CAMRT ⚛ ACTRM

Written Submission for the Pre-Budget Consultations in Advance of the 2019 Budget

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CAMRT's Pre-Budget Recommendations

To promote Canada's economic competitiveness, CAMRT recommends that the federal government:

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

2. 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

About Medical Radiation Technologists in Canada

Medical radiation technologists (MRTs) provide the essential link between compassionate care and the most sophisticated imaging and therapeutic technologies. In all, there are 20,000 professionals 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 the diagnosis and treatment of millions of Canadians each year. It is estimated that nearly 1 in every 3 Canadians would undergo medical imaging in each 6-month period,[1] where MRTs are responsible for the high quality diagnostic information essential to patient care management. Radiation therapists play a role in the care of just about 50% of all patients within oncology, with tens of thousands receiving radiation treatment for their malignancies each year.

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 dedicated 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.

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[1] Harris Decima Omnibus Survey, January 2010.

Efficient use of resources to enhance competitiveness

Canada's competitiveness in all areas of the economy depends on it carefully choosing investments that optimize results and outcomes. This is no less true in healthcare, where commitment to efficient use of technology and human resources ensure a highly functioning system. In addition to this, an efficient and advanced healthcare system plays a vital role in maintaining the health of our citizens, and by extension the competitiveness of our economy. Lower wait times, appropriate interventions from the start and continuity of care make for more efficient patient throughput and use of available care.

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 parts of the system work efficiently to minimize delays in care and maximize the quality of care. Attention is required to ensure 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.

Increasing demand outpacing infrastructure growth

Demand for medical imaging is 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 exams.[2]

Compared to its OECD peers, Canada is a country with a relatively modest investment in medical radiation technology. The 2017 Canadian Medical Imaging Inventory reveals that Canada is in the lower half for both CT units and MRI units per capita among OECD countries.[3] And each Canadian province when compared individually on these measures is different from the next, with unequal distribution of technological resources across the country.[4]

Technology itself is not the only factor in play – the way technology is used is also very important. While there is a clear need for an increased investment in new units and more efficient technologies, investment for the investigation of use patterns and subsequent alignment with evidence-based practices in the field is also

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[2] 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 July 27, 2018.

[3] Ibid.

[4] Ibid.

necessary for the continuing function and competitiveness of the healthcare system.

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]

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 requires a thorough understanding of the capacity of the system to absorb new demands.

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

> *invest in research dedicated to addressing appropriate and optimal use patterns 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

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[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. Accessed July 27, 2018.
[6] Ibid.
[7] Canadian Association of Medical Radiation Technologists. Health Human Resources Survey, 2017.

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 is already giving 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 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, including MRTs.

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[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 July 27, 2018.

[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 July 27, 2018.

The CAMRT thanks the House of Commons Standing Committee on Finance for its attention to these recommendations related to the competitiveness of our healthcare system and looks forward to working closely with the government on these issues now and into the future.