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Preparing and Administering Primary Intermittent Intravenous Medications with an Infusion Pump

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Preparing and Administering Primary Intermittent Intravenous Medications with an Infusion Pump

Overview

Intravenous (IV) medication administration as intermittent infusions is used to deliver drugs over specific periods of time at varying intervals. It is commonly used to administer antibiotics. This method allows quick attainment of medication peak blood concentration.

Intermittent IV infusions can be administered alone, as primary infusions, or as secondary infusions, which are delivered with another IV medication, usually maintenance fluids. High-volume (50 mL to 500 mL) IV medications are typically administered using infusion pumps. These medical devices consist of a main pump PC unit (the brain) and interlocking modules or channels, in which the IV tubing is contained. The infusion pumps allow delivery of IV fluids in a volume-controlled manner, keeping the medication side effects to a minimum and preventing the medication errors. Prior an intravenous medication administration the nurse must perform a careful review of the physician order, pharmacy recommendations in the medication administration record, and medication compatibility with maintenance fluids using an approved medication drug guide.

This video describes the approach to administer primary intermittent intravenous infusion medications using an intravenous infusion pump. We will review acquiring the primary intermittent intravenous infusion medication, priming the intravenous tubing, preparing the patient and programming the infusion pump. While the procedure outlines the steps for a specific brand of infusion pumps, the general concepts and principles remain the same, although the steps may vary slightly from brand to brand.

Procedure

1. General procedure considerations (review in the room, with the patient).

- 1.1 Upon first entering the patient's room, wash hands with soap and warm water or with hand sanitizers using vigorous friction for at least 20 seconds.

1.2 Confirm that the patient requires administration of the primary intermittent intravenous medication infusion (hereto referred to as “IV infusion medication”) in the patient electronic health record.

Review the patient’s medical history, allergies, admitting diagnosis, current conditions and oral intake ability. This review is conducted to

Commented [DN1]: Incomplete?

1.3 Review the patient’s Medication Administration Record for maintenance IV fluid and IV infusion medication orders, including the type of IV infusion medication ordered, type of maintenance IV fluid, compatibility of the IV infusion medication and the maintenance IV fluid, and the rate of IV infusion medication administration. The IV infusion medication review, IV infusion medication administration rate, and compatibility of the IV infusion medication with the maintenance IV fluids must be verified in an approved medication administration guide prior to administering the IV medication. For example, Phenytoin is incompatible with all solutions containing dextrose and most other medications. ~~It~~ therefore it should be delivered as a primary intermittent infusion.

Commented [DN2]: The sentence seems to be incorrect. It implies that the medication review must be verified...???

1.4 Leave the patient’s room, wash hands as described above (1.1).

2. In the medication preparation area acquire the ordered IV infusion medication and complete the first safety check [using adhering to](#) the 5 rights of medication administration (Refer to the video “Safety Checks and Five Rights of Medication Administration for Acquiring Medications from a Medication Dispensing Device”).

3. Acquire infusion pump intravenous tubing (hereto referred to as “IV tubing”).

4. Prime the IV tubing with the IV infusion medication fluid.

4.1. Open IV tubing packaging.

4.2. Occlude the IV tubing by sliding the roller clamp towards the narrow end and place the tubing on the counter. This will prevent air being pulled into the tubing and fluid leakage once the IV infusion medication bag is inverted.

4.3. Hold the IV infusion medication bag port with your non-dominant thumb and index finger.

4.4. Grasp the rubber pigtail that covers the IV infusion medication bag port with your dominant hand and then pull, removing the pigtail. Set the rubber pigtail on the counter, taking care not to touch the IV infusion medication bag port opening. If this occurs, the IV infusion medication bag is contaminated and a new bag should be acquired.

4.5. Pick up the IV tubing with the middle finger and the base of the thumb, and slide the protective cover from the IV tubing spike with the tip of the thumb and index finger taking care

not to touch the tubing spike. If this occurs, the IV tubing is contaminated and new IV tubing should be acquired. Drop the cover on the counter.

4.6. While still holding the IV infusion medication bag as described in step 4.3, hold the base of the IV tubing spike between your dominant thumb and index finger and insert the spike into the IV infusion medication bag port with a gentle twisting motion.

4.7. Invert the IV infusion medication bag with your non-dominant hand and hold it near eye-level. Hold the drip chamber and the tubing with your dominant hand. Gently squeeze the drip chamber with your dominant thumb and index finger until it is filled 1/3 to 1/2 full with IV infusion medication fluid.

4.8. Open the tubing by gently rolling the roller clamp toward the larger end of the clamp with until the fluid just starts to flow. This will allow fluid to flow into the tubing and air to be pushed out of the tubing without any loss of medication.

4.9. When the fluid has reached the end of the tubing, stop the flow by moving the roller clamp toward the narrow end of the clamp.

5.0. In the medication preparation area complete the second safety check using-adhering to the 5 rights of medication administration. (Refer to the video Safety Checks and Five Rights of Medication Administration for Acquiring Medications from a Medication Dispensing Device).

6.0. Acquire the appropriate equipment and supplies, including infusion pump channel, a 10mL normal saline flush and alcohol wipes. Dispose of waste in the proper waste disposal receptacle.

Administration

8.0. Upon first entering the patient's room, set aside equipment, IV infusion medication, tubing, and additional supplies and wash hands as described in step 1.1.

9.0. Complete the third, and final, medication safety check adhering to the 5 rights of medication administration. (Refer to the video "Preparing and Administering Oral and Liquid Medications").

10.0. Assess and flush the peripheral intravenous insertion site. Refer to the video "Assessing and Flushing a Peripheral Intravenous Line" but use the following variation.

10.1. Temporarily pause the maintenance IV fluid by pressing the "hold button" of the maintenance IV fluid infusion pump module.

10.2. Instead of flushing the peripheral IV needless port, locate the needless injection site on the maintenance IV tubing that is closest to the patient. Cleanse this needless injection site and use it to flush the peripheral intravenous line.

10.3. Flush and assess the peripheral IV site as described in the video “Assessing and Flushing a PIV Line”. Restart the maintenance IV fluid pump by pressing the “restart button” on the maintenance IV fluid module.

10.4 Prepare the IV pump.

10.4.1 Align the IV pump module unit with the IV PC unit of the pump. Hold the IV pump module next to the right or left side of the IV pump PC unit or “brain” and align the connection points by gently tipping the top of the module up and towards the IV pump brain, and then push the bottom of the module down and towards the pump until it clicks (or locks in place).

10.4.2 Align one of the hooks at the top of the IV fluid pole with the hole ~~in~~^{at} the top of the IV infusion medication bag and allow the bag to hang.

10.4.3 Inspect the IV tubing for air. If the IV tubing has air, repeat the steps 4.7-4.9 to remove the air from the IV tubing, taking care not to lose a large amount of IV infusion medication. If a large amount of the medication is lost, a new IV infusion medication bag should be acquired.

10.4.4 Remove the paper ties from the IV tubing and the sheath covering the IV infusion pump cartridge portion of the tubing. Wash hands as described in 1.1 and put on clean gloves.

10.5. Prepare the intravenous infusion pump.

10.5.1. Open the IV pump module door by lifting up on the module pump lever.

10.5.2. Load the administration set of the IV tubing into the module. Place the upper fitment of the tubing into the module groove at the top of the infusion module, and then slide the safety clamp into its compartment near the bottom of the module.

10.5.3. Close the IV pump module door and push down on the IV pump module door lever until it locks shut.

10.6. Connect the IV infusion medication tubing to the maintenance IV needless injection site closest to the patient’s peripheral IV.

10.6.1. Locate the maintenance IV needless injection site closest to the patient’s peripheral IV.

10.6.2. Clean the ~~IV needless injection site~~ ~~closest to the patient’s peripheral IV~~ with alcohol.

10.6.2.1 Open an alcohol wipe and hold it with your dominant hand.

10.6.2.2 Wrap the alcohol wipe around the site and scrub the site with friction and intent (as if you were juicing an orange) for at least 15 seconds and then allow it to dry.

10.6.3. Hold the needless injection site with between your **non-dominant** thumb and forefinger ~~of your non-dominant hand~~. With your dominant hand, grasp the IV infusion medication tubing near the connection port and remove the plastic cap, taking care not to contaminate the inner portion of the connection port.

10.7. Attach the IV infusion medication tubing connection port to the maintenance IV needless site. Insert the tip of the connection port into the center portion of the needless injection site by pushing it gently and turning the outer portion of the connection port clockwise.

10.8. Program the IV pump for IV infusion medication.

10.8.1. Push the “channel select” button on the IV infusion medication pump module and choose “Basic Infusion” from the menu.

10.8.2. Program the infusion rate (mL/hour) according to the IV infusion medication orders.

10.8.3. Open the IV infusion tubing rolling the clamp to the larger end of the clamp. On the IV infusion medication module, select “start” to begin the infusion.

10.9. Re-assess the peripheral IV site for leaking or swelling. Ask the patient if they are experiencing any pain as the IV infusion medication enters their line.

11. Document the IV infusion medication administration in the patient’s EHR.

11.1. In the patient’s EHR, record the date, time and location/site of the peripheral IV where the IV infusion medication was connected, and the peripheral intravenous site assessment. Record the assessment findings.

12. Discard waste in the appropriate receptacles, and leave the patient room. Upon exiting the room, wash hands as describe in step 1.1.

Summary

This video details the process for administering primary intermittent IV infusion medications using an infusion pump. It is important to confirm that the medication is compatible with the maintenance IV fluid to prevent medication precipitation and patient harm. It is also important to assess the patient’s intravenous site throughout administration of the IV infusion medication to prevent intravenous site complications such as extravasation or phlebitis. Because the medication directly enters the circulatory system, the patient should be closely monitored for

medication side effects, hypersensitivity reactions, and anaphylaxis. Common errors associated with administration of primary intermittent intravenous medication infusions include: failing to verify compatibility of the maintenance IV fluid with the medication, administering the medication at the incorrect rate for the medication concentration or patient condition, and failing to assess the patient for medication reactions.

Figures

Figure 1: Parts of an IV bag

Figure 2: Parts of infusion IV tubing

Figure 3: Parts of an IV infusion pump

References

1. Potter, P.A., Perry, A.G., Stockert, P.A., & Hall A. (2015). Essentials for Nursing Practice, Eighth Edition. Elsevier Publishing Co., St. Louis, MO



