BME 400 - Heart Phantom

Team Members:
Peter Strohm (Team Leader)
Lacey Halfen (Team Leader)
Jess Hause (Communicator)
Erin Main (BSAC)
Fan Wu (BWIG)

Client:
Orhan Unal

Progress Report Week 10 – 11/10/08 to 11/16/08

Problem Statement:

This project consists of designing a heart phantom to be used for the initial testing of a new, solenoid-tipped catheter awaiting FDA approval. This catheter will ultimately be used to treat atrial fibrillation under MRI guidance. The transparent phantom will be used to test the maneuverability of the catheter under MRI guidance as well as the high resolution imaging capabilities in the vicinity of the solenoid tip. It will consist of clear tubing of various sizes representing tortuous vasculature leading to a single heart chamber. All "veins" must terminate at one end of the phantom and be sealed so they may be filled with a saline solution in either a static or dynamic state without risk of leaking.

Summary of Accomplishments:

- Attempted to remove mirrored backing from circular end caps
- Threaded holes for lid of casing
- Practiced drilling holes and cutting the hard tubing to check sizes, fit, and effectiveness of glue

Goals last Week:

- Finish acrylic casing
- Begin constructing the rest of the prototype (vasculature, heart if it arrives)
- Return part list to client

Goals this Week:

- Return parts list and circular end caps to client at the beginning of the week
  (Client has tools to completely remove any traces of metal from end caps)
- Retrieve the end caps from the client once all metal is removed
- Drill holes in end cap for tubing to go through and secure tubing in place
- Glue entire casing together
- If heart arrives, begin construction of that
- Finalize vasculature pathways/lengths, and begin putting them together

Project Difficulties:

- The hemispheres of the heart have not come in yet, so we are have to wait to construct the heart and to finalize the vasculature plans.
- Although the circular end caps were mirrored, we were able to remove much of the metal, and the client has the tools required to remove the rest

Activities:

Date	Person	Activity	Time Spent
11/10/08	Team	Advisor meeting	0.50 hr
11/10/08	Team	Team meeting (threaded holes, worked on metal removal from end caps)	1.00 hr
	Individual	Individual work (moving parts, communicating with client, project brainstorming, research)	1.50 hr each
11/11/08	Peter, Jess, Lacey	Team meeting (Practiced drilling through siding/cutting tubing)	2.00 hr

Team Hours:

Weekly……....11.00 hrs
Total……..105.50 hrs

Project Timeline:

Aug. 31	Project Proposal (Sept. 2)	Project Selection	x
		Contact Client	x
Sept. 7		Individual Research	x
Sept. 14		Client Meeting (Sept. 19)	x
		Project Timeline	x
		PDS	x
Sept. 21		Research	x
		Individual Brainstorm	x
		Group Brainstorm	x
Sept. 28		Develop Designs	x
Oct. 5		Design Alternatives (2)	x
		Mid-semester PowerPoint	x
Oct. 12	Mid-Semester Presentations (Oct. 17)	Finalize Design Alternatives	x
		Decide on Final Design	x
		Design Matrix	x
		Prepare for Presentation	x
Oct. 19	Design Notebooks (Oct. 22)	Finalize Design	x
		Order Supplies	x
Oct. 26		Work on Design	x
Nov. 2		Work on Design	x
Nov. 9		Work on Design	x
		Begin Paper	x

Nov. 16		Finalize Prototype
		Continue Working on Paper
Nov. 23		Testing
		Complete Paper
		Design Poster
Nov. 30	Final Design Presentations (Dec. 5)	Complete Testing
		Prepare for Presentation
Dec. 7	Design Notebooks (Dec. 10)	
	Final Paper (Dec. 10)	
	Client Eval (Dec. 10)	
	Peer/Self Evals (Dec. 12)	