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Ongoing evaluation of the impact of a post-operative atrial fibrillation prevention protocol for patients undergoing cardiothoracic surgery

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BACKGROUND

- Atrial Fibrillation is a common post-operative complication that may occur in up to 40% of patients following cardiothoracic surgery (CTS)
- Caused by pre-existing degenerative changes to myocardium and perioperative conditions that alter electrophysiological parameters
- Per P&T approved protocol, all patients undergoing CTS will be initiated prophylactic medications post-operatively unless contraindicated. After extubation, patients will be switched to oral equivalents
  - **Amiodarone** 150 mg IV bolus followed by amiodarone infusion 1 mg/minute x6 hours then decrease rate to 0.5 mg/min x 18 hours
  - **Metoprolol** 5 mg IV every 6 hours, Hold for SBP < 100 or HR < 60 or if currently paced via epicardial wires
  - **Ketorolac** 30 mg IV every 6 hours x 48 hours while intubated reduce dose to 15 mg IV every 6 hours for CrCl 25-50 mL/min. Do not give ketorolac if patient is actively bleeding or CrCl < 25 mL/min
- In April 2018, an interim analysis was done on 50 patients pre protocol implementation, and 100 patients post protocol implementation
  - This interim analysis helped guide nurses by helping to establish current hold parameters for protocol medications

OBJECTIVES

- Compare the incidence of POAF CTS patients prior to and after implementation of a protocol that standardizes the prophylactic management of Post-Operative Atrial Fibrillation (POAF) in all post-operative patients

METHODS

- **Study Design:** Single center, IRB exempt, retrospective chart review pre and post protocol implementation
- **Data Collection Period:**
  - Pre Implementation: June 1st, 2017 to August 31st, 2017
  - Interim Evaluation: October 1st, 2017 to February 29th, 2018
  - Ad Hoc: March 1st, 2018 to October 21st 2018
- **Inclusion criteria**
  - Age ≥ 18 years
  - Received Coronary Artery Bypass Graft and/or valvular surgery during pre and post protocol implementation periods listed above
- **Exclusion criteria**
  - Active atrial fibrillation/flutter or either arrhythmia at time of surgery
- **Primary Endpoint**
  - Incidence of POAF in CTS, patients prior to and after protocol implementation
- **Secondary Endpoint**
  - Intensive Care Unit (ICU) and hospital Length of Stay (LOS)
  - Safety of protocol medications
  - P&T approved protocol compliance

LIMITATIONS

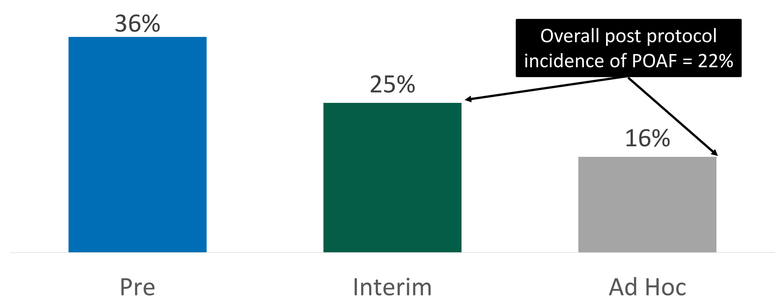
- Small sample size
- Two different investigators at different stages of the data collection

OUTCOMES

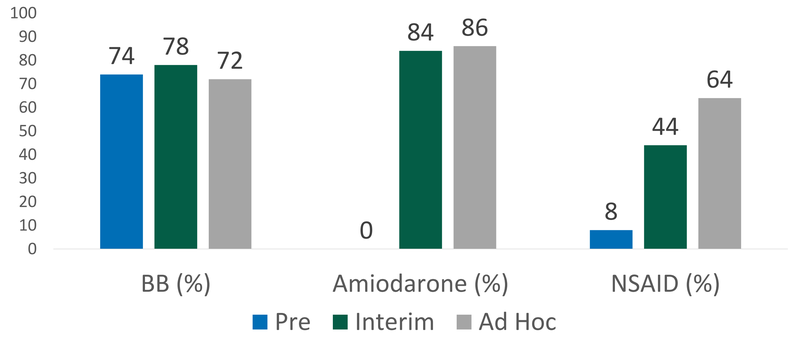
Baseline Characteristics

	Pre (n=50)	Interim (n=100)	Ad Hoc (n=50)
Age (years)	63	63	64
Gender - male, n (%)	35 (70)	70 (70)	32 (64)
CABG	32 (64)	60 (60)	36 (72)
x1	3 (6)	11 (11)	6 (12)
x2	13 (26)	21 (21)	21 (44)
x3	15 (30)	21 (21)	13 (26)
x4	1 (2)	7 (7)	1 (2)
Valvular	12 (24)	30 (30)	9 (18)
Aortic	6 (12)	21 (21)	5 (10)
Mitral	6 (12)	10 (10)	4 (8)
Combined	6 (12)	10 (10)	5 (10)
Emergent	24 (48)	49 (49)	29 (58)

Percent of Patients with Post Op Atrial Fibrillation



Utilization of Prophylactic Agents



Length of Stay

	Pre	Interim	Ad Hoc
ICU LOS (days)	3	3.3	3.3
Hospital LOS (days)	8	8.9	8.8

OUTCOMES

Risk Factor Comparison (n=150)

	No POAF (n=117)	POAF (n=33)
History of atrial fibrillation, n (%)	9 (8)	15 (45)
Mitral valvular disease, n (%)	9 (8)	6 (18)
Time on cardiopulmonary bypass (min)	98	139
Hypotension requiring vasopressors, n (%)	51 (44)	21 (64)

Protocol Compliance (n=150)

	No POAF (n=117)	POAF (n=33)
Number of agents received		
All three agents received, n (%)	52 (44)	8 (24)
Two agents received, n (%)	44 (38)	9 (27)
One agent received, n (%)	19 (16)	12 (36)
No agent received, n (%)	2 (2)	4 (12)

Safety Evaluation (n=150)

	Metoprolol	Amiodarone	NSAID
Received Therapy	114	127	76
ADR Requiring Dose Reduction or Discontinuation	18	31	12

CONCLUSIONS

- Incidence of POAF following CTS has reduced from 36% pre protocol to 22% post protocol with a relative risk reduction of 39%
- Prescribing of amiodarone and NSAIDs through this protocol has continued to improve post protocol implementation
- The number of protocol medications received is indirectly proportional to incidence of POAF development
- History of Atrial Fibrillation poses a major risk for POAF development after CTS

DISCLOSURES

- The study contributors have nothing to disclose regarding any financial or nonfinancial relationships with the products described, reviewed, or evaluated in this presentation.

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