

Healthcare Resource Utilization and Costs of POAF Patients After Cardiac Surgery: A Systematic Literature Review

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OBJECTIVE

To characterize healthcare resource utilization and costs for patients with POAF following cardiac surgery and 30 days post-discharge

CONCLUSIONS

Patients with POAF experience greater lengths of stay (1-4 days), readmission rates (2%), and higher total hospitalization costs (\$2,231-\$20,331).

POAF patients in the US typically experience longer lengths of stay and greater cost burden compared to Ex-US patients.

This review highlights the critical need for an effective prevention strategy for POAF.

INTRODUCTION

Background

- Post-operative atrial fibrillation (POAF) is one of the most common complications following open-chest cardiac surgery, occurring in ~35% of cases¹
- POAF is associated with a longer hospital length of stay, as well as increased risk of stroke, acute kidney injury, and rehospitalization^{1,2}
- Based on 2014 AATS guidelines, β-blockers are first-line therapy for POAF prevention³
 - Second-line therapy includes amiodarone for prevention and treatment of intermediate to high-risk POAF patients³
- Currently, there is no drug with an FDA approved indication to prevent POAF

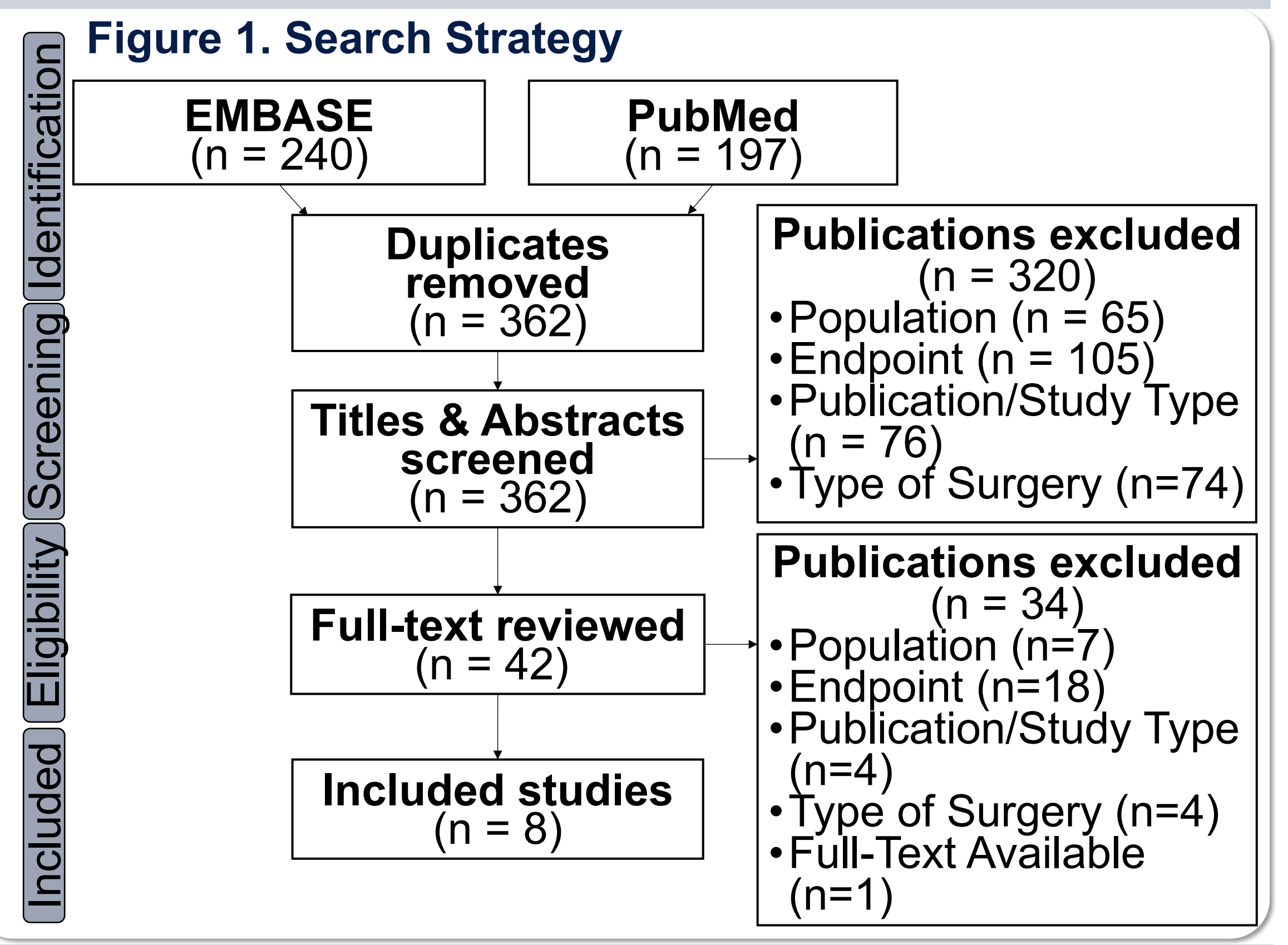
METHODS

Information Sources

- PubMed and EMBASE were searched for studies from 2011 to 2021; the search was limited to full-text publications, human subjects, and English language only

Eligibility Criteria

- Population of interest were adults who were 18 years or older who develop POAF after CABG and/or valvular surgery
- Outcomes included length of stay, hospital readmission rates, and costs



RESULTS

Study Characteristics

- A total of 8 studies spanned six countries, with sample sizes ranging from 44 - 49,264

Patient Characteristics

- Mean age of patients across these studies ranged widely from 55-71 years old
- 8 studies included patients undergoing CABG; 5 studies excluded patients with prior AF

Length of Stay

- POAF patients were associated with a greater total hospital, postoperative, and ICU LOS
 - 4/8 studies showed a significant increase (↑1-4 days) in total hospital LOS
- POAF patients in ex-US countries have a longer LOS compared to US POAF patients

Total Index Hospitalization Costs

- POAF patients were associated with greater total index hospitalization costs
 - 4/8 studies reported a significant increase ranging from \$2,753-\$20,331 in cost
- There is a greater hospital cost burden in the US for POAF vs. Ex-US countries

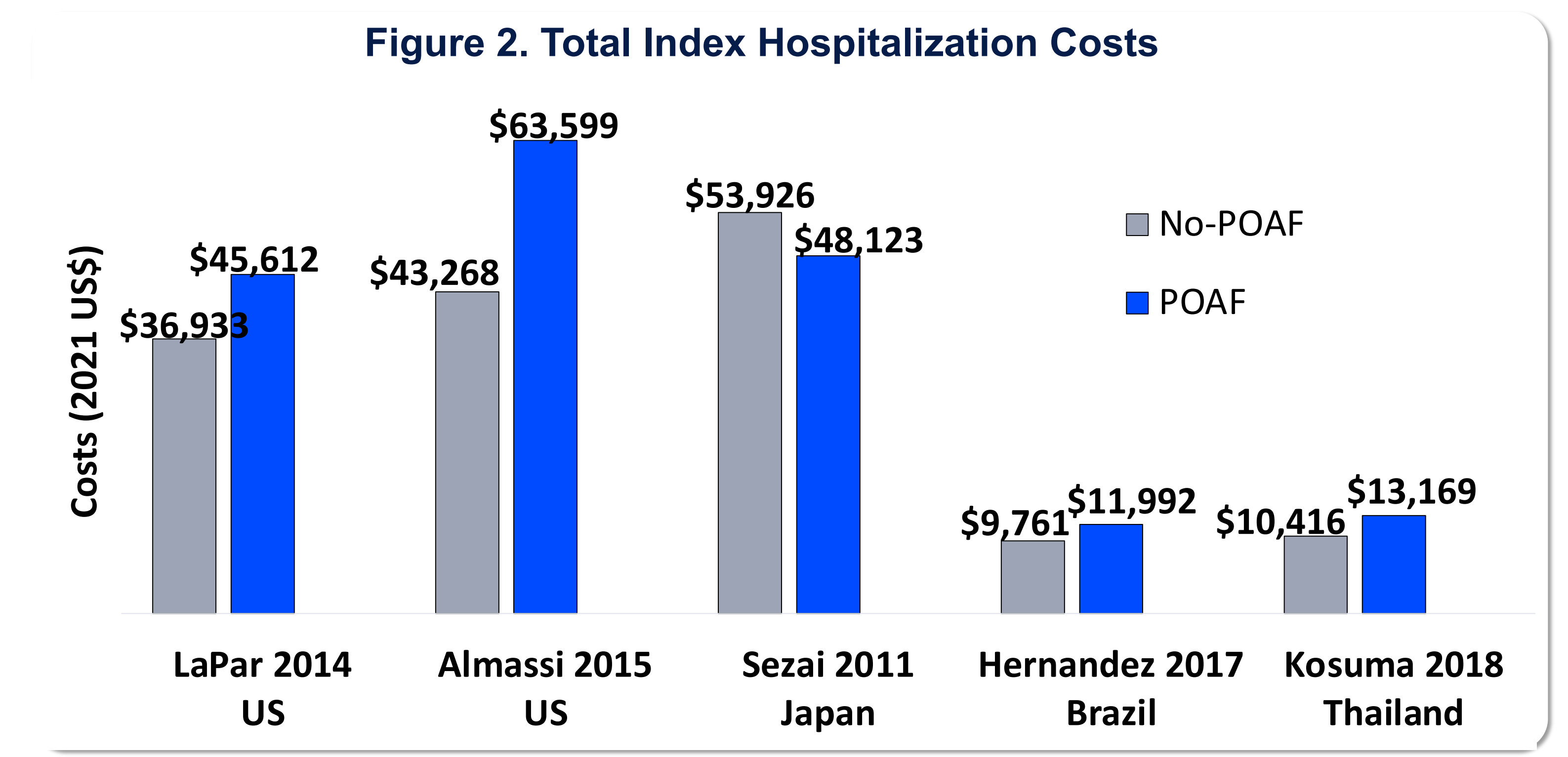
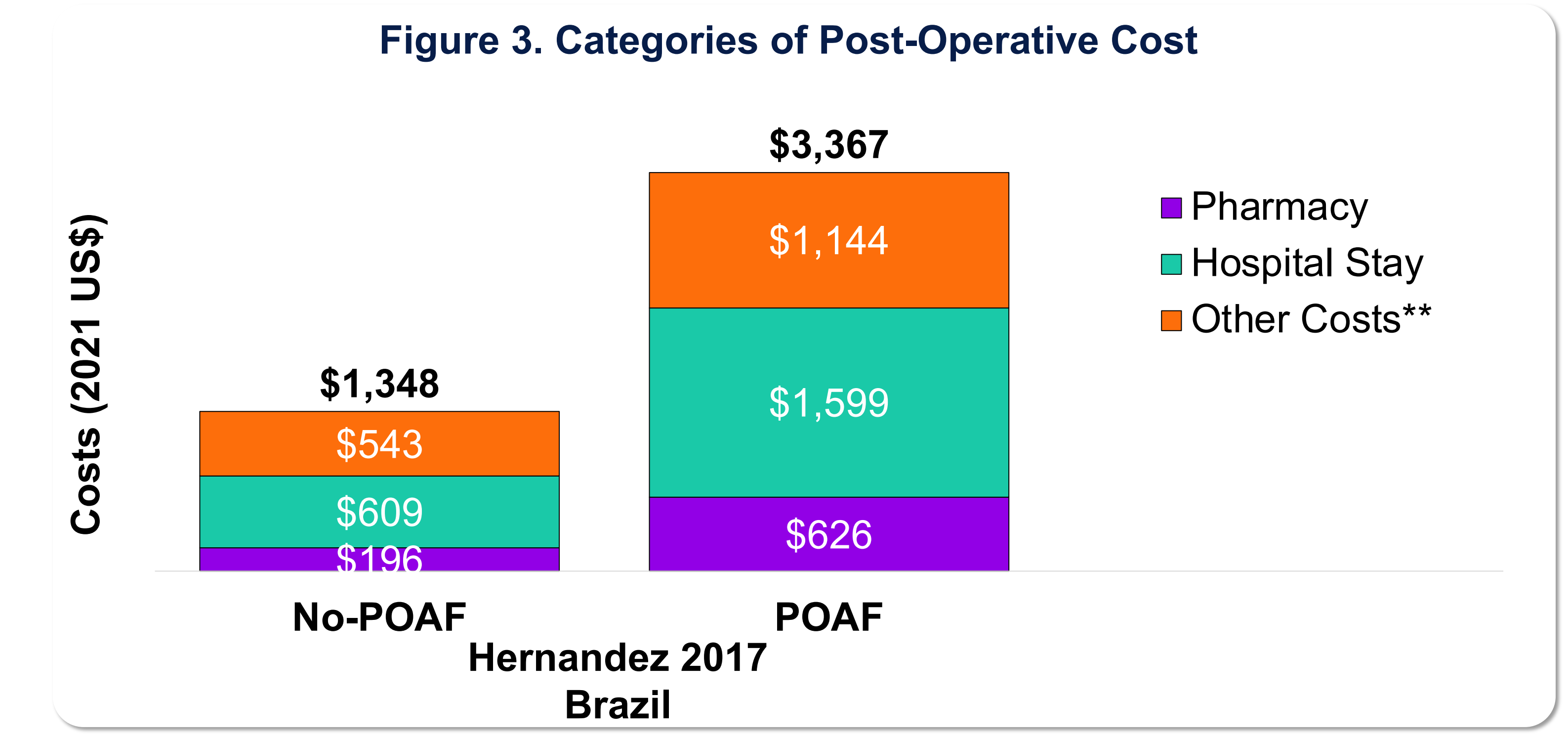


Table 1. Length of Stay

HRU	Country	Author Year	N Total	No-POAF	POAF	Δ POAF vs No-POAF	
						Δ Abs	Δ Rel
Total Hospital LOS	US	Coletta 2019 ^a	111	7 days	8 days	↑1 day	↑1.1x
		Coletta 2019 ^b	47	6 days	6 days	↑0	1x
	Japan	Sezai 2011	140	12 days	14.6 days	↑2.6 days*	↑1.2x
	Iran	Vahdati 2012	76	7.4 days	8.1 days	↑0.7 day	↑1.1x
	Malaysia	Farouk Musa 2015	637	7.2 days	9 days	↑1.8 days*	↑1.3x
Post-Operative LOS	US	LaPar 2014	49,264	5 days	7 days	↑2 days*	↑1.4x
		Almassi 2015	2,203	NR	NR	↑3.9 days	N/A
	Brazil	Hernandez 2017	44	5 days	9 days	↑4 days*	↑1.8x

Post-Operative Costs

- In every category of cost, POAF patients were associated with higher cost
- Post-operative costs account for most of the differences in total hospital cost between both groups



Readmission Rates

- The absolute difference in hospital readmission rates ranged widely from 1.8%-10%
 - One study found a significant 2% increase in readmission rates for POAF patients

Table 2. Hospital Readmission Rates

HRU	Country	Author Year	N Total	No-POAF	POAF	Δ POAF vs No-POAF	
						Δ Abs	Δ Rel
Hospital Readmission Rates	US	LaPar 2014	49,264	7.5%	9.4%	↑1.9%*	↑1.3x
		Coletta 2019 ^a	111	11%	21%	↑10%	1.9x
		Coletta 2019 ^b	47	15%	13%	↓2%	↓0.9x
	Malaysia	Farouk Musa 2015	637	2.9%	1.1%	↓1.8%	↓0.4x

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Note. All costs listed were unadjusted for confounders and were statistically significant. Absolute and relative differences were calculated by the investigator. All costs were adjusted to 2021 USD. ^a Pre-implementation data; ^b Implementation data; *Statistically significant; **Other costs may include supplies & devices, laboratory procedures, diagnostic imaging, physical therapy & rehabilitation and other unreported costs. Abbreviations: POAF, Post-Operative Atrial Fibrillation; AATS, American Association for Thoracic Surgery; ICU, Intensive Care Unit; LOS, Length of Stay; HRU, Healthcare Resource Utilization; Abs, Absolute; Rel, Relative; Hrs, Hours; NR, Not Referenced; CABG, Coronary Artery Bypass Graft; AF, Atrial Fibrillation;