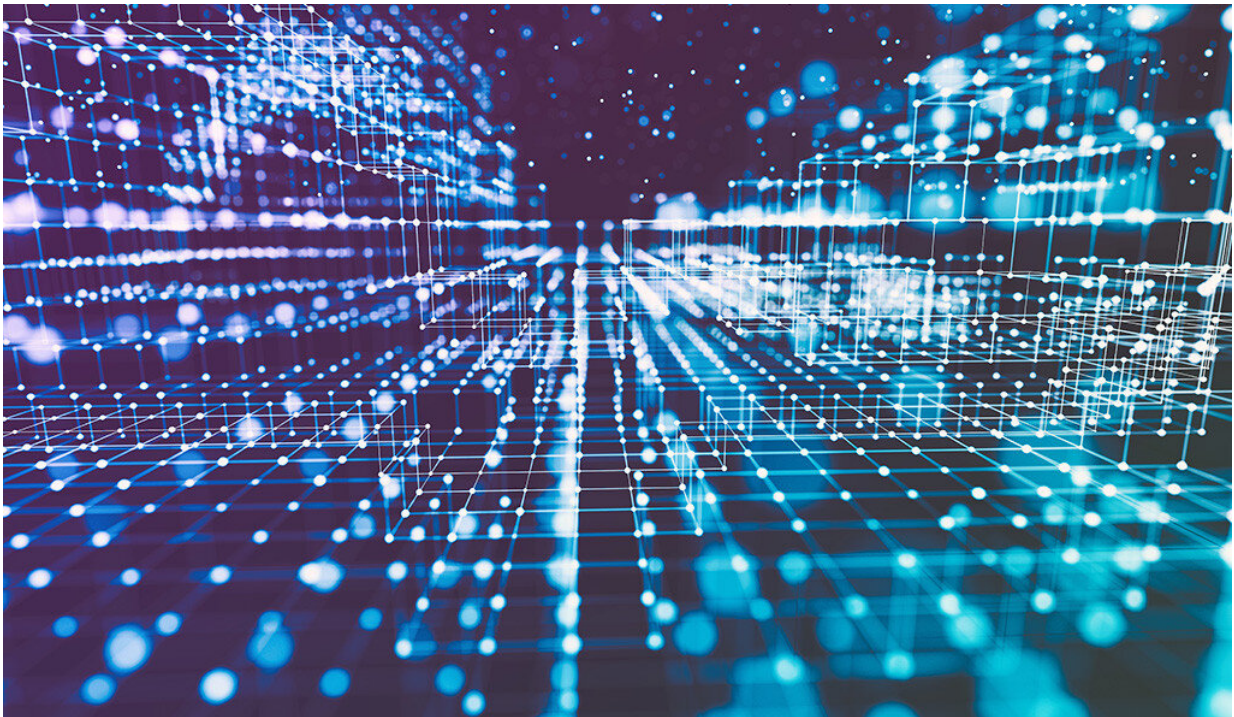# Machine learning better predicts bleeding risk during coronary procedures

July 23 2019, by Noah Vaca

Credit: stock.adobe.com

Machine learning techniques can better predict bleeding risk for patients undergoing percutaneous coronary intervention (PCI) than traditional methods, report Yale researchers.

This study is published in *JAMA Network Open*.

The research team analyzed data from the American College of Cardiology's (ACC) National Cardiovascular Data Registry (NCDR) from 2009 to 2015 using machine learning, a branch of artificial intelligence capable of performing tasks by inferring patterns in data. The database includes more than 3 million procedures conducted at hospitals across the United States. The team found that machine learning analytics improved the prediction of bleeding risk after PCI (often used to open up blood vessels narrowed by plaque build-up), which could better inform decisions by patients and doctors.

"We are discovering that machine learning may enable us to improve our ability to predict risk better than our traditional approaches," said Dr. Harlan Krumholz, Yale cardiologist and director of the Yale New Haven Hospital Center for Outcomes Research and Evaluation (CORE). "Importantly, the key is in how the information about the patients is processed even before the analysis begins. In the future these techniques will enable us to personalize estimates to a much greater extent."

The team included clinicians, clinical scientists, and data scientists. This study is one of the first to employ machine learning to the massive registries of the ACC. CORE is a partner with ACC in the Institute for Cardiovascular Computational Health and this project is one of the first products of that collaboration.

More information: Bobak J. Mortazavi et al. Comparison of Machine Learning Methods With National Cardiovascular Data Registry Models for Prediction of Risk of Bleeding After Percutaneous Coronary Intervention, *JAMA Network Open* (2019). DOI: 10.1001/jamanetworkopen.2019.6835

Provided by Yale University

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