iPhone app can diagnose stroke: study

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New research from the University of Calgary's Faculty of Medicine shows that doctors can make a stroke diagnosis using an iPhone application with the same accuracy as a diagnosis at a medical computer workstation. This technology can be particularly useful in rural medical settings. This allows for real-time access to specialists such as neurologists, regardless of where the physicians and patients are located.

Neuro-radiologists in the study looked at 120 recent consecutive noncontrast computed tomography (NCCT) brain scans and 70 computed tomography angiogram (CTA) head scans that were obtained from the Calgary Stroke Program database. Scans were read by two neuro-radiologists, on a medical diagnostic workstation and on an iPhone . The research is published in the May 6th edition of *Journal of Medical Internet Research*. The study was designed by Dr. Mayank Goyal, and involved the iPhone software technology originally developed by Dr. Ross Mitchell, PhD, and his team at the Hotchkiss Brain Institute (HBI), then further enhanced and commercialized by Calgary Scientific Inc.

"This iPhone app allows for advanced visualization and our studies show it is between 94% and 100% accurate, compared to a medical workstation, for diagnosing acute stroke," says Mitchell who is from the University of Calgary's Faculty of Medicine. "In a medical emergency, medical imaging plays a critical role in diagnosis and treatment, time is critical in acute stroke care, every minute counts."

Fellow HBI member, Dr. Mayank Goyal who is also the director of research in the department of radiology and one of the neuro-radiologists

in the study who analyzed the data. "Time is critical for diagnosing stroke and starting treatment. There are definitely benefits for doctors to have the ability to analyze and diagnose these images from virtually anywhere. We were pleasantly surprised at our ability to detect subtle findings on the CT scan, which are often very critical in patient management, using this software," he says. "Another strength of this platform was its ability to handle massive imaging datasets of over 700 images seamlessly over the iPhone." Goyal is also a member of HBI's Stroke and Vascular Dementia Program.

The study was done using Calgary Scientific Inc.'s ResolutionMD Mobile, an application for iPhone and Android smart-phones. In April 2010, the application was approved by Health Canada so Canadian doctors can now legally make a primary diagnosis using the device.

Resolution MD is different from other medical image applications as a server does all the computing work and streams images to display on a smart-phone in real time. Doctors can see and manipulate medical images in seconds unlike other apps that can take 10-20 minutes to download raw medical images to an iPhone before they can be displayed. It is also unique as all medical images are secure. The confidential patient images remain behind hospital firewalls to prevent any patient data from being lost or stolen. The technology can also be used over great distances. By placing a server in a remote community, distant medical experts, such as stroke neurologists and radiologists, can have immediate secure access to patient scans anywhere, using a device they carry in their pocket.

The images can be viewed on an iPhone, iPad, Android smartphone or web-browser.

Calgary Scientific has licensed the application to many medical imaging companies and over 50,000 hospitals around the world will have access

to it in the next 24 months as it's installed in their networks.

More information: The study can be found here: www.jmir.org/2011/2/e31/

Provided by University of Calgary

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