

Fatigue and Physical Activity in Patients Undergoing Hematopoietic Stem Cell Transplant

Eileen Danaher Hacker, PhD, RN, AOCN®, Carol Ferrans, PhD, RN, FAAN,
Ellen Verlen, MS, RN, FNP/BC, Farhad Ravandi, MD, Koen van Besien, MD,
Julie Gelms, PA-C, and Natalie Dieterle, PA-C

Purpose/Objectives: To examine the patterns of fatigue, physical activity, health status, and quality of life before and after high-dose chemotherapy and hematopoietic stem cell transplantation (HSCT) and to examine the feasibility of obtaining real-time fatigue and physical activity data.

Design: Prospective, repeated measures.

Setting: Two midwestern academic medical centers.

Sample: Convenience sample of autologous or allogeneic patients undergoing HSCT (N = 20 baseline, N = 17 post-transplant).

Methods: Subjects were assessed over a five-day period before and after HSCT for a total of 10 days. Subjects rated fatigue intensity three times daily and wore a wrist actigraph to measure physical activity. At the end of both five-day periods, subjects completed measures of perceived health status (European Organization for Research and Treatment of Cancer Quality of Life Questionnaire—Core 30) and life satisfaction (Quality of Life Index).

Main Research Variables: Fatigue, physical activity, perceived health status, and quality of life.

Findings: Study results indicate that fatigue significantly increased and physical activity decreased following high-dose chemotherapy and HSCT. The decline coincided with diminished physical, emotional, role, and cognitive functioning. The symptoms that patients experienced (i.e., fatigue, pain, nausea and vomiting, sleep disturbances, appetite loss, and diarrhea) increased during the acute post-transplant period. No significant changes in life satisfaction were found.

Conclusions: The study findings suggest that patients receiving high-dose chemotherapy followed by HSCT experience increased fatigue, reduced physical activity, diminished functioning, and poorer quality of life immediately after transplant. Findings demonstrate that real-time fatigue and physical activity data can feasibly be collected in acutely ill patients.

Implications for Nursing: Patients undergoing HSCT require considerable supportive nursing care immediately following transplant. Clinicians and researchers need to strive for effective symptom management to improve the likelihood of successful outcomes.

Key Points . . .

- ▶ Patients experience increased fatigue and decreased physical activity following the preparatory regimen and hematopoietic stem cell transplantation (HSCT).
- ▶ Patients report diminished functioning and increased symptomatology following HSCT, although no changes in life satisfaction were reported.
- ▶ Real-time fatigue and physical activity data can feasibly be collected from patients who undergo intensive cancer therapies.

the acute post-transplant period is difficult because patients frequently are too ill to complete long questionnaires or participate in lengthy interviews. Likewise, obtaining objective

Eileen Danaher Hacker, PhD, RN, AOCN®, is an assistant professor and Carol Ferrans, PhD, RN, FAAN, is a professor, both in the Department of Medical Surgical Nursing in the College of Nursing at the University of Illinois at Chicago; Ellen Verlen, MS, RN, FNP/BC, is a family nurse practitioner at Children's Health Center of Gurnee in Illinois; Farhad Ravandi, MD, was an assistant professor at the University of Illinois at Chicago at the time the article was written and currently is an assistant professor in the Leukemia Department at the University of Texas M.D. Anderson Cancer Center in Houston; Koen van Besien, MD, is the director of the Lymphoma and Transplant Program and, at the time the article was written, Julie Gelms, PA-C, was a physician's assistant, both at the University of Chicago Hospitals in Illinois; and Natalie Dieterle, PA-C, is a physician's assistant in the Bone Marrow Transplant Program at Karmanos Cancer Institute in Detroit, MI. This study was sponsored by grants from the ONS Foundation (supported by Ortho Biotech Products), American Cancer Society IRG-99-224, and Center for Research on Cardiovascular and Respiratory Health (CRCRH) in the College of Nursing at the University of Illinois at Chicago. The CRCRH is supported by the National Institute of Nursing Research, National Institutes of Health (grant #P20 NR07812). Mention of specific products or opinions related to those products do not indicate or imply endorsement by the Oncology Nursing Forum or the Oncology Nursing Society. (Submitted April 2005. Accepted for publication October 3, 2005.)

Digital Object Identifier: 10.1188/06.ONF.614-624

Intensive cancer therapy, such as high-dose chemotherapy followed by hematopoietic stem cell transplantation (HSCT), has the potential to affect all aspects of patients' lives, particularly during the immediate post-transplant period. Very little is known about the patterns of fatigue, physical activity, health status, and quality of life (QOL) during this period. Problems such as fatigue and decreased physical activity may result in long-term functional consequences, eventually affecting patients' ability to maintain or return to productive roles in society. Obtaining subjective data during