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Product Design Specifications

Title: Accessible Pill Cap Dispensing/Cutting Device

Team:

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Function: Dispensing set doses of medication from half to double doses of pills based on the programmed schedule. In order to administer half doses, the pill cap design will be capable of cutting pills in half mechanically. Additionally, the dispenser will automatically alert patients when to take pills and inform personnel offsite if doses have been missed.

Client requirements: The automated pill cap device should be easy to use by clients with diverse capabilities and safely assist with dispensing a single dosage during the prescribed interval. The prototype should be able to dispense any of 1/2, 1 or 2 pills at a time and be able to cut pills in half if required for 1/2 pill dosage. It should remind users to take their medications, record what medications have already been dispensed, provide multi-modal indicators of current status, and only dispense the pills within the specified time windows each day. The device should alert someone offsite if a dose is missed. The prototype can be larger than a normal pill cap for demonstration purposes.

Design requirements:

1. Physical and Operational Characteristics

a. Performance requirements

Pill cap must be capable of accurately dispensing set doses at designated time. The device will only dispense at given time intervals and inhibit patient access to medication at non-designated times. The design must incorporate a cutting device which halves a variety of pill shapes and sizes. The pill cap must also promptly inform medical personnel when doses have been missed by the patient.

b. Safety

The mechanical pill slicer must accurately cut pills in half so as to administer correct doses of medication. Additionally, the cutting device must be contained within the pill cap.

c. Accuracy and Reliability

The dispenser must administer the appropriate dosage of medication at the programmed time interval.

d. Life in Service

Multiple years and the dispenser can be reprogrammable for a different medication regimen.

e. Shelf Life

The mechanical pill slicer must safely contain pills for the duration of the prescription.

f. Operating Environment

This device could be used in a variety of settings including, but not limited to, homes, hospitals, and nursing homes.

g. Size

The device should be of minimal size; however the final prototype may be larger for demonstration purposes. Moreover, the device may be scaleable to handle both large and small medication regimens and pill bottle sizes.

h. Material

Plastic materials which are easily sterilized to allow for repeated usage.

i. Aesthetics, Appearance, and Finish

The device should be aesthetically pleasing.

2. Production Characteristics

a. Quantity

One large-scale working prototype.

b. Target Product Cost

The total cost of the project may be no more than \$2000 but minimal cost is desired to allow access for patients of all economic classes.

3. Miscellaneous

a. Standards and Specification

Must be FDA approved in order to put into service.

b. Customer

Individuals that have numerous medications, or individuals who have trouble complying with their recommended medication regimen.

c. Patient-related concerns

Dispensing the appropriate dosage of medication at the scheduled time and not allowing patient to access medication at non-scheduled times.

d. Competition

Other devices are on the market that addresses medication regimen compliance by reminding the individual to take their pills.