

This material is protected by U.S. copyright law. Unauthorized reproduction is prohibited. To purchase quantity reprints, please e-mail reprints@ons.org or to request permission to reproduce multiple copies, please e-mail pubpermissions@ons.org.

## Patterns of Fatigue and Effect of Exercise in Patients Receiving Chemotherapy for Breast Cancer

Hong-Shiuann Wu, RN, PhD, Marilyn J. Dodd, RN, PhD, FAAN,  
and Maria H. Cho, RN, PhD

**Purpose/Objectives:** To examine daily fatigue patterns during the third cycle of chemotherapy in women with breast cancer and predict whether fatigue trajectories differ by exercise or chemotherapy regimens.

**Design:** A secondary data analysis.

**Setting:** Five cancer centers in the San Francisco Bay area.

**Sample:** 98 female outpatients with breast cancer receiving chemotherapy.

**Methods:** The data were collected as part of a randomized clinical trial to test the effectiveness of a systematic exercise intervention on fatigue. Participants were classified as exercisers or nonexercisers according to the Surgeon General's Guideline for Physical Activity criteria. Average and worst fatigue levels in the prior 24 hours were measured on a 0–10 numeric rating scale at bedtime for 21 consecutive days beginning on the day of chemotherapy.

**Main Research Variables:** Average and worst levels of fatigue, exercise status, and chemotherapy regimens.

**Findings:** Average and worst levels of fatigue peaked immediately after chemotherapy and declined gradually over time. The decreases were significant ( $p < 0.001$ ) but not different between exercisers and nonexercisers. Fatigue of doxorubicin and cyclophosphamide (AC) regimens was more severe, especially for the first three days after chemotherapy, and more prolonged than those of non-AC regimens.

**Conclusions:** The patterns of change in fatigue were similar between exercisers and nonexercisers, but nonexercisers consistently reported higher fatigue levels during the third cycle of chemotherapy. The patterns of fatigue differed by chemotherapy regimens.

**Implications for Nursing:** The information of fatigue trajectories is crucial in preparing patients for chemotherapy and determining the timing of interventions and measurement of outcomes.

Cancer-related fatigue (CRF) is a significant and highly prevalent clinical problem. It is long lasting and characterized by a significant temporal variability. The symptom often is not continually present but comes and goes in a somewhat roller coaster fashion (Berger, 1998). CRF affects all aspects of patients' lives and decreases quality of life. Although fatigue is one of the most impairing cancer-related

### Key Points . . .

- ▶ Cancer-related fatigue (CRF) peaks in the days immediately after IV chemotherapy and declines gradually over time.
- ▶ Exercise has an impact on levels of CRF.
- ▶ Fatigue patterns vary depending on the type of chemotherapy regimen patients receive.

symptoms, it has not been controlled fully. The unknown mechanisms and the fluctuating nature of CRF add to obstacles in studying and managing this symptom.

### Patterns of Fatigue in Patients Receiving Chemotherapy

CRF fluctuates over time and peaks in the days immediately after IV chemotherapy administration. Richardson, Ream, and Wilson-Barnett (1998) revealed that patients with cancer who were treated by conventional three- or four-week regimens reported high levels of fatigue for the first four to five days after chemotherapy. Fatigue decreased steadily in subsequent days until around day 15, when a temporary

*Hong-Shiuann Wu, RN, PhD, is an assistant professor in the College of Nursing, Adult Health, at Wayne State University in Detroit, MI; and Marilyn J. Dodd, RN, PhD, FAAN, is a professor emerita and Maria H. Cho, RN, PhD, is an assistant adjunct professor, both in the School of Nursing at the University of California, San Francisco. This study was supported by a National Cancer Institute grant (NIH R01 CA 83316). No financial relationships to disclose. (Submitted November 2007. Accepted for publication March 18, 2008.)*

Digital Object Identifier: 10.1188/08.ONF.E90-E99