Advances in cancer chemotherapy include several new, highly active agents that are potentially neurotoxic. Aggressive treatment with one or more of the agents has increased the likelihood of cure or long-term survival along with possible development of dose-limiting neurologic effects, particularly in the peripheral nervous system (PNS), which is more sensitive than the central nervous system (CNS) to neurotoxic effects of chemotherapy. This article will discuss chemotherapy-induced peripheral neuropathy (CIPN) in terms of incidence, PNS anatomy and physiology, pathogenesis of CIPN, and current and potential management strategies.

Advances in supportive care have increased the likelihood that previously less common adverse effects of chemotherapy will be more evident. The incidence of chemotherapy-induced peripheral neuropathy (CIPN) is increasing because more neurotoxic drugs have been developed and because patients are living longer and receiving multiple chemotherapy regimens. This article reviews the anatomy of the peripheral nervous system, the proposed mechanisms of CIPN, and manifestations of CIPN from vinca alkaloids, taxanes, and platinum analogs. Major topics of this article are evidence-based data regarding symptom management, a review of medical management, and a synthesis of nursing care for patients at risk for or experiencing CIPN.

The Peripheral Nervous System

A brief review of PNS structures and functions is useful to understand the pathophysiologic mechanisms of CIPN. The PNS and CNS transmit, integrate, interpret, and respond to information from the external and internal environments. The CNS (brain and spinal cord) is protected by the blood-brain vascular barrier that inhibits diffusion of large molecules, highly charged ions, and many drugs from the bloodstream into CNS tissues (Willis, 2000). A similar vascular barrier does not protect the...