JoVE: Science Education

Discontinuing Intravenous fluids and a Peripheral Intravenous Line

--Manuscript Draft--

Manuscript Number:	10278
Full Title:	Discontinuing Intravenous fluids and a Peripheral Intravenous Line
Article Type:	Manuscript
Section/Category:	Manuscript Submission
Corresponding Author:	Katie Baraki UNITED STATES
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	
Corresponding Author's Secondary Institution:	
First Author:	Katie Baraki
First Author Secondary Information:	
Order of Authors:	Katie Baraki
	Madeline Lassche
Order of Authors Secondary Information:	

Author Name

Madeline Lassche, MSNEd RN; Katie Baraki, MS RN

Clinical Skills Education Title

Discontinuing Intravenous fluids and a Peripheral Intravenous Line

Overview

Intravenous fluid administration and peripheral intravenous catheters may be discontinued for a number of reasons. The most common ~~reasonfor~~reason for discontinuing intravenous fluids is that the patient has returned to normal body fluid volume (euvolemia) and is able to maintain adequate oral fluid intake. Peripheral intravenous catheters are commonly discontinued because the patient is either being discharged from the hospital or of the the peripheral intravenous catheter has been in place for 72 to 96 hours. The Centers for Disease Control Guidelines for the Prevention of Intravascular Catheter-Related Infections (2011) recommends replacing peripheral intravenous catheters every 72 to 96 hours in adults to prevent risk of infection or phlebitis. If the peripheral intravenous catheter becomes dislodged or if the insertion site demonstrates signs and symptoms of infection, infiltration, extravasation or phlebitis, the peripheral intravenous catheter should be discontinued and replaced. For pediatric patients, the Infusion Nurses Society recommends replacing the peripheral intravenous catheter only when the intravenous infusion site is no longer patent or demonstrates signs and symptoms of complications.

Commented [DN1]: Please check… also the sentence seems to be redundant.

This video describes the approach to discontinue intravenous fluid administration and peripheral intravenous catheters.

Procedure

Preparation

1. General intravenous fluid infusion discontinuation and peripheral intravenous catheter (PIV) removal considerations (review in the room, with the patient).

1.1 Upon first entering the patient's room, clean your hands with a sanitizer or with soap and warm water, applying vigorous friction for at least 20 seconds.

1. Review the patient's electronic medical record for fluid volume status. This includes intake and output total volumes and serum laboratory results, assessment of the vital signs, skin turgor and mucus membranes, and the patient's ability to maintain adequate oral fluid intake. In addition, review current medication orders to determine if there is a continued need for intravenous access and intravenous medication administration. Note if the patient's history indicates increased risk of bleeding following the peripheral line removal, including bleeding disorders, anticoagulant therapy, and low platelet counts.

1.3 Verify the patient's identity using 2 independent identifiers, not including the patient's room number or bed number. These might include the patient's name and record number.

1.4. Review the PIV removal procedure with the patient, answering any questions or discussing their concerns. Discuss with the patient their preference for using the tape versus non-adhesive self-adhering wrap following the peripheral intravenous catheter removal. Patient allergies to tape adhesive will require the use of non-adhesive self-adhering wrap.

1.5. Inspect the intravenous catheter insertion site for redness, swelling or bruising. Redness can indicate irritation, inflammation, infection or formation of a thrombus. Bruising at the insertion site could be a sign of a hematoma, which may cause a damage to the surrounding tissues.

1.6. Gently palpate the area around the intravenous catheter insertion site, assessing for tenderness and swelling. Ask the patient if the area feels tender or painful. Tenderness may suggest inflammation or infection at the insertion site.

1.7. Repeat the palpation of the area around the intravenous catheter insertion site, while palpating the same area on the other limb with your other hand. During the palpation pay attention to the temperature (both increased and decreased), skin texture (soft, boggy, tight), and the swelling (note any differences in size between the two limbs). Increased temperature may indicate inflammation or infection, while decreased temperature and bogginess may suggest an infiltration.

1.8. Take note of any abnormal findings to determine if ~~the~~ further intervention is needed and for the documentation following peripheral intravenous catheter removal.

Commented [DN2]: Please check.

1.9. Leave the patient room and wash the hands as described above (1.1).

2. Gather supplies needed for PIV removal, including two sterile 2x2 gauze packages, an absorbent pad, tape or non-adhesive self-adhering wrap.

~~Discontinuing the Intravenous fluids and removal of the peripheral intravenous catheter.~~

3.1. Position the bedside stand or the over-bed table on the same side as the peripheral insertion site and place the supplies on the table.

4. Discontinue the intravenous fluid administration.

4.1 Hold the IV tubing in your non-dominant hand, and slide the roller clamp towards the narrow clamp end to occlude the tubing with the other hand. Clamping the extension tubing will prevent back flow of blood into the extension tubing following discontinuation of intravenous fluid administration.

Commented [DN3]: To occlude WITH the other hand? Is that correct?

4.1.1 If the intravenous pump is used, press and hold the "Channel Off" button on the IV pump channel until the channel powers down to stop the intravenous infusion and then proceed to clamping the extension tubing.

Commented [DN4]: Are we going to demonstrate this or it is just an alternative?

4.2 Dispose the fluid bag and tubing according to facility policy ~~and~~ into the appropriate receptacle.

5. Prepare the patient and supplies for the peripheral intravenous catheter removal.

5.1. Place an absorbent pad under the peripheral intravenous insertion site.

5.2. Open two 2 x 2 sterile gauze packages, leaving them on their sterile packaging and place them within easy reach on the bedside stand or the over-bed table. Take care not to contaminate the sterile gauze.

6. Remove the peripheral intravenous catheter.

6.1. Wash hands as described in step 1.1 and don clean non-sterile gloves.

6.2. Remove the transparent dressing that covers the peripheral intravenous catheter.

6.2.1. With your dominant hand, gently peel up one proximal corner of the transparent dressing, while holding the skin taut near the dressing removal site with your non-dominant hand. Holding the skin taut decreases pain and helps to prevent the skin injury during the removal of the transparent dressing.

6.2.2. Peel back the transparent dressing with your dominant hand towards the catheter and away from the patient while continuing to hold the skin taught near the dressing removal site. Peeling the dressing towards the catheter and away from the patient prevents unintentional removal of the peripheral intravenous catheter before you are prepared to do so.

6.3. Remove the gloves, wash the hands as described in Step 1.1 and apply clean non-sterile gloves.

6.2. Grasp the peripheral intravenous catheter near the catheter hub between the dominant thumb and index finger ~~of your dominant hand~~.

6.3. Fold one gauze in half. Hold the gauze gently over the peripheral intravenous insertion site with your non-dominant hand.

6.4. With your dominant hand, remove the peripheral intravenous catheter by pulling the catheter out along the line of the vein and away from the patient.

6.5. With your non-dominant hand, apply firm pressure to the gauze over the insertion site for 1 to 3 minutes or until bleeding stops.

6.6. With your dominant hand, fold the remaining clean 2 x 2 gauze in half, remove the soiled gauze and then place the folded, clean gauze over the peripheral catheter insertion site.

6.7. Secure the clean gauze to the peripheral catheter insertion site wound with tape or non-adhesive self-adhering dressing. Be mindful to apply adequate pressure but not so tight as to occlude peripheral circulation.

6.8. Monitor the peripheral catheter insertion site wound for bleeding and instruct the patient to apply pressure to the site and to notify you if the site begins to bleed.

6.9. Assess the removed PIV to determine if the catheter is intact. The catheter should not be shortened and should have a clean edge to the catheter tip. A shortened or jagged catheter tip suggests that a portion of the catheter has detached and may remain in the patient. The primary care provider should be notified immediately.

6.10. Remove and discard gloves, soiled gauze and the trash into the appropriate disposal receptacle and according to facility policy.

6.11. Wash hands as described in Step 1.1

7. Document discontinuation of intravenous fluids and peripheral intravenous catheter removal in the patient's electronic health record.

7.1. Documentation should include the patient's response to the peripheral intravenous catheter removal and any abnormal findings.

Summary

While discontinuation of intravenous fluids and removal of a peripheral intravenous catheter appears to be a straight-forward process, the nurse should ensure an adequate preparation and assessment prior to the procedure and monitor ~~close~~ the patient ~~monitoring~~ closely afterwards. Prior to discontinuing intravenous fluids and removing the PIV the nurse must verify that the patient no longer requires intravenous therapy and educate the patient to ensure that they understand their responsibilities to maintain an adequate hydration. Both the nurse and the patient need to continue to monitor the insertion site wound for bleeding, bruising, pain and infection. Bleeding from the insertion site may require additional pressure and intervention to prevent blood loss. Progressive bruising at the insertion site may indicate bleeding into the tissues. This may result in compromised peripheral circulation and increased pressure into the tissues, which could potentially lead to compartment syndrome. Common mistakes when discontinuing a peripheral IV include not acquiring appropriate supplies, neglecting to stop fluid administration prior the procedure, and failure to monitor the insertion site for complications following the catheter removal.

Figures

Figure 1: Visual Phlebitis Scale

Commented [AS5]: I don't think this is necessary for the manuscript

References

1. Infusion Nurses Society (2011). *Policies and procedures for infusion nursing, 4th edition.* Chapter 5, vascular access device site selection and placement.
2. Potter, P. A. & Perry, A. G. (2009). *Fundamentals of Nursing, 7th edition.* St. Louis, MO Elsevier Inc.

3. Centers for Disease Control. (2011). Guidelines for the prevention of intravascular catheter-related infections. Department of Health and Human Services.