Valve for an Endotracheal Tube Cuff
Progress Report #11, November 29, 2006

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

November 15 to November 129, 2006

Problem Statement
Develop a valve for an endotracheal tube cuff that will not allow inflation pressures to exceed 25 cm H2O 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 H2O so the cuff can be safely utilized in pediatrics.

Last Weeks Goals
- Fabrication
- Testing / Calibration

Summary of Accomplishments
We have been fabricating the prototype all week and currently have two models with more to come. Initially, fabrication was a slow and laborious task, seeing as not one person in our group had any machining skills, but several days spent in the machine shop have changed that. We now have four people in the group (Claire, Tyler, Lucas, and myself) practiced and knowledgeable about the lathe and the steps of fabrication.
We have had to change our prototypes dimensions due to problems that became evident during our early test runs. I remain optimistic that we will have a prototype that will perform close to our specifications by next week.
Over the break, we ordered several different types of springs in the hopes that one will work correctly with our prototype. So far, the springs that we received have diameters too small to be used on our prototypes, but hopefully the design changes will rectify this problem.
Finally, Samantha has been researching several methods of testing for our prototype. Today, we talked with Amit Nimunkar about testing configurations and labview. Getting data into labview now seems to be a legitimate possibility.

This Weeks Goals
- Finalize 1 working prototype
- Testing
- Poster
- Presentation

**Project Schedule**

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

Michael:
- Fabrication (14 hrs)
- Parts Research (1 hr)
- Meeting with Amit Nimunkar (1 hr)
- Team Meeting (2 hrs)
**Total: 18 hrs**

Claire
- Fabrication (5 hrs)
- Team Meeting (2 hrs)
**Total: 7 hrs**

Tyler:
- Fabrication (5 hrs)
- Team Meeting (2 hrs)
- Meeting with Amit Nimunkar (1 hr)
**Total: 8 hrs**

Samantha:
- Communications (2 hrs)
- Fabrication (1 hr)
- Acquire Testing Equipment (2 hrs)
- Team Meeting (2 hrs)
- Meeting with Amit Nimunkar (1 hr)
**Total: 8 hrs**

Lucas:
Finalize prototype dimensions (1 hr)
Update Graphics/Schematics (1 hr)
Team Meeting (2 hrs)
Fabrication (3 hrs)
**Total: 7 hrs**