



# Impact of Post-operative Atrial Fibrillation on Length of Hospital Stay and Cost

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## Research Question

In post-operative CABG patients, is length of hospital stay affected by POAF?

## Background Information

Post-operative Atrial Fibrillation (POAF) is a common arrhythmia that can complicate Coronary Artery Bypass Graft (CABG) surgery. POAF is associated with increased length of ICU and hospital stays and subsequent healthcare costs and mortality. POAF is associated with a significant incidence of complications, such as cardiovascular events, renal failure, infection, and cerebral infarction. The incidence of POAF has been on the rise for the past twenty years due to the increase in age of patients undergoing cardiac surgery.

## Methods

In this retrospective observational case-control study, Baylor University research undergraduate interns collected data from patients who underwent CABG Surgery from January 2013-December 2014. Out of 289 patients, 71 patients were found to have POAF and 218 did not develop POAF.

## Objectives

**Primary:** Determine if post-operative atrial fibrillation lengthens hospital stay in patients after CABG surgery and its financial impact on Providence Health Center

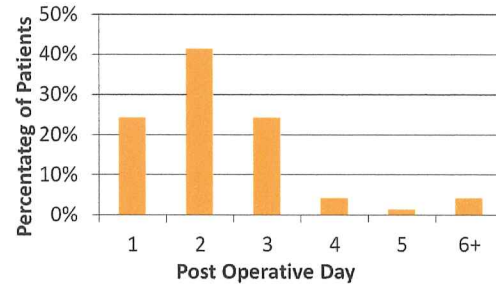
**Secondary:** Determine differences between CABG patients who developed POAF and those that did not

## Inclusion/ Exclusion Criteria

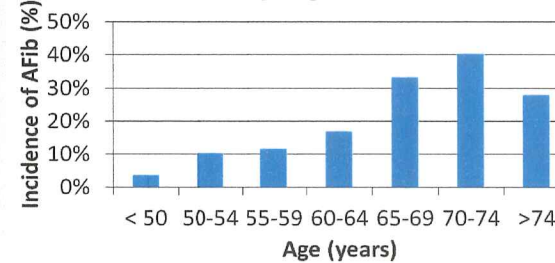
**Inclusion:** Patient is at least 18 years of age, underwent CABG, and does not have history of AFib

**Exclusion:** Patient is less than 18 years of age, did not undergo CABG, or has history of AFib

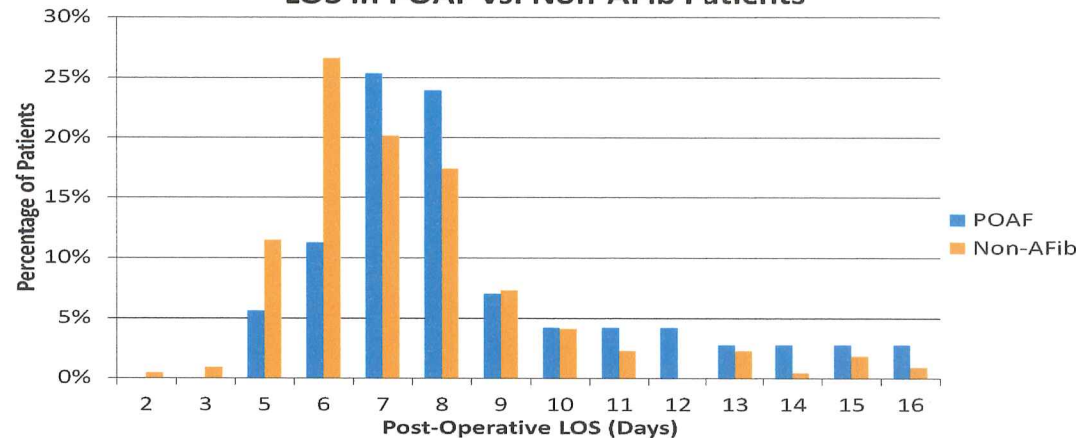
## Onset of AFib after CABG



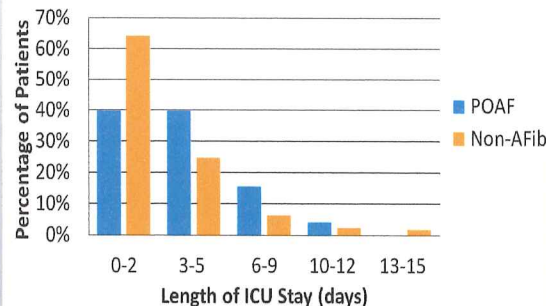
## Incidence of AFib after CABG by Age



## LOS in POAF vs. Non-AFib Patients



## Length of ICU Stay in POAF vs. Non-AFib Patients



## Comparison of Average Hospital Costs for POAF and Non-AFib Patients

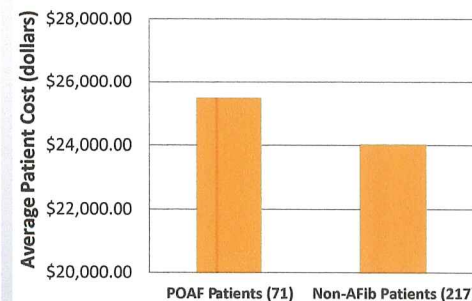


Table 1. Comparison of Variables between POAF and Non-Afib Patients

Preoperative Data	POAF (N=71)	Non-Afib (N=218)	P-value
Age (Years)	69 ± 8	64 ± 11	<.001*
Gender-Male (%)	86% (n=61)	73% (n=159)	.03*
BMI (kg/m <sup>2</sup> )	28.80	29.65	.27
Ejection Fraction (%)	54	53	.91
Comorbidity Percentage (n)			
Smoking			
Smoker	59% (41)	54% (116)	.49
Non-Smoker	41% (29)	46% (100)	
Hypertension	86% (61)	82% (179)	.46
CHF	15% (11)	19% (41)	.53
Chronic Lung disease	24% (17)	18% (40)	.30
Chronic Renal disease	15% (11)	18% (40)	.58
Diabetes	32% (24)	50% (108)	.02*
Readmission Percentage (n)			
30 Day	7% (5)	10% (22)	.44
90 Day	4% (3)	12% (27)	.05
Length of Stay in Days (n)			
Length of Hospital Stay	8.87 ± 4 (71)	8.00 ± 4 (218)	0.10
Length of ICU Stay	4.00 ± 2 (70)	3.00 ± 3 (213)	<.01*

\* denoted p value less than pre-established Type I error rate of 5%

## Conclusions

The overall incidence of post-operative atrial fibrillation was 25%. POAF occurred within 6 days after CABG surgery with a peak incidence on post-operative day 2. Advanced age was a significant predictor for the development of POAF (p<.001). 20% percent of patients with POAF stayed in ICU more than 5 days after surgery, compared to only 11% percent of Non-AFib patients. 83% percent of patients with POAF had a length of stay equal to or greater than 7 days, compared to only 61% percent of Non-AFib patients. Development of POAF is associated with longer ICU stay according to this study (p<0.01, d=0.39) and increased the cost of hospitalization by 6.1%.

## Citations

Echahidi, Najmeddine et al. "Mechanisms, Prevention, and Treatment of Atrial Fibrillation After Cardiac Surgery." Journal of the American College of Cardiology. 2012.  
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Phillip, Femi et al. "Transient Post-Operative Atrial Fibrillation Predicts Short and Long Term Adverse Events Following CABG." Cardiovascular Diagnosis and Therapy. 2014.

## Acknowledgements

We would like to thank:  
• Katherine Maler RN, Lori Beers, and Dennis Tucker of Providence Health Center  
• Dr. Richard Sanker for oversight of the Providence Research Associates Program.