



Improving Access for Patients Through Positron Emission Tomography/Computed Tomography (PET/CT) Technologies at BC Cancer - Victoria

Submitted by the Canadian Association of Medical Radiation Technologists – British Columbia

The B.C. government has been working to expand health-care

services in the province through investments in technology, such as PET/CT scanners for B.C.'s cancer centres. There are now four publicly funded PET/CT scanners in the province – two in Vancouver, one in Victoria (opened July 2019) and one in Kelowna (opened August 2020).

These scanners play an important role in treating cancer. They are used to diagnose and pinpoint the disease in the body, determine a treatment plan for patients and monitor them to make sure the plan is working. An increased number of these technologies in B.C. is helping patients receive improved care, closer to home.



What is PET/CT?

PET produces a three-dimensional image of the body's processes (e.g., blood flow, oxygen use, metabolism and digestion). To do this, a nuclear medicine technologist injects a small amount of a radioactive tracer into a patient's bloodstream. The tracer safely releases radioactive material that can pinpoint areas of the body that have higher levels of metabolic activity; this shows how the body's cell types are functioning. The technologist then scans the patient 60 minutes after the tracer has been injected. The images the PET scanner provide show where cells have taken in more of the tracer – signalling a possible sign of disease such as cancer. The scan is often used to identify cancer in a person's body and determine if it has spread.

A CT scan uses X-ray images taken from different angles around the body to create cross section images of bones, blood vessels and soft tissues. For patients diagnosed with cancer, a CT scan is needed before they can start receiving radiation therapy because it provides a map of the cancer and surrounding tissue (this is called a CT simulation).

Combining PET and CT imaging technologies into one scanner results in a more precise image, which shows both the anatomical structures and the functionality of the cells. This allows health-care teams to make faster, more informed decisions on treatments and help manage disease more accurately. For example, if a CT scan showed an abnormality on a patient's lungs, a PET scan may immediately determine if the lesion is cancerous or not cancerous.



Nuclear medicine technologists and radiation therapists are part of the medical radiation technologist (MRT) profession. As a direct point of contact, MRTs play a significant role in supporting patients on their health-care journey. [Learn more about MRTs.](#)

PET/CT at BC Cancer - Victoria

Before 2019, any Vancouver Island cancer patient who needed a PET scan – about 1,900 patients each year – had to travel to the Lower Mainland.

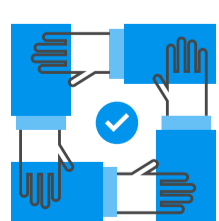
Patients with head and neck, esophagus and lung cancer commonly require a PET scan for treatment planning, while other forms of cancer may not. Previously, Island patients with these types of cancer required two appointments – one for their PET/CT scan and one for their CT simulation. When these patients come to BC Cancer - Victoria, they only need one PET/CT scan. The data collected within the scan will also be used for the [CT simulation](#) portion of their treatment planning. Not only does this mean patients experience one less scan (and as a result, they experience less radiation exposure), it typically means just one visit to the centre instead of having to come back for another appointment.

Appointments take approximately two hours, with the [PET/CT scanning procedure](#) taking about 20 to 40 minutes. Some additional accommodations or supports for certain patients can be completed during the CT simulation to save PET time. For example, patients with head and neck cancer require a custom-made headrest and immobilization device to keep them comfortable while holding a position and limiting movement during treatment.

Jennifer Forer is the chief PET/CT technologist of functional imaging at BC Cancer - Victoria; she explains, "because those patients with head and neck cancer often have difficulty swallowing, other supportive care consults may happen earlier in the day. The radiation oncologist – the doctor who specializes in treating cancer with radiation therapy – will often consult the patient right before they go to their CT simulation. This is an opportunity for the patient to ask questions. PET/CT imaging occurs last."

Radiation therapists construct the immobilization device during CT simulation. They then bring it to the patient's PET/CT imaging so that the patient will be in the same position during the scan, and for future treatments.

The same day PET/CT appointments support a more streamlined approach to care. "Combined PET/CTs have been a great example of how BC Cancer - Victoria has increased collaboration between nuclear medicine technologists and radiation therapists," explains Manpreet Sohi a CT planning resource radiation therapist at the centre. "We've been able to improve the patient experience, while also reducing workload across disciplines."



This year, BC Cancer - Victoria celebrated its 20-year anniversary. All MRTs play a role in caring for patients with cancer and collaborate unique ways. This is just one example of MRTs from two disciplines working together to improve patient care.

The Canadian Association of Medical Radiation Technologists (CAMRT) is the national professional association and certifying body for medical radiation technologists in Canada. CAMRT-BC is a unit of the association which represents MRTs in the province of British Columbia. The association promotes and advocates the value of the profession and delivers programs and initiatives to support MRTs in providing quality patient care. Learn more at www.camrt.ca.

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