IV Solution: Changing an Existing Bag/Bottle

What Is Changing an Existing Bag/Bottle of IV Solution?
› Intravenous (IV) therapy is administered to provide fluid resuscitation, prevent dehydration, and provide a vehicle for medication administration
• What: Changing an existing bag or bottle of IV solution is necessary when a change in solution is ordered, the hang time for the exiting bag or bottle has passed, or the existing bag or bottle is empty
• How: Changing an existing bag or bottle of IV solution is performed using general aseptic non-touch technique (ANTT; i.e., a type of aseptic technique in which a sterile item does not come into contact with anything nonsterile prior to use)
• Where: Changing an existing bag or bottle of IV solution is performed in any patient care area where IV solutions are administered, including the home setting
• Who: Licensed personnel change existing IV bags or bottles of IV solution. Care cannot be delegated to assistive personnel. Family members and visitors can be present when an IV bag or bottle is changed

What Is the Desired Outcome of Changing an Existing Bag/Bottle of IV Solution?
› The patient will receive the appropriate infusion of IV solution without interruption

Why Is Changing an Existing Bag/Bottle of IV Solution Important?
› Changing an existing bag or bottle of IV solution is necessary to ensure that the patient receives the ordered IV solution without an interruption in I.V therapy (e.g., such as when the bag or bottle is empty)

Facts and Figures
› The Centers for Disease Control and Prevention (CDC) and the Infusion Nursing Society (INS) recommend that IV administration sets be changed no more frequently than every 72–96 hours, and can be safely used for up to 7 days. They make no recommendations regarding the timing for changing bags or bottles of maintenance IV solution (Gorski et al., 2016; O’Grady et al., 2011)
› The Clinical Practice Committee of the Academy of Medical-Surgical Nurses (AMSN) recommends that IV solutions with added medications be changed every 24 hours, and maintenance IV solutions be changed every 24–96 hours, according to individual facility protocol (AMSN, 2012)
› Guidelines of the National Institute for Occupational Safety and Health (NIOSH) state that any administration tubing containing a hazardous drug, such as an antineoplastic agent, not be disconnected from the infusion bag to ensure staff and patient safety (NIOSH, 2004)

What You Need to Know Before Changing an Existing Bag/Bottle of IV Solution
› Prior to changing an existing bag or bottle of IV solution, the nurse must assess the IV insertion site for signs or symptoms of
• phlebitis, which include redness, tenderness/pain along the vein, edema, warmth, and a palpable venous cord
  – Phlebitis can occur as a result of mechanical irritation of the vein by the venous cannula or chemical irritation of the vein by the medication administered
• infection, which include redness, tenderness/pain, edema, and drainage, as well as systemic fever
• infiltration/extravasation, which include edema, tightness, blanching, coolness, pain/tenderness, stinging/burning, and leakage
• occlusion, which include leakage, sluggish IV flow, and an inability to withdraw blood

› When changing an IV bag or bottle that contains a medication, or when switching medications, the nurse must first
  • verify the treating clinician order for the medication
  • verify the 6 rights of medication administration (i.e., right patient, right medication, right dose, right route, right time, and right documentation [performed after administration])
  • review the recommended dosage and route of administration, as well as anticipated adverse effects, in a drug reference or with a licensed pharmacist
    – Confirm that a medication that can cause venous irritation (e.g., potassium) or that requires additional precautions during administration (e.g., an antineoplastic agent, a vesicant) will be administered through an appropriate vein or catheter (e.g., central venous catheter)
  • verify the correct drip rate, if not using an infusion pump
  • review laboratory test results or physical assessment information to assess for contraindications to the medication, according to the medication to be infused

› The nurse must demonstrate competency in ANTT before performing any IV procedures

› Preliminary steps that should be performed prior to changing an existing bag or bottle of IV solution include the following:
  • Review the facility/unit specific protocol for changing an existing bag or bottle of IV solution, if one is available
  • Review the treating clinician’s order for changing an existing bag or bottle of IV solution, if available
  • Review the manufacturer’s instructions for all equipment to be used and verify that the equipment is in good working order
  • Verify completion of facility informed consent documents
  • Review the patient’s medical history/medical record for
    – indication for IV therapy
    – the most recent physician orders for the maintenance IV solution or for a medicated IV solution
    – date and time of last infusion and tubing changes
    – results of laboratory and other diagnostic tests
    – previous assessments of IV patency
  • Gather the supplies necessary for changing an existing bag or bottle of IV solution, which typically include the following:
    • Nonsterile gloves and other personal protective equipment (PPE; e.g., gown, mask) if exposure to bodily fluids anticipated
    • Ordered IV solution
    • Written materials to reinforce patient/family education

### How to Change an Existing Bag/Bottle of IV Solution

› Perform hand hygiene and don PPE if exposure to bodily fluids anticipated
› Identify the patient using two unique identifiers, according to facility protocol
› Establish privacy by closing the door to the patient’s room and/or drawing the curtain surrounding the patient’s bed
› Introduce yourself to the patient and family member(s), if present; explain your clinical role; assess the coping ability of the patient/family and for knowledge deficits and anxiety
  • Determine if the patient/family requires special considerations regarding communication (e.g., due to illiteracy, language barriers, or deafness); make arrangements to meet these needs if they are present
    – Follow facility protocols for using a professional certified medical interpreter, either in person or via phone, when a language barrier exists
  • Explain the purpose for IV therapy; answer any questions and provide emotional support as needed
› Inspect the insertion site and palpate over the transparent dressing and above the insertion site to assess for signs or symptoms of phlebitis, infection, infiltration/extravasation, and occlusion
› If the ordered IV solution is refrigerated, allow it to come to room temperature for one hour prior to hanging
› Verify that the IV solution is clear, without precipitate
› Label the IV bag or bottle with the patient’s name, IV solution, any medication or other additives, and preparers initials, if not labeled
Verify the first 5 rights of medication administration
Change the IV solution when there is 50 mL of solution in the bag to prevent air infusion into the administration tubing
If hanging a glass bottle, remove the sterile metal covering and loose rubber disc, if present, over the infusion port and hang on the IV pole
If hanging a bag, hang the bag on the IV pole and remove the sterile plastic cover over the infusion port of the new IV solution
If using an infusion pump, pause the device
Close the roller clamp on the administration tubing
Remove the existing IV bag or bottle from the pole
Remove the spike of the administration tubing from the existing IV bag or bottle and hold it so that the spike of the administration tubing does not come into contact with any surface
Spike the infusion port of the new bag or bottle of IV solution
Verify that the drip chamber is roughly one-third to one-half full
  • If the drip chamber is too full, remove the bag or bottle from the pole, invert the bag/bottle, and squeeze the drip chamber to force fluid back into the bag or bottle, then hang the bag or bottle on the pole
Verify that there are no air bubbles in the administration tubing
  • If there are air bubbles in the administration, grip the tubing below the air bubbles with the thumb and forefinger of the nondominant hand and gently flick the tubing with a finger of the dominant hand to force the air up into the drip chamber
Release the roller clamp on the administration tubing
If using an infusion pump, unpaase the device and verify that it is programmed to the correct rate. Program the infusion volume and verify all alarms are set
If not using an infusion pump, verify that the solution is dripping at a rate sufficient to administer the IV solution at the ordered rate
Discard used procedure materials and PPE in the appropriate waste container
Perform hand hygiene
Update the patient's plan of care, as appropriate and document the following in the patient's medical record
  • Date and time the bag or bottle of IV solution was changed
  • Any medication added to the IV solution
  • Verification of the infusion rate
  • Assessment of the IV insertion site
  • Patient's response to care, including pain/discomfort/anxiety
  • Any unexpected patient events or outcomes, interventions performed, and whether or not the treating clinician was notified
  • Patient/family member education, including topics presented, response to education provided/discussed, plan for follow-up education, and details regarding any barriers to communication and/or techniques that promoted successful communication

Other Tests, Treatments, or Procedures That May Be Necessary Before or After Changing an Existing Bag/Bottle of IV Solution
IV tubing changes will be performed every 72–96 hours, or according to facility protocol

What to Expect After Changing an Existing Bag/Bottle of IV Solution
The ordered IV solution will be infusing and IV therapy will be continued without interruption

Red Flags
Patients with a central venous access device in place are at risk for air embolism if the tubing becomes disconnected or dislodged, or if air is infused through the tubing

What Do I Need to Tell the Patient/Patient’s Family?
Educate the patient and family about the need for and desired patient outcomes of IV therapy
Inform the patient that the IV bag or bottle will be changed when empty so that there is no interruption in IV therapy
References

1. Academy of Medical-Surgical Nurses (AMSN). (2012). Question: … regarding infection control and IV solutions … we have IV tubings changed q96hrs and pain IV solutions q96hrs but questioning if it should be q24hr? Retrieved January 2, 2018, from https://www.amsn.org/practice-resources/care-term-reference/assessments-intervention/question-regarding-infection-control (G)


