

ONCOLOGY NURSING SOCIETY WHITE PAPER

Neutropenia: State of the Knowledge Part I

Anita Nirenberg, RN, MS, AOCNP, Annette Parry Bush, RN, BSN, MBA, OCN®,
Arlene Davis, RN, MSN, AOCN®, Christopher R. Friese, RN, PhD, AOCN®,
Theresa Wicklin Gillespie, PhD, BA, BSN, MA, RN, and Robert David Rice, RN, NP-C, OCN®

Purpose/Objectives: To review neutrophil physiology, consequences of chemotherapy-induced neutropenia (CIN), CIN risk assessment models, national practice guidelines, the impact of febrile neutropenia and infection, and what is known and unknown about CIN.

Data Sources: Extensive review and summary of published neutropenia literature, guidelines, meta-analyses, currently funded National Institutes of Health and Oncology Nursing Society studies, and invited expert panel symposium presentations.

Data Synthesis: A comprehensive review of current literature regarding CIN risk assessment, practice guidelines, management, impact on dose-dense and dose-intense cancer treatment, complications, costs related to hospitalizations, and treatment strategies has been compiled.

Conclusions: CIN is the most common dose-limiting toxicity of cancer therapy. Medical practice guidelines and risk assessment models for appropriate use of myeloid growth factors and management of febrile neutropenia have been developed to assess patients for CIN complications prechemotherapy and during CIN episodes. CIN affects patients, families, practitioners, and the healthcare system. Although much is known about this common chemotherapy complication, a great deal remains to be learned.

Implications for Nursing: CIN is a serious and global problem in patients receiving cancer therapy. Oncology nurses need to critically analyze their own practices when assessing, managing, and educating patients and families about CIN.

Key Points . . .

- Chemotherapy-induced neutropenia (CIN) is the most common dose-limiting toxicity of cancer therapy.
- Clinical practice guidelines and validated risk assessment models are available for use in evaluating patients for complications related to CIN.
- Complications of CIN include infection, the need for hospitalization, and death.

The project team conducted an extensive review and summary of neutropenia literature, guidelines, and meta-analyses and reviewed current National Institutes of Health- and ONS-funded studies. The panel of experts was invited to participate in a two-day symposium held in January 2006 in Pittsburgh, PA, during which they presented their respective areas of expertise to the project team (see inset). The expert presentations were recorded and transcribed for use in the preparation of this article.

Neutropenia is the most common dose-limiting toxicity of cancer chemotherapy, and complications from chemotherapy-induced neutropenia (CIN) can cause significant morbidity and mortality. In fact, Given and Sherwood (2005) identified CIN as a nursing-sensitive patient outcome symptom. Expert nursing assessment, intervention, education, and evaluation facilitate patient management of CIN.

At the 2004 Oncology Nursing Society (ONS) Town Hall meeting, the Neutropenia Special Interest Group requested direction from ONS regarding CIN nursing care and management. The Society responded by appointing a project leader to develop the State of the Knowledge on Neutropenia Symposium. Project team members were chosen for their oncology nursing expertise in neutropenia. The team developed a roster of experts in neutropenia, including those knowledgeable in prevention and management in both inpatient and community settings, clinical outcomes, risk management, infection and infection control, translational research, nursing education, research, and health policy.

Anita Nirenberg, RN, MS, AOCNP, is an assistant professor of clinical nursing and director of the oncology masters program in the School of Nursing at Columbia University in New York, NY; Annette Parry Bush, RN, BSN, MBA, OCN®, is a nurse planner and project manager in the education team at the Oncology Nursing Society in Pittsburgh, PA; Arlene Davis, RN, MSN, AOCN®, is an oncology clinical nurse specialist at Malcom Randall VA Medical Center in Gainesville, FL; Christopher R. Friese, RN, PhD, AOCN®, is a postdoctoral fellow in the School of Public Health at Harvard University and in the Center for Outcomes and Policy Research at the Dana-Farber Cancer Center, both in Boston, MA; Theresa Wicklin Gillespie, PhD, BA, BSN, MA, RN, is an assistant professor in the Department of Surgery and Winship Cancer Institute at Emory University and the director of health services research and development at the Atlanta VA Medical Center, both in Atlanta, GA; and Robert David Rice, RN, NP-C, OCN®, is a research nurse practitioner at Memorial Sloan-Kettering Cancer Center in New York, NY. (Submitted June 2006. Accepted for publication June 30, 2006.)

Digital Object Identifier: 10.1188/06.ONF.1193-1201