Children's National Hospital
Division of Nursing & Patient Services

Nursing Practice Guideline

Chapter: Respiratory 2

Date Effective: 06/02
Last Updated: 10/23

Pigtail Catheter Flushing

Table of Contents

I. Definitions/Explanations

A. Description:

1. A chest tube (large bore) is inserted into the chest to drain fluid, air, or blood from the intrapleural or mediastinal space in the pediatric patient. This guideline discusses pigtail catheters, but for care of patients with a chest tube, please reference the Chest Tube Management NPG.

2. In comparison, a pigtail drain (small bore) can also be used as a drainage device. The pigtail is a flexible small bore catheter placed percutaneously, making it less invasive and less painful, as it is introduced through the skin with a guide wire. It is not inserted surgically, has fewer procedural complications, and leaves a smaller scar. The pigtail tube contains a drain valve which enables user to apply suction or flush the catheter if needed.

B. Indications for pigtail catheter use

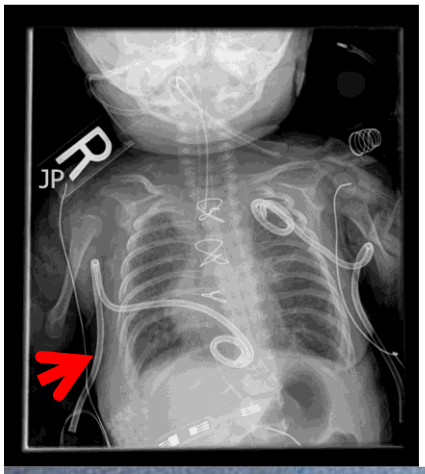
1. Pleural effusion

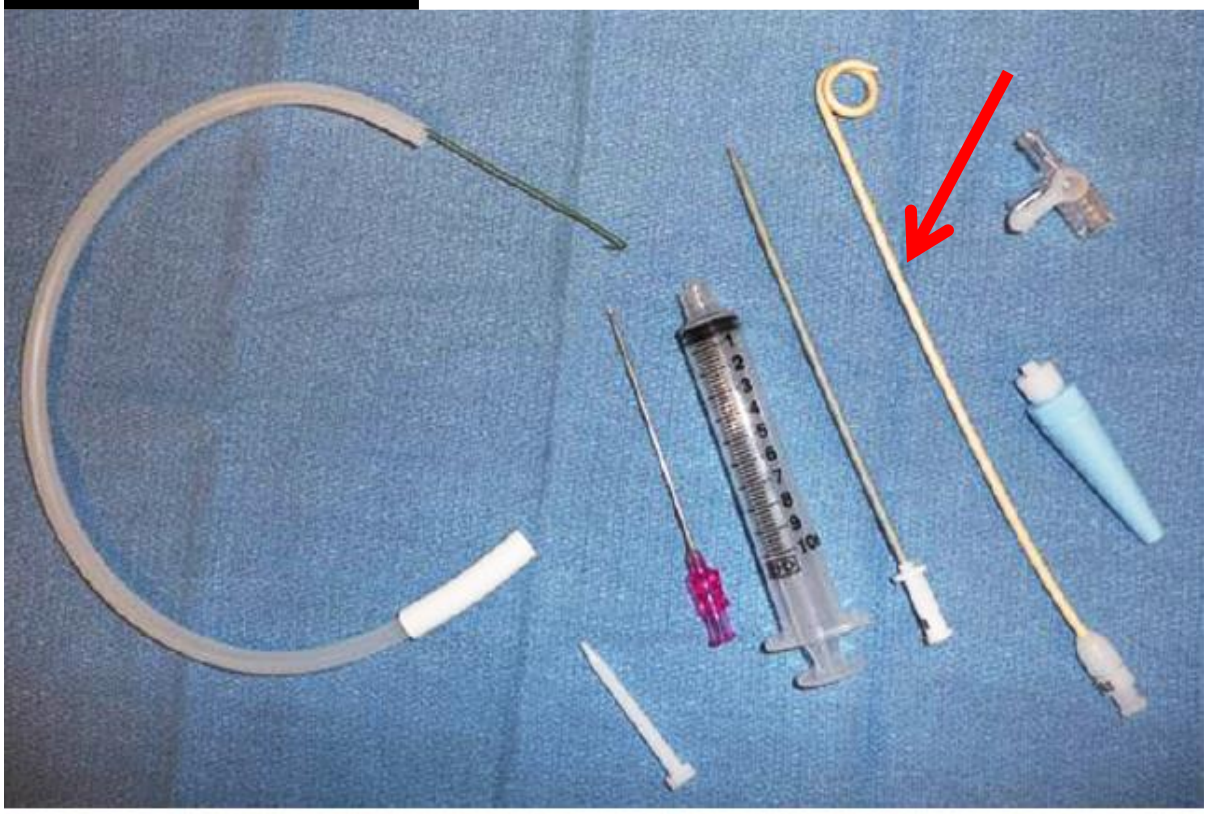
2. Chylothorax

3. Pneumothorax
4. Hemothorax
5. Empyema
6. Drainage of pooling blood post cardiac surgery

C. Indications for flushing:
1. Cessation of drainage
2. Water seal chamber stops fluctuating with respiration

II. Illustrations of the Pigtail catheter:





III. Assessment

A. Obtain baseline assessment prior to flushing pigtail catheter

1. Vital signs

2. Monitoring

a. Cardiopulmonary monitor

b. Pulse oximetry

c. Chest x-ray film discussed with LP or designee

3. Physical assessment

a. Respirations (rate, breath sounds, effort)

b. Water seal chamber stops fluctuating with respiration
Patients with open sternotomy may/will have an air leak

c. Circulation (heart rate, heart sounds, skin color, peripheral perfusion and pulses)

4. Evaluation of catheter insertion site

a. Pain

b. Color

c. Bleeding

d. Condition of dressing

e. Drainage from around chest tube

f. Integrity of suture (if present)

g. Security of catheter to patient

h. Integrity of tube and drainage system

IV. Implementation

A. A licensed practitioner (LP) order is required prior to the pigtail catheter being flushed.

B. A designated health care provider RN or LP who has demonstrated competency in flushing a pigtail catheter will perform the procedure.

V. Procedure

A. Pigtails are to be flushed by the RN or LP according to the order by the LP.

B. Supplies

1. Absorbent pad (i.e. chux)

2. Chlorhexidine gluconate (CHG) applicator

3. Clean gloves

4. 10 mL syringe filled with 5 mL of normal saline or a dose of alteplase as ordered by the LP. Dosage and amount may change depending on size of patient.

5. Cap (usually a red cap but sometimes a blue clave is used)

C. Create a clean field under the port using an absorbent pad.

D. Turn off suction.

E. Close the stopcock to the patient.

F. Access the pigtail catheter at the capped port of the 3-way stopcock.

G. Remove the cap and cleanse port with chlorhexidine.

H. Then attach prefilled 10 mL syringe (with ordered amount of flush volume) to the port.
I. Turn the stopcock "off" to the drainage collection chamber.
J. Instill ordered amount of flush volume.
K. Slowly aspirate any clot or fluid (NICU – do not aspirate – skip to step M). Aspirated fluid may be flushed to the collection chamber by turning the stopcock "off" to the patient and flushing towards the collection chamber. (STOPCOCK MUST ALWAYS BE "OFF" TO PATIENT BEFORE ACCESSING OR DEACCESSING PORT).
L. Continue to aspirate and flush into the collection chamber until no more drainage can be obtained.
M. Then, turn the stopcock "off" to the patient. Remove the syringe and place a new cap on the stopcock port.
N. Turn the stopcock back to neutral position to allow drainage from the chest to the drainage system.
O. Change the dressing using clean technique as needed.
P. Ensure the catheter is secured in place by the appropriate taping method (i.e. a stress loop)
Q. Include pigtail flush amount as intake in the patient's intake and output totals (see documentation section).

VI. Complications / Causes / Treatments

Complication	Causes	Treatment
Unable to flush the pigtail catheter	1. Kinking of catheter 2. Thrombus formation 3. Catheter malposition	1. Assess to make sure the port is open to the patient and there are no kinks in the catheter 2. Have the patient change positions (arms over head, side lying position) while attempting to flush the catheter. 3. **DO NOT** use excessive force to flush the catheter since this may cause rupture of the catheter or expulsion of the clot into the chest. If you are unable to flush the tubing after assessing for patency and changing the patient's position, notify the LP.
Complication	**Causes**	**Treatment**
Unable to aspirate fluid	1. Catheter malposition 2. Clot at tip of catheter	1. Have the patient change positions (arms over head side lying position) while attempting to aspirate. 2. Slowly flush the catheter again and attempt to aspirate. 3. If you are unable to aspirate fluid after changing the patient's position and re-flushing the catheter, notify the LP.

VII. Patient and Family Education

A. Discuss procedure and indication for pigtail flushing including any distraction/comfort techniques, pain control, and infection control taken.

VIII. Documentation

A. Document under "Intake/Output"- amount flushed under "Miscellaneous Intake" and amount returned under "Chest Tube Output"

B. Document vital signs before and after flushing

IX. References

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X. Reviewers

A. Cardiac Surgery

B. Shared Nursing Leadership Practice Council – PICU

C. Shared Nursing Leadership Practice Council – CICU

D. Shared Nursing Leadership Quality and Safe Practice Council – Systems Level

E. CICU Medical Director

XI. Legal Statement

The nursing practice guidelines are intended to serve as a reference for the nurses in their practice. The compilation of information provided is drawn from relevant literature research from juried, reliable and respected sources. The guidelines are not intended to replace individual judgment but instead to inform decision making. The material is updated approximately every 12-24 months.

XII. Approval

_____ _____

Senior Vice President & Chief Nursing Officer Date

Original Date: 06/02
Revised Date: 07/03, 12/06, 06/08, 06/09, 12/10, 03/13, 03/15, 03/17,7/19, 10/21, 10/23

Appendix A: Competency for Pigtail Flushing

Name:	Unit:
Employee ID:	Date Completed:

COMPETENCY VALIDATION CHECKLIST: Pigtail Flushing Competency
COMPETENCY STATEMENT: A successful pigtail flush with must be demonstrated to validate competency.
VALIDATION KEY: VF = Verbal Feedback, OB = Observation, D = Discussion, RD = Return Demonstration

Performance Criteria	Method of Validation	Validator Initials	Comments
Explains indications and possible complications for pigtail flushing	VF D		
Explains rational to the patient/family including risks and the process of the procedure	VF D		
Perform proper hand hygiene and standard precautions	RD		
Identify patient using two patient identifiers per hospital policy	RD		
Procedure	**Method of Validation**	**Validator Initials**	**Comments**
Gather supplies listed in NPG	RD		
Create clean field under pigtail port using absorbent (i.e. chux) pad	RD		
Turn the stopcock off to the patient	RD		
Clean the port to be accessed using clean technique with CHG	RD		
Attach the 10mL syringe to the port	RD		
Turn the stopcock off to the drainage system	RD		
Gently flush the tube with 3-5mL of normal saline (or heparinized saline if ordered)	RD		
Slowly aspirate any clot or fluid. Continue to aspirate until no further drainage can be obtained	RD		

Remove the syringe and place a new red cap to the stopcock port.	RD		
Turn the stopcock back to the neutral position to allow drainage from the chest to the drainage system	RD		
Change the dressing using clean technique as needed	RD		
Ensure the catheter is secured into place by the appropriate taping method (i.e. a stress loop)	RD		
Include pigtail flush amount as intake in the patient's intake totals	RD		

Preceptor Name (Please Print)	Initials	Date