MYELOMA CANADA
MAKING MYELOMA MATTER

InfoSheet

MYELOMA CELLULAR THERAPIES

What are myeloma cellular therapies?

Myeloma cellular therapies are a type of "immunotherapy" that uses blood cells to help the body's immune system fight myeloma cells. These therapies use a completely different mechanism of action to efficiently eliminate myeloma cells compared to more conventional myeloma drugs such as lenalidomide (an immunomodulatory agent) and bortezomib (a proteasome inhibitor), among others. These therapies can offer a long treatment-free remission period that could last for years.

How are myeloma cellular therapies made?

These therapies are made in a lab using white blood cells (WBCs) taken from human blood. WBCs, like T-cells, are important for the immune system because they can recognize the difference between healthy cells and harmful cells (such as myeloma cells) by identifying specific tags (called antigens) on the surface of myeloma cells.

Making cellular therapies is complex and expensive, involving the genetic modification of normal WBCs to better target myeloma cells and attack and destroy them, sparing most normal and healthy cells.

Two types of WBCs are currently being used to develop cellular therapies for treating myeloma:

- T-cells are genetically modified to create chimeric antigen receptor (CAR) T-cell therapies
- Natural killer (NK) cells are genetically modified to create CAR NK-cell therapies

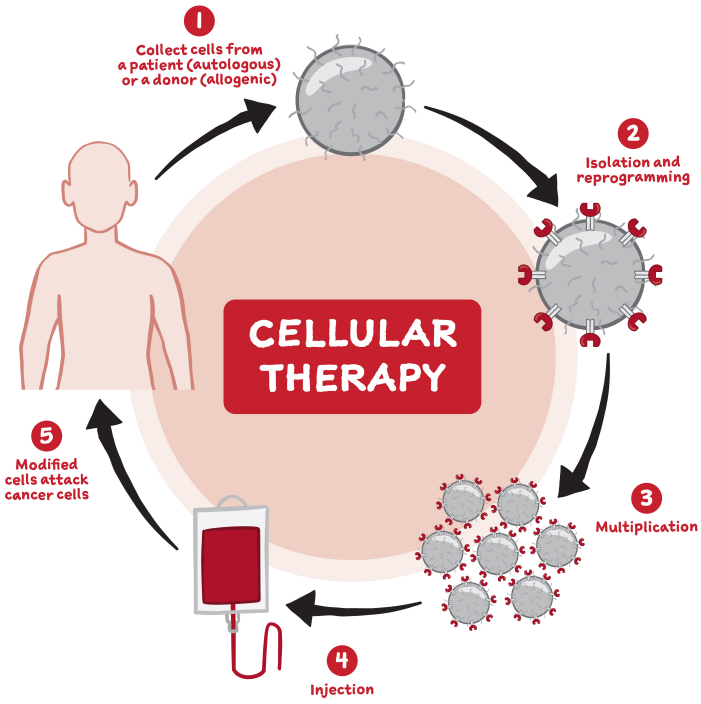


Figure 1: Manufacturing of modified cells

How do myeloma cellular therapies target myeloma cells?

For these therapies to work well, they must primarily target myeloma cells and not healthy cells. For example, many CAR T-cell therapies have been designed to target B-cell maturation antigen (BCMA), which is found on almost all myeloma cells but not on most healthy cells. Other targets being used to develop these therapies are called GPRC5D and FcRH5.

Are myeloma cellular therapies available in Canada?

Before a drug can be used in Canada, it must go through a rigorous approval process by Health Canada. Although Health Canada has approved two CAR T-cell therapies for myeloma, they are not currently covered by Canadian healthcare systems, so most Canadians with myeloma can't access them. All new, publicly funded drugs undergo a review process encouraging greater consistency in cancer drug funding across the country. Despite the national review processes that are in place, most publicly funded provincial drug plans continue to make their own decisions as to which medications they will or will not list. As a result, the coverage of new treatments often varies across the country.

It's also not possible to buy these therapies out-of-pocket or through insurance/drug plans in Canada. Their availability through clinical trials is also limited in Canada. Because of the expertise required to manufacture and administer cellular therapies, few hospitals have adequate facilities or qualified personnel to do so.

Funding the development of academic myeloma cellular therapies in Canada

Several myeloma researchers at academic institutions in Canada are working hard to develop cellular therapies for the treatment of myeloma. A key priority of Myeloma Canada's research funding strategy is to accelerate the development of academic cellular therapies so that Canadians living with myeloma can access these treatments more quickly and at a cost that is sustainable for Canadian healthcare systems.

Myeloma Canada wishes to acknowledge the contribution of Richard LeBlanc, M.D., FRCPC, medical hematologist and oncologist at Hopital Maisonneuve-Rosemont (HMR). This information is not meant to replace the advice of a medical professional; they are the best people to ask if you have questions about your specific medical/social situation.

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