

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

1. 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.¹ Preliminary data from another study conducted in children and adults found no cases of extravasation during administration via minibags.² These data strongly support the safe use of minibags in adults and children.³ 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 Society⁴ 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:

1. Gilbar PJ, Carrington CV. The incidence of extravasation of vinca alkaloids supplied in syringes or mini-bags. *J Oncol Pharm Pract.* 2006;12(2):113-8.
2. Nurgat Z, Smythe MP, Aljedai A. Assessment of the risk of extravasation with the introduction of vincristine mini-bags to eliminate inadvertent intrathecal administration. *J Oncol Pharm Pract.* 2012;18(suppl):16-7.
3. Gilbar PJ. Accidental administration of vincristine in pediatric patients. *J Pediatr Oncol.* 2013;1(1):9-16.
4. Polovich, M, Olsen, M., LeFebvre, KB (Eds.) (2014) *Chemotherapy and biotherapy guidelines and recommendations for practice.* Oncology Nursing Society; Pittsburgh, PA.

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2. 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, ringers lactate, 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.¹ *Note: for sterility reasons, USP 797 recommends a beyond-use date, which is less than the maximum stability above.*

The Hospira brand 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:

1. Trissel LA. *Handbook of injectable drugs* 17th edition. 2012. American Society of Health-system Pharmacists. Bethesda, MD. p1104-5.
2. Hospira. Package insert for vinCRISTine sulfate injection, USP (preservative-free) 1 mg/mL vial. www.hospira.com/Images/434047_32-91799_1.pdf

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3. 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 Society¹, 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.

References:

1. Polovich, M, Olsen, M., LeFebvre, KB (Eds.) (2014) *Chemotherapy and biotherapy guidelines and recommendations for practice*. Oncology Nursing Society; Pittsburgh, PA.

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

ANSWER: Errors have still been reported with the use of large volume syringes, although usually with 10 or 20 mL syringes¹. ISMP does not recommend the use of large volume syringes as an acceptable alternative to the minibag.

References:

1. Gilbar P. Inadvertent intrathecal administration of vincristine: has anything changed? J Oncol Pharm Pract. 2012;18(1):155-7

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5. 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 in 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:

1. Gilbar PJ, Carrington CV. The incidence of extravasation of vinca alkaloids supplied in syringes or mini-bags. J Oncol Pharm Pract. 2006;12(2):113-8.
2. Gilbar P, Chambers CR, Larizza M. Medication safety and the administration of intravenous vincristine: International survey of oncology patients. J Oncol Pharm Pract. 2014;(Epub ahead of print). Online access at: <http://opp.sagepub.com/content/early/2014/01/13/1078155213517729>.

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6. **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 that 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 were administered IV push. Please refer to FAQ Question #1 above and the ONS guidelines¹ for special considerations for vesicant administration through a peripheral IV site.

References:

1. Polovich, M, Olsen, M., LeFebvre, KB (Eds.) (2014) *Chemotherapy and biotherapy guidelines and recommendations for practice*. Oncology Nursing Society; Pittsburgh, PA.

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