BARBARA HOLMES GOBEL, RN, MS, AOCN®
ASSOCIATE EDITOR

Transporting Patients Receiving Continuous Infusion Chemotherapy

Lisa Schulmeister, RN, MN, CS, OCN®

Question: What is common practice related to sending patients with continuous infusions (CIs) of IV chemotherapy for procedures or tests in ancillary departments? Are patients routinely sent during CI chemotherapy, or is the infusion "capped off" while patients are away from the inpatient oncology unit?

Answer: The rationale for CI chemotherapy is based on the physiology of the cell cycle and pharmacokinetics of chemotherapy agents. Because only a fraction of cancer cells are cycling actively at a given point in time, prolonged infusion of chemotherapy increases the amount of exposure of the cancer cells to the chemotherapy. Also, because many chemotherapy agents have short plasma half-lives, CIs provide a longer duration of drug exposure (Lokich & Anderson, 1997; Wilkes, Ingwersen, & Barton-Burke, 2002).

CI chemotherapy requires reliable long-term venous access; therefore, central venous access devices (VADs), such as central venous catheters or implanted ports, are used instead of short peripheral catheters. Using central VADs that are correctly placed, are patent, and have good blood returns is important, particularly when vesicants are administered continuously. Reliable infusion pumps also are needed to deliver chemotherapy precisely and provide alerts when problems arise, such as kinked tubing or low battery power. The selection of a particular VAD and infusion pump to deliver CI chemotherapy is based on consideration of the agent to be infused, duration of therapy, costs, expertise and availability of the healthcare team, and ability and willingness of the patient and family to participate in monitoring the infusion.

CI chemotherapy is administered in inpatient, outpatient, and homecare settings. In outpatient and homecare settings, the infusion usually is not interrupted and is discontinued only upon completion of the planned treatment course or when a problem is suspected, such as needle dislodgment from an implanted port. In inpatient settings, various procedures are used when patients receiving CI chemotherapy are transported off patient care units. Postings on an Oncology Nursing Society online discussion forum indicate that in some institutions, chemotherapy is routinely "capped off" and temporarily discontinued when patients are transported off patient care units, whereas in others, chemotherapy infusion is continued.

When developing an institutional policy regarding care of patients receiving CI chemotherapy, the following areas should be considered.

Pharmacokinetics: CI chemotherapy provides prolonged exposure of cancer cells to the cytotoxic effects of chemotherapy. Interrupting and resuming a CI alters the circulating blood level of the chemotherapy agent and potentially changes its therapeutic efficacy. Frequent or prolonged interruptions (e.g., interrupting a CI for an hour or longer each day while the patient goes to physical therapy) pose the greatest threat of diminished efficacy. Interrupting a CI also sometimes prompts nurses to "speed up" the CI to make up lost time or get back on schedule, and this practice alters the therapeutic efficacy of the drug and should be avoided. To maximize its therapeutic potential, CI chemotherapy should be infused as intended, as a *continuous* infusion.

Patient safety: Whenever a CI is interrupted, the closed system connecting a chemotherapy infusion bag to a patient's VAD is entered, and the patient's risk of infection is increased. In addition, prolonged interruptions extend the time that a chemotherapy infusion bag hangs, and this time period can exceed the duration of time that the drug is stable at room temperature.

Safe handling of cytotoxic drugs: A related potentially problematic area is storage of a partially administered bag of chemotherapy. If a CI bag is brought back to the medication room, it can be discarded inadvertently (especially a bag that has a small amount of chemotherapy remaining to be infused). If the bag remains on a patient's IV pole but is not connected to the patient, the potential for patient or staff exposure to chemotherapy exists if the cap is not placed tightly and leaks.

Paclitaxel CIs (such as 140 mg/m^2 over 96 hours in conjunction with dose-dense doxorubicin and cyclophosphamide to treat breast cancer) are being evaluated in clinical trials (Zujewski et al., 2003). They present a unique safety consideration because this drug is prepared in glass bottles or polypropylene plastic bags. When glass bottles are used and a bottle swings into a doorframe or the IV pole during patient transport (which often occurs when IV poles are rolled onto elevators), the glass can break and chemotherapy can spill. However, this risk can be reduced by wrapping glass bottles in bubble wrap or other protective coverings during transportation.

Nurses who advocate "capping off" patients who are receiving CI chemotherapy assert that patients are safer if transported when chemotherapy is not infusing. Interrupting the chemotherapy eliminates the potential for inadvertently disconnecting or kinking the tubing (and pump alarms) when patients are moved about and away from the inpatient unit, allows other healthcare providers to use the VAD if needed, and eliminates the possibility that a CI chemotherapy bag will become empty while the patient is being transported or is in another area of the hospital.

Staff education regarding CI chemotherapy: Concerns about potential problems can be addressed through education and communication. Secure luer-lock tubing connections and careful patient transferring reduce the risk of tubing disconnection. Patient transportation personnel and others who have patient contact, such as physical therapists and radiology department staff, can be taught patient lifting and transferring techniques that keep tubing intact and free from kinks. They also can be informed about the

Lisa Schulmeister, RN, MN, CS, OCN®, is an oncology nursing consultant in New Orleans, LA.

Key Words: chemotherapy, safety, transportation of patients

Digital Object Identifier: 10.1188/04.CJON.419-420