MYELOMA CANADA

# New and Emerging Therapies for Multiple Myeloma

**By Dr. Heather Leitch, MD, PhD, FRCPC**
Hematologist, St. Paul's Hospital, Vancouver, BC Clinical Associate Professor, University of BritishColumbia

**M**yeloma is a cancer of plasma cells, cells of the immune system which produce antibodies or immunoglobulins. Myeloma is identified by abnormal levels of certain immunoglobulins or paraproteins (M-proteins) in the blood or urine. Over the past decade there has been steady progress in improving treatments and preventing complications of the disease. People with myeloma are now living longer than ever before. As new and future therapies are developed, are tested, and become available, it is anticipated the lives of myeloma patients will be lengthened and their quality of life improved.

## First-line and Supportive Therapies

Currently, the only treatment that can potentially cure myeloma is stem cell transplant from a matched donor (allogenic transplant). Allogenic transplant is suitable for only a small proportion of myeloma patients, and is seldom used because of the excessive toxicity of the treatment.

An alternative treatment is autologous transplant - transplantation with your own, pre-harvested stem cells. Usually, only one transplant is performed, although there have been a few studies showing that two autologous transplants (tandem transplant) may be beneficial in some circumstances. High-dose chemotherapy is used to prepare for transplant and because of the associated toxicity, this procedure is usually limited to people under the age of 65 who have no other serious medical problems.

There is no evidence that early treatment of someone not eligible for transplant is beneficial. Treatment could expose the patient to the risk of side effects, without proof that there will be benefit. As a result, some patients are followed closely, but do not receive active treatment until they are in stage II or III of the disease. When therapy is started, it is usually oral chemotherapy, such as melphalan and prednisone. This therapy is often successful at controlling the myeloma for a time.

Treatments to handle complications of myeloma (known as supportive therapy) can include monthly infusion of pamidronate, a medication that strengthens the bones and may have an antimyeloma effect. Pamidronate may also help to bring down high calcium levels in the blood. If fractures occur, such as compression fractures of the vertebrae in the spine, localized radiation therapy can relieve pain and stimulate healing. Compression fractures of the spine can also be treated by surgery or a new procedure called vertebral balloon kyphoplasty.

Anemia is a common complication for myeloma patients, and may be treated with blood transfusions or with erythropoietin. Erythropoietin is a medication that is injected under the skin once weekly and stimulates the bone marrow to produce more red blood cells.

## Second and Third-Line Treatments

Since none of the current therapies can cure myeloma, eventually further treatment will be needed. Melphalan and prednisone may be repeated, but over time the disease usually becomes less responsive to them. Dexamethasone, a steroid related to prednisone, may be used intermittently.

Another useful treatment is thalidomide. This medication affects the regulation of the immune system, and is thought to work in several ways to inhibit the growth of myeloma cells. Thalidomide is classified as an experimental therapy, which means that it is not approved for use in Canada outside of research studies.

Lenalidomide (Revlimid®) belongs to another class of drugs that is related to thalidomide and works in a similar way. Pre-clinical studies suggest lenalidomide may be more powerful than thalidomide and may have fewer side effects. This medication is not yet approved for use in Canada.

Bortezomib (VELCADE*) is another new treatment for myeloma. Bortezomib is a proteasome inhibitor and works by suppressing cell division. It has been shown to be effective even in patients who have received multiple prior therapies, including stem cell transplant. Bortezomib was recently approved for use in Canada as a third-line agent in the treatment of myeloma (i.e., when two or more other treatments have been given). Studies are underway looking at its ability to treat newly diagnosed and relapsed myeloma, either alone or in combination with other drugs.

For more information about treatments for multiple myeloma, check out **www.myelomacanada.ca**, the Web site of Myeloma Canada, or the Web sites of the Multiple Myeloma Research Foundation (**www.multiplemyeloma.org**) or the International Myeloma Foundation (**www.myeloma.org**). Information for multiple myeloma is also available from your provincial cancer care agency.

*Qualified in Hematology, with further clinical and research training in Hematologic Malignancies, Dr. Heather Leitch practices as a Hematologist at St. Paul's Hospital in Vancouver BC, and holds an appointment as a Clinical Associate Professor in the Faculty of Medicine at the University of British Columbia. Dr. Leitch trained at UBC, McGill University, and the Fred Hutchinson Cancer Research Center in Seattle, Washington. Dr. Leitch is active in clinical research and has published the results of several studies in peer-review journals, as well as publishing review articles and book chapters.*

## Complications of Multiple Myeloma

Myeloma is a hematologic cancer, which means that it develops in the blood.

Common complications are:

**Bone lesions:** Small spots or "holes" can develop in bones throughout the body, and can lead to fractures. A common early sign of myeloma is pain in the lower back or ribs from tiny fractures.

**Hypercalcemia:** The break down of bone may lead to high levels of calcium in the blood. Symptoms can include kidney stones, confusion, and abdominal pain.

**Kidney problems:** Excess protein in the blood can cause kidney damage and, if not treated, renal failure.

**Changes in the blood:** As the myeloma cells crowd out normal cells, there can be a drop in the number of white blood cells (increasing the risk of infection), platelets (preventing normal blood clotting) and red blood cells (resulting in anemia). High levels of M proteins and light chain proteins can "thicken" the blood (hyperviscosity syndrome), causing headaches and nosebleeds.

The treatment of myeloma is directed in part toward preventing or treating complications.