IN BRIEF A Summary of the Evidence

Canadian Medical Imaging Inventory: 2017

Key Findings

Of the six imaging modalities captured in the survey:

- CT is the most common modality, with 561 machines in Canada — up from 419 machines in 2007.
- MRI is the second most common modality, with 366 machines in Canada — up from 222 machines in 2007.
- There are 330 SPECT machines, 261 SPECT-CT machines, 51 PET-CT machines, and 3 PET-MRI machines.
- The number of most imaging modalities is growing. SPECT-CT is experiencing the fastest growth and CT the slowest growth.
- Trends over time suggest that SPECT units are being replaced by SPECT-CT units. SPECT is the only imaging modality of those surveyed that showed a decline in numbers.
- For each imaging modality, approximately 60% of all growth between 2007 and 2017 can be attributed to two provinces, Quebec and Ontario.
- In terms of the total number of exams, CT is the most-used modality (5.61 million exams per year), followed by MRI (1.86 million exams per year), SPECT and SPECT-CT combined (1.23 million exams per year), and PET-CT (0.091 million exams per year). Currently, PET-MRI is used solely for research.
- In terms of the average number of hours each machine is used, MRI is the most heavily used, at 78.7 hours per week, followed by CT, at 76.5 hours per week. The other imaging modalities are used 40 hours to 45 hours per week.
- Most imaging machines are located in large city hospitals, with the greatest number and variety in Ontario, Quebec, Alberta, and British Columbia.
- Prince Edward Island and the territories have the lowest number of machines.
- CT is the only imaging modality that is available in every province and territory.
- Most imaging equipment has been operating for 10 or fewer years. SPECT is the exception, with 57.5% of units being more than 10-years-old.
- Compared with other countries in the Organisation for Economic Co-operation and Development (OECD), Canada ranks in the lower-half for the number of CT and MRI machines per population. In terms of the number of CT and MRI exams per population, Canada appears around the midpoint.

Context

Medical imaging is a vital component of modern health care, playing a role in the diagnosis, staging, and monitoring of many diseases and conditions. As new medical imaging technologies become available and population needs change, it is important to keep track of where imaging capacity exists and how equipment is being used. In 2015, CADTH created the first iteration of the Canadian Medical Imaging Inventory (CMII) — a database containing information on the location and use of specialist medical imaging equipment. The 2017 iteration is now available. CADTH will continue to maintain the inventory and publish a report of the findings every two years.

Technology

There is a range of imaging modalities, each with its own characteristics. For the 2017 inventory, CADTH collected data on the following six modalities:

- computed tomography (CT)
- magnetic resonance imaging (MRI)
- single-photon emission computed tomography (SPECT)
- positron emission tomography–computed tomography (PET-CT)
- positron emission tomography–magnetic resonance imaging (PET-MRI)
- single-photon emission computed tomography–computed tomography (SPECT-CT).

Issue

As the medical imaging landscape in Canada changes and new imaging technologies become available, it can be difficult to know which equipment to use and how to best manage finite resources. An up-to-date inventory of medical imaging equipment can help with planning for upgrades, installations, replacements, and decommissioning. It can also provide valuable insights into usage trends over time, patient access, appropriateness, and service delivery.

Methods

CADTH collected data on imaging equipment using a Web-based survey and a search of the literature. After the survey closed on June 9, 2017, validators reviewed the data for accuracy and

provided additional information. New data were merged with data collected in 2015, and CADTH imputed numbers for sections where data were missing.

Results

Data were available for 505 sites. Most imaging machines captured in the survey are publicly funded and predominantly used for clinical purposes, although they can be used for research purposes, as well. Based on this collected data, CADTH developed the 2017 CMII, with the results published in a final report. The CMII provides insight into the landscape of medical imaging in Canada and paves the way for ongoing exploration of medical imaging issues.

Read more about CADTH and the CMII:

cadth.ca/imaginginventory

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