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# A Comparison of the Theory of Unpleasant Symptoms and the Conceptual Model of Chemotherapy-Related Changes in Cognitive Function

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**R**etrospective and prospective clinical trials have substantiated the incidence of mild to moderate cognitive impairment resulting from chemotherapy to treat cancer (Ahles & Saykin, 2001; Jansen, Miaskowski, Dodd, Dowling, & Kramer, 2005). Patients with cancer report that cognitive impairment has a significant effect on their quality of life (QOL) (Ahles & Saykin, 2001). Associated factors may include age, anemia, fatigue, depression, anxiety, hormone levels, cytokine release, and genetic makeup (Jansen et al.). Establishing the appropriateness of a working model to describe the relationships would provide additional structure and focus for empirical research. The purpose of this article is two-fold: (a) to explore the use of the Theory of Unpleasant Symptoms (TUS) (Lenz, Suppe, Gift, Pugh, & Milligan, 1995) as a model for describing the symptom experience related to cognitive impairment associated with standard-dose chemotherapy, and (b) to compare and contrast that use of the TUS with the Conceptual Model of Chemotherapy-Related Changes in Cognitive Function (Hess & Insel, 2007).

## Cognitive Impairment Secondary to Chemotherapy

An increasing body of literature supports the existence of cognitive impairment associated with standard-dose chemotherapy (Ahles & Saykin, 2001). The lay term for this treatment-related effect is “chemo brain” (Jansen et al., 2005). Retrospective trials estimate an incidence ranging from 17%–75% (Wefel, Lenzi, Theriault, Davis, & Meyers, 2004). Wefel et al. conducted the first longitudinal, prospective trial and evaluated the effects of standard-dose adjuvant chemotherapy in a small sample of women with breast cancer (N = 18). Neurocognitive

**Purpose/Objectives:** To explore the use of the Theory of Unpleasant Symptoms (TUS) as a model for describing the symptom experience related to the cognitive impairment associated with standard-dose chemotherapy and compare and contrast that use of the TUS with the Conceptual Model of Chemotherapy-Related Changes in Cognitive Function.

**Data Sources:** PubMed database.

**Data Synthesis:** Retrospective and prospective clinical trials have substantiated the incidence of mild to moderate cognitive impairment. Patients have reported a significant effect on quality of life. Associated factors may include age, anemia, fatigue, depression, anxiety, hormone levels, cytokine release, and genetic makeup. Establishing the appropriateness of a working model to describe the relationships would provide additional structure and focus for empirical research.

**Conclusions:** Both models have utility for describing the relationships of factors associated with chemotherapy-related cognitive impairment.

**Implications for Nursing:** Blending of the TUS and the Conceptual Model of Chemotherapy-Related Changes in Cognitive Function may provide an enhanced framework for further research about the physiologic and psychological aspects of chemotherapy-related cognitive impairment.

testing was performed at baseline, six months (approximately three weeks from completion of therapy), and one year following the completion of chemotherapy. More than 60% of participants exhibited a decline in cognitive performance from baseline at the six-month evaluation. Nearly 50% of those subjects demonstrated cognitive improvement at the one-year evaluation.

Cognitive impairment has been demonstrated in patients receiving standard-dose chemotherapy for lymphoma. Ahles et al. (2002) compared survivors of Hodgkin disease (n = 31) and non-Hodgkin lymphoma (n = 27) with survivors of breast cancer (n = 35). Similar incidence