

# Development and validation of a 30-day re-visit risk prediction model in patients admitted to the emergency department due to Drug-related problems

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## BACKGROUND

Drug-related problems (DRPs) are an important cause of admission to the Emergency Department (ED), being drugs used for cardiovascular diseases one of the most frequently implicated. However, information regarding the risk factors associate to ED re-visit in this group of patients is scarce.

## PURPOSE

The aim of this study was to develop a predictive model of 30-day revisit to the ED in patients with a first episode of DRP visit

## MATERIAL AND METHODS

- A retrospective cohort study was carried out including patients attended in an ED due DRPs during 2019 caused by drugs classified in the ATC classification system as A, B and C.
- A **30-day prediction** model was created in a derivation cohort using backward logistic regression. Those variables significant at  $p < 0.100$  in a multivariate analysis were assigned an integer score proportional to the regression coefficient.
- The model was **internally validated** by k-fold cross-validation and in the validation cohort.

## RESULTS

580 patients were included [Mean age: 80.0 (12.6) years];  
133 (22.9%) patients re-visit the ED at day 30.

**5 risk factors** and were combined into an overall score.

- Moderate to severe chronic kidney disease: 5 points
- Previous ED visit within 3 months: 6 points
- High anti-cholinergic burden: 8 points
- DRPs related to heparin 12 points
- Safety DRPs: 8 points

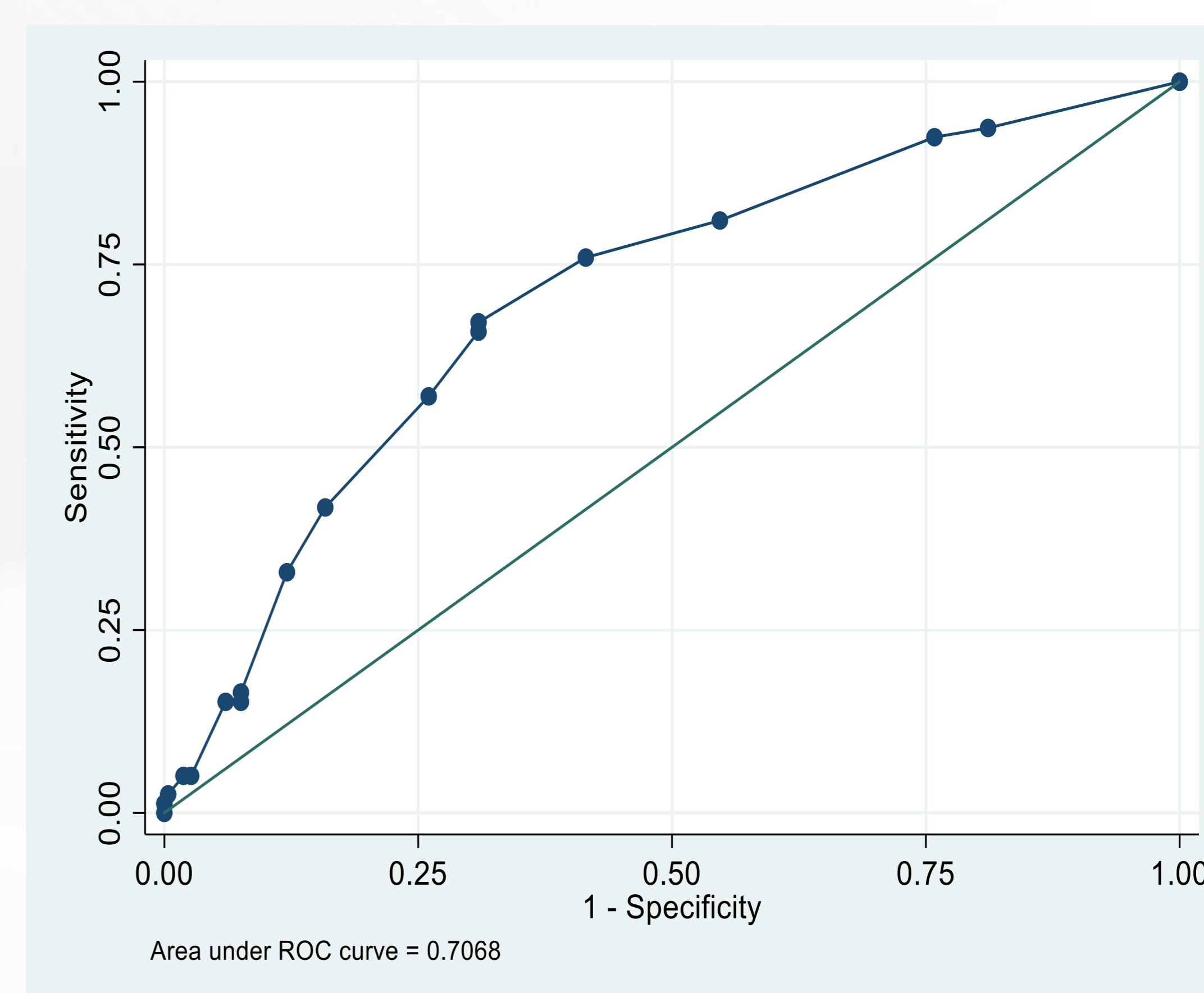
Model achieved **AUC=0.71** (CI 95% 0.66–0.75) in the derivation cohort and 0.70 (0.65–0.74) in the validation cohort ( $p=0.273$ ).

- Patients were classified into 3 risk categories
  - Low risk: 11.1% (0–6 points),
  - Medium risk: 20.0% (8–13 points)
  - High risk: 39.5% (>13 points).
- Optimal cut-off point in the model was 9, having a sensitive of 67.09%, a specificity of 69.06%, a Positive predictive value of 36.78%, and a Negative predictive value of 87.61%.

## CONCLUSIONS

- ✗ This score could be used by clinicians from ED to identify those patients at high risk of 30-day re-visit, being useful for design specific interventions at discharge in this group of patients.

AUC validation risk



30-day revisit

