CAREPATHrx™
Specialty Pharmacy & Infusion Solutions

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SUBCUTANEOUS INFUSION

Section: Nursing
Compliance: ACHC Infusion Pharmacy
INS Standards: 8, 10, 11, 12, 13, 16, 17, 18, 20, 21, 58, 59
ACHC STANDARDS: DRX2-10D, DRX5-1D, DRX5-5E, DRX7-8I, DRX7-21A
TJC STANDARDS: IC.02.01.01, MM.05.01.07, MM.06.01.01, MM.06.01.03, MM.07.01.01, NPSG.01.01.01, PC.01.02.07, PC.02.01.01, PC.02.01.03, PC.02.02.05, PC.02.03.01
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I. POLICY

To guide safe practice associated with the initiation, maintenance, and monitoring of subcutaneous infusion therapy. Subcutaneous infusion therapy is a technique whereby fluids or medications are infused into the subcutaneous tissue via small gauge needles inserted into the abdomen, arms, back or thighs. The subcutaneous route may be used to infuse isotonic solutions for treatment of dehydration (HYPODERMOCLYSIS), continuous opioid infusions for pain control, non-vesicant neoplastic agents, certain antibiotics (e.g., ceftriaxone, ertapenem), immunoglobins, endocrine medications (e.g., hydrocortisone, pamidronate, parathormone), gastrointestinal medications (e.g., granisetron, metoclopramide, ondansetron, palonosetron), monoclonal antibodies (e.g., alemtuzumab, trastuzumab) , and other therapies/medications (e.g., midazolam and furosemide) as prescribed. Subcutaneous infusion offers several advantages over intravenous infusion, including ease of administration, and lack of potential serious complications**. For administration of Subcutaneous Immunoglobulin (Refer to CarepathRx (2022) *Subcutaneous Immunoglobulin Infusion,* NUR218).**

II. PROCEDURES

A. Supplies: (Additional supplies may be required)

1. Gloves
2. Subcutaneous infusion set (24 -to 27-gauge); (Pediatric length:4,6mm; adult length: 9, 12,14 mm) with transparent dressings (single or multi needle)
3. Flow rate tubing
4. Needleless end connector
5. Tape
6. Antiseptic cleanser
7. Prefilled medication syringe or cassette
8. Syringe (for checking for needle placement)
9. Syringe tip cap

10. Gauze and Band-Aid
11. Infusion pump
12. Sharps container

B. Verify patient using 2 identifiers.

C. Review prescriber's order. Verify the medication matches the medication label. Compare medication or solution to prescriber's order and medication label to ensure right patient, right dose, right route of administration, rate of administration, and total volume to infuse.

D. Prior to use, allow medication or solution reach room temperature according to medication label or manufacturer's instructions for use.

E. Perform hand hygiene (refer to CarepathRx (2022). Hand Hygiene, NUR 018).

F. Clean and disinfect work area using an appropriate disinfectant.

G. Explain procedure and educate patient/caregiver:

1. Risks, benefits, and goals of treatment
2. Aseptic technique and hand hygiene
3. Medication preparation
4. Troubleshooting infusion pump
5. Signs and symptoms of a reaction
6. Signs and symptoms of access complications
7. Side effects of treatment and management
8. Safe storage of medication and supplies
9. Disposal of medications, supplies and equipment
10. The appropriate provider of treatment (the prescriber OR the pharmacist; BOTH the prescriber and the pharmacist) to contact during business hours, the availability of an answering system to receive calls during evenings, nights, weekends and holidays and the accessibility of a Pharmacist, Nurse, and Dietician 24 hours a day, 7 days a week. Notify pharmacy by calling the number listed at the top of the medication label; (Refer to CarepathRx (2022). BEST PRACTICE GUIDELINES, NUR 002; II. ALGORITHM FOR NOTIFICATION OF PHARMACIST AND PROVIDER).

H. Gather all equipment on a clean, disinfected, aseptic field.

I. Inspect equipment and supplies for product integrity and function before use; inspect packaging for damage; inspect vial(s)/cassette/bag for cracks, particulate matter, and clarity of medication. Verify expiration date.

J. Immediately prior to equipment assembly, hand hygiene is repeated, and non-sterile gloves are donned.

K. Prepare medications or solutions for infusion according to medication label or package insert.

L. Attach pump tubing to syringe, bag, or cassette of medication or solution.

M. Attach needleless end cap to the end of the subcutaneous needle administration set. Cleanse the needleless end cap with an alcohol swab using a vigorous scrub for 30 seconds and allow to dry for 60 seconds. Attach pump tubing to needleless end cap.

N. Prime the pump tubing and subcutaneous administration set according to medication package insert or pump manufacturer's instructions for priming tubing.

O. Place patient in a comfortable position.

P. Select site(s): (Consider patient's mobility, comfort, and site preference)

1. Select areas with intact skin and adequate subcutaneous tissue
2. Abdomen (at least 2 inches from umbilicus)
3. Deltoid
4. Left iliac fossa (considered the preferred zone due to maximal distance between colon and abdominal wall)
5. Infraclavicular
6. Intrascapular
7. Flank
8. Hips
9. Thighs

Q. Site rotation recommendations:

1. Rotate site used for hydration every 24-48 hours or after 1.5 to 2 liters of fluid has infused.
2. Rotate site used for continuous medication administration every 2 to 7 days.
3. Rotate site used for intermittent infusions with each administration.
4. New sites should be at least 1 inch from previous administration sites.

R. AVOID:

1. Bony prominences
2. Joints
3. Previous surgical incisions
4. Damaged skin (radiation therapy)
5. Ascites
6. Lymphedema
7. Mastectomy
8. Intercostal space in patients with cachexia (due to high risk of pneumothorax)
9. Areas near the waist
10. Areas with infection, scars, stretch marks, bruises, tattoos
11. Tumors
12. Ascites
13. Lymphedema
14. Inner thigh if urinary catheter present
15. Thigh if peripheral vascular insufficiency exists.

S. Insert Needles:

1. Adhere to Standard Precautions (refer to CarepathRX (2022). *Standard Precautions*, NUR019) and to standard ANTT (refer to CarepathRx (2022). *Aseptic Non-Touch Technique*, NUR016) during access device placement.

2. Perform skin antisepsis using a friction scrub for at least 30 seconds and allow to dry for 60 seconds.

3. With 2 fingers pinch together an inch of skin and insert needle rapidly at a 90-degree angle into the skin and secure with transparent dressing. Repeat for each additional site. May infuse into multiple sites simultaneously as required for high-volume infusions per physician's order. For multiple sites, refer to medication package insert for maximum number of sites and distance between sites. Change infusion sites with each administration. New sites should be at least 1 inch from previous site.

4. Check placement **if indicated** in manufacturer's package insert. Gently pull back on the plunger of attached syringe (Freedom 60 syringe) to check for a blood return in the tubing of the needle set. If blood is seen in the tubing, remove and discard the needle if using a single needle administration set. Repeat steps M-S if using a single needle set. If using a multi-needle administration set and blood is noted in one or more of the bifurcated tubings, clamp the tubing(s) where the blood is noted and contact the pharmacy to see if it is safe to proceed with remaining sites due to a decrease in the number of infusion sites and increase in volume to be infused into those remaining sites.

T. Turn pump on to begin the infusion.

U. Discard used supplies, remove gloves, and perform hand hygiene.

V. Monitor patient and access site for erythema, swelling, leaking, bleeding, bruising, burning, abscess or pain.

1. Leaking at the infusion site can be an indication of:
   a. Improper needle placement and securement or placed in an area subject to excessive movement
   b. Inadequacy of subcutaneous tissue
   c. Needle length (too short or too long)
   d. Volume infused per site
   e. Rate of infusion
2. Pain
   a. Assess length: may be too long and positioned in the muscle and not the subcutaneous tissue.
   b. Try a topical anesthetic prior to insertion.

W. Once medication has infused:

1. Turn pump off
2. Leave needles in skin for an additional 5 minutes to permit additional absorption time
3. Perform hand hygiene and don gloves
4. Remove dressing(s) from the skin

5. Remove subcutaneous needle(s) by pulling the needle wings straight up and out
6. Apply Band-Aid if desired
7. Dispose of administration set in a sharps container that is closeable, puncture-resistant, and leakproof
8. Remove gloves and discard
9. Perform hand hygiene

X. Post Infusion Monitoring:

1. Refer to medication package insert or therapy specific guidelines for post infusion monitoring.
2. In the absence of specified instructions for post infusion monitoring, the nurse will remain with the patient for at least 30 minutes following first and subsequent medication administration(s) of specialty or immunotherapy infusions to monitor vital signs (temperature, pulse, respirations, and blood pressure) and response to therapy.
3. Nurse will remain with the patient for at least 30 minutes following first dose administration of intravenous antimicrobials, antibiotics, antifungals, continuous opioid infusions for pain control, non-vesicant neoplastic agents, endocrine medications, and gastrointestinal medications to monitor vital signs (temperature, pulse, respirations, and blood pressure), potential reactions or adverse effects and response to therapy.

Y. Document:

1. Patient's response to needle insertion and removal procedures.
2. Patient's response to infusion therapy, including symptoms, side effects or adverse events.
3. Education provided both verbal and written
4. Access related documentation:
   a. site preparation
   b. infection prevention
   c. date and time of insertion
   d. number of access sites and location
   e. gauge and length of needles
   f. medication, infusion rate, and method of administration
   g. length of time of administration
   h. dressing
   i. condition of access site prior to and after infusion therapy
   j. upon removal: condition of site, condition of access device, reason for removal, dressing applied

REFERENCES

Infusion Nurses Society. 8th Edition (2021). Infusion Therapy Standards of Practice. *Journal of Infusion Nursing, Volume 44.*

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