



## A royal recovery

**Princess Margaret Hospital cleared its life-threatening organizational clot in ways that have caught the world's attention, writes Barbara Turnbull**

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In a rare case of successful self-diagnosis and treatment, Princess Margaret Hospital's radiation therapy wing has cured itself.

Patient treatment at Canada's pre-eminent oncology facility had been slowed by constantly evolving technology, and the need to continually teach students and staff how to use it.

The solution took two years of weekly meetings to plan, design and build, \$4 million and reconfigured space – including the funkily named Cobalt Lounge, after the cancer treatment agent Cobalt-60 – in two floors of the building's basement on University Ave. The result, brought online two years ago, is a revolutionary approach to modern medicine.

"In radiotherapy in five years we've gone from good quality care to something that the rest of the world is watching to see what we do," says David Jaffray, PMH's head of radiation therapy physics, and one of the chief planners behind the revamped system. Jaffray and Dr. Mary Gospodarowicz, director of the hospital's radiation medicine program, have spearheaded a massive reorganization. Now, they are constantly invited to speak around the world and their work, including advancements they have made in their own technologies, have been the subject of peer-reviewed articles and reviews.

Radiation technology has made dramatic advancements in the last decade, enabling more individualized treatments that can be continuously adjusted for greater accuracy. Computerization further speeds up those capabilities. Says Jaffray: "We needed to develop a system where we can switch technologies as they come up."

Established in 1952, the original 87-bed facility on Sherbourne St. was named in 1958 for Queen Elizabeth's sister. Today, Princess Margaret is one of three University Health Network hospitals – it's Canada's only cancer-dedicated hospital – and with 16 patient units in the Samuel Radiation Centre, is among the largest in the world. In the department, almost 400 radiologists, oncologists, physicists, physicians, educators, therapists and nurses work together.

Cases for the approximately 7,500 patients receiving radiation at PMH annually are each handled by an interdisciplinary team of up to 25 staff. Each team includes experts in radiation oncology, therapy, physics and oncology nursing, as well as patient educators, dieticians and other support services. At the same time, an average 40 trainees start at PMH every year as another 15-20 employees come and go.

The conventional method of training on the treatment unit not only interrupts patient flow, it's distracting for everybody.

The traditional hospital model also left little opportunity for the experts to mix, with a separate department for each discipline. Gospodarowicz and Jaffray saw a better way.

They began by creating "super teams," composed of all disciplines, separated anatomically, and each with a team leader. Team One deals with head and neck cancers, Team Two handles the chest, the third specializes in the pelvis and abdomen and a fourth works with arms, legs and anything left over, such as pediatrics and sarcomas.

"There is a certain expertise that comes with knowing what disease it is," Gospodarowicz explains. Since treatment protocols, prognoses and outcomes are disease specific, it makes more sense to organize them that way, she says.

With this organization so different from the regular hospital model, it called for a new kind of workspace. They enlisted noted architect Siamak Hariri, of Hariri Pontarini Architects, and created two working spaces patients never see.

The first is an open-concept area used for radiation treatment planning, designed for maximum efficiency and collaboration, giving each super team its own corner. "You can't really tell who's the chief doctor and who's the nurse," Hariri says. "You create more of a meritocracy, which means that they are all looking at the thing together.

"The idea is to compress on time and solve problems quickly, because you are dealing with a disease that time matters."

All work is computer-based, which means anyone can sit at any number of terminals to look at any case. This also allows for collaborating with experts in other countries, who can simultaneously review images.

One floor away is the Cobalt Lounge, an area reserved for education, policy and procedural development, and for determining new techniques. Everything from lunches to team meetings takes place in the Cobalt Lounge, uniting the hospital's enormous community of professionals who prescribe, plan, check and deliver radiation treatment.

The critically important group that keeps the Lounge's dozens of computer systems running smoothly is here. So are the three section leaders for planning, treatment delivery and quality assurance. One area of the Cobalt Lounge is a focused skills lab for computer and equipment training. By removing training from the treatment unit, it boosts the hospital's capacity to treat more patients. Unlike most computers, each station has room for up to three people.

Computers play an increasing role in research, Jaffray says. "Some people in here are working on new agents that will tell us what part of the disease is more active, more aggressive and what part needs to be treated with higher dose."

There are only four doors in the paperless, 10,000-square-foot workspace. The two glass-paneled meeting rooms – named "fishbowl" and "aquarium" by size – allow people to see who is meeting and what they are discussing, particularly when they project images.

Everything in the space is mobile, and easily reconfigured. The glass doors of the large meeting room open, to provide a town hall concept.

This new setup encourages open, wide and expert-fuelled communication in ways traditional hospitals prevent, says Lorella Divanveigi, a radiation therapist. "The good thing is, that although most of us have different objectives, we do use similar tools and we act as a human resource with one another, helping us do our job better."

"Everything was carefully orchestrated by (Gospodarowicz) and her teams to drive efficiency through design," architect Hariri says, adding there was no model to base this project on.

"Although it doesn't look like they are breaking ground, they are breaking *huge* ground," says Hariri. "This, then, is the model that can be used for other facilities."