

Stepwise Approach Improves Performance on INR-Based Metric

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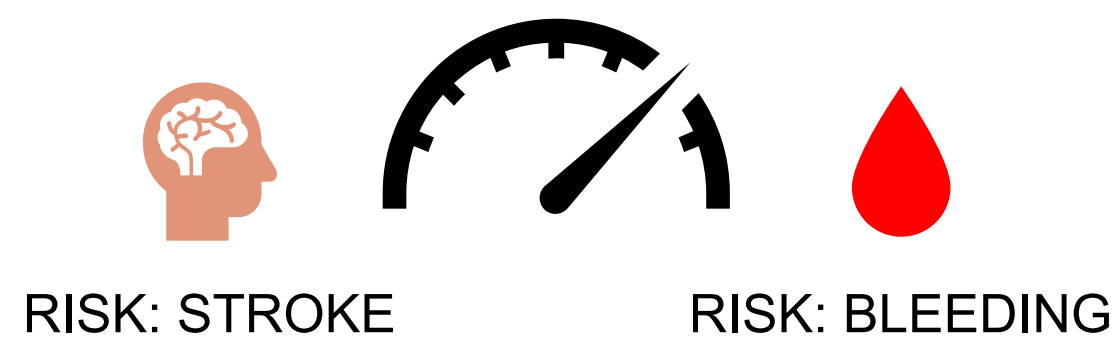
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BACKGROUND:

Warfarin, a commonly used anticoagulant, requires close monitoring to achieve the desired anticoagulant effect while ↓ **bleeding risk**



According to INR-based metric, patients with INR ≥ 5 after receiving ≥ 3 doses is unsafe

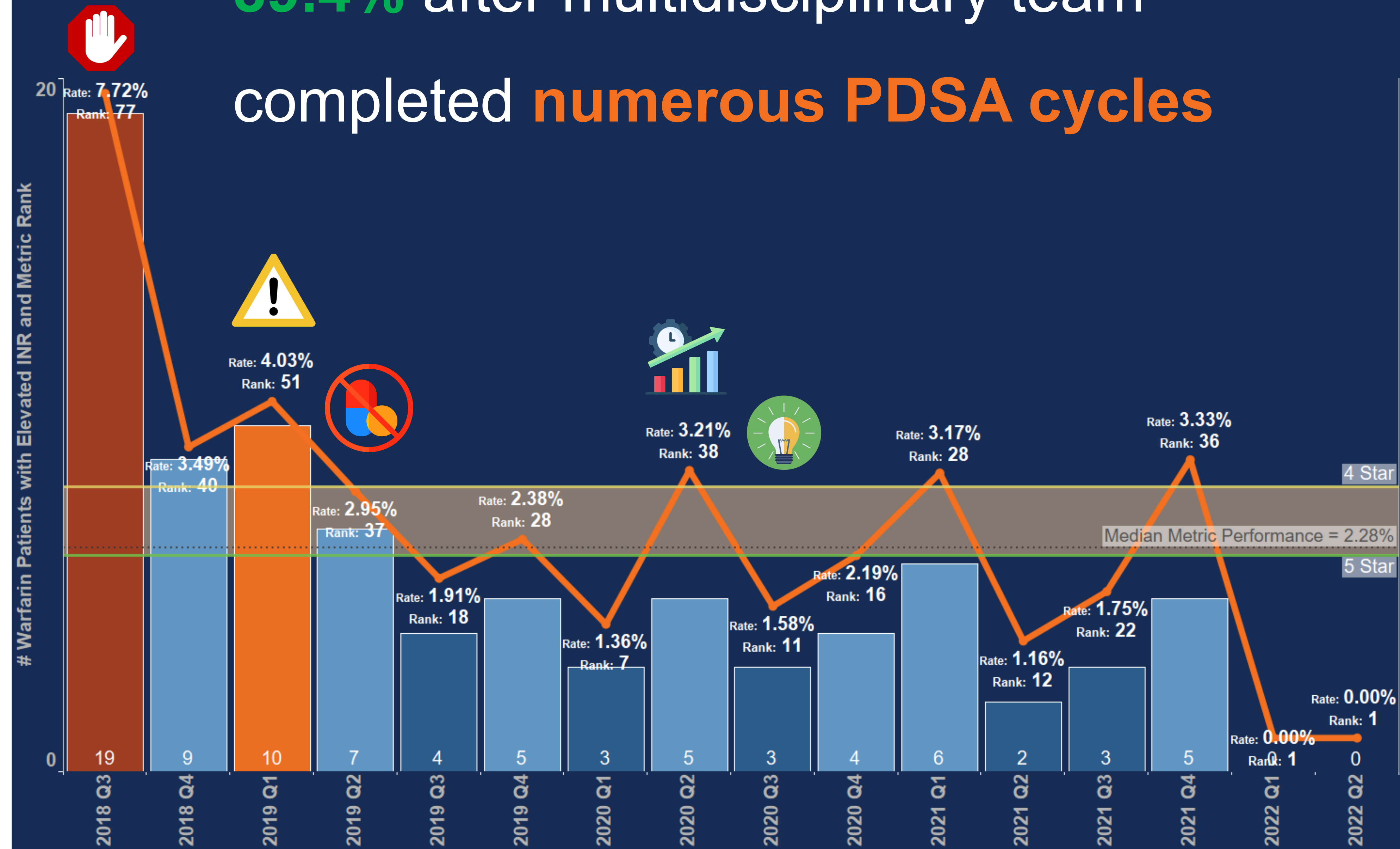
METHODS:

Retrospective Review 770 Patients



Stepwise implementation of clinical decision support strategies and standard operating procedures

Metric performance improved by 55.2% and ranking among peers by 89.4% after multidisciplinary team completed numerous PDSA cycles



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LEGEND:

- Hold warfarin if INR > 3.5
- Alert before administration if INR > 3.5
- Report of patients meeting or at risk of meeting metric
- EHR tool identifying patients with rapidly rising INR
- Add drug interaction alert
- Require daily INR monitoring
- Drug interactions added to standardized assessment note
- If INR ≥ 2.5 and increased by ≥ 0.6 in 24 hours, hold dose and decrease weekly dose by 50%
- Warfarin-INR metric primer
- Warfarin placeholder for EHR
- Peer review decision making

KEY TAKEAWAYS:

- Warfarin therapy protocols often differ from institution to institution, including a lack of guidance for acute INR elevations, despite well-established target ranges.
- A multidisciplinary team sequentially developed metric performance improvement tools and procedures over 24 months.
- Subsequent data suggest we have maintained our status as a top performer for this metric and speaks to the quality of the highly reliable strategies we implemented.

LEARNING OBJECTIVES:

- Explain team-based clinical decision support strategies to improve patient outcomes related to acute INR elevation management.
- Outline the stepwise implementation outcomes of clinical decision support and standard operating procedures by a multidisciplinary group using an INR-based metric.

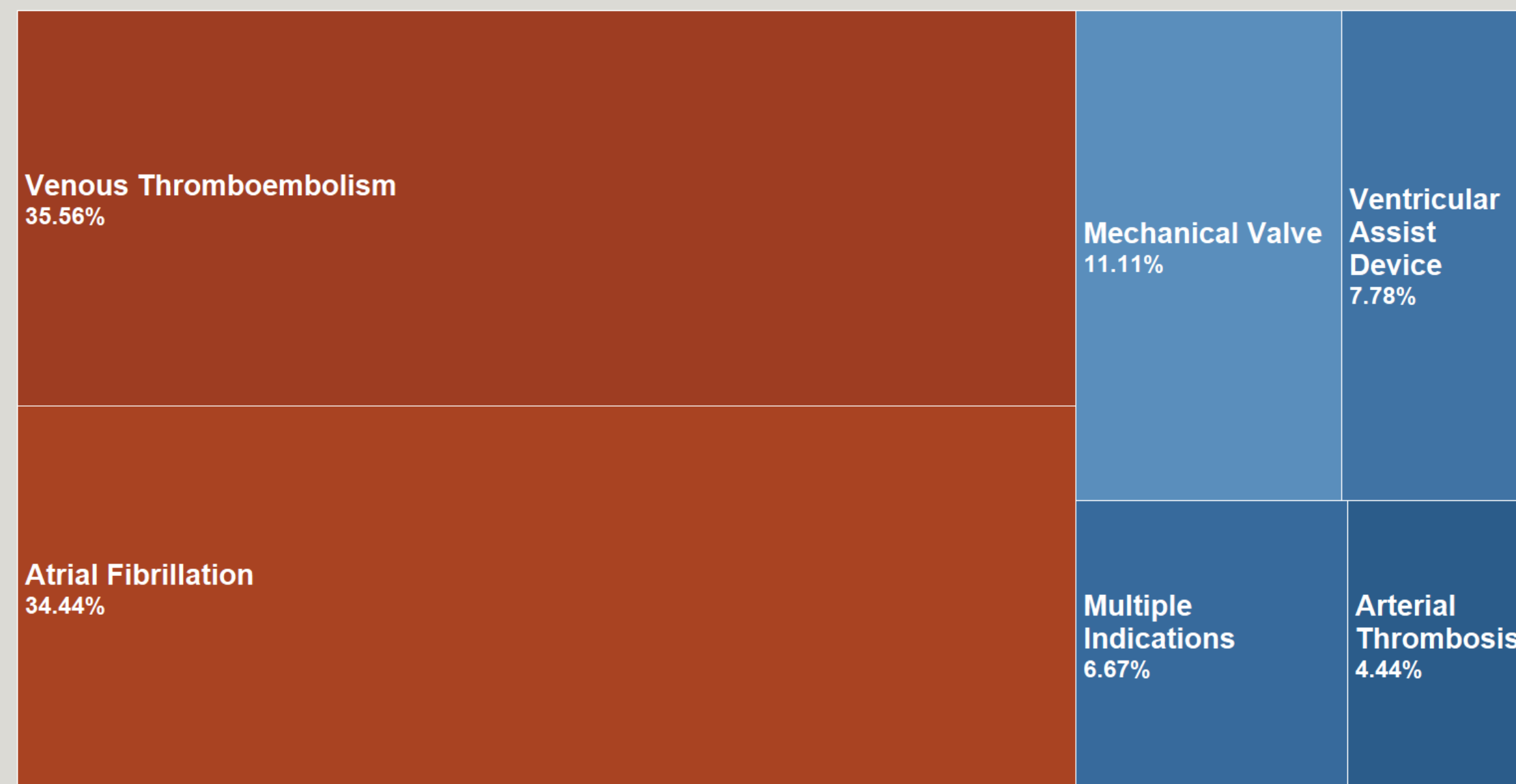
The authors of this poster have no relevant financial relationships to disclose.

STUDY POPULATION *n* = 770

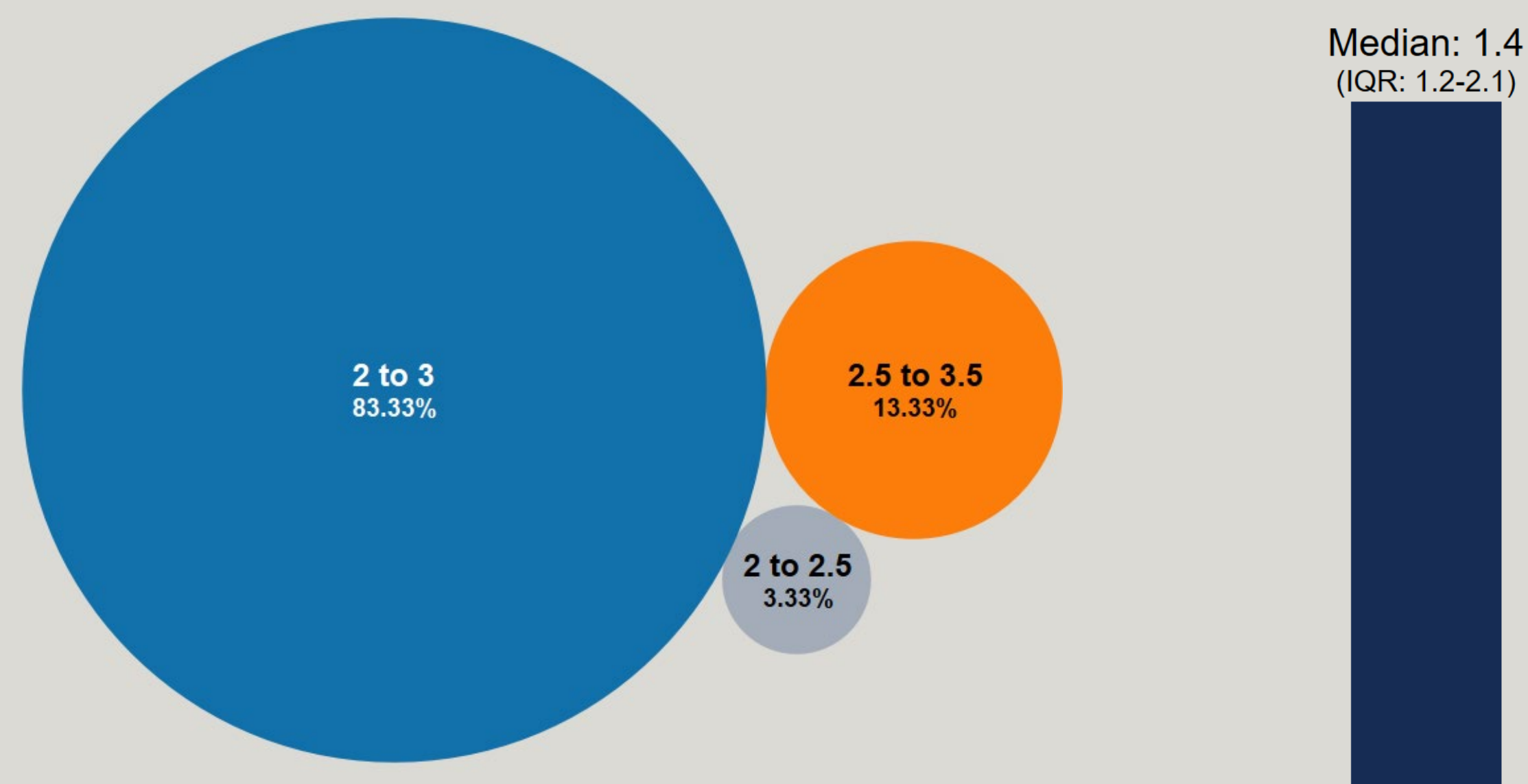
1 Continuation from Home versus Therapy Initiation



2 Warfarin Indication



3 INR Goal Baseline INR (Median and SD)

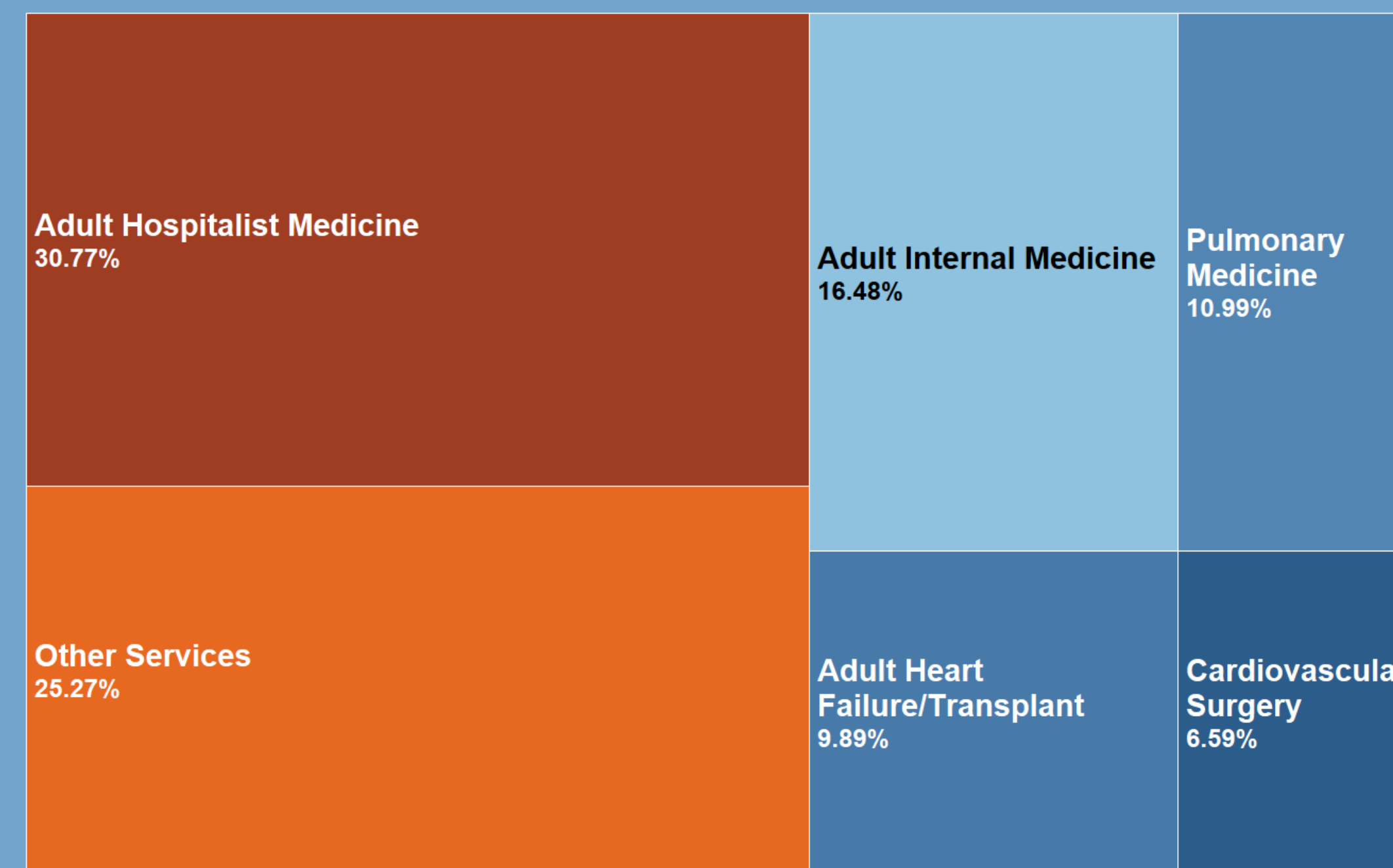


RESULTS

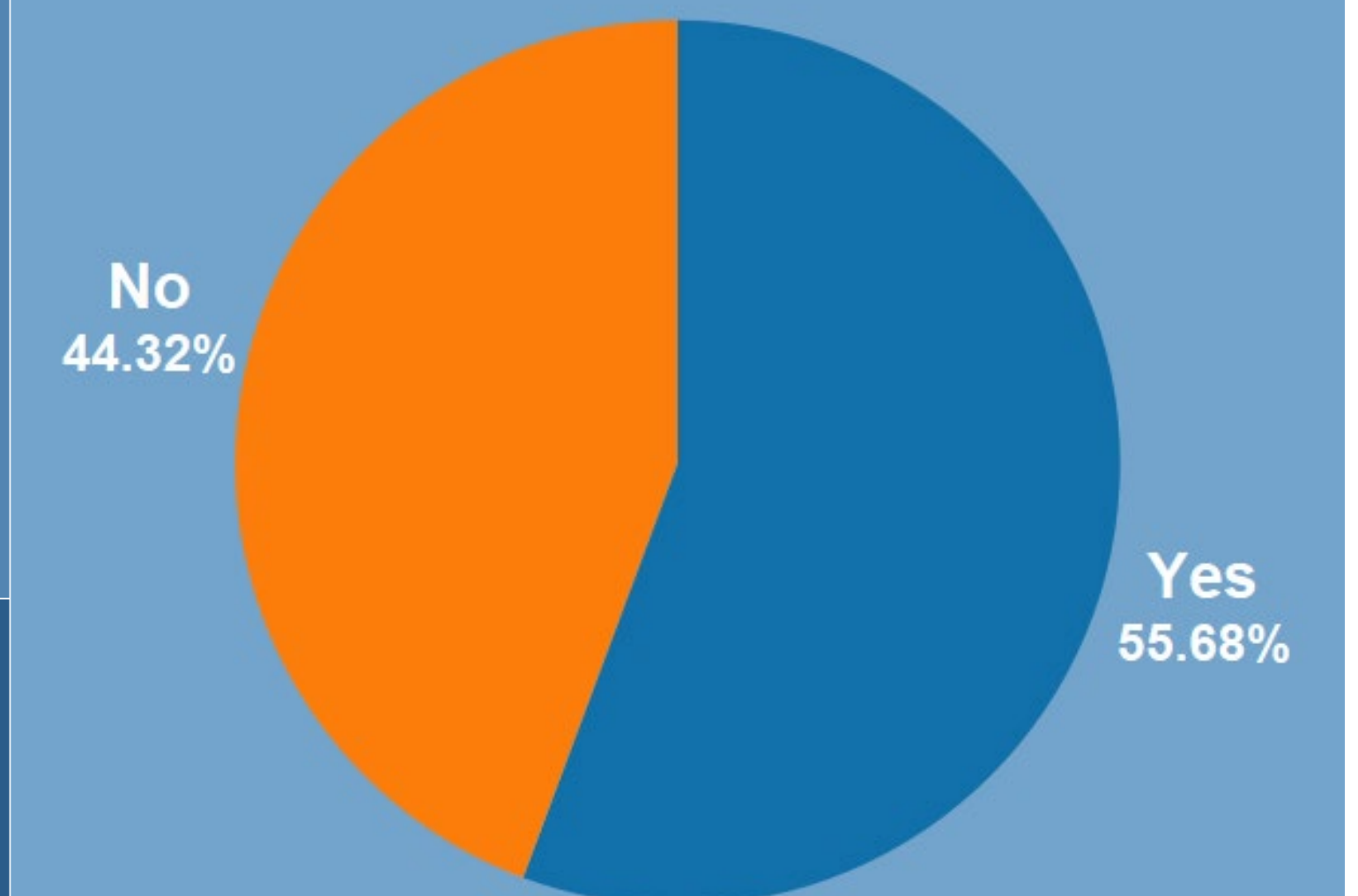
1 Supratherapeutic INR Event Preventable?



2 Primary Service



Concomitant Drug-Drug Interaction



3 Max INR



RESULTS OF SUB-GROUP ANALYSIS—

If INR ≥ 2.5 and increased by ≥ 0.6 in the past 24 hours, hold dose and decrease weekly dose by 50%



1 STUDY POPULATION: BASELINE INR (MEAN \pm SD)

Pre-Cohort	1.55 \pm 0.55	$p = 0.204$
Post-Cohort	1.57 \pm 0.57	

2 PRIMARY OUTCOME: PERCENT OF PATIENTS MEETING WARFARIN INR-BASED METRIC

Pre-Cohort	2%	$p = 0.36$
Post-Cohort	1%	

3 BALANCING MEASURE: PERCENT OF PATIENTS WITH A RESULTANT SUBTHERAPEUTIC INR

Pre-Cohort	23.8%	$p < 0.05$
Post-Cohort	43.7%	

4 BALANCING MEASURE: AVERAGE DURATION OF SUBTHERAPEUTIC INR (DAYS)

Pre-Cohort	3.69	$p = 0.38$
Post-Cohort	4.11	

5 BALANCING MEASURE: MEDIAN HOSPITAL LENGTH OF STAY (DAYS)

Pre-Cohort	12.1	$p = 0.24$
Post-Cohort	13.3	

KEY TAKEAWAYS

- ▶ The updates to our warfarin guidelines resulted in a decrease in the proportion of patients who met INR-Based metric, which was likely driven by interventions focused on an acute INR elevation.
- ▶ Further study is necessary to elucidate the true impact of these interventions on thromboembolic and bleeding complications before and after the guideline update.
- ▶ For the first time, the relationship between an acute INR elevation and resultant supratherapeutic result was evaluated in this extensive retrospective review and showed promising outcomes.