Progress Report - Week 1

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 12, 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 focused on introducing ourselves to the client, Dr. Raval, and familiarizing ourselves with a background on ICE. We have conducted some initial research that will be used as we begin drafting Product Design Specifications (PDS) in the coming week. We will gain further insight into requirements for the device when we meet with Dr. Raval on Friday morning.

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:

- Continue developing a foundation of knowledge on ICE and the project requirements.
- Draft and revise Product Design Specifications to be completed by Thursday (9/19) evening.

Next week's individual goals:

- Sara:
  - Research relevant information for the PDS, including standards and specifications for medical devices in the surgical environment.
  - Complete assigned sections of the PDS and collaborate with the team to review the overall document.
- Max:
  - Researched information about materials and current competing designs
  - I will work on the PDS
  - Work on gathering design ideas
- Noah:
  - Continue researching to learn more about the deployment procedure
  - Work on PDS
  - Begin brainstorming design ideas
- Kaden:
  - Continue researching ICE and potential material options
  - Work on the PDS

Timeline:

Task	September			October				November					December
	13	20	27	4	11	18	25	1	8	15	22	29	6
Project R&D													

Background research	X												
Design development													
Prototyping													
Testings													
Deliverables													
Progress Reports	X												
PDS													
Design Matrix													
Prelim presentation													
Final Poster													
Meetings													
Client	X												
Advisor	X												
Website													
Update	X												

Previous week's goals and accomplishments:

- N/A

Activities:

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sara	9/9/24	Researched ICE to gain a better understanding of what it is used for and how it works.	1	2	2
	9/11/24	Updated the team's problem statement, set up PDS and Progress Report, and researched the MitraClip system.	1		
Max	9/11/24	I researched background information about the ICE procedure to better understand how to better design our device	2	2	2
Noah	9/11/24	Researched ICE, MitralClip, and different minimally invasive cardiac surgical procedures	2	2	2
Kaden	9/11/24	Researched ICE and potential material choices for the project	1	1	1