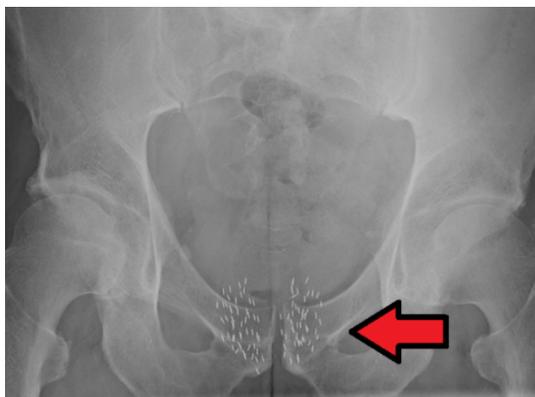


CNIC Member Spotlight: McMaster University

McMaster is home to the McMaster Nuclear Reactor, the world's leading supplier of Iodine-125

Prostate cancer is the most common cancer among men and will affect approximately 1 in 9 men at some point during their lives. The specific treatment path will vary from patient to patient according to the type and severity of their cancer. One such path is low dose seed implant brachytherapy.

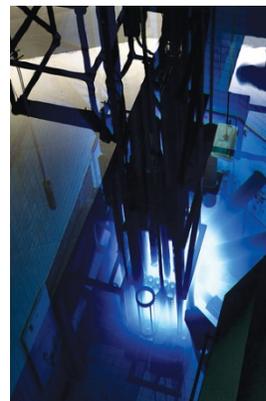
Seed implant brachytherapy involves the insertion of small radioactive “seeds”, each about the size of a grain of rice, directly into the affected areas of the prostate. These seeds steadily deliver radiation to their immediate surroundings with minimal damage to tissue located further away. I-125 brachytherapy is also used in the treatment of brain and eye cancers.



X-Ray of Radiation Brachytherapy Seeds
[Image credit: James Heilman, MD / [CC-BY-SA 4.0](#)]

The seeds are typically made using the isotope Iodine-125 (I-125) encapsulated in an inert material such as titanium. The production of I-125 is limited to just three nuclear reactors worldwide. One of those three is located at McMaster University in Hamilton, Ontario.

A walk through the Main Campus at McMaster University will take you past a unique-looking, circular concrete structure which houses the McMaster Nuclear Reactor (MNR). The MNR is the largest producer of I-125 worldwide and from December 23rd 2019 to January 2nd 2020, it was the world's only supplier of Iodine-125 due to both other reactors that produce the isotope being offline for maintenance at the same time.



X-Ray of Radiation Brachytherapy Seeds
[Image courtesy of [McMaster University](#)]

The McMaster Nuclear Reactor began operations in 1959 and still remains the most powerful research reactor at any Canadian university. In addition to producing I-125, neutron beams from the reactor are also used to look for flaws in turbine blades from aircraft engines, helping to keep air travel safe. The reactor and associated Nuclear Research Building are also home to numerous other research initiatives across disciplines such as

environment, health, materials, and nuclear science.

The world depends on Canada to supply most of its lifesaving Iodine-125 and for over a week was dependent on Canada for all of it. If you would like to see the world's largest I-125 producer for yourself, the McMaster Nuclear Reactor offers free tours to the public and welcomes approximately 1500 visitors per year. For more information on the MNR (including tours), visit <https://nuclear.mcmaster.ca>. For more information on the Canadian Nuclear Isotope Council, visit www.canadianisotopes.ca.

References

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[3] Canadian Cancer Society, "Brachytherapy", Available: <https://www.prostatecancer.ca/Prostate-Cancer/Treatment/Treatment-Options/Radiation-Therapy/Brachytherapy>

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