Impact of a Standardized Postoperative Atrial Fibrillation Protocol on Clinical and Financial Outcomes in Isolated Coronary Artery Bypass Graft Surgery

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Background

- Postoperative atrial fibrillation (POAF) is a common complication following isolated coronary artery bypass graft (CABG) surgery, contributing to increased hospital length of stay (LOS) and rising healthcare costs.
- Studies evaluating prophylactic treatment with amiodarone and adjunctive pharmacologic therapies have shown its effectiveness in reducing the incidence of postoperative AF, highlighting its potential role in improving outcomes, decreasing LOS, and reduction in healthcare expenditures

Local Problem

- Approximately 30% of patients undergoing isolated coronary artery bypass grafting (CABG) develop new-onset postoperative atrial fibrillation (POAF).
- The current intensive care unit (ICU) length of stay for patients undergoing isolated coronary artery bypass grafting (CABG) is 6.6 days, with an overall hospital length of stay of 11 days

Project Goal

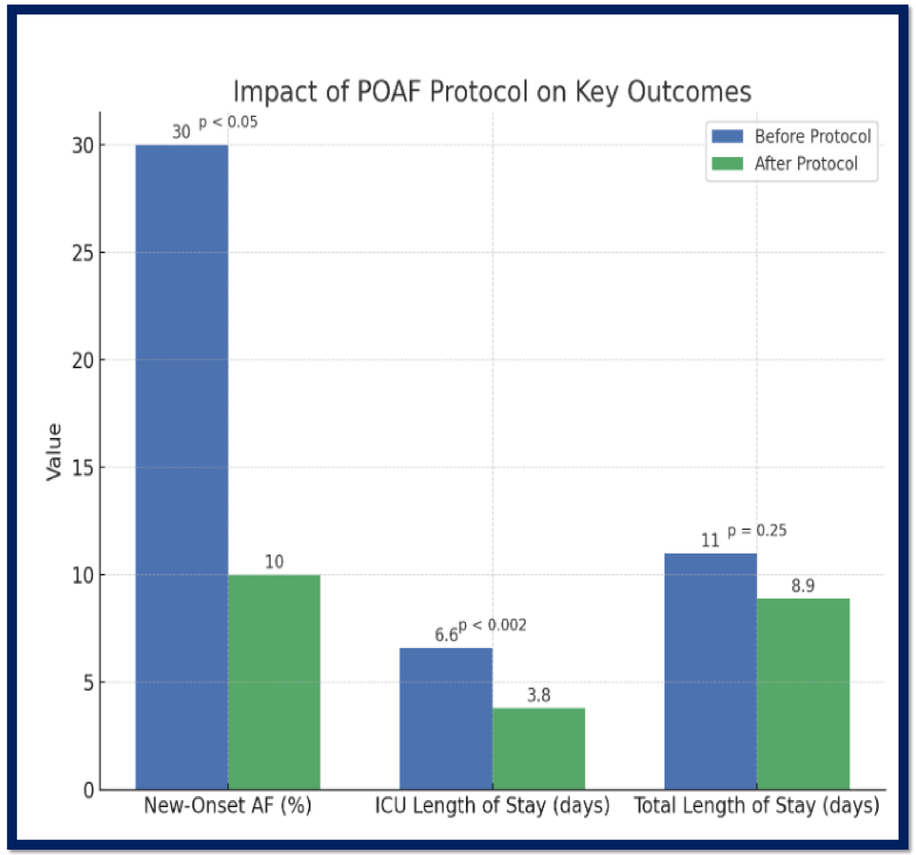
- Implementing a standardized advanced practice provider led Postoperative Atrial Fibrillation (POAF) Protocol aims to optimize patient outcomes, minimize complications, and reduce associated healthcare expenditures.

Methods

- Inclusion criteria: All adult isolated CABG patients
- Exclusion criteria: patients with AICD/PPM, previous history of atrial fibrillation, and salvage CABG
- A retrospective analysis was conducted comparing outcomes between patients undergoing isolated CABG surgery before and after implementation of a standardized POAF protocol.

Implementation Plan

- Following a comprehensive literature review and stakeholder engagement, a standardized POAF protocol was developed and implemented within the electronic health record (EHR) system
- Education sessions were developed to train provider and nursing teams on the order sets and protocol
- The POAF protocol included pre-, intra-, and postoperative administration of amiodarone with defined bolus dosing parameters, early initiation of beta-blockers, adjunctive use of colchicine and magnesium, and strict adherence to potassium and magnesium targets



Results

- Statistically significant reduction in new-onset atrial fibrillation from 30% to 10% ($p<0.05$)
- Clinically significant reduction in readmission rates from 10% to 2%.
- ICU LOS decreased from 6.6 to 3.8 days ($p<0.002$) with associated cost savings of $8,400 per patient
- Overall LOS was reduced from 11 days to 8.9 days ($p=0.25$), with associated savings of $1,575 per patient
- Financial analysis demonstrated cost savings of $750 per patient day for step-down/telemetry care and $3,000 per ICU patient day.

Operational Definitions

- CABG - a patient who has undergone a coronary artery reperfusion surgery
- LOS – the number of days an inpatient remains hospitalized

Measures

- Baseline rate of new onset POAF in isolated CABG patients from October 2024
- LOS for isolated CABG patients who developed new onset POAF
- Cost per ICU and telemetry care per day

Conclusion

- A standardized POAF protocol significantly reduces the incidence of new-onset atrial fibrillation, ICU LOS, and healthcare costs.
- While the reduction in overall LOS and readmission rates was not statistically significant, the financial implications highlight the potential value of protocolized care in improving outcomes and reducing expenditures in patients undergoing isolated CABG surgery.

References