What causes delays in admission to rehabilitation care? A structural estimation approach

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Background

The increase in demand for rehabilitation care has led to long admission delays. These delays not only affect patient outcomes, but also lead to bed blocking in acute care.

Admission delays can be due to capacity constraints, bed admission policy, or extra processing time required to plan rehabilitation activities.

To propose effective operational intervention to reduce delays, it is important to identify and quantify different sources of delay.

Methodology

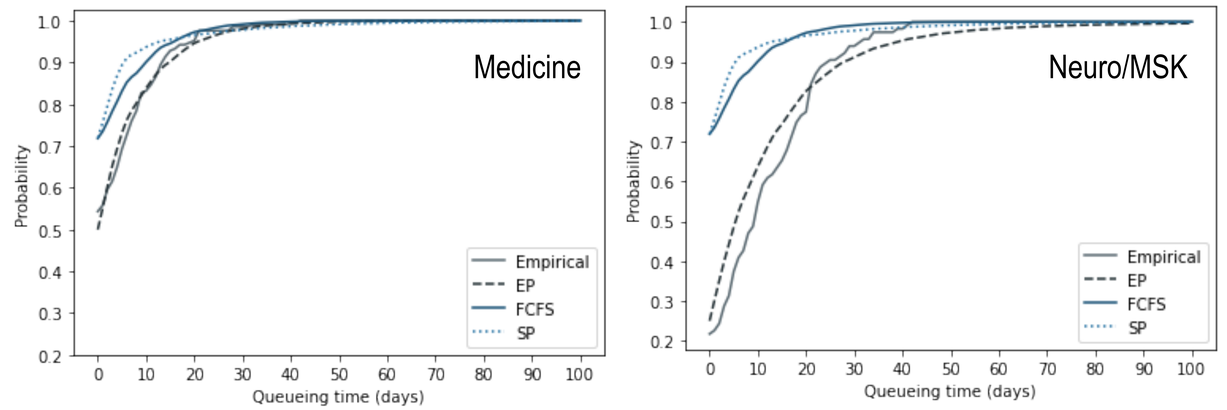
Utilizes data from Low-Intensity, Long-Duration (LTLD) rehab patients at Trillium Health Partners (THP).

Hidden Markov Model (HMM) to estimate the unobserved processing time and the status-quo bed allocation policy.

Queueing model of patient flow calibrated using real data to examine the effect of various operational interventions to reduce delays.

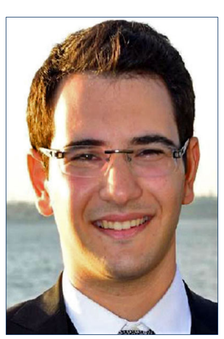
Results

The proposed model (EP) accurately captures both sources of delay, and closely matches with historical data compared to simple benchmarks of FCFS and Strict Priority (SP).



The models support targeted operational interventions aimed at reducing admission delays.

Centre Affiliates



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