Predicting 30-Day Readmission Risk: Data-Driven Insights

Unlocking the power of EHR data to proactively identify and mitigate patient readmission risks.

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The Imperative of Reducing Readmissions

Patient well-being

Enhanced safety and recovery

Financial burden

Significant costs to healthcare systems, insuarance and patients.

Quality metrics

Impacts hospital performance and ratings

Resource strain

Optimizes bed availability and staffing

Our Core Objectives

Predictive model

Leverage EHR data for accurate risk prediction

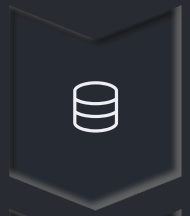
Care strategies

Inform targeted patient interventions

Improve outcomes

Reduce unplanned readmissions

Methodology: The OSEMN Framework

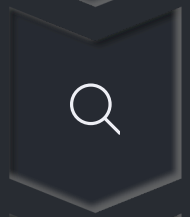


Obtain

Gather relevant EHR data

Scrub

Clean and preprocess data



Explore

Identify patterns and insights

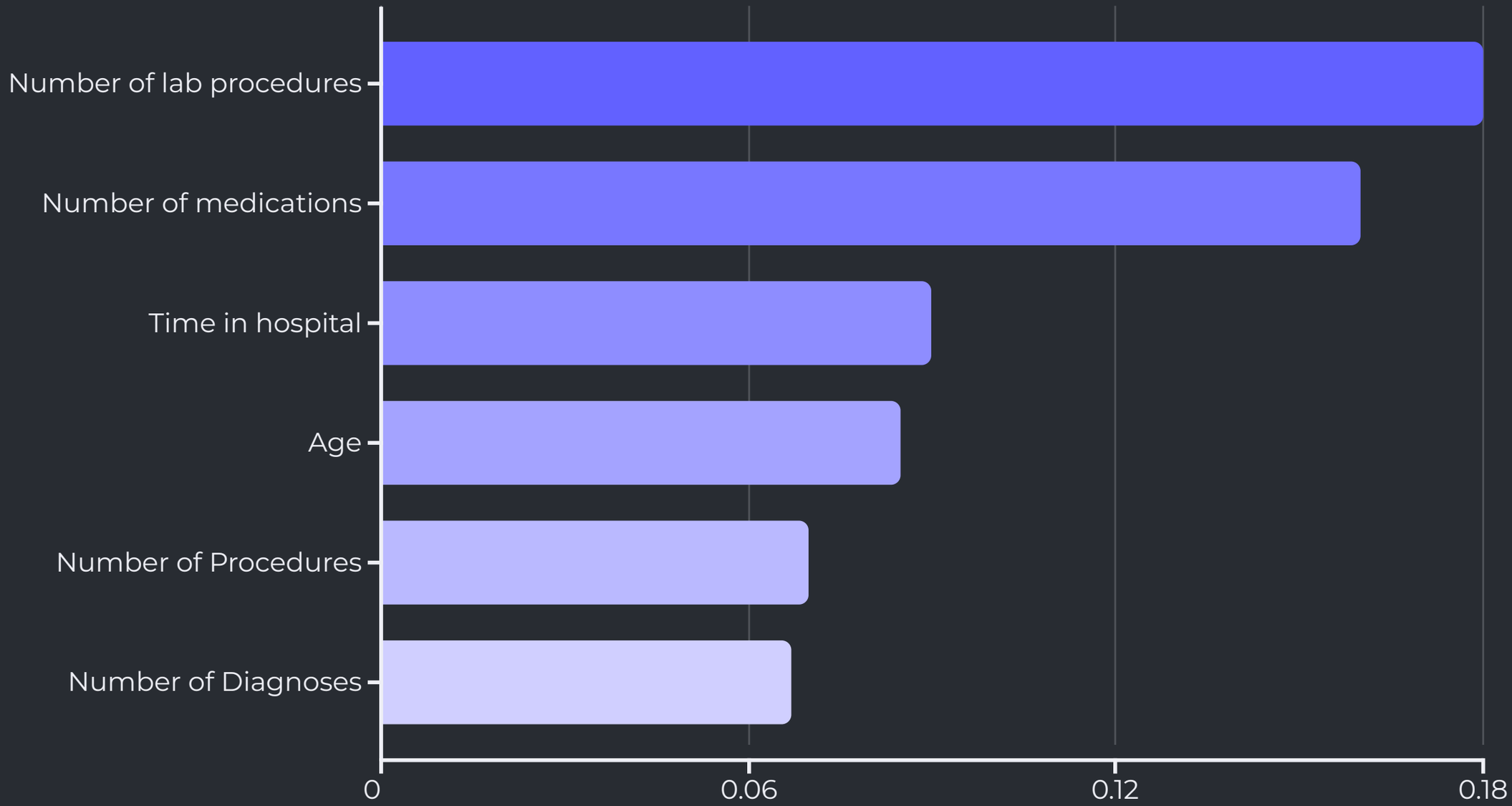
Model

Build predictive algorithms (Random Forest)

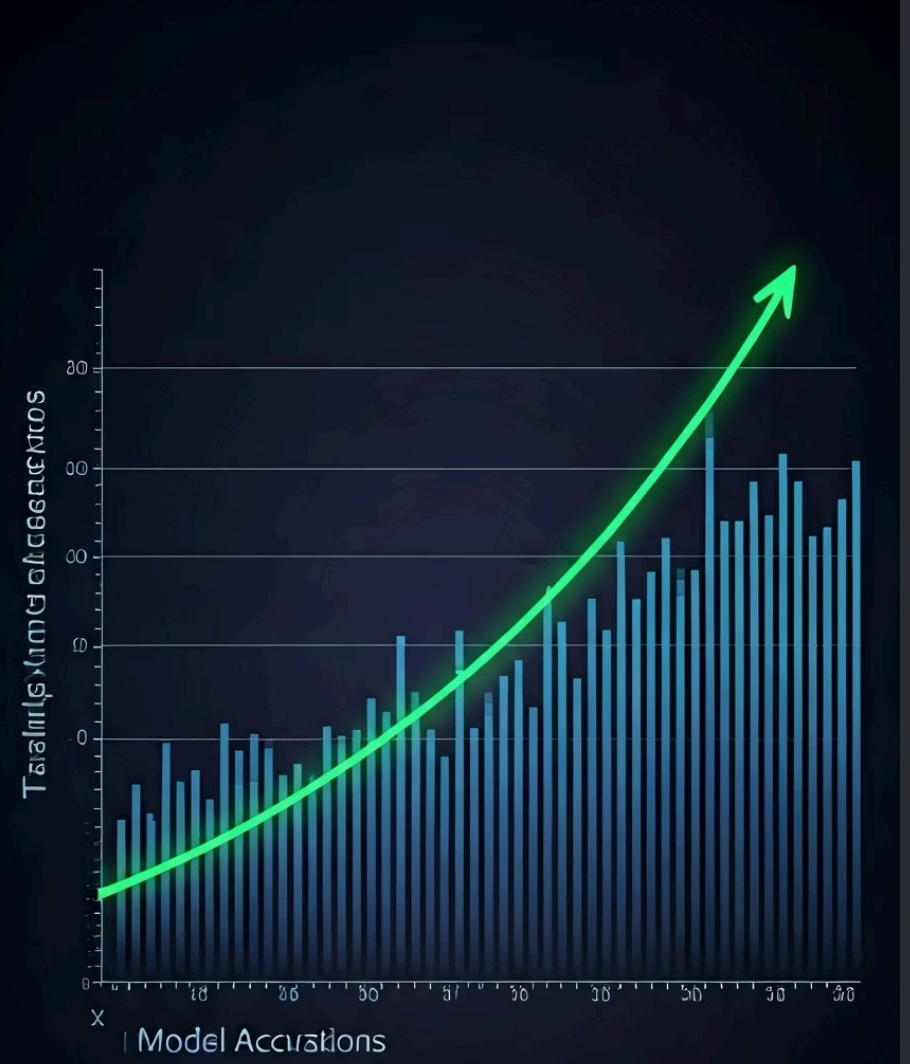
Interpret

Extract actionable findings

Key Predictive Features



The chart highlights features most correlated with increased readmission risk. Prior admissions and length of stay are critical indicators.



Model Performance & Insights

0.64

AUC

Good discrimination ability

0.75

Recall

Captures high-risk patients

0.70

Precision

Minimizes false positives

Our model prioritizes patient safety, ensuring high recall to identify at-risk individuals, while maintaining robust precision.

Top Factors That Increase Readmission Risk

Number of Lab Procedures	More lab procedures may indicate more severe or uncertain conditions, prompting closer monitoring or follow-up.	Patients with many lab tests could be flagged as higher risk; hospitals might set discharge flags or prioritize enhanced follow-up.
Number of Diagnoses	A higher number of diagnoses suggests greater medical complexity and comorbidity, increasing the likelihood of post-discharge complications.	Complex patients with multiple diagnoses should receive comprehensive discharge planning, including detailed medication reconciliation and follow-up appointments.
Number of Medications	Polypharmacy can lead to adverse drug events, non-adherence, and medication management challenges, contributing to readmission.	Medication reconciliation and patient education on drug regimens are crucial. Pharmacists can play a key role in post-discharge medication management.
Time in Hospital	Prolonged hospital stays often correlate with more severe illness, slower recovery, or complications, increasing vulnerability post-discharge.	Patients with extended admissions require thorough assessment for functional decline, rehabilitation needs, and robust transitional care planning.

Enhancing Clinical Impact

Early identification

Proactive patient support

Resource allocation

Optimized care team efforts

Personalized plans

Tailored interventions for high-risk patients

This tool empowers clinical staff to better identify and support high-risk patients, leading to improved outcomes and efficient resource use.

Roadmap: Next Steps

Dashboard deployment

Integrate into clinical workflow

Model monitoring

Continuous performance tracking

Feature refinement

Periodic model retraining with new data

Our commitment is to continuous improvement, ensuring the model remains accurate and relevant in a dynamic healthcare environment.

Thank You & Q&A

We appreciate your time and interest in data-driven healthcare. Open to your questions.

- What are your thoughts on integrating this into existing EHRs?
- How do we ensure model fairness across diverse patient populations?
- What pilot programs could demonstrate immediate impact?