
**BEST PRACTICE #1:** Dispense vincristine (and other vinca alkaloids) in a minibag of a compatible solution and not in a syringe.

1. **Question:** We are trying to implement best practice #1 to dispense vincristine (and other vinca alkaloids) in a minibag. However, we have concerns about the excessive loss of drug that remains in the IV tubing after administration. The loss of drug in the tubing exceeds the 5% dose variability acceptable for our chemotherapy doses per our hospital policy. The tubing contains 7 mL of volume and that is more than 10% of the 50 mL for an adult dose. For pediatrics, if we dispense vincristine in a minibag with 25 mL, losing 7 mL of the 25 mL dose is not acceptable either. What are other facilities doing to avoid excessive drug loss in the tubing?

   **Answer:** To prevent excessive drug loss, some organizations are utilizing a “back flushing” method to infuse the remaining volume of drug that may remain in the IV tubing. A similar sized bag for the back flushing, such as a 25 mL bag of 0.9% saline is used for both adults and pediatric patients. Vincristine administration and the back flushing method are done by gravity when administered through a peripheral line. (An infusion pump is not recommended by the Oncology Nurses Society (ONS) to administer vincristine in this situation.) The procedure includes connecting the bag of saline to a long straight infusion set. The minibag of vincristine, using a short infusion set, is connected to the Y-site closest to the patient. (Closed system devices are also utilized to ensure the vincristine does not leak out of the system.) The vincristine is infused via gravity through the peripheral line. Once the infusion is complete, the short set is dropped to backfill the line with saline and then the remaining drug is infused.

   Acknowledgement: Mikaela M. Olsen RN, MS, AOCNS, Oncology and Hematology Clinical Nurse Specialist; Johns Hopkins Hospital

   **References:**

   1. Avoiding the use of infusion pumps for vesicant administration via short infusion using a peripheral vein (Polovich et al., 2009) [www2.ons.org/ClinicalResources/Vincristine/Safety](http://www2.ons.org/ClinicalResources/Vincristine/Safety)

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2. **Question:** Will administering vincristine in a minibag increase the risk of extravasation?

   **Answer:** Some practitioners have expressed concern that administering diluted IV vincristine via a minibag might increase the risk of extravasation and subsequent tissue injury. However, data suggests that the risk of extravasation is low, regardless of the method used to administer the drug. A study in Australia involving 68 cancer centers evaluated more than 44,000 doses of vinca alkaloids administered via syringe or minibag to adult and pediatric patients, found that the extravasation rates were similar and low—0.03% with syringes and 0.04% with minibags. Preliminary data from another study conducted in children and adults found no cases of extravasation during
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administration via minibags. These data strongly support the safe use of minibags in adults and children. The risk of extravasation injury doesn’t compare to the risk of severe neurological injury and near certain death resulting from the intrathecal administration of vinca alkaloids. Also, dilution of the vinca alkaloid likely reduces the impact of any extravasation that might occur.

The Oncology Nursing Society recommends administering IV vinCRIStine and other vinca alkaloids via a minibag to prevent errors with intrathecal chemotherapy administration. The organization also recommends a multidisciplinary review of the process regarding the preparation and administration of vinCRIStine in each practice setting.

When the institution implements the use of minibags to administer vinCRIStine, the following nursing guidelines should be followed to further reduce the risk of harm from extravasation.

- If using a peripheral vein, allow the infusion to flow via gravity. Use of an infusion pump is discouraged because it increases the amount of pressure on the vein, which raises the risk of extravasation.
- Watch for signs of extravasation; stay with the patient and verify blood return every 5 to 10 minutes.
- Use a central venous catheter or implanted device for continuous vesicant infusions or for any vesicant infusion lasting longer than 30 minutes. Monitor for extravasation according to hospital policy.

References:

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3. Question: Is the dilution of vinCRIStine in a minibag stable?

ANSWER: Yes, the product is stable in a minibag. According to Trissel’s Handbook on Injectable Drugs 17th Edition, vinCRIStine is stable at a concentration of 20 mg/L in dextrose 5% in water, Lactated Ringer’s, and 0.9% sodium chloride for at least 24 hours and up to 21 days with little or no drug loss (under 10%) at 4°C and 25°C when in the dark. Note: for sterility reasons, USP 797 recommends a beyond-use date, which is less than the maximum stability above.

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The Hospira brand of vinCRIStine sulfate injection, USP (preservative-free) 1 mg/mL vial package insert² states:

**Preparation for flexible plastic container**

VinCRIStine sulfate injection, USP when diluted with 0.9% sodium chloride injection in concentrations from 0.0015 mg/mL to 0.08 mg/mL is stable for up to 24 hours when protected from light or 8 hours under normal light at 25°C.

References:

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4. **Question:** Our pediatric department is reluctant to administer vinCRIStine via a minibag through a peripheral IV line since many of our patients do not have a peripherally inserted central catheter (PICC) or central venous access device. What do you recommend?

**ANSWER:** For those patients who do not have a PICC or central venous access device, a peripheral IV line can still be used to administer vinCRIStine in a minibag. The practice of monitoring the administration of vinCRIStine and other vinca alkaloids in a minibag to avoid extravasation via a peripheral IV is essentially the same as if it was administered IV push. Please refer to FAQ Question #1 and the ONS guidelines¹ for special considerations for vesicant administration through a peripheral IV site.

Reference:

Rev. 3/26/2014

5. **Question:** How do you recommend that we verify blood return when administering vinCRIStine in a minibag?

**ANSWER:** According to a publication by the Oncology Nursing Society,¹ the easiest way to check for a blood return is to use gravity by lowering the minibag below the IV site. Another option is to aspirate with a syringe via the lowest Y-site and clamp off fluid from the minibag. Do not pinch the IV administration tubing because this can cause the vein to rupture.

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**6. Question:** Is it just as safe to prepare vincristine in a large volume (30-50 mL) syringe as in a minibag?

**Answer:** ISMP does not recommend the use of large volume syringes as an acceptable alternative to the minibag. Errors have still been reported with the use of large volume syringes, although usually with 10 or 20 mL syringes.¹

**Reference:**

**7. Question:** Wouldn’t the administration of vincristine IV push using a syringe be much shorter in duration and with less chance of extravasation than administration using a minibag?

**Answer:** In regard to duration of administration: It is true that the process of administering a vinca alkaloid via a syringe is probably of shorter duration when compared to administering via a minibag. This decision must be weighed in light of certain death if the drug is administered via the wrong route. Having practitioners spend a few additional minutes during the administration step using a minibag is the only safe choice to be made.

In regard to the risk of extravasation: There have been studies comparing extravasation rates between these two administration techniques, which have similar results.¹ ² Recognize that when a vinca alkaloid is prepared in a minibag, it is likely more dilute than in a syringe, and thus the impact of tissue injury is even less if extravasation should occur. Most importantly, organizations must weigh the risk of possible extravasation versus certain death from the accidental administration of vincristine by the intrathecal route when making decisions about changing practice.

**References:**

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