

# Chemotherapy Extravasation

## Establishing a national benchmark for incidence among cancer centers

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**BACKGROUND:** Given the high-risk nature and nurse sensitivity of chemotherapy infusion and extravasation prevention, as well as the absence of an industry benchmark, a group of nurses studied oncology-specific nursing-sensitive indicators.

**OBJECTIVES:** The purpose was to establish a benchmark for the incidence of chemotherapy extravasation with vesicants, irritants, and irritants with vesicant potential.

**METHODS:** Infusions with actual or suspected extravasations of vesicant and irritant chemotherapies were evaluated. Extravasation events were reviewed by type of agent, occurrence by drug category, route of administration, level of harm, follow-up, and patient referrals to surgical consultation.

**FINDINGS:** A total of 739,812 infusions were evaluated, with 673 extravasation events identified. Incidence for all extravasation events was 0.09%.

### KEYWORDS

chemotherapy; extravasation; vesicant; irritant; venous access; cancer program quality

### DIGITAL OBJECT IDENTIFIER

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**CANCER CARE HAS LARGELY SHIFTED TO OUTPATIENT SETTINGS**, but oncology-specific ambulatory quality indicators are lacking. Members from several National Cancer Institute (NCI)-designated cancer centers, consisting of nurses working in hospital quality, safety, chemotherapy infusion practice, and data or decision support, recognized this need and created a nursing consortium, the Cancer Centers Consortium Nursing-Sensitive Indicators (C<sub>3</sub>NSI) consensus group. The C<sub>3</sub>NSI group identified chemotherapy infusion practice as a high-risk and nursing-sensitive procedure in ambulatory oncology care and chose to evaluate vesicant chemotherapy extravasation in adult patients with cancer as its first project.

Extravasation, the inadvertent leakage of vesicant chemotherapy outside of the vein and into surrounding tissue, is a significant risk for patients. It can cause pain, swelling, erythema, tissue damage, blistering, sloughing, tissue necrosis, and significant morbidity that may require surgical intervention. Further descriptions of chemotherapy extravasation risk, sequelae, and management can be found in the literature (Ener, Meglathery, & Styler, 2004; Sauerland, Engelking, Wickham, & Corbi, 2006; Schulmeister, 2014; Wickham, Engelking, Sauerland, & Corbi, 2006). Overall incidence of chemotherapy extravasation ranges from 0.1%–6.5% (Ener et al., 2004), with reports of extravasation occurrence via central venous catheters ranging from 0.3%–4.7% (Cassagnol & McBride, 2009) and, in one early report, an incidence of 6.4% (Brothers et al., 1988). No benchmark existed for the incidence of chemotherapy extravasations. For quality assurance, Morris and Holland (2000) recommended that the frequency of chemotherapy extravasation should be significantly less than 1% of the drug administration.

The C<sub>3</sub>NSI group grew to include 19 cancer centers and met monthly, via teleconference, to determine data elements to be collected by institutions participating in the study. A research protocol was submitted to and approved by the institutional review board at the Roswell Park Cancer Institute, which maintained the data repository. All participating organizations