

Title: Drainage Valve for Body Fluids for use by Paralyzed Individuals

Team Members:

Angela Heppner
Shannon Kane
Jeff Phillips
Sarah Schram

Client:

Dan Egan

Date: 4/24/01-5/01/01

Problem Statement : In order to better suit the needs of individuals that are paralyzed, handicap, or make use of a wheelchair on a daily basis, our goal is to design a waste fluid drainage system for the well-controlled, accurate and dependable disposal of stored liquid wastes. The device must incorporate a secure valve system that stops the flow of urine that is stored in a 1000 cubic centimeter bag attached to the client's leg. The opening and closing of the valve must operate solely at the discretion of the user, without failure in any conditions, via a switch located within accessibility of the client. The urine that passes through the tubes or the device must not sediment over time, and the valve must remain unobtrusive throughout the life of the device.

The main goal of the project is to construct the valve so that a 1000 cubic centimeter fluid bag is able to drain as quickly as possible upon opening of the valve. We hold comfort, ease of use and safety of the client as paramount aspects of the device, while offering the product at a reasonable cost to the customer.

Restatement of Team Goals:

- 1) Write final paper and prepare presentaion
- 2) Mount the switch for demonstration
- 3) If time permits we would like to make a strap that would fix the valve to the leg

Summary of Accomplishments:

- 1) Built box for switch
- 2) Made strap to fix the valve to the leg
- 3) Our final paper is almost complete, as is the power point presentation

4) Testing:

-Squeezed the leg bag and tubing repeatedly to try to force liquid through the valve. No liquid went through the valve, demonstrating that the valve completely pinches the tubing shut.

-Angie wore the leg bag and pinch valve. The water in the leg bag was dyed red so that we could easily tell whether or not the valve was leaking. The valve did not leak, however, the leg bag did.

Statement of Team Goals:

- 1) Finish paper and presentation
- 2) Give presentation

Project Schedule:

Week 1: Choose Project and Obtain Contact Information

Week 2: Meet with Client and Redefine problem

Week 3: Start PDS and Continue Refining Throughout Semester

Week 4: Background Research

Week 5: Brainstorm, continue Background Research, and begin Midsemester Paper and Presentation

Week 6: Finish and Give Midsemester Presentation while continuing to Brainstorm and Research

Week 7: Order Valves

Week 8: Spring Break

Week 9: Obtain tubing, order leg bag and pinch valve, research electromagnetic cap idea, meet with Dan.

Week 10: Test valves

Week 11: Select Final idea, document and draft final design.

Week 12: Build and Test

Week 13: Build and Test, start final paper

Week 14: Final presentation and paper

Difficulties:

- 1) Finding meeting times

Activities:

1) Met in class to test pinch valve. ~1.5 hours

2) Sarah made a strap for the pinch valve ~ 2.5 hours

3) Jeff, Sarah, and Shannon worked on the paper. ~ 7 hours

4) Angie worked on the presentation, website, and switch. ~ 12 hours (she also wore

leg bag all day tuesday)

5) Shannon worked on the paper. ~ 4 hours

6) Shannon, Sarah, and Angie took pictures of device ~ 1hour

7) Jeff used Visio to create a drawing of the device ~ 1hour

2) Sarah wrote progress report ~ 0.50 hours

Running Total ~ 97.25 hours