

## Patient-Reported Outcomes Improves the Prediction of In-patient and Emergency Department Readmission Risks in Coronary Artery Disease

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### Introduction

Coronary Artery Disease (CAD) patients are known to report higher healthcare resource use, such as inpatient [IP] and emergency department [ED] readmissions, than the general population. We investigate if the patient reported outcome measures (PROMs) improve the accuracy of readmissions risk prediction models in CAD.

### Objectives and Approach

Patients enrolled in the Alberta Provincial Project for Outcomes Assessment in Coronary Heart Disease (APPROACH) registry between 1995 and 2014 who received catheterization (CATH) and completed baseline PROMs were linked to discharge abstract data and national ambulatory data. Logistic regression (LR) was used to develop 30-day and 1-year readmissions risk prediction models adjusting for patients' demographic, clinical, and self-reported characteristics. PROM was measured using the 19-item Seattle Angina Questionnaire (SAQ). The discriminatory performance of each prediction model was assessed using the Harrel's c-statistic for LR.

### Results

Of the 13,264 patients who completed baseline SAQ, 59 (0.3%) had IP readmissions or ED visits within 30 days, and up to 356 (1.9%) within 1 year of baseline survey. The C-statistics for one-year readmissions risk prediction models that only adjusted for demographic and clinical variables only ranged between 56.4% and 61.2%. The prognostic improvement in the discrimination of these models ranged between 2% to 10% when patient-reported SAQ was included as predictor. The addition of SAQ improves the model discrimination in all types of admission.

### Conclusion/Implications

The addition of PROMs improves the moderate accuracy of readmissions risk prediction models. These findings highlight the need for routine collection of PROMs in clinical settings and their potential use for aiding clinical and policy decision-making and post-discharge outcomes monitoring in the management of cardiovascular diseases.

