New tool predicts risk of hospital readmission for children before discharge

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Readily available electronic health record (EHR) data can be used to reliably identify readmission risk for children of all ages while they are still in the hospital, according to a study from Ann & Robert H. Lurie

Children's Hospital of Chicago published in the journal *JAMA Network Open*. The newly developed and validated tool will be key in efforts to reduce hospitalizations within 30 days of discharge, which also should help free up scarce pediatric hospital beds.

"Although hospital readmissions are a quality metric, until now we have not had a comprehensive and easily applicable tool to predict pediatric readmission risk prior to discharge," said lead author Denise M. Goodman, MD, MS, Critical Care physician at Lurie Children's and Professor of Pediatrics at Northwestern University Feinberg School of Medicine. "Knowing which children are most likely to need another hospitalization soon after their initial stay allows us to be proactive and better focus discharge planning to mitigate high risk of readmission."

Dr. Goodman and colleagues used data from three years of discharges at Lurie Children's to derive and validate a suite of three readmission prediction models for children of all ages, including infants younger than 28 days. To calculate readmission risk, these models apply demographic and socioeconomic data from the EHR, as well as clinical variables such as ongoing length of stay, use of specific therapies and prior hospitalizations.

"A significant strength of our prediction models is that they were designed to be implemented in the EHR during the hospital stay and to change with clinical circumstances," said Dr. Goodman. "Readmission risk can be recalculated daily, which allows us the opportunity to tailor discharge planning in real time."

Lowering the risk of readmissions also helps hospitals to make available pediatric beds, which are becoming increasingly scarce in Chicago, across Illinois and nationally.

"Given the growing shortage of pediatric beds, it is extremely important

to reduce the chance that a child would need to return to the hospital within 30 days," added senior author Matthew M. Davis, MD, MAPP, Chair of the Department of Pediatrics at Lurie Children's and Northwestern University Feinberg School of Medicine.

"We believe that our readmission prediction tool is the most comprehensive one available for hospitals to address the anticipated needs of children and their families prior to discharge, thereby reducing the risk of rehospitalization."

More information: Development and Validation of an Integrated Suite of Prediction Models for All-Cause 30-Day Readmissions of Children and Adolescents Aged 0 to 18 Years, *JAMA Network Open* 2022; 5(11):e2241513. DOI: 10.1001/jamanetworkopen.2022.41513

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