

 <p>CLINICAL PRACTICE GUIDELINE</p>	Practice Guideline: ASSISTING WITH PERICARDIOCENTESIS	
	Approval Date: Revised September 15, 2022	Pages: 1 of 6
	Approval By: Professional Advisory Committee Standards Committee	Supercedes: Aug 20, 2020

PURPOSE AND INTENT

The following Clinical Practice Guideline is intended to provide direction in the assistance of pericardiocentesis.

GUIDELINE STATEMENTS

1. Ensure personnel trained and experience in resuscitation and advance airway management are available to respond immediately in the event of an emergency when a pericardiocentesis is to be performed.
2. Two-dimensional echocardiographic confirmation of pericardial fluid with hemodynamic evidence of cardiac tamponade precedes a pericardiocentesis. This step may not be done if patient is hemodynamically unstable.
3. Echocardiography is recommended during the procedure to assist with needle insertion. The echocardiogram technologist will provide any additional supplies that may be required.

SKILL ALERT:

Performance of the following procedure requires advanced knowledge and skill on cardiac monitoring and procedural sedation and analgesia (moderate conscious sedation).

EQUIPMENT:

1. Two-dimensional echocardiography equipment.
2. Cardiac monitor including pulse oximetry.
3. Appropriate maximal barrier precautions attire (sterile gloves, procedure masks, disposable surgical caps, sterile gowns).
4. Sterile fenestrated drape(s).
5. 2% Chlorhexidine with 70% alcohol swab sticks.
6. Local anesthetic (2% Xylocaine without Epinephrine).
7. 20 or 25 gauge needle for local anesthetic.
8. Externally sterile 10 mL pre-filled saline syringes.

9. Pericardial aspiration tray – may include the following:
 - a. 2 – 60 mL luer lok syringes for manual aspiration
 - b. Sterile bowl or container
 - c. 2 – Sterile 4 x 4 gauze
 - d. 2 – 4-way stopcocks
 - e. 1 Spinal needle 3 ½” – 18 gauge
 - f. 1 Spinal needle 3 ½ - 20 gauge
 - g. 1 Spinal needle 3 ½ - 22 gauge
 - h. Disposable scalpel (size #11)
 - i. 2 – 20 mL luer lok syringes
 - j. 2 – 10 mL luer lok syringes
10. 2 – Empty sterile drainage bags or bottles with attached drain line for aspirated fluid.
11. Specimen containers with orange lids for fluid analysis (biochemistry, microbiology, immunology, hematology, pathology).
12. Specimen labels.

Additional Equipment for Indwelling Pericardial Catheter:

1. Pigtail catheter, 6- to 8-Fr (commonly used 8.3 Fr x 41 cm).
2. J guide wire (0.035” (inch) diameter).
3. Drain sponge.
4. Sterile 4 x 4 gauze.
5. Adhesive fabric dressing tape (eg. Mefix™).
6. 4-way stopcock.
7. Securement Device of appropriate size (eg. StatLock® or catheter stabilization device).
8. Drainage bag (may be urine drainage bag).
9. Male/Female Luer Lock Cap (non-vented cap or dead end cap).
10. Urethral connecting tube (connects catheter to stopcock).

PROCEDURE:

1. Perform hand hygiene before direct patient contact and subsequently as clinically indicated.
2. Ensure a patent IV line insitu and infusing.
3. Ensure the patient is on a cardiac monitor and baseline rhythm strip has been obtained.

SPECIAL CONSIDERATIONS:

An IV line is required for emergency medication administration.

PROCEDURE:

4. Obtain baseline vitals and assessment including:
 - a. Heart rate/rhythm
 - b. Blood pressure
 - c. Respiratory rate
 - d. Oxygen saturation
 - e. Level of consciousness
 - f. Current lab values including the CBC, electrolytes and coagulation profile are available
5. Continuously monitor ECG, vital signs and oximetry during the procedure. Notify physician immediately of any changes.
6. Prepare and administer analgesic or sedation as ordered.
7. Position patient supine with head of bed 30-45 degrees or as directed by the physician.
8. Don procedure gloves.
9. Assist the physician as directed with preparing the sterile field and draping the patient. Open the pericardiocentesis tray and supplies as directed using aseptic technique.
10. Assist the physician as needed with skin prep utilizing 2% Chlorhexidine with 70% alcohol and allow to dry.
11. Remove gloves, perform hand hygiene and don barrier precautions as required.

SPECIAL CONSIDERATIONS:

This data is needed to compare any changes during or following the procedure.

These values aid in identifying potential for cardiac dysrhythmias or abnormal bleeding.

Arrhythmias may occur. If the needle contacts the ventricle, ST segment depression is seen; with atrial contact, PR segment elevation is seen.

Do not delay procedure to administer these agents in the unstable or deteriorating patient.

This position facilitates gravity drainage and aspiration of pericardial fluid. For procedures guided by echocardiogram, position patient as per technologist's instructions.

Allow skin prep (2% Chlorhexidine with 70% alcohol) to dry for 3 minutes.

Anyone working directly over a sterile field must wear a disposable surgical cap, procedure mask, sterile gloves and sterile gown.

If anyone is working in the area, but not directly over the sterile field, they must

PROCEDURE:

12. Assist physician with procedure as directed.
13. Assist with pericardial specimen collection for lab analysis.
14. If an indwelling pericardial catheter is ***not required:***
 - a. Once the physician has removed the needle, cleanse area with 2% Chlorhexidine with 70% alcohol and allow to dry.
 - b. Apply sterile 4x4 gauze over puncture site or dressing as ordered by the physician.
 - c. Apply adhesive fabric dressing tape over gauze.
 - d. Label dressing with date and time.
15. If an indwelling pericardial catheter ***is required*** then:
 - a. Assist with connecting the 4-way stopcock to the pericardial catheter (and drainage bag if ordered).
 - b. Cleanse insertion site and surrounding area with 2% Chlorhexidine with 70% alcohol swab sticks and allow to dry.
 - c. Secure catheter to the chest wall using a securement device.
 - d. Apply sterile drain sponge around pericardial catheter and cover with a sterile 4 x 4 gauze.
 - e. Apply adhesive fabric dressing tape over gauze.
 - f. Label dressing with date and time.

SPECIAL CONSIDERATIONS:

wear a disposable surgical cap and procedure mask.

Typical lab tests include cytology, cell count, electrolytes, routine aerobic and anaerobic cultures, and acid-fast bacilli cultures.

Additional gauze may be used for excessive drainage as needed.

Dressing should be removed or changed in 48 hours.

The physician will indicate if the pericardial catheter will be attached to a drainage bag and whether continuous or intermittent drainage is required.

If no drainage bag is applied, ensure the stopcock is closed off to the patient and any unused port has a “dead end” cap attached to it.

The physician may also secure the catheter with a suture.

Additional gauze may be used for excessive drainage as needed.

Dressings should only be changed if dressing is lifting, leaking, saturated or as ordered by the physician to prevent infection and/or accidental dislodgement.

PROCEDURE:

16. Monitor vital signs and site for bleeding q15 min x 4, q30 min x 2, Q1H x 2, Q4H for 24 hr. Continue ECG monitoring as ordered.

17. Assess for possible post-procedure complications.

18. Send collected specimens for ordered tests.

SPECIAL CONSIDERATIONS:

Vital signs may be monitored as per specific unit protocols or physician orders.

A chest x-ray may be ordered to assess for pneumothorax/hemothorax.

An echocardiogram may be ordered for confirmation of catheter placement if an indwelling pericardial catheter was inserted.

The physician may also order hemoglobin, hematocrit and coagulation studies

Potential complications include:

- Bleeding/Hematoma at the site
- Arrhythmias
- Pericarditis/Endocarditis
- Hemothorax/pneumothorax
- Perforation of ventricle, atrium, coronary vessels
- Infection
- Tamponade

DOCUMENTATION:

Intensive Care Flowsheet or Nursing documentation tool for your area:

1. Time, drainage amount, color and volume of fluid aspirated.
2. Placement of indwelling catheter and/or drainage bag, if applicable.
3. Specimens sent.
4. ECG rhythm strips.
5. Patient's response.

REFERENCES:

- Becker, Deborah E. (2017). Procedure 43: Pericardiocentesis (Assist). In Debra Lynn-McHale Wiegand (Ed.), *AACN Procedure Manual for High Acuity, Progressive and Critical Care* (349-355). St. Louis, Missouri: Elsevier Saunders.
- Elsevier Mosby Nursing Skills Online Resource. *Pericardiocentesis*. Retrieved on June 8, 2018 from https://lms.elsevierperformancemanager.com/ContentArea/NursingSkills/GetNursingSkillsDetails/?skillkeyid=56&skillid=CC_042.
- Holt, Brian D. (2015). *Diagnosis and treatment of pericardial effusion*. Retrieved from UpToDate <https://www.uptodate.com/contents/diagnosis-and-treatment-of-pericardial-effusion>.
- Maggiolini, S., Gentile, G., Farina, A., De Carlini, C.C., Lenatti, L., Meles, E., Achilli, F., Tempesta, A., Brucato, A., and Imazio, M. (2016). Safety, Efficacy, and Complications of pericardiocentesis by Real-Time Echo-Monitored Procedure. *The American Journal of Cardiology*, Vol 117, Issue 8, 15April 2016, 1369-1374. <http://dx.doi.org/10.1016/j.amjcard.2016.01.043>.
- Rieke, Liza & Cmolik, Brian. (2016). Pericardiocentesis. In D.A. Taylor et al. (eds.). *Interventional Critical Care* (189-199). Switzerland: Springer International Publishing. DOI 10.1007/978-3-319-25286-5_21.
- Sadiz, Adnan & Wall, Michael. (2012). Chapter 9 Pericardiocentesis. In Falter, F. (Ed.), *Bedside Procedures in the ICU* (05-103). London: Springer-Verlag London Limited.
- Whetstone, Janet G. & Prevost, Suzanne S. (May 31 2012). *Advanced Practice Nursing of Adults in Critical Care*. Philadelphia: F.A. Davis Company.