

Radio-isotopes; what they are, how we make and use them

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Radioactive isotopes present us with a powerful toolbox with which to diagnose and stage neuroendocrine and other tumours, to provide effective treatment and to monitor the responses to therapy. The growth of molecular-based and personalized approaches to health care ensure that the exquisite sensitivity of isotopes will be required to an ever greater extent in future. The production of medical isotopes is costly; it requires sophisticated technology and committed expertise. In fact, medical isotope production capability has been incidental to the primary reasons for the initial construction of the world's current isotope production capacity. The failure of government actions to renew the Chalk River facilities over several decades has resulted in deterioration of the facilities and loss of the necessary human resources. Since Canada has historically been the world's leading isotope producer, the 2009 reactor failure is having international repercussions.

Radioisotopes play a major role in the assessment, treatment and follow up of NETS but they must be deployed in the context of a multidisciplinary group supported by a strong vision and enduring institutional commitment. Several essential components required to support a robust, best practices approach are not mature in Canada. There is need to ensure wider availability of diagnostic and therapeutic isotopes to allow use of advanced radiopharmaceuticals. Further, it will be necessary to fund the costs of materials and services. Accountability for the funding could be developed through the use of a registry to provide outcomes data. Finally, there should be a committed team and leadership whose commitment would include patient care and continuous learning within a centre of excellence framework.