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Trillium Health Partners deploys clinical AI to provide faster, safer care

BY NORM TOLLINSKY

Trillium Health Partners, a community-based academic health system serving Mississauga, Ont., and surrounding communities, is advancing a system-level approach to clinical AI as embedded infrastructure for faster, safer care.

“At Trillium Health Partners, we see AI as foundational infrastructure – not simply a standalone technology project – enabling better quality, access, equity, and system integration across hospital, community, and home-based care,” said Dr. Ivan Diamond, program chief and medical director of the Cator Family Diagnostic Imaging Program at Trillium Health Partners.

In June 2025, Dr. Diamond’s team launched a clinical AI application designed to accurately identify and notify physicians of intracranial hemorrhage (ICH) in real-time. Running in the background on head CT scans, the tool strengthens clinical decision-making for radiologists and emergency physicians while maintaining a clear focus on patient safety, quality, and experience.

The AI application was acquired via Sectra Amplifier Services, which features 100+ validated third-party AI apps for radiology, pathology, and cardiology that integrate with the Sectra diagnostic viewer.

“The tool flags the possibility of a bleed right away, immediately triaging urgent cases to the top of the queue, helping us deliver high-quality care faster,” said Dr. Diamond. “Particularly in high-volume and time-sensitive settings like the emergency department, where saved time can mean the difference between permanent harm and a successful recovery.”

In outpatient settings where CT scans are routinely reviewed the next day, the algorithm can identify potential intracranial hemorrhages earlier, prioritizing those patients for prompt review. Additionally, for ED physicians, who look at these cases initially themselves, AI gives them more confidence in their diagnoses.

The selected application also detects and flags cases of midline shift, mass effect and

skull fractures. Midline shift is the displacement of brain structures away from their normal central position, while mass effect occurs when a tumor, bleeding, swelling or infection takes up extra space in the skull, pushing on and compressing brain tissue.

Sectra Amplifier Services has been live since 2022 with adoption in Europe. Trillium Health Partners’ acquisition of the ICH detection application is the first time it has been deployed in Canada.

“Obtaining AI applications through Sectra Amplifier Services guarantees that the AI is baked into the workflow,” said Stephen



Dr. Ivan Diamond, DI medical director

Harrold, Sectra Canada’s director of strategy and innovation. “All the AI applications within Sectra Amplifier Services are also pre-validated for compliance with the regulatory agencies.”

Prior to going live, Trillium Health Partners validated the application’s performance using historical scans from its own archives. “Because we serve one of Canada’s most diverse communities, it was important to evaluate and validate the application against local data to ensure it performs as intended for our patient population,” explained Dr. Diamond. Local validation was performed by the AI Deployment and Evaluation Lab at Trillium Health Partners’ Institute for Better Health.

Sectra and the selected AI vendor representatives were also onsite at the hospital to assist with training radiologists, technolo-

gists, and ED physicians, who were coached on how to use the application and made aware of its limitations.

When evaluating the performance of a diagnostic test, sensitivity and specificity are crucial metrics that help determine the test’s ability to identify positive and negative cases. Sensitivity measures how well a test correctly identifies positive cases, while specificity measures how well it correctly identifies negative cases. Both metrics are essential for making informed decisions.

“Because our goal is to never miss a bleed, we optimized sensitivity over specificity. This gives our highly experienced radiologists additional areas to target and rule out,” said Dr. Diamond. “Working with Sectra, the ability to provide feedback is built directly into the clinical workflow. That makes it easy for our teams to contribute to continuous learning and improvement as part of everyday care.”

Consistent monitoring of the application is necessary because its performance could ‘drift’ if significant changes occur, such as major upgrades to the hospital’s CT scanner or substantial shifts in the hospital’s patient population.

While it’s still too early to have all the necessary data on the algorithm’s performance, Dr. Diamond estimates his team is seeing three to four cases per month where the algorithm detects a subtle finding that may not have been seen by a human.

“We are impressed by the algorithm’s ability to correctly prompt cases for earlier review, which is enhancing decision-making, as well as improving care,” said Dr. Diamond. Like all diagnostic AI applications, the product is locked, meaning that the AI application doesn’t learn to improve its performance between scheduled updates to the algorithm. “We only see changes in the tool once they’ve been approved by Health Canada,” he said.

Trillium Health Partners is investing in AI across the organization as a key enabler of its plan to 2030, including a lung nodule AI algorithm that comes with a scanner the hospital uses, as well as a bone AI application developed in-house.

Harrold notes that AI adoption in Canada is accelerating as hospitals across the country undertake major refreshes of their PACS systems. As these upgrades move forward, Sectra’s market share in Canada has expanded in recent years to more than 30 percent.