

In Vitro to In Vivo Translation of AI for Clinical Use: Screening for Acute Coronary Syndrome to Identify STEMI



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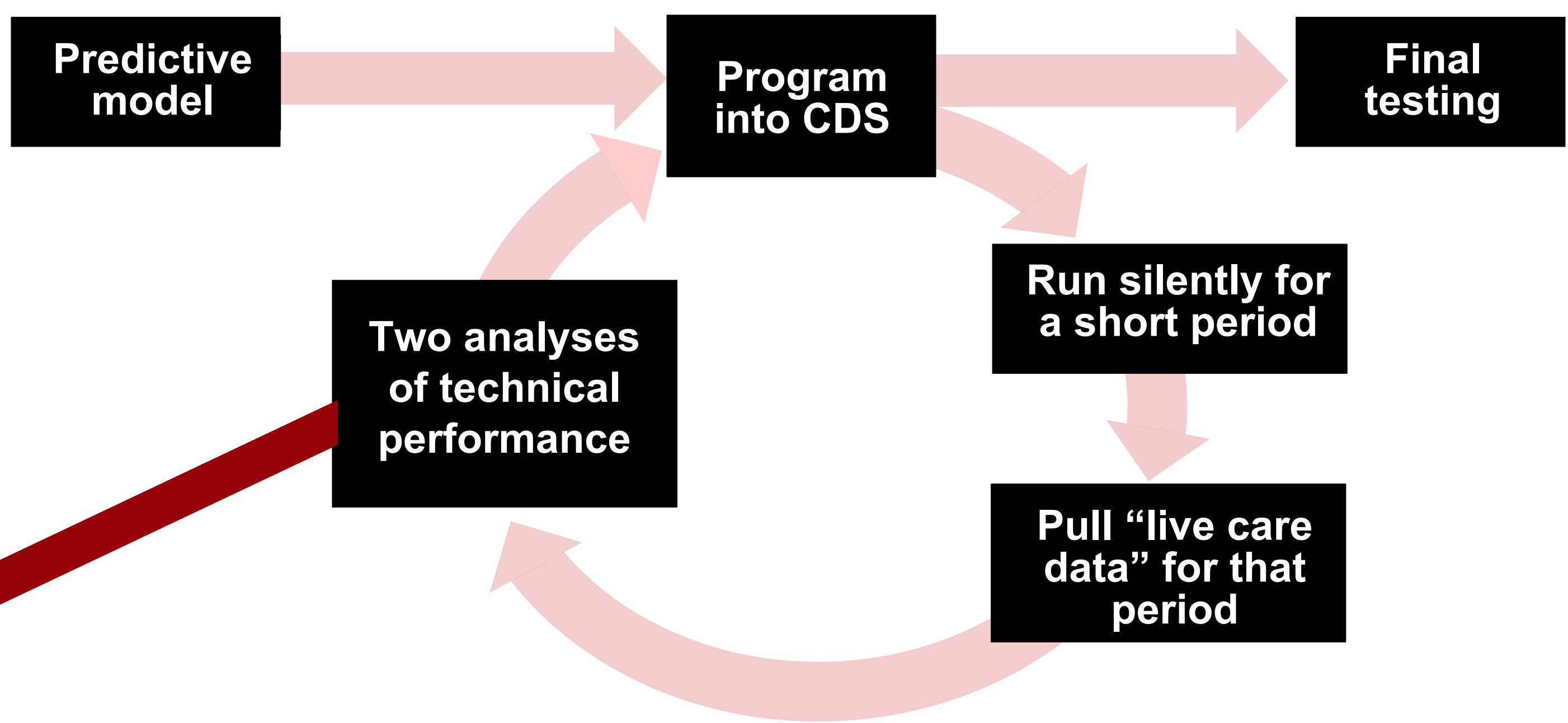
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Background

- Patients presenting to the Emergency Department (ED) who are at risk of Acute Coronary Syndrome (ACS) should receive an ECG within 10 minutes of arrival.
- We have built a logistic model to estimate patients' ACS risk.
- Based on the model's performance, we believe it can reduce the time to ECG if implemented in clinical care.
- Before using AI in live care, testing is required to ensure patient safety. Standards for such testing are needed.
- We present our method and results from a prospective silent pilot of our model programmed as Clinical Decision Support (CDS) in the electronic health record (EHR).

Methods

Prospective silent pilot with iterative cycles



Results

A. Technical Component Analysis

1. Population Capture	2. Risk Prediction Score Calculation	3. Decision Threshold	4. Data Capture for Monitoring and Transparency	5. CDS Decision Alignment with Risk Calculation
Ineligible patients were initially included, such as those in the Clinical Decision Uni or under 18.	The 4th decimal place of the decision threshold was missing.	The symbol \geq had been inputted as $>$.	Initially, the report of CDS data included only the "yes" screening decisions.	In 21 encounters, the CDS screening decision did not align with the calculated risk score.

B. Technical Fidelity Analysis

	Agreement between CDS and model	Impact of data missingness	Impact of calculation method
Raw agreement	96%	96%	98%
Kappa	88%	89%	93%

Conclusions

- This methodology evaluated the technical translation of a predictive model into CDS.
- With each iteration, issues were discovered and successfully corrected.
- The CDS screening decisions substantially agreed with the original model's decisions, and disagreements were due to both missing data and calculation differences.
- We look forward to evaluating the impact of this CDS on STEMI screening when it becomes available for use in live care.