

Team members:
Chris Webster
Ksenija Bujanovic
Jessica Hause
Mike Oldenburg

September 22, 2006

Glaucoma Medicine Reminder

Problem Statement

Develop a portable electronic device which can alert a glaucoma patient when it is time to take their next dose of medication. An audio signal will be necessary because many of the patients are severely sight-impaired. The device needs to be programmable for up to six different medications that can be used in different dose regimens. A reset mechanism, types of reminder signals, durability/portability, power options, and power level indicators all must be taken into consideration.

Client requirements

- Use with 6 different medications
- Programming by doctor with a lock preventing patient access
- Indicates each specific medication to be taken
- Digital screen
- Portable; “small enough to be put into a bag”
- Durable
- Audio/Visual/Vibration alert
- Different alarm for each medication
- Reset button to stop the alarm
- Low battery indication
- Indication of the time and type of the next medication administration
- Clock

Design Requirements

1. Physical and Operational Characteristics

a. *Performance requirements:* The device must alert the user for up to six different medications. The alert must be through sound or vibrations. The device must be turned on all the time. It must be programmable by the doctor, not the patient, with a lock or a password. There must be a button to reset the alarm as well.

b. *Safety:* The device cannot contain any bare wires that may electrocute the user. It should have rounded edges.

c. *Accuracy and Reliability*: The time should be accurate to the second, but needs to only display the minute. It must alert for every dose.

d. *Life in Service*: The device will be used as long as the patient's medication is prescribed.

e. *Shelf Life*: The device may be used for one patient or for several. It should function for many years. The device must either be rechargeable or contain batteries that are easily disposable. There must be an indicator when the batter is going low.

f. *Operating Environment*: The device will be with the patient wherever they go. It may be kept in a pocket, purse, bag, etc.

g. *Ergonomics*: Function and reliability are most important. Look and feel are secondary considerations.

h. *Size*: It must be small enough to be transportable. It must be easy to hold. It would preferably be operable with one hand.

i. *Weight*: The weight must correspond with the mobility requirement.

j. *Materials*: Plastic would be optimal.

k. *Aesthetics, Appearance, and Finish*: The device must be easy to use by elderly and someone with poor sight. Preferably a digital screen.

2. Production Characteristics

a. *Quantity*: Only one unit is needed for the time being. Multiple is a possibility for the future.

b. *Target Product Cost*: We have potentially \$1000 available, but product should be as inexpensive as possible.

3. Miscellaneous

a. *Standards and Specifications*: Product must comply with FDA medical device requirements.

b. *Customer*: Paul Kaufman, M.D., Dept. of Ophthalmology and Visual Science, UW Medical School; and Liane Seyk

c. *Patient-related concerns*: Easy to use, accurate, and durable.

d. *Competition*: There are several similar products on the market. Our goal is to make an equally functional, more cost effective, and more visually sensitive alternative.