

Susan Martinuk: PET imaging has revolutionized cancer care

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We're far behind in adopting PET technology. The U.S. has 2,100 scanners. Europe will soon have 750. We have 29.

By Susan Martinuk

Cancer. It's the word we all dread, and Canadians have ample reason for concern — it's our leading cause of premature death and its prevalence is increasing. This pattern will continue as our population grows and ages, placing greater pressure on our health-care system to adopt new technologies that can provide better, more efficient and cost-effective care for cancer patients.

Amidst these circumstances, Canada should be racing to embrace technology that diagnoses cancer earlier, optimizes management of cancer treatments and eliminates the need for surgical biopsies (in up to 70% of cases) and further tests/procedures (in up to 90% of cases). But we're not.

PET (positron emission tomography) imaging detects active cancer cells before they create a mass that can be identified by CT or MRI scans, and early detection means a greater chance of successful treatment. As a result, PET is the most powerful diagnostic technology available to detect cancer and make cancer treatment regimes more efficient. It has revolutionized cancer care in the United States, Europe and other nations over the past decade, yet Canadian provinces are still reluctant to accept PET. Consequently, Canada's global leadership in cancer care and imaging has fallen to the sidelines.

A recent report, *The Use of Positron Emission Tomography (PET) for Cancer Care Across Canada: Time for a National Strategy*, is the first to examine Canada's utilization of PET, identify factors that have restricted its use and provide a national strategy to enhance access.

Why is this important?

Large studies have shown PET changes patient treatment plans in 36.5% to 50% of cases. This holds true for all cancer types and suggests doctors who don't utilize PET may be prescribing a suboptimal (or even incorrect) treatment path in as many as 50% of cases.

In addition, PET scans early in a chemotherapy regime can reveal if the treatment is effective. If no benefit is visible, the treatment is changed, thereby improving the probability of success, ensuring the most appropriate use of therapeutic resources and preserving the patient's physiological resources.

PET is a diagnostic tool only. It won't bring about miracles, but its significance to managing cancer is clear. So why isn't PET part of the diagnostic/treatment protocol for every patient?

First, Canada is embarrassingly far behind the rest of the world in adopting PET. The United States has 2,100 scanners; Europe will soon have 750. Canada has 29.

Second, PET is unevenly deployed across Canada and depending on the province, PET can be absent, difficult to access or under-utilized.

Third, access is dependent on a doctor's knowledge of PET and its benefits to cancer care. In recent months, I have personally dealt with several oncologists (in different provinces) who don't understand the difference between PET and CT.

In Ontario, PET use has been negatively affected by restrictive policies, misinformation, billing issues and acrimonious relationships amongst policy makers, nuclear-medicine

physicians and radiologists. As a result, Ontario's nine clinical PET scanners perform the lowest number of scans (per million) of any province.

It is only in Quebec, where there is a network of 12 clinical scanners, that PET is the normal standard of care. It is often the first diagnostic tool used when cancer or recurrence is suspected, and thoracic/oncologic surgeons there won't operate unless they've seen a PET scan; it's considered "malpractice" to do so. If PET changes treatment plans in up to 50% of cases, Quebec cancer patients may have a very different standard of care than their counterparts in other provinces.

The most surprising finding was the lack of education and awareness of PET amongst doctors, patients, cancer advocacy groups and the public. Medical schools provide little education about PET, and far too many doctors are a decade behind science in that they consider PET to be experimental, not clinical, technology. Other doctors have managed cancer for so long without PET that they fail to see the need for another diagnostic tool. Consequently, medical education programs and public awareness campaigns are critical to PET becoming an integral part of cancer care.

Canada has long been a world leader in nuclear medicine, including the use of PET for research into Alzheimer's and Parkinson's diseases. But the rest of the world is long past using PET for research only. It detects cancer earlier, optimizes patient management and provides more efficient care — all things desperately needed by our overburdened health-care system. For the sake of its cancer patients and the benefit of its health-care system, Canada has a responsibility to embrace PET as a clinical tool.

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Susan Martinuk is a medical research consultant, well-known columnist and author of the report. It was commissioned by Advanced Applied Physics Solutions (AAPS), a centre of excellence for commercialization and research in the physical sciences, and TRIUMF, Canada's centre of excellence for particle and nuclear physics. It is available at triumf.ca.