1. Patients and families will be provided with the appropriate information prior to initiation of the procedure if not an emergent lifesaving procedure, and obtain consent as per hospital protocol.
  2. A chest x-ray will be obtained upon completion or procedure
  3. The physician must be contacted if any of the following complications occur:
    - If the child remains unstable after the thoracentesis
    - If the child develops any complications from the thoracentesis procedure
  4. Documentation of the procedure performed, outcome, and any complications will be recorded on the transport Record.
  5. In all emergencies, the PICU Attending on-call and the transport physician coordinator will be notified as soon as possible while advanced life support is being initiated. When possible the PICU attending on-call should be contacted

prior to the procedure.

- B. Indication
  - 1. Symptomatic treatment of air or fluid accumulation in the pleural space
- C. Contraindications
  - 1. No absolute contraindications
- D. Equipment
  - 1. ECG/O2 saturation monitors in place with alarms on
  - 2. Antiseptic solution
  - 3. 30cc syringe
  - 4. #14 to #18 IV catheter (non-insyte style)
  - 5. 3-way stopcock
  - 6. IV extension tubing
  - 7. Heimlich valve
  - 8. Tape
- E. Essential steps for procedure/practice: Thoracentesis
  - 1. Gather equipment
  - 2. Connect the 3-way stopcock and syringe to IV extension tubing.
  - 3. Turn the stopcock "off" to the remaining outlet (off to the atmosphere)
  - 4. Prepare sterile intracath and open Povidone swabs (*add chlorhexidine/chloraprep*)
  - 5. Position the child supine with affected side slightly elevated and restrain child's arms and legs.
  - 6. Prep area with antiseptic solution
  - 7. Locate nipple, sternum, and fourth and fifth intercostal space (ICS) mid axillary. Enter the 4th or 5th ICS with intracath pointed toward opposite shoulder. Enter just above the ribs or enter second ICS just above third rib mid clavicular. Steady the needle in this position and remove needle guide
  - 8. Attach IV extension tubing with 3-way stopcock and syringe to the hub of the intracath. Pull syringe to aspirate air. Turn the stopcock off to the patient and expel air from the syringe. Repeat process until resistance is encountered
  - 9. As you are aspirating air, observe child's heart rate. Listen for improvement in breath sounds. When no more air is obtained with aspiration, turn 3-way stopcock off to the patient
  - 10. Tape the intracath in place and attach Heimlich valve to IV extension tubing. If air reaccumulates, continue to aspirate air from chest until a chest tube is inserted
  - 11. Obtain a chest radiograph as soon as possible
  - 12. Observe child's respiratory status, (color, rate, effort) before, during, and after procedure
- F. Documentation
  - 1. Upon stabilization of patient, document procedure on the Transport Record. Include signs and symptoms manifested, site of puncture, amount withdrawn, vital signs before and after procedure
  - 2. A written consent per hospital protocol will be obtained and placed in the patient's medical record prior to procedure if not a lifesaving procedure. If consent not obtained in advance, parent/guardian to be notified as soon as possible after procedure.
  - 3. A copy of the transport record will be scanned or paper copy placed into the patient's medical record upon final disposition.

## **V. DEVELOPMENT & APPROVAL**

- A. Method - Development and approval of this standardized procedure as stated in Policy CPM -1-12
- B. Review Schedule – Review every 3 years. Revision process should begin 30 months after most recent approval date and entire review process to be completed within 36 months of last approval date.
- C. Required Approval(s)
  - 1. Pediatric Critical Care CHET team and CHET team leadership (review, revise, approve and provide education and dissemination of changes)
  - 2. PICU CHET Medical Director (review, revise and approve)
  - 3. Allied Health Professional/Interdisciplinary Practice Committee (AHP/IDC) Approval
  - 4. MSEC: Final approval, modification or rejection. ,

**VI. REFERENCES:**

Curley, M. et al (2007), Critical Care Nursing of Infants and Children 2<sup>nd</sup> Ed. Philadelphia: Saunders.

Insoft, R. et al (2016). Guidelines for Air and Ground Transport of Neonatal and Pediatric Patients. 4<sup>th</sup> Ed. Elk Grove, IL: American Academy of Pediatrics

Nichols, D. (2008). Rogers Textbook of Pediatric Intensive Care 4th Ed. Baltimore: Lippincott Williams and Wilkins

Samson, R. et al (2016). *Pediatric Advanced Life Support*. Dallas: American Heart Association.

**VII. CROSS REFERENCES:**

A. Development and Approval of Standardized Procedures, Protocols and Standing Orders. CPM 1-12

**VIII. ATTACHMENTS: N/A**

A. A list of Competency Validated RN's will be kept in the CHET office

**IX. APPROVALS**

A. Pediatric Transport Team – May 2017

B. Pediatric Transport Team Medical Director – May 2017

C. Allied Health Professional/Interdisciplinary Practice Committee (AHP/IDC) pending

D. RCHSD Medical Staff Executive Committee – pending

**X. REPLACES: N/A**

**XI. HISTORY: N/A**