Written Submission for the Pre-Budget Consultations in Advance of the 2020 Budget

By: The Canadian Association of Medical Radiation Technologists (CAMRT)

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CAMRT's Pre-Budget Recommendations

Recommendation 1:
That the government support continued and expanded investment in research dedicated to addressing **appropriate and optimal use of medical imaging and radiation therapy** technologies across the country

Recommendation 2:
The the government adopt and implement the recommendations made by the Senate Standing Committee Social Affairs, Science and Technology (in a 2017 report) to convene a National Conference that would address the **integration of artificial intelligence in healthcare**

About Medical Radiation Technologists in Canada

Medical radiation technologists (MRTs) provide the essential link between compassionate care and the sophisticated medical imaging and therapeutic technologies that underpins modern healthcare. In total, there are more than 20,000 technologists working across Canada within the three medical imaging areas of radiologic technology, nuclear medicine, magnetic resonance, as well as in the practice of radiation therapy.

MRTs play an essential role in the Canadian healthcare system, contributing their expertise to ensure state-of-the-art diagnosis and treatment for millions of Canadians each year. It is estimated that nearly 1 in every 3 Canadians undergo medical imaging in each 6-month period,[1] where MRTs are responsible for producing detailed and high-quality diagnostic information indispensable to decision making in patient care. Radiation therapists play an integral role in the care of 50% of all cancer patients, with tens of thousands of Canadians receiving radiation treatment for their malignancies each year.

Whatever their specialization, MRTs use their expert knowledge of imaging and radiation therapy equipment, together with an extensive understanding of the principles of anatomy, physiology and pathology, image acquisition, treatment and radiation safety to deliver quality care to their patients. As the professionals dealing directly with the delivery of medical radiation, as well as magnetic resonance, MRTs are also integral to ensuring the care provided is safe, appropriate, tailored, timely, and maximizes the potential of the available equipment and resources.

About the CAMRT

Established in 1942, the Canadian Association of Medical Radiation Technologists (CAMRT) is the national professional association and certifying body for radiological, nuclear medicine and magnetic resonance imaging technologists and radiation therapists. Recognized at home and internationally as a leading advocate for the profession of medical radiation technology, the CAMRT is an authoritative voice on the critical issues that affect its members and their practice. The CAMRT has successfully partnered with a number of government initiatives and agencies in the past to work towards a better healthcare system for Canadians.

[1] Harris Decima Omnibus Survey, January 2010.

Efficient use of resources and the reduction of wasteful practices

A greener economy for Canada will be achieved through a variety of coordinated steps to reduce emissions. Healthcare is a large sector of the economy, and as such will as a sector need to examine current practices under the lens of climate impact. Indeed, the World Health Organization considers numerous ways in which the healthcare sector could play an important role in the green economy and climate change mitigation.[2] Efficiencies, according to their report, may be found in many areas, including the reduction of inefficient practices like (unnecessary) patient travel.[3]

In healthcare, commitment to efficient use of technology and human resources ensure a highly functioning system. Lower wait times, appropriate interventions from the start and continuity of care make for more efficient use of available care and less waste. By extension, this more efficient healthcare system is better able to maintain the health of our citizens, reduce patient time spent in (and commuting to and from) healthcare facilities and, by consequence, enhance the competitiveness of our economy.

Medical radiation technology plays an important and ever-growing role in the care of Canadians. Medical imaging is used in countless diagnoses to determine the appropriate interventions and care for patients, and radiation therapy is a pillar of cancer care. It is important that these indispensable parts of the modern healthcare system work efficiently to minimize delays in care and maximize the quality of care. New attention and investment are required to ensure continued efficiency, particularly considering the upcoming challenges presented by an aging population It is also important that new and emerging technological enhancements like artificial intelligence and robotics can be adopted for maximum benefit and minimal disruption to patient care.

[2] World Health Organization (WHO). Health in the green economy Co-benefits to health of climate change mitigation. Available at: https://www.who.int/hia/hgebrief_health.pdf. Accessed August 2, 2019.
[3] Ibid.

Efficient practices to meet increasing demand

Demand for medical imaging has been steadily increasing nationally. Over the past decade, Canada has seen a 48% increase in CT examinations performed annually and a 63% increase in the number of MRI examinations performed, to name but two implementations of medical imaging.[4]

Technology itself is one factor in play – the way technology is used is another. While there still exists a clear need for an increased investment in new units and more efficient technologies, continued efforts to curb inappropriate and wasteful practices remains very important.

The 2017 Canadian Medical Imaging Inventory revealed important differences in the distribution and use patterns of technological resources across the country. Ontario, with fewer CT units per million within its provincial borders leads the country in examinations performed.[5] Whereas, in PET-CT, an important emerging modality for molecular imaging, Quebec has twice the number of units as Ontario and uses those to perform more than seven-times the number of examinations.[6] Those are but two examples of important divergences.

While differing distribution and use patterns are to be expected in a country as large and diverse as Canada, it is of some concern to CAMRT that such large discrepancies could exist. Furthermore, use patterns (particularly use patterns that push the limits of the technology and time available) affect the people working in this area. We know from member feedback that stress and increasing workload are ongoing concerns in the MRT community. Our recent poll of managers in medical imaging and radiation therapy departments showed an anticipated increase in demands across all existing infrastructure and staff.[7] Considering current conditions and the mounting strain from an aging population, MRTs are increasingly concerned about the capacity to address upcoming demand on medical imaging and radiation therapy services.

Maintaining a competitive and functional healthcare system within a greener economy requires a thorough understanding of the capacity of the system to absorb new demands, as well as strategies to increase efficiency and reduce waste. Investment for the investigation of use patterns and subsequent alignment with evidence-based practices in the field will give valuable insight for the continuing

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[4] Canadian Agency for Drugs and Technologies in Health. 2017 Canadian Medical Imaging Inventory. Available at: https://www.cadth.ca/canadian-medical-imaging-inventory-2017. Accessed August 2, 2019.

[5] Canadian Agency for Drugs and Technologies in Health. 2017 Canadian Medical Imaging Inventory. Available at: https://www.cadth.ca/canadian-medical-imaging-inventory-2017. August 2, 2019.

[6] Ibid.

[7] Canadian Association of Medical Radiation Technologists. Health Human Resources Survey, 2017.

function and competitiveness of the overall healthcare system, and help this part of the healthcare system to maximize its efficiency.

To help provide this information, currently missing to policy makers, the CAMRT recommends that the federal government:

> ***invest in research dedicated to addressing the appropriate and optimal use of medical imaging and radiation therapy technologies across the country.***

Preparing for Artificial Intelligence (AI) in healthcare

It is expected that, in the coming years and decades, technologies integrating machine learning and artificial intelligence (AI) will play an increasingly important role in healthcare. In some fields of practice, artificial intelligence is in the early stages of development. In medical imaging and radiation therapy, companies are moving quickly to develop and integrate AI into commercial products that could be implemented in healthcare institutions in the near-term.[8]

With professionals on the front lines of medical imaging and radiation therapy, the CAMRT represents a key constituency for the deployment of artificial intelligence in healthcare. MRTs stand to be among the first healthcare professionals working alongside AI and are key contributors for any discussion regarding its eventual deployment and integration across the country.

The CAMRT is encouraged by the investment and consideration that the federal government has already given to artificial intelligence in health.[9] The CAMRT is also in agreement with the federal government's response to the recent Senate Committee on Social Affairs, Science and Technology's 2017 report *Challenge Ahead: Integrating Robotics, Artificial Intelligence and 3D Printing Technologies into Canada's Healthcare Systems*, in which it identified its critical role as "catalyst and convener in facilitating national dialogue and supporting provinces and territories in

[8] Tang A, et al. Canadian Association of Radiologists White Paper on Artificial Intelligence in Radiology. *CARJ 2018:69:120-135.*

[9] Canadian Institutes of Health Research Press Release, June 13, 2018. Available at: https://www.canada.ca/en/institutes-health-research/news/2018/06/canadas-scientists-can-pitch-projects-that-bridge-artificial-intelligence-health-research.html. Accessed August 2, 2019.

the integration of these technologies."i[10] In fact, the CAMRT joins other organizations, such as the Canadian Association of Radiologists, in recommending that the federal government take this leadership role, as catalyst and convener for AI in healthcare. AI will pervade many aspects of the healthcare system, and there is an enormous risk for human resources disruption if implemented unevenly across the country.

The CAMRT asks that the federal government:

> ***adopt the recommendation made by the Senate Standing Committee Social Affairs, Science and Technology to convene a National Conference that would address the integration of artificial intelligence in healthcare.***

Critically such a conference must include all healthcare professional groups that stand to be affected by AI. Critically, we believe MRTs should be represented amongst the stakeholders, as perhaps the largest constituent healthcare professional group likely to be impacted by the first wave of AI-driven innovation.

The CAMRT thanks the House of Commons Standing Committee on Finance for its attention to these recommendations related to the medical radiation technology and the wider healthcare system in a greener economy and looks forward to working closely with the government on these issues now and into the future.

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[10] Government response to Eighteenth Report of the Senate Committee on Social Affairs, Science and Technology: Challenge Ahead: Integrating robotics, artificial intelligence and 3D printing technologies into Canada's healthcare systems. Available at: https://sencanada.ca/content/sen/committee/421/SOCI/reports/GovernmentResponse_e.pdf. Accessed August 2, 2019.