

# Researchers develop algorithm to improve care delivery to seriously ill patients

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The level of communication between patient and physician can make a monumental difference, specifically in the case of seriously ill hospitalized patients. Researchers at the University of Minnesota have found a way to better identify these patients with the hopes of better facilitating "end-of-life" or specialized conversations and care.

Studies have shown that seriously ill and frail hospitalized [patients](#) are frequently subjected to unnecessary, [invasive procedures](#) that do not enhance the quality of life. Surveys amongst seriously ill hospitalized patients have identified better end of life planning as an area of potential improvement for hospitals.

"The idea was to come up with an algorithm that would identify those patients from among 100,000 seriously ill patients who might die within a year," explained Nishant Sahni, MD, MS, Adjunct Assistant Professor in the Department of Medicine, University of Minnesota Medical School. "The hope is when a patient is leaving the hospital, the physician will get a notification that the patient is high risk and needs those specific conversations and care, which would empower patients to make more informed decisions regarding their medical care."

"Development and Validation of Machine Learning Models for Prediction of 1-Year Mortality Utilizing Electronic Medical Record Data Available at the End of Hospitalization in Multicondition Patients: a Proof-of-Concept Study" of which Sahni was the main author, was recently published in the *Journal of General Internal Medicine*.

The data was gathered from nearly 60,000 hospitalizations from six hospitals over four years. It can be used to accurately estimate the risk of 1-year mortality within a cohort of multi-condition hospitalized patients.

In addition to empowering seriously ill patients to make more informed health care choices, this model could help clinicians reduce unnecessary invasive procedures on patients who are not likely to benefit from them. This is an important consideration as the number of Americans ages 65 and older is expected to reach more than 98 million by 2060—putting an increased strain on increasingly limited Medicare and Medicaid funding.

"We want to make sure that as a health care system —we are providing our patients with appropriate and cost effective care" said Sahni.

This could be a big step for [health care](#) systems, although Sahni acknowledges there is still work to be done. While the applications for the algorithms are endless, the next step is determining how best to use and learn from them.

**More information:** Nishant Sahni et al. Development and Validation of Machine Learning Models for Prediction of 1-Year Mortality Utilizing Electronic Medical Record Data Available at the End of Hospitalization in Multicondition Patients: a Proof-of-Concept Study, *Journal of General Internal Medicine* (2018). [DOI: 10.1007/s11606-018-4316-y](#)

Provided by University of Minnesota

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