

	Policies and Procedures RNSP: Advanced RN Intervention Title: CHEST TUBES: IRRIGATION AND/OR ADMINISTRATION OF A MEDICATION TO THE PLEURAL SPACE I.D. Number: 1016
Authorization: <input checked="" type="checkbox"/> SHR Nursing Practice Committee <input checked="" type="checkbox"/> Critical Care Executive Committee	Source: Nursing Date Revised: November 2016 Date Effective: September 2016 Scope: SPH ICU

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DEFINITIONS:

Health Care Professional- for the purpose of this policy, Health Care Professional will be used to refer to the Registered Nurse, physician or their designate

Intrapleural instillation is the delivery of the medication into the pleural space. The goal is to breakdown any areas of infective material or fibrin within the pleural space that may impair the flow of drainage.

Pleurodesis fusion of the visceral and parietal pleura by instilling a sclerosing agent through a chest tube or via talc insufflations.

ROLES:

Registered Nurses (RNs): RNs identified by the manager in targeted practice settings will be certified in this RN Specialty Practice (Advanced RN Intervention): Intrapleural Irrigation and /or medication administration via Chest Tubes

1. PURPOSE

- 1.1 To safely irrigate the pleural space
- 1.2 To safely administer medications into the pleural space

2. POLICY

- 2.1 The RN certified in this RNSP will have first completed the following learning modules/activities prior to performing intrapleural irrigation and /or medication administration via chest tubes:
 - Attended an educational session on intrapleural irrigation and /or medication administration into chest tubes:
 - Completed the learning package and quiz and returned it to the CNE
 - Complete skills checklist with a certified RN during first intrapleural irrigation and/or medication administration into chest tubes, to validate and ensure safety checks are followed appropriately.
- 2.2 A written physicians order is required for intrapleural irrigation or administration of an intrapleural medication. They must specify the type, amount of solution or medication, frequency and length of dwell time.
- 2.3 All RN's may add the irrigation set up to the chest drainage system
- 2.4 **Only a Registered Nurse who has received the RNSP certification or the physician may irrigate and instill into the chest tube.**
- 2.5 **Pleurodesis is performed by the physician only.**
- 2.6 For single dose medication, intrapleural medications are administered manually with a syringe not an infusion pump.
- 2.7 For irrigations or antibiotic instillation over several hours, an infusion pump may be used.
- 2.8 Notify the physician if the patient experiences any of the following symptoms
 - Difficulty breathing during/after irrigation/instillation
 - Signs and symptoms of bleeding
 - Significant pain during/after irrigation/instillation

3. PROCEDURES

- 3.1 Patient teaching:
 - 3.1.1 Explain the purpose and the goal of the procedure
 - 3.1.2 Explain to the patient what to expect during and after the procedure
 - 3.1.2.1 During the procedure some pressure and slight discomfort during the procedure
 - 3.1.2.2 After the procedure: the chest tube may be clamped for a few hours as ordered by the physician and once the chest tube is unclamped there may be more drainage. This will be closely monitored by the nurse. There should be no drainage around the chest tube site, but if this occurs the nurse will notify the physician. If bleeding occurs the nurse will immediately notify the physician.
 - 3.1.2.3 Advise the patient to notify the nurse immediately if any of the following occur:
 - Difficulty with breathing
 - Any drainage from the chest tube site
 - Any pain during/after instillation of solution

3.2 Supplies:

- Sterile gloves
- Sterile drape
- Facemask with shield
- Chlorhexidine
- 2 Chest tube clamps per chest tube
- Needleless adaptor ex. Microclave
- T-connector or stopcock as indicated below
 - See Appendix A for photos

3.3 Adding the Irrigation Set Up to the Chest Drainage System **(All RNs can do)**

Note: *the small bore drains (pigtail drains) often are already connected to a stopcock and chest drainage set (ex. Truclose drainage), the system is already set up for irrigation/instillation.*

- 3.3.1 Wash hands and don gloves and mask with face shield. Proceed using aseptic technique
- 3.3.2 Clamp the chest tube closest to the patient using 2 clamps in opposite direction
- 3.3.3 Chest tube should be clamped less than one minute
- 3.3.4 Insert the stop cock or T-connector between the chest tube and the chest drainage set. If using an T-connector, apply a needleless adaptor to the remaining stopcock port
- 3.3.5 Remove the chest tube clamps.
- 3.3.6 Secure the non-luer lock connections with waterproof tape
- 3.3.7 Assess the chest drainage system for signs of a leak.

3.4 Intermittent Intrapleural Irrigation of the chest tube **(RNSP Certified RNs only)**

- 3.4.1 Prepare the non-medicated (NaCl 0.9%) irrigation solution
- 3.4.2 Turn off suction if applicable
- 3.4.3 Stopcock inline:
 - 3.4.3.1 Turn the stopcock "off" to drainage
 - 3.4.3.2 Clean the injection cap of the needleless adaptor on the 4-way stopcock with an alcohol swab and allow air to dry (contact time 30 seconds)
 - 3.4.3.3 Insert syringe in the injection cap
 - 3.4.3.4 Instill the prescribed amount of solution. Stop instillation and notify physician if a lot of resistance is felt or the patient complains of pressure or pain
 - 3.4.3.5 Clamp the chest tube for the prescribed time (keeping the stopcock off to drainage).
 - 3.4.3.6 If the chest tube is not ordered to be clamped after the irrigation, open the stopcock between the chest tube and the drainage system and turn the suction back on if applicable.

3.4.4 T-connector with needleless adaptor in place:

- 3.4.4.1 Clamp the chest tube below the connector
- 3.4.4.2 Clean the injection cap of the needleless adaptor on the T-connector with an alcohol swab and allow air to dry (contact time 30 seconds)
- 3.4.4.3 Insert syringe in the injection cap
- 3.4.4.4 Instill the prescribed amount of solution. Stop instillation and notify physician if resistance is felt or the patient complains of pressure or pain
- 3.4.4.5 Clamp the chest tube for the prescribed time (keeping the stopcock off toward the patient).
- 3.4.4.6 If the chest tube is not ordered to be clamped after the irrigation, turn the suction back on if applicable.

3.5 Administration of medication in the pleural space: (RNSP Certified RNs only)

3.5.1 Prepare the prescribed medication

3.5.2 Turn off suction if applicable

3.5.3 Stopcock inline:

- 3.5.3.1 Turn the stopcock "off" to drainage
- 3.5.3.2 Clean the injection port of the needleless adaptor on the 4-way stopcock with an alcohol swab and allow air to dry (contact time 30 seconds)
- 3.5.3.3 Insert syringe in the injection cap
- 3.5.3.4 Instill the prescribed medication. Stop administration and notify physician if resistance is felt or the patient complains of pressure or pain
- 3.5.3.5 Clamp the chest tube for the prescribed time (turn stopcock off toward the patient).
- 3.5.3.6 If the chest tube is not ordered to be clamped after the medication administration, open the stopcock between the chest tube and the drainage system and turn the suction back on if applicable

3.5.4 T-connector with needleless adaptor in place:

- 3.5.4.1 Clamp the chest tube below the connector
- 3.5.4.2 Clean the injection needleless adaptor on the T-connector with an alcohol swab and allow air to dry (contact time 30 seconds)
- 3.5.4.3 Insert syringe in the injection cap
- 3.5.4.4 Instill the prescribed medication. Stop medication administration and notify physician if resistance is felt or the patient complains of pressure or pain
- 3.5.4.5 Clamp the chest tube for the prescribed time
- 3.5.4.6 If the chest tube is not order to be clamped after the medication administration, turn the suction back on if applicable

3.5.5 Administration of a continuous infusion (antibiotic or Normal Saline)

- 3.5.5.1 Clean the injection port of the needleless adaptor on the 4- way stopcock with an alcohol swab and allow to dry (contact time 15 seconds)
- 3.5.5.2 Connect the infusion tubing to the needleless adaptor
- 3.5.5.3 Cover all injection ports with colored tape
- 3.5.5.4 Program the infusion pump to the prescribed rate
- 3.5.5.5 Identify infusion pump as "intrapleural" infusion (e.g. put tape across pump and label as Intrapleural Infusion)
- 3.5.5.6 Monitor patient as per medication administration policy and per chest tube policy

- 3.6 Assess patient and chest tube system in 15 minutes then q 1hr prn
- Vital signs including SpO₂
 - Rate, depth and ease of respirations
 - Skin color
 - Lung auscultation
 - Insertion site
 - Amount and type of drainage
 - Occurrence of subcutaneous emphysema or any other signs of distress
 - Patient comfort

Note: Occasionally, if there is a loculated effusion, the lytic effect of the medication may be quite dramatic and may result in a pressure-like pain. This may also cause drainage around the insertion site.

- 3.7 Document amount of solution or medication given and any change in patient condition or drainage noted.

4. REFERENCES

Chest drainage (small and large bore chest tube) adding an irrigation set up to a drainage system and intrapleural irrigation, instillation. Nursing policies, procedure & protocols the Ottawa Hospital 2007.

New England Journal of Medicine.

<http://www.nejm.org/doi/full/10.1056/NEJMoa1012740?viewType=Print&viewClass=Print> 1/5/2016

Rahman et al. Intrapleural use of tissue plasminogen activator and DNase in pleural infection.

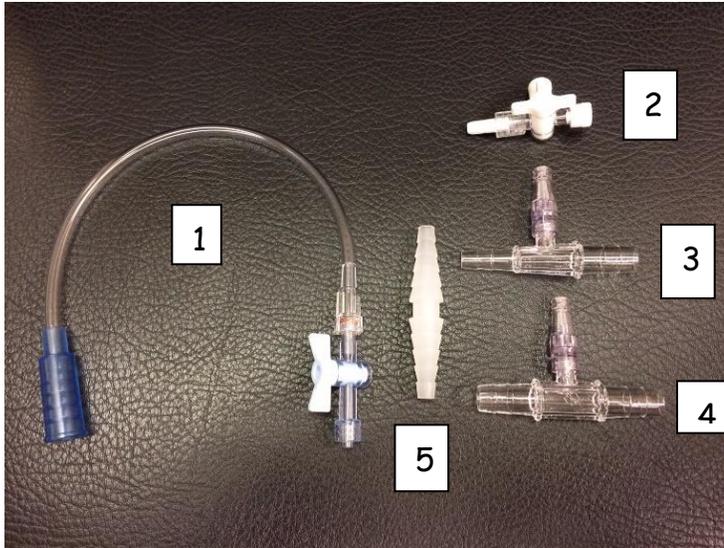
Rahman, Najib M. Intrapleural agents for pleural infection: fibrinolytics and beyond. Volume 18, Number 4 July 2012. www.co-pulmonarymedicine.com

Tissue Plasminogen Activator (TPA, Activase) and Pulmozyme (dornase alpha) Intrapleural for loculated empyema protocol. 07/2014 Gwinnett Hospital System

Appendix A

Connection Devices to be used between chest tubes and collection device

A T-connector or stop-cock to be placed between the chest tube and the collection device, the item will be dependent on the size of the 2 ends



1. Custom contrast /fluid Management kit [SKU 46882]
2. 4-way stopcock [SKU 40090]
3. ¼ x 3/8 inch T-connector (Special order)
4. 3/8 x 3/8 inch T- connector (Special order)
5. Sterile 5 in 1 connector [SKU 536455]

Chest tube drainage system		
Chest tube	Underwater Chest Drainage Set	Truclose Drainage
1. Small bore chest tube ex. Pig tail	<ul style="list-style-type: none"> • 4-way stopcock SKU 40090 • Fluid management kit SKU 46882 	<ul style="list-style-type: none"> • 4-way stopcock SKU 40090
2. Midsized chest tube ex. 20 Fr thoracic silicone catheter	<ul style="list-style-type: none"> • T- connector + needleless adaptor (¼ x 3/8 inch) <p>**this is the only chest tube that needs this size connector</p>	<ul style="list-style-type: none"> • T- connector + needleless adaptor (¼ x 3/8 inch) • Fluid management kit SKU 46882
3. Large bore chest tube or Thoracic silicon catheter ex. Size 24 or larger or Thal-quick chest tube	<ul style="list-style-type: none"> • T connector + needleless adaptor (3/8 x 3/8 inch) 	<ul style="list-style-type: none"> • T connector + needleless adaptor (3/8 x 3/8 inch) • Fluid management kit SKU 46882