Project Title: Ophthalmic Dose Compliance Monitor
Team Members: Arinne Lyman, Anita Zarebi, Becky Koszalinski, Michael Alexander
Client: Christopher J. Murphy DVM, PhD
Advisor: Wally Block
Date: 11-4-05 to 11-10-05

Problem Statement:
Develop a dose compliance monitor that would record (unknown to the client) when (date and time) a topical ophthalmic medication was delivered. There are several older studies performed in the 80's that used a compliance monitor specifically designed for topical ophthalmic medications, and I am hopeful that we would be able to develop a cost effective improved model. Ideally we would be able to manufacture approximately 10 of these devices for use in studies. It could be as simple as some of the older models that recorded when the top of the bottle was removed and the bottle inverted. Maintenance of sterility of the medication is imperative. The simplest designs would simply provide a thin sleeve that the commercial 5, 15, or 30 ml topical ophthalmic medication bottle slid into. There are many possibilities and I am hopeful that some of your students would find this challenging. These would initially be used in research of patient compliance.

Statement of Team Goals:
1. Problem statement
2. Create first draft of PDS
3. Set up meeting with client
4. Begin to research and develop design ideas
5. Research specs on parts as well as cost and dimensions
6. Continue the design project.
   a) Research all possible background information.
   b) Research existing solutions on the market
   c) Brainstorm in individual teams
   d) Meet with experts to gain ideas about possible solutions
   e) Develop possible design solutions
7. Continue to develop final design alternatives
8. Write midterm paper
9. Create power point presentation
10. Discussed possible final design alternative
11. Finalize design
12. Further develop and test prototype
13. Present final design
Summary of Team Accomplishments:

We have ordered the inclinometers and are waiting for those and the o-1lb force sensors to arrive so we can get them tested on a circuit board to see if they light up lights. Also, Michael is working on programming the microprocessor and he thinks we can have a crude representation of recording the date and time squared away by the end on the week. We need to figure out a way to slow down the speed of the oscillator so it doesn’t suck up so much power. This week (Friday) we will be testing the cap sensor and cutting bottles to see how much room we need to enclose everything in the bottom of a bottle. As soon as the inclinometers arrive, we will have more testing to do and then we will try to integrate everything onto the microprocessor and try to test the entire device.

Project Schedule:

- 9/2: Form team, contact client, assign team roles, set up client meeting
- 9/9: Literature search, create problem statement, begin PDS
- 9/16: PDS, brainstorming, begin developing designs
- 9/23: Design research
- 9/30: Design Research
- 10/7: Work on mid-semester presentation paper and presentation (oral and power point)
- 10/14: Mid-semester presentation
- 10/21: Work on final design (i.e. develop a prototype, testing, etc)
- 10/28: Continue working on final design
- 11/4: Work on design
- 11/11: Work on design
- 11/18: Continue working on design, start working on presentation
- 11/25: No Class (Thanksgiving)
- 12/2: Prepare final presentation and paper
- 12/9: Final poster presentation
- 12/16: Hand in report and notebook
- 12/23: Last day of finals

Activities:

Arinne:
- Product research/ordering (2 hrs)
- Lab testing (1 hr)
- Misc (1 hr)
- Team meeting (1 hr)

Total: 5 hrs

Anita:
- Worked on revising paper (2 hrs)
- Lab testing (1 hr)
- Misc (1 hr)
- Team meeting (1 hr)

Total: 5 hrs

Becky:
Worked on cap sensor (2 hrs)  
Lab testing (1 hr)  
Misc (1 hr)  
Team meeting (1 hr)  
**Total: 5 hrs**

Michael:  
Microprocessor Programming (10 hrs)  
Lab testing (1 hr)  
Misc (1 hr)  
Team meeting (1 hr)  
**Total: 13 hrs**

**Team Total Hours for this week: 28 hrs**