



Health Canada Licenses First Artificial Intelligence Algorithms Embedded On-Device to Prioritize Critical Chest X-ray Review

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- *Critical Care Suite helps radiologists prioritize critical cases with a suspected pneumothorax – a type of collapsed lung – by immediately flagging critical cases to radiologists for triage, which could drastically cut the average review time from up to eight hours^[1]*
- *Offers first-of-its-kind automated AI quality check features that detect acquisition errors, flagging images for technologist review and allowing them to make corrections before they go to radiologists for review*

[Critical Care Suite with overlay and AI score IMAGE/PNG - 0.45 MB](#)

Mississauga, ON, September 1, 2020 – GE Healthcare today announced Health Canada’s license of Critical Care Suite, an industry-first collection of artificial intelligence (AI) algorithms embedded on a mobile X-ray device. Built in collaboration with Humber River Hospital in Toronto, using GE Healthcare’s Edison platform, the AI algorithms help to reduce the turn-around time it can take for radiologists to review a suspected pneumothorax, a type of collapsed lung.

“Today’s pandemic has proven that data, analytics, AI and connectivity will only become more central to helping clinicians and partners on the front lines to quickly deliver care,” says Katelyn Nye, Global General Manager, Mobile Radiography & Artificial Intelligence. “For GE Healthcare, that means continuing to advance intelligent health and providing innovative technologies to improve patient outcomes, reduce waste and inefficiencies, and eliminate costly errors. Critical Care Suite is a great example of how we can do just that.”

Currently, 62 percent of exams are marked ‘STAT’ or for urgent reading ^[1], but they aren’t all critical. A prioritized “STAT” X-ray can sit waiting for up to eight hours for a radiologist’s review ^[1]. However, when a patient is scanned on a device with Critical Care Suite, the system automatically analyzes the images, searching for a pneumothorax. If a pneumothorax is suspected, an alert – along with the original chest X-ray – is sent directly to the radiologist for review via picture archiving and communication systems (PACS). The bedside care team also receives an on-device notification to provide awareness of the prioritized cases. Quality-focused AI algorithms simultaneously analyze and flag protocol and field of view errors as well as auto rotate the images on-device to save technologists time and simplify workflow.

To further assist technologists and radiologists, Critical Care Suite also includes an:

- **On-Device Pneumothorax Alert^[2]** which is flagged as soon as the X-ray image is acquired, if a pneumothorax is detected;
- **AI Score^[2]** from 0 to 100 in which the higher the score, the more confident the algorithm is that a pneumothorax is detected;
- **Image Overlay^[2]** that can be seen on-device (as well as on the Secondary Capture image sent to PACS) and has accurately localized 96% of positive pneumothorax findings; and
- **Customization of preferences^[2]** which allows users to set an AI operating point (five setting options) in order to tune the performance of the system to preferred sensitivity or specificity.

Embedding Critical Care Suite on-device offers several benefits to radiologists and technologists. For critical findings, GE Healthcare’s algorithms are a fast and reliable way to ensure AI results are generated within seconds of image acquisition, without any dependency on connectivity or transfer speeds to produce the AI results. These results are then immediately made available to the technologist on the mobile X-ray device as well as sent to the radiologist for review on PACS. Also, automatically running quality checks on-device integrates them into the technologist’s standard workflow and enables technologist actions – such as rejections or reprocessing – to occur at the patient’s bedside and before the images are sent to PACS.

Critical Care Suite and the quality algorithms were developed using GE Healthcare’s Edison platform – which helps deploy AI algorithms quickly and securely – and deployed on the company’s AMX 240 mobile X-ray system.

GE Healthcare’s Edison offering comprises applications and smart devices built using the Edison platform. The platform uses an extensive catalog of healthcare-specific developer services to enable both GE developers and select strategic partners to design, develop, manage, secure and distribute advanced applications, services and AI algorithms quickly. Edison integrates and assimilates data from multiple sources, applying analytics and AI to not only transform data, but provide actionable insights that can be deployed on medical devices, via the cloud or at the edge of the device.

Humber River Hospital in Toronto, one of four institutions to sign a data sharing agreement for the development of Critical Care Suite, provided 156,000 privacy-compliant chest X-rays and associated reports to GE Healthcare. Additional partners in the development of Critical Care Suite include UC San Francisco (UCSF), St. Luke’s University Health Network, and CARING - Mahajan Imaging – India.

Critical Care Suite was 510(k) cleared by the FDA and CE Marked by the European Commission in August 2019. With the recent addition of Canada, Critical Care Suite continues to be made available in new countries and regions for the benefit of clinicians and patients around the world.

To try Critical Care Suite for yourself, visit www.gexray.ai. For more information on GE Healthcare's Critical Care Suite and Edison platform visit gehealthcare.com.

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About GE Healthcare:

GE Healthcare is the \$16.7 billion healthcare business of GE (NYSE: GE). As a leading global medical technology and digital solutions innovator, GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world.

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[1] Rachh, Pratik et al. "Reducing STAT Portable Chest Radiograph Turnaround Times: A Pilot Study." *Current Problems in Diagnostic Radiology* Vol. 47, No. 3 (n.d.): 156–60. <https://www.sciencedirect.com/science/article/abs/pii/S0363018817300312?via=ihub>.

[2] Not available in the United States.

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