

Management of Side Effects of Novel Therapies for Multiple Myeloma: Consensus Statements Developed by the International Myeloma Foundation's Nurse Leadership Board

**Page Bertolotti, RN, BSN, OCN[®], Elizabeth Bilotti, RN, MSN, APRN, BC, OCN[®],
Kathleen Colson, RN, BSN, BS, Kathleen Curran, RN, MSN, CRNP,
Deborah Doss, RN, OCN[®], Beth Faiman, RN, MSN, APRN, BC, AOCN[®],
Maria Gavino, RN, BSN, Bonnie Jenkins, RN, Kathy Lilleby, RN,
Ginger Love, RN, OCN[®], Patricia A. Mangan, APRN, BC,
Emily McCullagh, RN, NP-C, OCN[®], Teresa Miceli, RN, BSN,
Kena Miller, RN, MSN, FNP, Kathryn Rogers, RN,
Sandra Rome, RN, MN, AOCN[®], CNS, Stacey Sandifer, RN, BSN,
Lisa C. Smith, MSN, FNP, AOCN[®], Joseph D. Tariman, RN, MN, ARNP-BC, OCN[®],
and Jeanne Westphal, RN**

Nurses play an essential role in managing the care of patients with multiple myeloma, who require education and support to receive and adhere to optimal therapy. The International Myeloma Foundation created a Nurse Leadership Board comprised of oncology nurses from leading cancer centers and community practices. An assessment survey identified the need for specific recommendations for managing key side effects of novel antimyeloma agents. Myelosuppression, thromboembolic events, peripheral neuropathy, steroid toxicities, and gastrointestinal side effects were selected for the first consensus statements. The board developed recommendations for healthcare providers in any medical setting, including grading of side-effect toxicity and strategies for managing the side effects in general, with specific recommendations pertaining to the novel agents.

Multiple myeloma is a B-cell-derived hematologic malignancy evolving from the clonal growth of plasma cells (Kyle & Rajkumar, 2004). It is the second most common hematologic malignancy after non-Hodgkin lymphoma, with 19,920 new cases in the United States in 2008. In 2008, an estimated 10,690 patients with multiple myeloma in the United States are expected to die (American Cancer Society, 2008). Multiple myeloma is characterized by destructive bone lesions, hypercalcemia, anemia, and renal failure, the result of accumulation of plasma cells and secretion of monoclonal protein in the serum and/or urine. The most common symptoms at diagnosis are fatigue, bone pain, and recurrent infections (Kyle & Rajkumar).

The National Comprehensive Cancer Network ([NCCN], 2008) has developed guidelines for the evaluation and treatment of patients with plasmacytomas, asymptomatic myeloma, and symptomatic myeloma. Readers are referred to those guidelines for the overall management of such patients. Although multiple myeloma remains incurable, the continuing development of new therapies has contributed to longer survival for many patients (Kyle & Rajkumar, 2004; Tariman, 2003). The

At a Glance

- ◆ Patients with multiple myeloma require education and support to receive and adhere to optimal therapy, obtain the full benefits of therapy, and improve their quality of life.
- ◆ The novel therapeutic agents lenalidomide, thalidomide, and bortezomib have contributed to longer survival but are associated with side effects that present unique challenges.
- ◆ The International Myeloma Foundation's Nurse Leadership Board developed recommendations to assist healthcare providers in any medical setting in managing the side effects of novel agents for multiple myeloma.

For author affiliations, please see page 1. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the *Clinical Journal of Oncology Nursing* or the Oncology Nursing Society. (Submitted October 2008. Accepted for publication January 5, 2008.)

Digital Object Identifier:10.1188/08.CJON.S1.9-12

five-year survival rate increased from 25% in 1974 to 34% in 2003 (NCCN). The new therapies approved by the U.S. Food and Drug Administration include the so-called novel agents for multiple myeloma: the immunomodulatory drugs lenalidomide (Revlimid[®], Celgene Corporation) and thalidomide (Thalomid[®], Celgene Corporation) and the proteasome inhibitor bortezomib (Velcade[®], Millennium Pharmaceuticals). The novel agents are being used increasingly for induction therapy and treatment of patients at relapse, supplanting or being added to past standard therapies, including vincristine with doxorubicin plus dexamethasone, and melphalan and prednisone (NCCN, 2008). Thalidomide is indicated in combination with dexamethasone for newly diagnosed patients with multiple myeloma. Lenalidomide is indicated in combination with dexamethasone for patients with multiple myeloma who have received at least one prior therapy. Bortezomib is indicated for the treatment of patients with multiple myeloma who have received at least one prior therapy (Celgene Corporation, 2007a, 2007b; Millennium Pharmaceuticals, 2007).

Overall Issue Statement

Patients with multiple myeloma require education and support to receive and adhere to optimal therapy, obtain the full benefits of therapy, and improve their quality of life. The novel therapeutic agents lenalidomide, thalidomide, and bortezomib have contributed to increased response rates and increased survival time compared with conventional chemotherapy (Ghobrial et al., 2007; Manochkian, Miller, & Chanan-Khan, 2007; Rajkumar et al., 2005; Richardson & Anderson, 2006; Richardson, Hideshima, Mitsiades, & Anderson, 2007). However, the agents cause side effects that, although predictable and manageable, can be life threatening, interfere with adherence to optimal therapy, and

The International Myeloma Foundation believes that nurses play an essential role in managing patient care and recognizes the need for specific information concerning the use of novel antimyeloma agents as well as management of their associated side effects.

adversely affect quality of life. Steroid-induced side effects also have the potential to affect adherence and quality of life for several reasons. Dexamethasone and other corticosteroids form the basis of many regimens for multiple myeloma. Lenalidomide and thalidomide currently are indicated in combination with dexamethasone (Celgene Corporation, 2007a, 2007b). Bortezomib, which can be administered as monotherapy, also may be administered in combination with dexamethasone (Millennium Pharmaceuticals, Inc., 2007).

The International Myeloma Foundation, a not-for-profit advocacy organization, believes that nurses play an essential role in managing patient care and recognizes the need for specific information concerning the use of novel antimyeloma agents as well as management of their associated side effects. To address

the need, the foundation created a Nurse Leadership Board, which included 20 oncology nurses from leading cancer centers and community practices in the United States caring for patients with multiple myeloma. Nurse Leadership Board members were selected by the International Myeloma Foundation to include nurses recommended by key opinion leaders, department heads, and nurses in major medical centers and leading community-based centers treating patients with multiple myeloma.

Needs Assessment

A premeeting assessment survey of members of the Nurse Leadership Board identified key experiences and needs. The treatment protocols with which the members had the most experience included lenalidomide plus dexamethasone, bortezomib, and thalidomide. Of the most common side effects observed by the nurses, deep vein thrombosis was identified as the most challenging.

A two-day inaugural meeting of the Nurse Leadership Board took place November 4–5, 2006, in Dallas, TX. The premeeting survey highlighted the need for specific strategies and programs that nurses could use to educate and assist patients and their caregivers in managing key side effects of the novel agents used to treat multiple myeloma. During the meeting, board members voted on the first side effects to address. Myelosuppression (thrombocytopenia, neutropenia, and anemia), thromboembolic events (deep vein thrombosis and pulmonary embolism), peripheral neuropathy, steroid toxicities, and fatigue were selected for the first consensus statement recommendations based on their severity, frequency, and effect on quality of life. However, because of the large volume of information already available regarding fatigue, the board decided after further discussion to address gastrointestinal side effects instead (nausea, vomiting, diarrhea, and constipation).

Consensus Statement Development

During the inaugural meeting, the Nurse Leadership Board separated into five subgroups of four nurses apiece, and each subgroup developed a consensus statement for a specific side effect. The board reviewed all five statements with input from members of the Scientific Advisory Board of the International Myeloma Foundation. During the 10-month period following the inaugural meeting, the subgroups completed issue and position statements, which were reviewed and approved by the entire board. The selection of side effects for consensus statement development, an overview of consensus statement content, and the issue statements specific to each side effect were presented by the Nurse Leadership Board at the 11th International Myeloma Workshop and the 4th International Workshop on Waldenstrom Macroglobulinemia, June 25–30, 2007, in Kos, Greece (Bertolotti et al., 2007).

The five subgroups then established consensus statements for use by healthcare providers in any type of medical facility. Each consensus statement includes an issue statement, strategic recommendations, side-effect toxicity and risk assessment tools for grading and management, and recommendations, as

appropriate, for prophylaxis, pharmacologic interventions, nonpharmacologic management approaches, and patient and caregiver education.

The consensus recommendations use the National Cancer Institute (NCI) Common Terminology Criteria for Adverse Events (CTCAE) for toxicity and risk assessment tools for grading and management of adverse events (NCI, 2006). NCI CTCAE version 3.0 are used to identify treatment-related adverse events to facilitate the evaluation of new cancer therapies, treatment modalities, and supportive measures. For most adverse events, NCI CTCAE define grades 1-5 using clinical descriptions; each grade is assigned a severity: grade 1 is mild, grade 2 is moderate, grade 3 is severe, grade 4 is life threatening or disabling, and grade 5 is death related to the adverse event. CTCAE categories are broad classifications based on anatomy and/or pathophysiology. The grades may be used for quantifying and monitoring toxicities and determining the need for intervention. The CTCAE also allow for consistency of evaluation among healthcare providers, thereby promoting continuity of care. This is particularly important for patients who need referral to specialists for management of particular side effects.

The Nurse Leadership Board has developed consensus statements, including strategies for managing the side effects in general, along with specific recommendations pertaining to the novel agents, for myelosuppression (Miceli et al., 2008), thromboembolic events (Rome et al., 2008), peripheral neuropathy (Tariman et al., 2008), steroid toxicities (Faiman et al., 2008), and gastrointestinal side effects (Smith et al., 2008).

Future Directions

The Nurse Leadership Board is collaborating with the International Myeloma Foundation to disseminate the information in the first five consensus statements for the management of side effects associated with novel therapies in patients with multiple myeloma to nurses, other healthcare professionals, patients with multiple myeloma, and caregivers. Dissemination strategies include presentations at symposia and regional meetings of patient and caregiver support groups, development of quick reference cards and other printed materials for healthcare professionals and patients, and Internet-based resources. The board also plans to expand its initiative to collaborate with nurses in Canada, in Europe, and eventually worldwide to develop consensus statements which will be reviewed and updated on an ongoing basis.

A second meeting of the Nurse Leadership Board took place August 18-19, 2007, in Santa Monica, CA. The board and the International Myeloma Foundation confirmed their commitment to changing care for patients with multiple myeloma. At that meeting, new task force committees were established for nurse education, patient education, publications, and long-term care.

As patients with multiple myeloma continue to survive longer, long-term care, including management of the long-term side effects of therapy, will be of increasing importance. Long-term side effects associated with therapy for multiple myeloma that will continue to be of interest are peripheral neuropathy, gastrointestinal effects, deep vein thrombosis, fatigue, and myelosuppression. Additional side effects and patient concerns

for which consensus statements for management are needed include stem cell transplantation, osteonecrosis of the jaw, and falls. Consensus statements concerning those side effects are under consideration by the Nurse Leadership Board.

The Nurse Leadership Board and the International Myeloma Foundation recognize that the development and approval of additional therapies for multiple myeloma, including those with unique mechanisms of action, as well as the use of new combinations of therapeutic agents, will create a need for additional recommendations for the management of previously unrecognized side effects. Long-term care topics of concern that have been identified by the Nurse Leadership Board Long-Term Care Task Force include bone health, functional mobility and safety, chronic pain, sexuality and sexual dysfunction, renal complications, and health maintenance. These are being developed as part of a long-term care plan for patients with multiple myeloma who are receiving novel therapies. The Nurse Education Task Force, a subgroup of the Nurse Leadership Board, will develop tools to disseminate the work of the Nurse Leadership Board, including Internet-based training programs, flip charts, and quick guides. The Nurse Leadership Board Patient Education Task Force will develop patient education tools that are easily accessible and user-friendly for patients with and without Internet access. The Nurse Leadership Board Publication Task Force will work closely with the other task forces and support publication of additional recommendations to help nurses in their roles and to improve care for patients with multiple myeloma.

The authors gratefully acknowledge Brian G.M. Durie, MD, Robert Kyle, MD, Susie Novis, co-founder and president of the International Myeloma Foundation, and Diane P. Moran, RN, MA, EdM, senior vice president of strategic planning at the International Myeloma Foundation, for critical review of the manuscript and Lynne Lederman, PhD, medical writer at the International Myeloma Foundation, for assistance in preparation of the manuscript.

Author Contact: Page Bertolotti, RN, BSN, OCN®, can be reached at page.bertolotti@cshs.org, with copy to editor at CJONEditor@ons.org.

References

- American Cancer Society. (2008). *Cancer facts and figures 2008*. Atlanta, GA: Author.
- Bertolotti, P., Bilotti, E., Colson, K., Curran, K., Doss, D., Faiman, B., et al. (2007). Nursing guidelines for enhanced patient care [Abstract]. *Haematologica*, 92(Suppl. 2), 211.
- Celgene Corporation. (2007a). Revlimid® (lenalidomide) [Package insert]. Summit, NJ: Author.
- Celgene Corporation. (2007b). Thalomid® (thalidomide) [Package insert]. Summit, NJ: Author.
- Faiman, B., Bilotti, E., Mangan, P.A., Rogers, K., & the IMF Nurse Leadership Board. (2008). Steroid-associated side effects in patients with multiple myeloma: Consensus statement of the IMF Nurse Leadership Board. *Clinical Journal of Oncology Nursing*, 12(3, Suppl.), 53-62.
- Ghobrial, J., Ghobrial, I.M., Mitsiades, C., Leleu, X., Hatjiharissi, E., Moreau, A.S., et al. (2007). Novel therapeutic avenues in myeloma: Changing the treatment paradigm. *Oncology*, 21(7), 785-792.

- Kyle, R., & Rajkumar V. (2004). Multiple myeloma. *New England Journal of Medicine*, 351(18), 1860-1873.
- Manochakian, R., Miller, K., & Chanan-Khan, A.A. (2007). Clinical impact of bortezomib in frontline regimens for patients with multiple myeloma. *Oncologist*, 12(8), 978-990.
- Miceli, T., Colson, K., Gavino, M., Lilleby, K., & the IMF Nurse Leadership Board. (2008). Myelosuppression associated with novel therapies in patients with multiple myeloma: Consensus statement of the IMF Nurse Leadership Board. *Clinical Journal of Oncology Nursing*, 12(3, Suppl.), 13-19.
- Millennium Pharmaceuticals, Inc. (2007). Velcade® (bortezomib) [Package insert]. Cambridge, MA: Author.
- National Cancer Institute. (2006). *Common Terminology Criteria for Adverse Events (CTCAE)*, v3.0. Retrieved September 17, 2007, from <http://ctep.cancer.gov/forms/CTCAEv3.pdf>
- National Comprehensive Cancer Network. (2008). *NCCN Clinical Practice Guidelines in Oncology™: Multiple myeloma* [v.1.2008]. Retrieved December 31, 2007, from http://www.nccn.org/professionals/physician_gls/PDF/myeloma.pdf
- Rajkumar, S.V., Hayman, S.R., Lacy, M.Q., Dispenzieri, A., Geyer, S.M., Kabat, B., et al. (2005). Combination therapy with lenalidomide plus dexamethasone (Rev/Dex) for newly diagnosed myeloma. *Blood*, 106(13), 4050-4053.
- Richardson, P., & Anderson, K. (2006). Thalidomide and dexamethasone: A new standard of care for initial therapy in multiple myeloma. *Journal of Clinical Oncology*, 24(3), 334-336.
- Richardson, P.G., Hideshima, T., Mitsiades, C., & Anderson, K.C. (2007). The emerging role of novel therapies for the treatment of relapsed myeloma. *Journal of the National Comprehensive Cancer Network*, 5(2), 149-162.
- Rome, S., Doss, D., Miller, K.C., Westphal, J., & the IMF Nurse Leadership Board. (2008). Thromboembolic events associated with novel therapies in patients with multiple myeloma: Consensus statement of the IMF Nurse Leadership Board. *Clinical Journal of Oncology Nursing*, 12(3, Suppl.), 21-27.
- Smith, L.C., Bertolotti, P., Curran, K., Jenkins, B., & the IMF Nurse Leadership Board. (2008). Gastrointestinal side effects associated with novel therapies in patients with multiple myeloma: Consensus statement of the IMF Nurse Leadership Board. *Clinical Journal of Oncology Nursing*, 12(3, Suppl.), 37-51.
- Tariman, J.D. (2003). Understanding novel therapeutic agents for multiple myeloma. *Clinical Journal of Oncology Nursing*, 7(5), 521-528.
- Tariman, J.D., Love, G., McCullagh, E., Sandifer, S., & the IMF Nurse Leadership Board. (2008). Peripheral neuropathy associated with novel therapies in patients with multiple myeloma: Consensus statement of the IMF Nurse Leadership Board. *Clinical Journal of Oncology Nursing*, 12(3, Suppl.), 29-35.