

# Identifying Internal Medicine patients at risk of delayed discharge from hospital: a pilot QI initiative

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## Background

Medicine wards across the world struggle with patients who experience non-medical delays to hospital discharge. In Canada, these patients are termed "ALC", because they are awaiting an "alternate level of care" besides hospital. According to the Canadian Institute of Health Information (CIHI), 7% of all hospitalizations in Ontario are ALC, the highest of any province or territory.

Until recently, there has been no method to predict who is at highest risk of ALC designation. In 2019, Bai et al. analyzed data gathered over the course of one year from patients admitted to Internal Medicine wards at a tertiary care hospital, and derived a clinical prediction rule to identify those at highest risk of becoming ALC. The goal of this current study is to trial and validate this rule on the same population in the real world setting, so that future preventative interventions may be targeted at these patients.

## Methods

Between August 2019-March 2020, housestaff were asked to use the rule to score patients admitted to Internal Medicine wards. It was administered using a secure, online survey platform, and awarded points for female sex, age >64, preexisting dementia, preexisting diabetes with end organ damage, and indications for physiotherapy, occupational therapy, or speech language pathology consultation. Chart review was performed to determine the length of stay and eventual ALC status.

## Results

116 patients were scored after duplicates and incorrect MRNs were excluded. The tool flagged 30% of patients as being at risk, with 12% eventually becoming ALC. There was a total of 2046 inpatient days, of which 612 were attributable to ALC patients alone. An ROC curve was generated, with an estimated AUC of 0.758. At the cutpoint of a score of 4 or greater, the sensitivity was 0.57, the specificity was 0.74, and the LR+ was 2.16.

## Discussion

Overall, the clinical prediction rule appears to be a valid tool which may be used at a cutpoint score of  $\geq 4$ . Feedback obtained during the course of the pilot, however, indicated that housestaff found the survey platform to be a workflow interruption, resulting in low compliance rates. Measures are underway to automate the collection of scoring data using information available via the medical record, as well as the determination of eventual ALC status. This will not only facilitate more powerful

validation of the tool, but also the ability to apply future interventions to reduce the risk of ALC status.