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### IV Amiodarone vs IV Sotalol for the use in postoperative junctional ectopic tachycardia (JET): A randomized study

Tanner Isaacson

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## Research Abstract Title

**Submitting/Presenting Author (must be a trainee):** Tanner Isaacson, MD  
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**Resident/Psychology Intern ( $\leq$  1 month of dedicated research time)**  
 **Resident/Ph.D/post graduate ( $>$  1 month of dedicated research time)**  
 **Fellow**

**Primary Mentor (one name only):** Lindsey Malloy-Walton, DO  
**Other authors/contributors involved in project:** Beth Runkel, MD

**IRB Number:** STUDY00000846

**Describe role of Submitting/Presenting Trainee in this project (limit 150 words):**

Completed appropriate research training to be credentialed as a co-investigator  
Involved in creation and submission of IRB protocol created  
Submitted to MARS Ops  
Created patient consent  
Multiple meetings along the way with HC research team, HC faculty, pharmacy, IRB board, PICU, PAT nursing  
Received IRB approved  
Obtained consent for multiple patients  
Drafted abstract  
Created Redcap database

### **Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words**

IV Amiodarone vs IV Sotalol for the use in postoperative junctional ectopic tachycardia (JET): A randomized study

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#### **Background:**

Junctional ectopic tachycardia (JET) is one of the most common post-operative arrhythmias encountered in infants and children, potentially resulting in hemodynamic instability up to and including cardiac arrest. Amiodarone has become the pharmacologic treatment of choice for JET at our institution and, while effective, has been associated with dose-related adverse effects including hypotension, bradycardia, atrioventricular block, and cardiovascular

collapse. Sotalol, which has recently been approved for use intravenously in the United States, has class III antiarrhythmic properties with some mild  $\beta$ -adrenergic blocking effects similar to amiodarone, with recent data showing a lower rate of cardiovascular collapse and related adverse events in patients with congenital heart disease. It is unclear at this time whether IV sotalol is as safe and effective as amiodarone for use in the treatment of JET.

### **Objectives/Goal:**

The purpose of this study is to evaluate the safety and efficacy of IV Sotalol in comparison to IV Amiodarone in postoperative patients with confirmed JET.

**Methods/Design:** Patients scheduled for atrioventricular canal repair, ventricular septal defect repair, or tetralogy of Fallot repair, or neonates undergoing any open heart procedure were pre-operatively consented. Post-operatively, patients with confirmed JET were randomized to IV Amiodarone or IV Sotalol. Patients were monitored for events of bradycardia, sinus arrest, severe hypotension, torsade des pointes, polymorphic ventricular tachycardia, QTc prolongation, the need for inotropic support or escalation of support during treatment, and death. Efficacy was determined by successful termination of the rhythm, adequate rate control, effective use of AAI/DDD pacing, time to rate control/termination, and recurrence of JET.

**Results:** Since September 2019, 27 patients evaluated preoperatively qualified for the study, of which 19 consented to participate. The incidence of JET is quite low at our institution, and there have been only two patients who have experienced postoperative JET since starting this study, one of whom had declined consent. The remaining patient, a two week old male neonate undergoing repair of obstructed total anomalous pulmonary veins, enrolled in the trial and received two doses of IV Sotalol 24 hours apart for treatment of JET at rates of 180-190 bpm. Rate control was able to be achieved. Mild hypotension was treated with IV fluids and increasing the patient's epinephrine infusion. Unfortunately, by post-operative day three, the patient developed ectopic atrial tachycardia as well and was loaded with amiodarone. Despite achieving hemodynamic stability with amiodarone, the patient developed extensive occlusive venous thromboses unresponsive to anticoagulation and intervention. This ultimately resulting chylothorax and demise of the patient approximately one week after surgical intervention. His death does not appear to be related to IV sotalol administration.

**Conclusions:** We hypothesize that IV Sotalol will be as safe and effective as IV amiodarone in achieving rate and/or rhythm control in patients with postoperative JET in our patient population, although we have data from only one patient thus far. We have a very low incidence of postoperative JET at our institution but hope to collect more data from approximately 20 patients over the next 12 month time period.

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