

Implementation and Evaluation of a High-Dose Cytarabine Neurologic Assessment Tool

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Patients receiving high-dose cytarabine as part of their chemotherapy regimen have a chance of experiencing neurotoxicities. Prompt identification of signs and symptoms can greatly reduce the chance of patients sustaining permanent neurologic damage. This article describes the development and successful implementation of an evidence-based, standardized neurologic assessment and documentation tool that was evaluated using a clinical utility questionnaire and an adherence audit.

At a Glance

- Use of a standardized neurologic assessment and documentation method can aid in minimizing patient harm during chemotherapy administration.
- An inpatient medical oncology unit formally assessed its clinical practices, identified deficiencies, and developed new assessment and documentation processes.
- A clinical utility and knowledge questionnaire that involved the staff assessed existing practices, guided the development and evaluation of new assessment and documentation practices, and was helpful in successful implementation of a complex practice change.

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Patients undergoing standard treatment for acute leukemia typically receive high-dose cytarabine as part of their induction and consolidation regimens. Cytarabine, also known as arabinofuranosyl cytidine (Ara-C), is an antimetabolite, or a cell-cycle-specific drug that inhibits DNA synthesis, halting cell division. Several serious adverse effects have been identified in patients receiving high-dose cytarabine (doses of 1 g/m² or greater), including keratitis and possible dose-limiting myelosuppression. However, the cause for greatest concern is the possibility of irreversible neurotoxicities.

Patients receiving high-dose cytarabine have a 7%–28% incidence of neurotoxicity, which can be reversible if identified early

(Lundquist & Holmes, 1993). These toxicities include gait and balance disturbances, alterations in fine motor skills, headache, memory loss, peripheral neuropathy, and seizures (Nielsen & Brant, 2002). Several risk factors have been identified, including a cumulative dose effect, age older than 60 years, and decreased renal or hepatic function (Baker, Royer, & Weiss, 1991). Prompt identification and reporting of adverse effects by nurses is imperative to ensure that permanent neurotoxicities do not occur (Amen, 2007). For this reason, Brown (2010) suggested the use of a standardized neurologic assessment tool during the administration of high-dose cytarabine.

The University of Maryland Greenebaum Cancer Center (UMGCC) Nursing

Clinical Practice Council (NCPC) undertook a two-year project to improve nursing practices associated with high-dose cytarabine. The NCPC assessed nurses' knowledge and existing practices using a knowledge and clinical utility questionnaire and then developed a new standardized neurologic assessment guide and documentation tool to facilitate practice change. The council sought feedback from stakeholders to help shape and improve the innovation, with the goal of making the practice change more acceptable. Throughout, the council was mindful that the nursing staff's impression of the clinical utility of the new processes and tools (i.e., ease of use, time commitment, and clinical helpfulness) is crucial to ensure a successful, sustainable implementation (Polgar, Reg, & Barlow, 2002; Smart, 2006). Following implementation, the same clinical utility questionnaire was used to evaluate nurses' knowledge and perceptions of the new clinical processes, then responses were compared with the preimplementation questionnaire. Adherence to the practice change also was assessed.

Methods

An informal review of the current practices revealed that orders for neurologic assessments varied by prescriber. A consistent, formal method of assessing, documenting, and reporting abnormal neurologic findings by nurses also was lacking. Typically, nurses were instructed only to assess a patient's signature, which was not obtained on a hospital form and, therefore, not transferred into the medical record.

A literature review was performed, and a questionnaire was developed to assess