Valve for an Endotracheal Tube Cuff
Progress Report #3, September 28, 2006

Client: Dr. Lester Proctor
Team: Michael Alexander (Leader)
Claire Edlebeck (BWIG)
Samantha Bergh (Communicator)
Tyler Lark (BSAC)
Lucas Vitzthum (Graphics)

September 21 to September 28, 2006

Problem Statement
Develop a valve for an endotracheal tube cuff that will not allow inflation pressures to exceed 25 cm H$_2$O pressure. Overinflation of the cuff that provides a tight seal between the endotracheal tube and the patient’s trachea is a common problem. The excess pressure can cause many complications, especially in children. Our task is to create a cuff that fails predictably at 25 cm H$_2$O so the cuff can be safely utilized in pediatrics.

Last Weeks Goals
• 3 Design ideas per person
• Research
• Contact Experts
• Look for component sources

Summary of Accomplishments
We began this week with a meeting with Professor Shedd as to feasible mechanical and electronic solutions to our intracuff pressure monitor. He gave us some interesting suggestions, turning us on to a pressure transducer that could be used to indicate when the cuff was filled to a safe range.

We spent the next couple of days doing some patent research. We found that our project had been attempted several times, but the existing designs were not appreciably similar to our plans.

On Tuesday night, we got together in Wendt for a brainstorming session on possible designs. Some good ideas came out, and I believe we are set to further develop some of those possibilities into design options.

This Week’s Goals
• MRI Compatibility Research
• Contact Dr. Proctor
• More Component sources
• Meet about other possibilities for pressure tranducer
Project Schedule

9/8  Form team, contact client, assign team roles, set up client meeting
9/15 Literature search, create problem statement, begin PDS
9/22 PDS, brainstorming, begin developing designs, fix prototype
9/29 Brainstorming
10/6 Decide on 3 design alternatives, prepare for mid-semester presentation
10/13 Mid-Semester Presentation
10/20 Hand in report and notebooks
10/25 Work on final design
10/27 Decide on final design
11/3 Work on final design
11/10 Work on final design
11/17 Work on final design, begin preparing poster and paper
11/24 Thanksgiving
12/1 Final Poster Presentation
12/8 Hand in final written report and notebooks
12/13 Final meeting with advisors

Activities

Michael:
  Team meeting (1 hr)
  Meeting with Prof. Shedd (1 hr)
  Patent Research (1 hr)
  **Total: 3 hrs**

Claire:
  Team meeting (1 hr)
  Meeting with Prof. Shedd (1 hr)
  Patent Research (1 hr)
  **Total: 3 hrs**

Tyler:
  Team meeting (1 hr)
  Patent Research (1 hr)
  Design Brainstorming (1 hr)
  **Total: 3 hrs**

Samantha:
  Team meeting (1 hr)
  Meeting with Prof. Shedd (1 hr)
  Communications (1.5 hrs)
  **Total: 3.5 hrs**

Lucas:
  Team meeting (1 hr)
  Patent Research (1 hr)
  Design Brainstorming (2 hr)
  **Total: 4 hrs**