Data-driven COVID-19 care

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Credit: Shannon Wongvibulsin

When caring for people hospitalized with COVID-19, doctors need to prioritize the most at-risk patients. Shannon Wongvibulsin, Med '21 (MD/Ph.D.) has helped make it easier to identify who should go to the front of the line.

Wongvibulsin was part of the team of scientists at the Johns Hopkins University School of Medicine and the Bloomberg School of Public Health that developed the Severe COVID-19 Adaptive Risk Predictor, or SCARP, which provides real-time clinical predictions via a system of colored circles: Yellow or green circles indicate a moderate to low risk of a patient becoming seriously ill or dying within the week, while orange or red circles signal imminent danger.

"Those with orange or red were the ones I needed to pay the most attention to overnight," says Matthew Robinson, an infectious disease specialist and assistant professor of medicine who led the SCARP team. "Without that algorithm, I would have struggled to know who [the sickest patients] were."

At the heart of this novel computer program is an algorithm designed by Wongvibulsin. She conducted research in computational medicine as part of the Johns Hopkins Individualized Health Initiative, known as Hopkins inHealth, using machine learning—a type of artificial intelligence where the computer is trained to make decisions using experiences based on data. Using data from more than 3,000 COVID-19 patients within the Johns Hopkins Health System between March 5 and Dec. 4 of last year, Wongvibulsin's algorithm predicted the risk of a

patient progressing to severe disease or death. She also created visualizations to help communicate the predictions and determine which clinical variables, like lung function, were the most important.

"While most patients with COVID-19 recover with supportive care, the course of COVID-19 is highly variable, and it is difficult to predict who will deteriorate," she says. "Our clinical risk prediction tool allows health care providers to obtain real-time predictions for disease progression in patients hospitalized with COVID-19."

Provided by Johns Hopkins University

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