Saline Flush and Vial Shortage

- Prefilled saline flush syringes are not just a nursing convenience, they are an important part of vascular access device (VAD) maintenance and play an important role in reducing the risk of bloodstream infections.
- On August 19, 2021, Cardinal Health issued a voluntary, nationwide recall of Monoject™ Flush Prefilled Saline Syringes because of a defect that could reintroduce air back into the syringe after the air had been expelled. The affected lot numbers were dated between 2019 – 2021 and removed 267 million prefilled saline syringes from the supply chain.
- This market disruption has caused a cascade of additional shortages of 0.9% sodium chloride 10-mL, 20-mL, and 50-mL preservative-free vials. Fresenius Kabi has 0.9% sodium chloride 10 mL and 20 mL vials on back order. The company estimates a release date of early January 2022 for the 10 mL vials. Pfizer has 0.9% sodium chloride 10 mL LifeShield syringes on back order and the company estimates a release date of January 2022. The 10-mL , 20-mL, and 50-mL vials are available in limited supply.

Current Best Practices

Considering the current shortage in 10-mL prefilled flush syringes coupled with the shortage of saline vials it is imperative to review current best practices related to flushing and locking. Please refer to the *Infusion Therapy Standards of Practice* 8th Edition, Section Six: *Vascular Access Device Management*, Standard 41, *Flushing and Locking,* for the complete text.[1]

- Use single-dose systems (eg, single-dose vials or prefilled labeled syringes) for all VAD flushing and locking.
  - Use commercially available prefilled syringes whenever possible.
  - If multidose vials must be used, dedicate a vial to a single patient.
  - Do not use intravenous (IV) solution containers (eg, bags or bottles) as a source for obtaining flush solutions.
- VADs are flushed and aspirated for a blood return prior to each infusion. Assess VAD function using a 10-mL diameter syringe. After confirming catheter patency, use an appropriately sized syringe for medication dose.
- Do not use prefilled flush syringes for dilution of medications.
- VADs are flushed with preservative-free 0.9% sodium chloride after each infusion to clear the infused medication from the catheter lumen.
  - Do not reuse the same saline syringe to flush prior to and after medication administration.
  - Use a minimum volume equal to twice the internal volume of the catheter system and add-on devices.
  - Do not use sterile water for flushing VADs.
- Peripheral and central VADs (CVADs) are locked after completion of the final flush. Lock CVADs with either preservative-free 0.9% sodium chloride or heparin 10 units/mL according to the manufacturers' directions for use for the VAD and needleless connector.

Mitigation Strategies During Shortages

- Collaborate with your organization utilizing a multidisciplinary approach regarding IV medication preparation. In some facilities, nurses reconstitute IV push medications at the bedside in lieu of pharmacy-prepared products. To conserve saline flush vials and/or syringes, pharmacies should consider alternative methods for reconstitution and/or dilution such as vial transfer devices, pharmacy-prepared infusions, or pharmacy-prepared IV push syringes.
- Ask the procurement department to order syringes that hold smaller volumes. Some manufacturers supply 10-mL diameter syringes with 3- or 5-mL fill volume.
- Use heparinized saline flush syringes for locking unless contraindicated.
- Establish criteria for peripheral intravenous catheter (PIVC) insertion to reduce insertion of catheters that are idle.
- Use a CVAD with the least number of lumens to reduce risk of thrombosis, infection, or occlusion.
- Use implanted port, unless contraindicated, as the preferred IV route in preference to insertion of an additional VAD.
- Remove PIVCs and CVADs if no longer included in the plan of care or if not used for 24 hours or more.

INS acknowledges the work of the National Coalition for IV Push Safety and will work together to ensure clinicians are informed as this shortage evolves and resolves. Please email INS Master Account INS@ins1.org with questions or comments.

1. Gorski LA, Hadaway L, Hagle ME, et al. Infusion therapy standards of practice. *J Infus Nurs*. 2021;44(suppl 1):S113-S118. doi:10.1097/NAN.0000000000000396