

# Nuclear Medicine Facts

The world's supply of medical isotopes produced by nuclear reactors was impacted in 2009 by the shutdown of the Chalk River National Research Universal Reactor in Ontario and the shutdown of the Petten High Flux Reactor in the Netherlands. The Canadian Institute for Health Information conducted a one-time, voluntary survey of nuclear medicine facilities to better understand the impact on the Canadian healthcare system. The survey looked at the impact of the supply disruption of the isotope technetium (Tc 99m) in Canada, at three distinct points in time in 2009:

- **February 2009:** Even before the shutdown in May 2009, there was a slight decrease in the number of selected nuclear medicine examinations performed when compared with February 2008. Depending on the type of examination, the decreases ranged from 3% for lung perfusion examinations to 5% for bone and cardiac tests.
- **August 2009:** In addition to Chalk River, the Dutch reactor Petten was also temporarily out of service at this point. The survey found a significant decline in the number of selected examinations that cannot be attributed to just seasonal variations. Depending on the type of nuclear medicine examination, the comparison between August 2008 and August 2009 showed decreases ranging from 18% for lung perfusion and bone examinations to 25% for cardiac tests. Other factors may also have contributed to the decline, such as rescheduling patient examinations and changes in practice around the ordering of examinations.

- **October 2009:** The Petten reactor had re-opened by October 2009, but Chalk River remained closed. During this month, the number of selected nuclear medicine examinations across Canada increased from August 2009 levels but decreased significantly when compared with October 2008. Depending on the type of examination, the comparison between October 2008 and October 2009 showed decreases ranging from 16% for lung perfusion examinations to 22% for bone and cardiac tests.

Additional medical imaging analysis revealed the following:

- In 2008–2009, the national rate of magnetic resonance imaging (MRI) examinations was 41 per 1,000 people. Provinces ranged from highs of 54 (Alberta) and 51 (New Brunswick) to lows of 23 (P.E.I.) and 24 (Newfoundland and Labrador).
- In 2008–2009, the national rate of computed tomography (CT) scans was 121 per 1,000 people. Provinces ranged from highs of 193 (New Brunswick) and 155 (Nova Scotia) to lows of 104 (P.E.I.) and 106 (British Columbia).
- Ontario and Alberta used MRI scanners most intensely (more examinations per scanner). New Brunswick and Alberta used CT scanners most intensely.
- In 2009, 80% of MRI and 95% of CT scanners were located in hospital settings; 20% of MRI and 5% of CT scanners were in free-standing clinics.
- By January 1, 2009, there were 266 MRI scanners and 465 CT scanners operational in Canada. There were 222 MRI and 419 CT scanners in 2007.
  - In 2008–2009, the Canadian rate of MRI examinations was 41 per 1,000 people. Among Organisation for Economic Co-operation and Development (OECD) countries, MRI rates varied from a low of 13 in Korea to a high of 98 in Greece.
  - In 2008–2009, the Canadian rate of CT examinations was 121 per 1,000 people. Among OECD countries, CT rates varied from a low of 60 in the Netherlands to a high of 321 in Greece.
- For both MRI and CT examinations, the United States had the second-highest rate of use at 91 and 228 per 1,000, respectively. **HQ**



Sources: Canadian Institute for Health Information. 2010. *Results of the Survey on Medical Isotopes Supply Disruption*. Toronto, ON: Author. Retrieved August 25, 2010. <[http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=PG\\_3031\\_E&cw\\_topic=3031&cw\\_rel=AR\\_3510\\_E](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_3031_E&cw_topic=3031&cw_rel=AR_3510_E)>;

Canadian Institute for Health Information. 2010. *Use of MRI and CT Exams Varies Greatly among Provinces*. Toronto, ON: Author. Retrieved August 25, 2010. <[http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=media\\_20100722\\_e](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_20100722_e)>.

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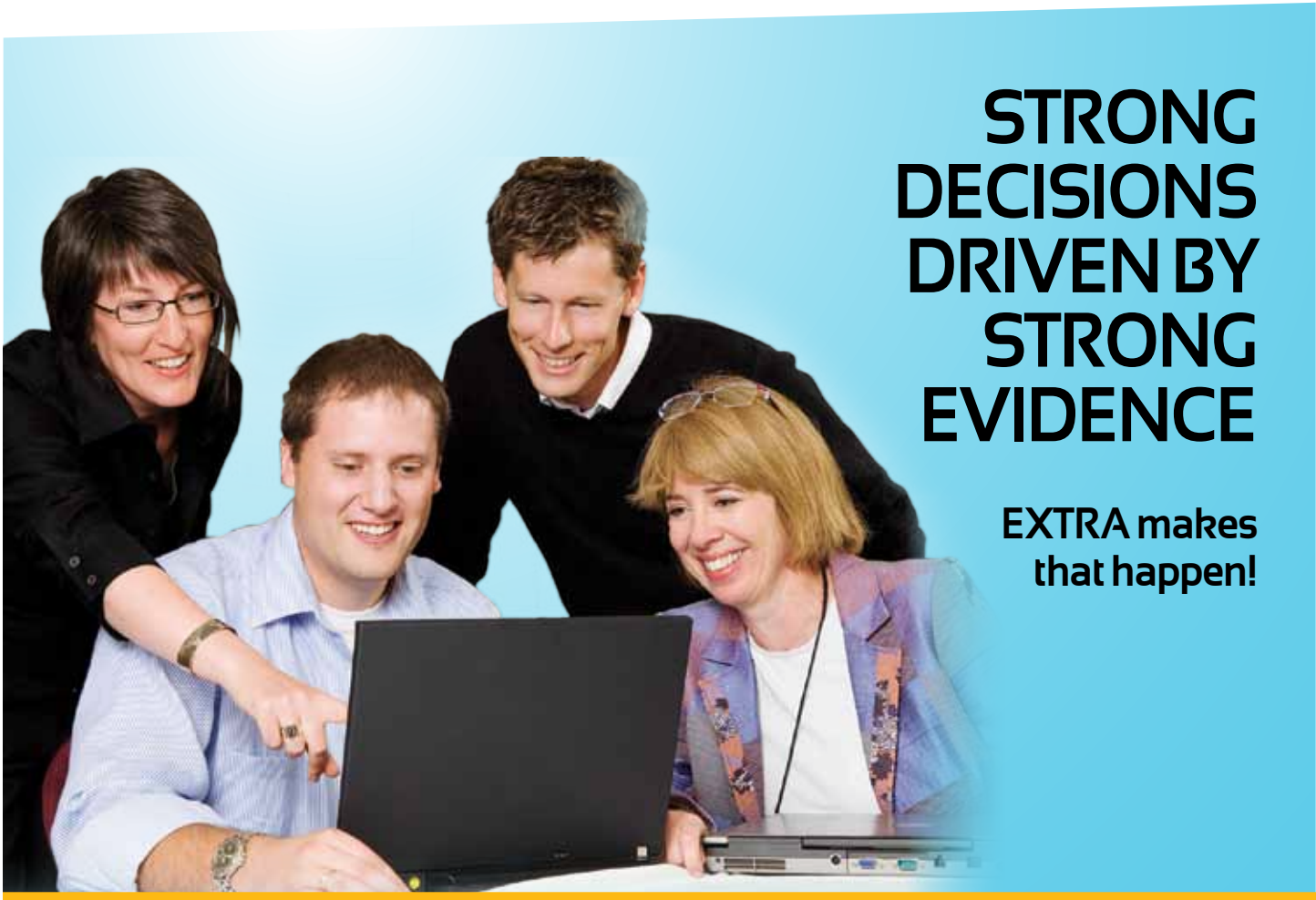
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