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For biophysicist, inventions began early

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Farm life provided a perfect childhood workshop for David Jaffray.

"Basically you had to fix anything that was broken on a farm, so you learned to make things work," says Jaffray, 40, head of Princess Margaret Hospital's radiation therapy physics department.

The tractors he tinkered with started him on a path that's led to the creation of a radiation operational system that's being used in 80 per cent of North America's cancer treatment centres.

Jaffray earned his PhD in medical biophysics, and after leaving the University of Western Ontario in London, he joined a Detroit hospital looking to develop novel radiotherapy initiatives. There he learned how to build imaging systems to better position the patient, a crucial element in radiation treatment because the patient has to be in the exact position through a series of treatments that can last several weeks.

Jaffray and his two colleagues envisioned a system that could combine the separate technologies of imaging and treatment, ensuring that the high-dose rays hit the tumour and avoid all surrounding healthy tissue.

"I realized ... all that technology is sitting there, you just have to stitch it together," Jaffray recalls. "If we could get some industry people to jump on this, then we could ... treat patients at a precision we'd never thought possible."

A prototype was built in 1997 and in 2002, image guided radiation treatment (IMRT) was introduced. Today, 80 per cent of radiation treatment machines sold in North America are based on this invention.

Why only 80 per cent? "Ontario, for example, hasn't decided that image guidance is the standard of care," he says. In 2002, Jaffray met Dr. Mary Gospodarowicz, head of PMH's radiation department, while she was on a worldwide search to fill a newly endowed chair whose mission was to increase physics capabilities at the hospital.

"There was a good culture coming up here, a desire to change and the infrastructure resources were fantastic in terms of the group that was here," he says. That, combined with an instant connection to Gospodarowicz, brought him to Toronto.

He balances family life with minimal travel. Jaffray's wife is a speech pathologist and they have three children.

"I'm either here or at home – no golf dates," he says. "I try to spend a lot of time with the kids. They don't go to soccer and every lesson under the sun. If we're home, they're home."