Canada Develops Models of Teleoncology

By Alison Palkhivala

Want to get oncology care to a small population spread over a large area? Canada is a case in point of a country rising to that challenge.

In Canada, with a land mass spanning more than 3.8 million square miles and a population of only 34 million tucked mainly into a few urban centers, telemedicine is just about the only economically feasible option for delivering quality health care to the hundreds of small communities scattered throughout its northern regions. (By contrast, the U.S. has a population of 314 million people on 3.7 million square miles.) Perhaps not surprisingly, Canada has spawned one of the world’s largest telemedicine networks, and oncology is a big part of that.

Mapping It Out: To the East
The easternmost point of continental North America is Cape Spear, in the province of Newfoundland and Labrador, a short drive from the provincial capital of St. John’s. From there, it’s water all the way to Ireland, where most of the province’s inhabitants trace their roots. One of the country’s largest provinces, Newfoundland and Labrador, also has its lowest population density, with only about four people per square mile and almost everyone located in or near the capital. The region also consists of two landmasses accessible to each other only via ferry, making travel a challenge. That isolation has pressed the region’s only academic medical center, at Memorial University in St. John’s, to provide distance learning and tele-health as a means of servicing its remote communities long before the notion was even considered elsewhere.

Teleoncology was brought in early 2003 to the province by Arthur Maxwell House, M.D., a professor emeritus at Memorial University, who himself was born in the tiny town of Glovertown (population, 2,163). House was concerned that small communities like Glovertown simply did not receive the kind of cancer care available in the capital.

Although diminishing cost over time is considered to be a reasonable goal for teleoncology in the U.S., the reality of socialized medicine in Canada mandates a goal in which teleoncology, after a small initial capital investment, costs no more than a face-to-face model or, ideally, saves health care dollars in the long term. With this in mind, House secured $750,000 (CAD) ($714,295 USD) in private and public funds to seed a pilot province-wide teleoncology project in 2002. “We weren’t looking to find anything new in the telemedicine field. We wanted to apply what we knew about and already had and experimented with,” House said. “All of our projects were based on the needs of specific groups, whether it was patients or physicians or students. We also deliberately chose to use the least expensive technology that would meet these needs.”

What started with single videoconferencing units being placed at five or six rural sites—where patients, accompanied by a nurse, could consult with an oncologist in St. John’s—has blossomed into a major teleoncology service that treated nearly 3,000 patients in 2010, offering initial consults, follow-ups, and diagnostic evaluations that include magnetic resonance imaging and computed tomography as well as chemotherapy. In fact, the teleoncology program has been so successful that the provincial health ministry took it over and is using it as a template to expand telemedicine services across the province.

Jonathan Greenland, M.D., a radiation oncologist at Memorial, is on the front lines of the province’s teleoncology network. The program has greatly diminished the need for oncologists to visit outlying areas on a rotating basis, he said, giving oncologists the opportunity to follow up their own patients.

“It’s not uncommon that you’ll see someone who is just too sick to treat, and one of the big advantages of [teleoncology] is you avoid taking these patients out of their community at all.”

Teleoncology in the West
Vancouver Island is situated just off the coast of British Columbia, Canada’s westernmost province. This mountainous island of more than 12,000 square miles has 750,000 inhabitants, most located in the only major city, Victoria. As in Newfoundland and Labrador, the island’s teleoncology service started as a small but well-received pilot project that took advantage of an established regional cancer care network. Regional centers are fitted with videoconferencing units, and patients travel to these regional centers for a virtual consult with a cancer specialist. Imaging and chemotherapy are also generally available at these centers, although radiotherapy requires a trip to a central location.

In an economic analysis of the program covering October 2005 through September 2007, undertaken by the BC Cancer Agency in collaboration with the Vancouver Island Health Authority and the Provincial Services Health Authority, patients seen via teleoncology services saved an average of $242 CAD ($245 USD) per appointment in travel costs. Last year, 1,200 patients were seen with the service.

According to Brian Weinerman, M.D., executive medical director at the Vancouver
Island Health Authority, teleoncology allows physicians to connect with patients who might not otherwise have been seen. “I saw a patient in a hospital room up the island when they wheeled a videoconferencing unit into his room,” he said. “There was no way that patient could have made it down the island to see an oncologist.”

Most regional centers have only one videoconferencing unit, and other specialties have been clamoring to use them. To make sharing feasible, a central booking service manages all units. So, if a unit in one region is in use, physicians can simply find one available in another region and see a patient there. This approach cuts back on time spent waiting around, said Weinerman.

**Serving the Center**

Even Canada’s most populous central provinces must contend with providing health care to remote regions to the north. The Ontario Telemedicine Network (OTN) is helping manage these needs.

According to the OTN’s CEO, Edward M. Brown, M.D., OTN is one of the world’s largest telemedicine networks, with approximately 1,250 sites and 2,400 videoconferencing platforms covering more than 415,000 square miles. In 2010, the OTN facilitated more than 11,000 teleoncology patient consults. In fact, oncology is one of the heaviest users of the OTN, and usage is growing 20%–40% every year.

Teleoncology is so closely integrated with regular oncology services in Ontario, said Brown, that when oncologists walk into a treatment room, they don’t always know whether they will be encountering a live patient or a
videoconferencing unit. “There’s very low annual operating costs associated with [teleoncology] because we’ve been able to embed it into the practice of the clinics, so there’s no, on our end, human resource costs other than what it would cost for a face-to-face visit.”

According to Brown, telemedicine helped patients avoid more than 78 million miles of travel in 2010. That translates to a significant public cost savings because the Ontario government offers grants to residents of Northern Ontario who must travel to see a medical specialist.

Another teleoncology program in northeastern Ontario is the North East Regional Cancer Program. It serves a population of 600,000 spread over about 116,000 square miles. Oncology services are operated out of Sudbury (population, 165,000), the region’s largest city. Nearly 5,000 patient consults occur through their teleoncology network every year. Fourteen regional satellite clinics offer imaging and chemotherapy, and one offers radiotherapy. About 35% of chemotherapy ordered at the Sudbury Regional Hospital is actually delivered at one of these clinics, according to Hartman.

Making It Work
Most Canadian provincial health care systems use electronic medical records databases as well as a virtual Picture Archive and Communication System, called PACS. This way, physicians can access test results and diagnostic images from anywhere. These systems use the same dedicated fiber-optic network as the teleconferencing units, so the risk of security breach is minimal.

“In my office, I have a large desktop unit that is a dedicated videoconferencing terminal. I also have my desktop computer,” Greenland said. “So, I’ll pull up the radiology images and my laboratory data from there and have everything in front of me all at once.”

A limit to telemedicine in some countries has been resistance among providers because their fee-for-service pay structure prevents them from being paid for a telemedicine consult the way they would be for a face-to-face consult. In Canada, many oncologists are on salary. In regions where they are paid using a fee-for-service model, provincial governments quickly adopted telemedicine billing codes once they saw the ample evidence of high patient and provider satisfaction as well as cost savings. Canadian medical boards are also facilitating telemedicine by fast-tracking applications for physicians from one province to treat patients, via telemedicine, located in other provinces.

Palliative Care Takes Off
A small pilot project offering palliative care via telemedicine is about to become a permanent feature of the province of Alberta’s teleoncology initiative.

Sharon Watanabe, M.D., a professor of palliative care medicine at the Cross Cancer Institute of the University of Alberta in Edmonton, spearheaded the project that invited nurses from small community cancer centers to come to the institute for 3 days of training in palliative care. Once they returned home, these nurses accompanied patients as they video-conferenced from their local communities with a team of palliative care specialists in Edmonton. The team then devised a treatment plan that was discussed with the patient and delivered by a local physician.

The service was open to any cancer patients in need of social, physical, emotional, or spiritual support, regardless of whether they continue to receive active treatment for their disease.

The project started in January 2008 and ended in March 2011, during which time the team made initial consults with 43 patients and followed up with 28. Both patients and providers were highly satisfied with the interface, and savings to patients in travel time and expense were substantial. In fact, for some patients the need to travel to Edmonton would have been such an insurmountable barrier that they would simply have been unable to receive palliative care, said Watanabe.

The key to jump-starting the program, which according to Watanabe, is the world’s only multidisciplinary palliative care program, was developing relationships with the service providers who could use it, said Watanabe. One of the biggest challenges she faced was simply getting word out. “Rural family physicians are quite busy, so it was a challenge to impress upon them that this service was available to them and their patients. A lot of effort was spent on advertising the clinic,” she said.