

Vincristine is a cytotoxic chemotherapy agent classified as an antitumor alkaloid and is part of the vinca alkaloid family. Vincristine's mechanism of action is to primarily inhibit mitosis of the cancer cell and is given by IV route only for treatment. Accidental intrathecal administration of vincristine has lethal consequences for patients. To minimize the risk of accidental intrathecal administration of vincristine, 14 infusion centers participated in a quality improvement project to change the practice of vincristine administration from IV push to IV piggyback via minibag and gravity. After three months, all infusion centers successfully implemented the practice.

AT A GLANCE

- Vincristine administration using minibag with IV piggyback via gravity increases patient safety and prevents adverse events.
- A vincristine minibag policy was developed using a quality improvement method to standardize administration.
- A scripted video and checklist, including a demonstration of competencies for nurse training, eliminate the risk of unconscious trainer bias.

KEYWORDS

vincristine IV piggyback administration; patient safety; nurse skill training

DIGITAL OBJECT

IDENTIFIER

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Vincristine Minibag Administration

A quality improvement project to minimize medical errors

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Vincristine is a vinca alkaloid that has been used in practice for more than 50 years. Since its introduction as a chemotherapy agent, it has been used to treat hematologic cancers, such as leukemia and lymphoma, and childhood sarcomas. Vincristine is administered to patients via IV. Accidental intrathecal administration of vincristine can be lethal for patients, causing ascending paralysis, neurologic defects, and eventual death (Corbitt et al., 2017; National Comprehensive Cancer Network [NCCN], 2016). Care must be taken when administering the drug to avoid patient harm (Corbitt et al., 2017). Since the 1960s, 125 deaths have been attributed to improper administration of vincristine (Institute for Safe Medication Practices, 2013). The risk of making this error is greatest when chemotherapy regimens include vincristine in addition to intrathecal chemotherapy agents (Corbitt et al., 2017).

Vincristine is considered a vesicant chemotherapy agent, which requires close observation of the site during IV administration. The Oncology Nursing Society (Polovich, Olsen, & LeFebvre, 2014) recommends that, when administering vesicant therapy, nurses avoid using an IV pump or syringe pump, remain with the patient throughout the infusion, verify blood return every 5–10 minutes for short infusions, and monitor for signs and symptoms of extravasation during infusion.

In 2016, the NCCN launched the Just Bag It campaign to showcase the

importance of patient safety and the safe handling of vincristine. The American Society of Clinical Oncology and Oncology Nursing Society also recommend the standardization of minibag administration for all vinca alkaloids (Neuss et al., 2016). Many organizations (e.g., Joint Commission, Oncology Nursing Society) support initiatives to eliminate vincristine administration errors by using minibags for IV administration (Joint Commission, 2017). The Joint Commission (2017) urges that IV vincristine never be dispensed at a location where intrathecal chemotherapy is administered, as well as reinforces the National Patient Safety Goal of adherence to medication safety processes, including medication double checks and labeling.

In some cancer centers, vincristine is given IV push using a large-volume syringe. Accidental intrathecal administration of vincristine can occur if the syringe containing vincristine for IV administration is mixed up with a syringe containing a drug for intrathecal administration (Institute for Safe Medication Practices, 2017).

Policy and practice changes can minimize the risk of accidental intrathecal administration (Neuss et al., 2016). As a result, a quality improvement initiative was implemented at the author's health-care system to change the method of vincristine IV administration using a syringe to using a minibag. The purpose of the initiative was to (a) introduce a new standard of care related to the preparation and administration of vincristine and (b) validate the uptake and standardization of this new standard of care

FIGURE 1.
VINCRISTINE ADMINISTRATION COMPETENCY CHECKLIST

NAME: _____ **TITLE:** _____

COMPETENCY	MET	UNMET
Verify the accuracy of the chemotherapy drug with the Chemotherapy Order and Administration Record.		
Identify patient using two patient identifiers (name, date of birth) and compare it to the identification band according to policy.		
Assemble equipment. <ul style="list-style-type: none"> ■ Prepare chemotherapy from pharmacy with primed secondary IV administration set. ■ Flush bag of compatible fluid. ■ Prime administration set. ■ Alcohol wipes ■ Nonsterile drape ■ 2 pairs of nitrile chemotherapy gloves ■ Chemotherapy gown 		
Wash hands.		
Check IV site for infiltration, inflammation, or leakage. If observed, remove cannula and restart IV.		
Apply personal protective equipment.		
Prime administration set with compatible IV solution.		
Swab IV/venous access device (VAD) connection with an alcohol wipe. Allow to dry for 15 seconds. Attach flush solution to IV/VAD.		
Place drape under arm where IV site is established to protect clothes, linen, and surface from drug.		
Verify IV patency and vigorous blood return by lowering flush solution bag and opening clamp on IV tubing.		
Rehang flush solution bag on IV pole with open clamp on IV tubing to maintain a free-flowing stream.		
Swab y-site closest to the patient with an alcohol wipe. Allow to dry for 15 seconds. Attach IV piggyback (IVPB) medication in bag with secondary infusion set to primary IV line.		
Administer drug at prescribed rate through free-flowing compatible flush.		
Assess patency of IV every 5 minutes by pinching primary line, lowering IV piggyback, and allowing for blood return.		
Continuously monitor for ease of flow, absence of pain, swelling, and burning.		
Stop chemotherapy if a change in sensation, pain, burning, stinging, or swelling occurs at the IV site or if a blood return is no longer present. Follow the institution policy or procedure for extravasation if infiltration is suspected.		
Allow all medication to clear out of IVPB tubing.		
Clamp secondary medication set after IVPB has infused.		
Assess patency of IV and blood return.		
Flush the line upon completion of the infusion to cleanse the vein and decrease venous irritation.		
Remove the IVPB and flush bag with tubing as one intact unit and dispose of all waste, including personal protective equipment, in a chemotherapy disposal unit.		

Continued on the next page

FIGURE 1. (CONTINUED)

VINCRIStINE ADMINISTRATION COMPETENCY CHECKLIST

COMPETENCY	MET	UNMET
Document start and stop time per policy. Document blood return checks, absence of pain, burning, or inflammation at the site, as well as the patient response to the medication in a progress note or Clindoc or on the infusion assessment form.		
Verbalize where to document if adverse event occurs (progress note).		

COMMENTS: _____

EMPLOYEE SIGNATURE: _____ **DATE:** _____

VALIDATING CLINICIAN SIGNATURE: _____ **DATE:** _____

Note. Signatures indicate that the procedure was observed and proper technique was demonstrated.

Note. Courtesy of Barbara Ann Karmanos Cancer Institute. Reprinted with permission.

across 14 infusion centers in the author's healthcare system.

Minibag Administration

In collaboration with the pharmacy, the infusion centers stopped preparing vincristine syringes for IV administration. Under the new guidelines, vincristine for

the education and training program were standardized with a scripted education video of vincristine administration and a nurse skills checklist. This standardization was particularly important because the new guideline and administration practice needed to be implemented in 14 infusion centers across the system.

ensure sustained adherence to the guidelines, trainers continued to evaluate infusion nurse practices at least once a year through direct observation. This method of peer evaluation helped detect and correct any deviation from the standard of practice. During the evaluation period, trainers observed some nurses administering vincristine via IV pump when patients had a central line. To ensure consistent practice across all sites, the training video was updated,

"Since the 1960s, 125 deaths have been attributed to improper administration of vincristine."

IV infusion had to be mixed in a minibag, with a label reading, "Administer via gravity." When administering vincristine using a minibag, nurses have less control over the vesicant administration and may be tempted to place the minibag on a pump for ease of infusion, such as when the patient has a central line. Reminding nurses about the vesicant nature of the medication is important in preferred use of gravity when administering vincristine via minibag.

To ensure consistency in the teaching of the new vincristine policy and practice,

The scripted video and guidelines minimized the risk of misrepresentation and misinterpretation. Nurses in each of the 14 infusion centers had one month to watch the education video and complete a clinical validation skills checklist (see Figure 1) under the direct observation of a trained validator.

Evaluation

During a three-month period, validation of all infusion nurses who had adopted the new practice was conducted. To

OCN® SAMPLE QUESTION

This is a sample question related to the OCN® examination. Test your knowledge on essential examination content.

The Institute for Safe Medication Practices recommends which of the following routes of administration for vincristine?

- IV push via syringe
- IV piggyback via infusion pump
- IV piggyback via gravity
- All of the above

Answer: IV piggyback via gravity

demonstrating vincristine administration via IV piggyback and gravity through a peripheral line and a central line.

Conclusion

Patient safety is a priority for all health-care providers. Nurses play a special role in promoting patient safety and minimizing the risk of errors by questioning practice and developing safer procedures.

Practice change can be difficult. However, the author’s experience suggests that education with clinical validation of the uptake of new knowledge can facilitate the adoption of a new practice. Using a scripted video and checklist ensured that the same content was delivered to all participants.

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