

# Chemotherapy Extravasations: Prevention, Identification, Management, and Documentation

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The nurses' role in safe and effective practice of chemotherapy administration is paramount. The purpose of this article is to present nurses administering chemotherapy with evidence-based information useful in eliminating or reducing the severity of an injury from a chemotherapy extravasation. Nurse education is essential to prevent, recognize, manage, and document chemotherapy extravasations. The classification of the cytotoxic drug and its mechanism of action is useful when selecting the IV access device and also will direct the nurse's intervention to manage the injury. The Oncology Nursing Society's *Chemotherapy and Biotherapy Guidelines and Recommendations for Practice* and the drug manufacturer are the best sources offering pharmacologic and nonpharmacologic recommendations. The nurse's best ally in the prevention, prompt recognition, and management of an extravasation is the educated patient. Documenting chemotherapy extravasation is another important step to guide the treatment plan; therefore, the document must provide complete details and the extent of the event.

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**A** 67-year-old male with non-small cell lung cancer receiving docetaxel via peripheral infusion in the outpatient clinic suffered an extravasation. The nurse caring for him noticed inflammation around the peripheral site, prompting her to stop the infusion and notify the advanced registered nurse practitioner (ARNP). The IV catheter from the peripheral site was removed and cool packs were applied to the site. The patient was discharged from the clinic with instructions from the ARNP to apply cool compresses for 15–20 minutes four times daily for the next 48–72 hours. By the third day, the patient's hand had become erythematous with a burning-stabbing pain of 7 on a 0–10 scale. The ARNP in collaboration with the oncologist prescribed Vicodin® (hydrocodone and acetaminophen) for pain and Silvadene cream (silver sulfadiazine) applied over the affected area to prevent infection. Weekly appointments were arranged to follow-up, with specific instructions to call immediately if fever or skin changes occurred. The chemotherapy treatments were resumed four weeks later after the patient's complete recovery.

Chemotherapy extravasation is the escape of antineoplastic fluid from the vessel into the surrounding tissue, increasing the patient's risk for a cutaneous injury (Doellman et al., 2009). The severity of the injury depends on the noxious effect of the cyto-

toxic drug and its mechanism of action. Cytotoxic drugs are classified as irritants and vesicants. Irritants may cause inflammation, burning, or pain. They rarely cause tissue necrosis or ulceration unless large amounts or high concentration of the irritant is extravasated, in which case the injury can be compared to that of a vesicant (Schulmeister, 2011). In contrast, vesicants are capable of causing local blisters and extensive damage to the underlying tissues accompanied with pain, and can lead to tissue death and necrosis (Yarbro, Wujcik, & Gobel, 2011). However, the mechanism of action of the irritant or vesicant solution, which may be DNA binding or DNA nonbinding, must be taken into consideration to have an absolute stance of the potential damage to the patient's surrounding tissue (Schulmeister, 2010) (see Figure 1). When a chemotherapy agent does not bind to DNA, the solution remains contained within the area of extravasation, which facilitates drug deactivation (Schulmeister, 2010). DNA binding agents, on the other hand, attach to nucleic acid in the cells' DNA (Schulmeister, 2011). The contaminated cells exchange the caustic solution through the course of cellular ingestion. The result is an indolent and progressive destruction of soft tissue, causing the ulcer to become bigger, deeper, and more painful (Yu et al., 2011). An estimated 10%–25% of peripheral extravasations of this type require surgery (Kane, McGuinn, Dagher, Justice, & Pazdur, 2008).