The Patient Care Monitor–Neutropenia Index: Development, Reliability, and Validity of a Measure for Chemotherapy-Induced Neutropenia

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Chemotherapy-induced neutropenia is a treatment side effect with several notable consequences for patients with cancer. The most important is increased likelihood of infection, particularly when the absolute neutrophil count falls below 500/mm³. More than 60,000 patients with cancer were hospitalized for neutropenia in 1999, with a corresponding 7% inpatient mortality rate (Caggiano, Weiss, Rickert, & Linde-Zwirble, 2005). In addition, neutropenia is a dose-limiting factor for many regimens and may compromise optimal cancer treatment by requiring dose reduction or delay (Chang, 2000; Crawford et al., 1991; Elting, 1998; Pettengell et al., 1992), both of which can impact disease progression and long-term survival (Bonadonna & Valagussa, 1981; Glasy, Hackett, Flyer, Dunford, & Liang, 2001).

Neutropenia complications can adversely affect health-related quality of life (HRQOL) (Nirenberg et al., 2006a, 2006b; Padilla & Ropka, 2005). For example, patients with febrile neutropenia had worse symptom profiles than patients without neutropenia for abdominal pain, anorexia, asthenia, dehydration, fatigue, rigors, and vomiting (Glasy et al., 2001). Similar patterns have been shown in patients with severe afebrile neutropenia, although those results were nonsignificant trends (Glasy et al., 2001). Another investigation showed greater symptom burden for patients with neutropenia grades 3–4 compared to those with grades 0–2; symptoms included depression, physical symptom distress, social limitations and isolation, and limitations on normal physical activities (Fortner, Houts, & Schwartzberg, 2006).

To date, few self-report instruments are sensitive to changes in HRQOL specific to neutropenia. One measure, the Functional Assessment of Cancer Therapy–Neutropenia Subscale (FACT-NS) (Calhoun, Chih-Hung, Welshman, & Cell, 2002; Wagner et al., 2008), was designed to assess HRQOL specific to neutropenia and has demonstrated good psychometric properties. However, the FACT-NS has been unable to use a single time point score to differentiate patients who had grades 3–4 neutropenia from those who did not, and the tool has not been validated on a broad demographic sample (Wagner et al., 2008). In addition, whether the FACT-NS will be useful as an outcome measure or a clinical symptom screener is unclear.