Abbott Announces New Data That Shows Artificial Intelligence Technology Can Help Doctors Better Determine Which Patients Are Having A Heart Attack

- New research found Abbott's algorithm created through machine learning could give doctors a more individualized calculation, leveraging factors such as age, sex and the changing dynamics of troponin protein levels in the blood, to improve heart attack diagnosis

- This technology is the first machine learning developed algorithm that combines high sensitive troponin testing with other patient details to help doctors better determine if a heart attack is occurring

ABBOTT PARK, Ill., Sept. 10, 2019 /PRNewswire/ -- Abbott (NYSE: ABT) announced today that new research, published in the journal Circulation, found its algorithm could help doctors in hospital emergency rooms more accurately determine if someone is having a heart attack or not, so that they can receive faster treatments or be safely discharged.[1]

In this study, researchers from the U.S., Germany, U.K., Switzerland, Australia and New Zealand looked at more than 11,000 patients to determine if Abbott's technology developed using artificial intelligence (AI) could provide a faster, more accurate determination that someone is having a heart attack or not. The study found that the algorithm provided doctors a more comprehensive analysis of the probability that a patient was having a heart attack or not, particularly for those who entered the hospital within the first three hours of when their symptoms started.

"With machine learning technology, you can go from a one-size-fits-all approach for diagnosing heart attacks to an individualized and more precise risk assessment that looks at how all the variables interact at that moment in time," said Fred Apple, Ph.D., Hennepin HealthCare/ Hennepin County Medical Center, professor of Laboratory Medicine and Pathology at the University of Minnesota, and one of the study authors. "This could give doctors in the ER more personalized, timely and accurate information to determine if their patient is having a heart attack or not."

Removing the barriers for determining the presence of a heart attack

A team of physicians and statisticians at Abbott developed the algorithm* using AI tools to analyze extensive data sets and identify the variables most predictive for determining a cardiac event, such as age, sex and a person's specific troponin levels (using a high sensitivity troponin-I blood test**) and blood sample timing.

Today, when a person enters the emergency room with symptoms of a heart attack, doctors often use a clinical assessment, an electrocardiogram (EKG) and troponin blood tests at set intervals to determine if the patient is having a heart attack or not. The algorithm is designed to help address two barriers that exist today for doctors looking for more individualized information when diagnosing heart attacks:

- International guidelines for using high sensitive troponin tests currently do not always account for personal factors, such as age and sex, which could impact test results. For instance, women may not produce as much of the troponin protein as men and their heart attacks could go undiagnosed.
- The guidelines also recommend that doctors carry out troponin testing at fixed times over a period of up to 12 hours. However, these time periods do not take into consideration a person's age or sex, and puts a patient into a one-size-fits-all algorithm, rather than having an algorithm that accounts for factors specific to each person.

The algorithm used in the study takes into consideration the patient's age, sex and the dynamics of the troponin blood test results over time. Researchers found that when this information is combined through the power of computation, the algorithm has the potential to give doctors more confidence in the results to help rule out a heart attack and safely discharge that person or diagnose that a heart attack has occurred.

"As doctors are bombarded with data and information, this new algorithm takes several of these variables and uses computational power to more accurately provide a probability of that person having a heart attack," said Agim Beshiri, M.D., one of the inventors of the algorithm and senior medical director, global medical and scientific affairs, Diagnostics, Abbott. "In the future, you could imagine using this technology to develop algorithms that help doctors not only better determine if their patient is having a heart attack or not, but potentially before a heart attack occurs."

Abbott is continuously utilizing new technologies, such as AI and machine learning, to create innovative solutions in healthcare.

The algorithm used is for research purposes only and is not commercially available.
*** Abbott's High Sensitive Troponin-I test is not commercially available in the U.S.*

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References:

1. Than, MP et al. *Circulation*. 2019; published online Sept 10. https://doi.org/10.1161/CIRCULATIONAHA.119.041980

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