Progress Report - Week 3

Title: Stabilizer Device for Intra-Cardiac Echocardiography (ICE) to

Assist Structural Heart Interventional Procedures

Client: Dr. Amish Raval

Advisor: Dr. Darilis Suarez-Gonzalez

Team: Sara Morehouse (Leader)

Max Aziz (Communicator) Noah Hamrin (BWIG & BPAG)

Kaden Kafar (BSAC)

Date: September 26, 2024

Problem Statement:

Intracardiac echocardiography (ICE) is a technique commonly used during catheter-based interventional procedures to treat congenital heart disease, valvular heart disease and myocardial disease. Typically, the ICE catheter is advanced into the right atrial from a femoral vein, where it is positioned for imaging purposes. A separate catheter to perform the interventional procedure such as a transseptal needle or Watchman left atrial appendage occluder delivery system is then introduced. Many times, the ICE catheter drifts out of place, the imaging perspective is lost and the ICE catheter needs to be readjusted. Therefore, there exists a need for a simple re-sterilizable device to stabilize a variety of commercially available ICE catheters during interventional procedures. The device must prevent movement of the ICE catheter so that it does not migrate out of place when in use.

Brief Status Update:

This week, the team worked on brainstorming design ideas and design criteria. We then came up with 3 design concepts that we evaluated with a design matrix. Looking ahead, we will solidify these design ideas and create a preliminary presentation of our work thus far. This will be presented on Friday, October 4.

Difficulties / Advice Requests:

N/A at this time.

Current Design:

N/A at this time.

Materials and Expenses:

Item	Description	Manufac- turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
-									\$0.00	
-									\$0.00	
-									\$0.00	
-									\$0.00	
-								TOTAL:	\$0.00	

Major team goals for the next week:

- Complete and present Preliminary Design Presentation
- Continue development of the final design and capture our work in the Preliminary Design Report.

Next week's individual goals:

- Sara:
 - Complete portion of the Design Presentation
 - Work on further development of designs
- Max:
 - o Work on Preliminary Presentation
 - o Update design ideas and continue researching about ethylene oxide sterilization
- Noah:
 - o Refine design ideas
 - Work on preliminary presentation
- Kaden:
 - Work on preliminary design presentation
 - Research ethylene oxide and other common sterilization types for hospitals

Timeline:

Task	September			October				November					December
Tuon	13	20	27	4	11	18	25	1	8	15	22	29	6
Project R&D													
Background research	Х	Х	Х										
Design development			Х										
Prototyping													
Testings													
Deliverables													

Progress Reports	Х	Х	Х					
PDS		Х						
Design Matrix			Χ					
Prelim presentation								
Final Poster								
Meetings								
Client	Х							
Advisor	Х		Х					
Website								
Update	Х	Х	Х					

Previous week's goals and accomplishments:

- Goal: Brainstorm design ideas
 - This was accomplished as the team was able to conceptualize three main ideas.
- Goal: Complete initial design modeling
 - The team was able to draft initial design sketches of each idea, and will work on modeling the designs in SolidWorks in the coming weeks.
- Goal: Compile designs into a design matrix and evaluate each design based on criteria
 - The designs are compiled into the matrix and evaluated. See attached Design Matrix for full details.

Activities:

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sara	9/23/24 & 9/24/25	Brainstormed design ideas and worked on the design matrix.	2	2	7
Max	9/23/24 & 9/25/24	Met with team, drew design ideas, and helped with design matrix	2	2	7
Noah	9/23/24 & 9/25/24	Came up with several design ideas and worked on the design matrix	2	2	7
Kaden	9/23/23 & 9/25/24	Worked on the design matrix and brainstormed additional design ideas	2	2	6