Submission Id: 5562

Title

Predicting unplanned hospitalisations in older adults using routinely recorded general practice data

Priority 1 (Research Category)

Acute and emergency care

Presenters

Jet Klunder, MD

Abstract

Context: Unplanned hospitalisations represent a hazardous event for older persons. Timely identification of high-risk individuals using a prediction tool may facilitate preventive interventions.

Objective: To develop and validate an easy-to-use prediction model for unplanned hospitalisations in community-dwelling older adults using readily available data to allow rapid bedside assessment by general practitioners.

Study Design and Analysis: retrospective study

Setting or Dataset: general practice electronic health records linked with national administrative data

Population Studied: 243,129 community dwelling adults aged 65 years and over

Intervention/Instrument: The dataset was geographically split into a development (58.7%) and validation (41.3%) sample. The model was developed using logistic regression with backward selection. The models were validated internally and externally. We evaluated the performance of three different models with increasingly smaller selections of candidate predictors (i.e. optimal, readily-available and easy-to-use model, respectively). Predictive performance was assessed by area under the curve (AUC) and calibration plots.

Outcome Measures: unplanned hospital admissions within 6 months.

Results: In both samples, 7.6% had at least one unplanned hospitalisation within 6 months. The discriminative ability of the three models was comparable and remained stable after geographic validation. The easy-to-use model included age, sex, prior hospitalisations, pulmonary emphysema, heart failure and polypharmacy. Its discriminative ability after validation was AUC 0.72 [95% confidence interval: 0.72-0.71]. Calibration was good.

Conclusions: Our models showed satisfactory predictive ability. Reducing the number of predictors and geographic validation did not impact predictive performance, demonstrating the robustness of the

model. We developed an easy-to-use tool that may assist general practitioners in decision-making and targeted preventive interventions.