

KHSC CEO's Research Brief

Imaging research

November 2018

High-tech imaging is advancing new frontiers in clinical research and clinical training at Kingston Health Sciences Centre.

Kingston General Hospital site

In the area of arrhythmia research, earlier this year KHSC became the first facility in Canada to use the Abbott Advisor™ HD Grid Mapping Catheter, Sensor Enabled™, a first-of-its-kind technology that captures and analyses the electrical signals that cause irregular heartbeat. It provides the cardiologist with a highly detailed picture of the problem areas where these signals originate, leading to faster and more successful cardiac procedures. For example, Dr. Damian Redfearn, an arrhythmia specialist who oversaw the development of KHSC's complex ablation program, will be using the catheter to examine ventricular tachycardia, or rapid heartbeat.

Also at the KGH site, Dr. Amer Johri, Director of the Cardiac Imaging Network Queen's (CINQ), is working with Dr. David Rival, Associate Professor in Mechanical and Materials Engineering at Queen's, to develop new capabilities in carotid ultrasound for better analysis and treatment of atherosclerotic plaques in the novel field of theranostics. Dr. Rival is an expert in experimental fluid dynamics, and in partnership with Dr. Johri is supervising two graduate students to develop nanobubble technology targeting atherosclerotic treatment.

Hotel Dieu Hospital site

At the KHSC-HDH site, ophthalmological surgeon Dr. James Farmer is involved in developing an innovative method of teaching ocular pathology to both ophthalmology and anatomic pathology residents. This involves the use of Aurora mScope, a digital pathology image viewing system. Aurora, a Canadian-based software company, has developed digital pathology image viewing and workflow management for educational institutions, practising pathologists in clinical healthcare and laboratories, and biomedical research.

Dr. Farmer is working with the company to develop an interactive case-based module that teaches residents how to make appropriate diagnoses from individual patient slides with accompanying clinical information. This will include a question and answer format to guide and assess the learner as they examine slides and integrate accompanying details of clinical history, signs and symptoms. This promises to be a more pragmatic and engaging method of teaching ocular pathology than the lecture based method. It will also allow for standardized teaching and more direct assessment of residents' knowledge, in line with the goals of Competency-Based Medical Education as well as the Canadian Ophthalmological Society. Dr. Farmer notes that this skill set is important for ophthalmologists because of the serious disease that can be marked by ocular pathology. Dr. Farmer and Dr. Isabella Irrcher (Research Coordinator, Ophthalmology) are planning a series of research projects to evaluate the effectiveness of the interactive case-based module as a teaching tool.