

# 3D printing our way to better health care:



David Chasse (left) and Sebastien Chavarria both received 3D-printed moveable hands. Printing these hands is easier, faster and cheaper than a traditional prosthetic hand.

Revolutionizing medicine is no exaggeration. A 3D printer uses an ‘additive process’ successively laying thin layers of material on top of each other to create a three-dimensional, solid object. Its medical uses are unlimited.

Thanks to a donor’s generosity, The Ottawa Hospital acquired a medical 3D printer that uses acrylics and plastics. The new 3D printing laboratory opened at the General Campus of The Ottawa Hospital on Feb. 3. Chasse’s left hand was printed for the launch to demonstrate the 3D printer’s capabilities. It was designed so that Chasse can open and close his fingers to grasp items by moving his wrist.

The Ottawa Hospital is the first hospital in Canada to have

**D**avid Chasse lost his left hand in a motorcycle accident in 2015. On Feb. 3, during the launch of Canada’s first Medical 3D Printing Program, he picked up a water bottle with a moveable hand created by a 3D printer.

“3D printing is revolutionizing the way we do medicine at The Ottawa Hospital,” said Dr. Adnan Sheikh, medical director of the hospital’s 3D printing program.



3D printers can print a wide variety of body parts.

# a Canadian first

an integrated medical 3D printing program for pre-surgical planning and education. It also will open up new avenues for research.

“We’re going to print models for surgical planning and for education,” said Dr. Frank Rybicki, Chief of Medical Imaging at The Ottawa Hospital and Chair of Radiology at the University of Ottawa. “If somebody has cancer, we can print the actual organ to show them and explain a treatment plan.”

For instance, an exact model of a patient’s hip, partially eaten away by cancer, was printed based on the patient’s CT scan. It is the sort of 3D-printed model that surgeons will use to plan complex hip replacement surgery. Seeing the extent of the damage done by the disease gives them a clear idea of how to operate.

Knowing ahead of time exactly how to operate reduces the operating time, often by hours, resulting in significant cost savings. Saving surgery time also decreases wait times, which allows more patients to be treated.

“It means we can provide care in ways that we were not able to do before,” said Dr. Rybicki.

3D printing offers incredible innovation that will help patients today and into the future. Within the next few years, the lab is planning to expand its research program to include 3D printers capable of printing human tissue, bones and organs to implant into patients. **J**



Dr. Adnan Sheikh (left) and Dr. Frank Rybicki are heading The Ottawa Hospital's new Medical 3D Printing Program. Dr. Sheikh is holding a 3D-printed pelvis used to plan hip replacement surgery. Photo by Mark Holleron.