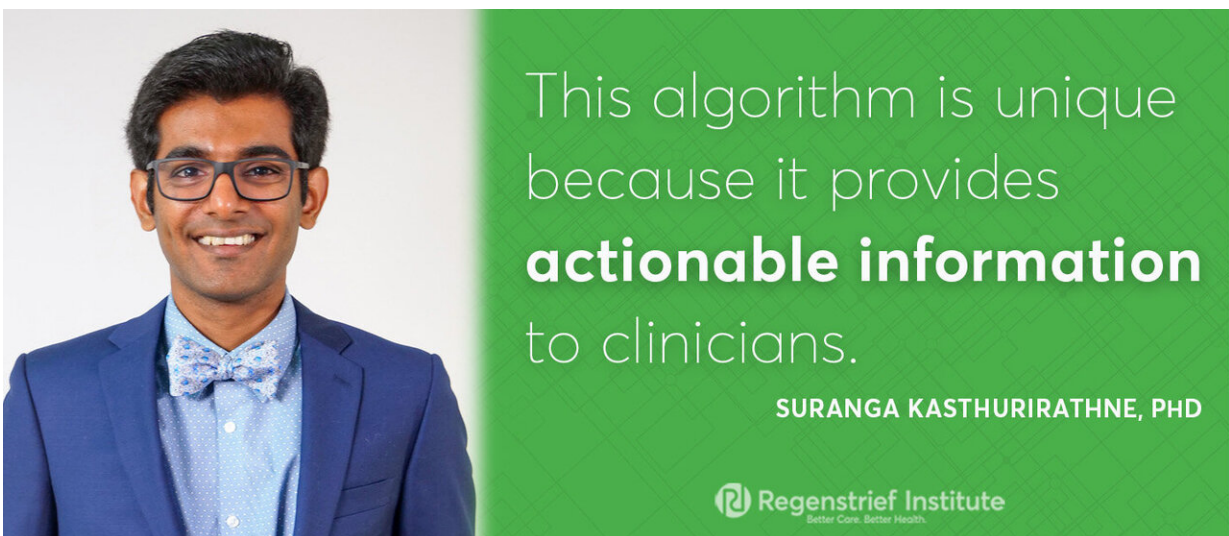


Machine learning models help clinicians identify people who need advanced depression care

August 20 2019



Regenstrief Institute research scientist Suranga N. Kasthurirathne, PhD and colleagues have created decision models capable of predicting which patients might need more treatment for their depression than what their primary care provider can offer. The algorithms were specifically designed to provide information the clinician can act on and fit into existing clinical workflows. Credit: Regenstrief Institute

Researchers at Regenstrief Institute and Indiana University created decision models capable of predicting which patients might need more treatment for their depression than what their primary care provider can

offer. The algorithms were specifically designed to provide information the clinician can act on and fit into existing clinical workflows.

Depression is the most commonly occurring [mental illness](#) in the world. The World Health Organization estimates that it affects about 350 million people. Some people may be able to manage their depression on their own or with guidance from a primary care provider. However, others may have more [severe depression](#) that requires advanced care from mental [health](#) care providers.

The Regenstrief and IU researchers created algorithms to identify those patients so that primary care doctors and providers can refer them to mental health specialists.

"Our goal was to build reproducible models that fit into clinical workflows," said Suranga N. Kasthurirathne, Ph.D., first author of the paper and research scientist at Regenstrief Institute. "This algorithm is unique because it provides actionable information to clinicians, helping them to identify which patients may be more at risk for adverse events from depression."

The algorithms combined a wide variety of behavioral and clinical information from the Indiana Network for Patient Care, a statewide health information exchange, for patients at Eskenazi Health. Dr. Kasthurirathne and his team developed algorithms for the entire patient population, as well as several different high-risk groups.

"By creating models for different patient populations, we offer health system leaders the option of selecting the best screening approach for their needs," said Dr. Kasthurirathne. "Perhaps they don't have the computational or human resources to run models on every single patient. This gives them the option to screen select high-risk patients." Dr. Kasthurirathne is also a visiting research assistant professor at the

Indiana University Richard M. Fairbanks School of Public Health at IUPUI.

"Primary care doctors often have limited time, and identifying patients with more severe forms of [depression](#) can be challenging and time consuming. Our [model](#) helps them help their patients more efficiently and improve quality of care simultaneously," said Shaun Grannis, M.D., M.S., co-author on the paper and director of the Clem McDonald Center for Biomedical Informatics at Regenstrief Institute. "Our approach is also well suited to leverage increasing health information technology adoption and interoperability to enable preventive care and improve access to wraparound health services." Dr. Grannis is the Clem McDonald Professor of Biomedical Informatics at Indiana University School of Medicine.

Researchers are now working to integrate social determinants of health into these models.

This research was conducted as part of Dr. Kasthurirathne's doctoral dissertation.

Provided by Regenstrief Institute

Citation: Machine learning models help clinicians identify people who need advanced depression care (2019, August 20) retrieved 18 April 2024 from <https://medicalxpress.com/news/2019-08-machine-clinicians-people-advanced-depression.html>

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