Improving The Eye Drop Experience

Trevor Myers
Problem

• Eye drop bottles contain critical medications; yet they are difficult to use and store.

• Awkward bottle design makes it difficult to dispense medication without use of aftermarket aids.

• According to the California Poison Control System people mistaking super glue for eye drops is a "big problem".
Example

• Can you easily tell which of these are super glue and which are eye drops?
Example

- Both the 2nd and 3rd bottles are super glue.
Pain Points

Packaging

• Hard to distinguish with poor eye sight

• Hard to distinguish between if color blind
Use

• Poor ergonomic design is hard to grip and hard to squeeze

• One user had to remove the cap with the help of pliers

• Cap and bottle can roll off surface and become lost or contaminated
Use
• Proper eye drop technique is not possible for user

Unmet Needs
• Two hands are required to force drops out
• No place to record number of drops per use & number of uses per day
Goals

- easy identification
- easy open cap
- easy squeeze bottle
- number of drops
Prototypes

- larger top
- grips for sides
User Testing

- ergonomic side grips
- cap is easier to grip
Form Development

- Rhino and SolidWorks modeling
User Testing

- squeezable 3D printed model to test ergonomics
### Identification

- use FDA approved color coding

### Solutions

<table>
<thead>
<tr>
<th>Class</th>
<th>Color of Bottle Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-infectives</td>
<td>Tan</td>
</tr>
<tr>
<td>Anti-inflammatories/steroids</td>
<td>Pink</td>
</tr>
<tr>
<td>Mydriatics and cycloplegics</td>
<td>Red</td>
</tr>
<tr>
<td>Nonsteroidal anti-inflammatories</td>
<td>Gray</td>
</tr>
<tr>
<td>Miotics</td>
<td>Dark Green</td>
</tr>
<tr>
<td>Beta-blockers</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

- a system of simple icons with heavy line weight will help reinforce identification and make it easier for the color blind
Non-color blind
• about 92% male & 99.5% female

Deuteranopia
• affects about 5% of males
• tan & magenta look very similar
• icons are still visible

Protanopia
• affects about 2.5% of males
• purple, blue, & magenta look very similar
• icons are still visible
• embossing the icons would create a third layer of perceptible information

• icon on top keeps identification easy after prescription tag is placed over box

Use

• wide cap for easy grip and twist off
- ergonomic design is easy to grip & squeeze

- the unique bottle design will prevent users from mistaking it with incorrect medications and super glue

- cap and bottle won’t roll off surface
• icons created to record proper number of drops & times per day

• proper eye drop technique is now possible
**Sterile 10ml**

For ages 3 and above

Manufactured for:
Wardenclyffe Vision Division
Shoreham, New York 11786
Made in USA
L134-985 Rev. 10/12
www.regen.com

Discard solution 30 days after opening.

Store this solution at room temperature.

Avoid freezing. Refer to expiration date on bottom of carton prior to purchase.

Carefully observe directions, warnings and precautions on inner carton.

**Warnings**

For external use only.

Do not use
- if solution changes color or becomes cloudy
When using this product
- do not touch tip of container to any surface to avoid contamination
- replace cap after each use
Stop use and ask doctor if
- you feel eye pain
- changes in vision occur
- redness or irritation of the eye gets worse or lasts more than 72 hours.

If pregnant or breast feeding, ask a health professional before use.

Keep out of reach of children.

If swallowed, get medical help or contact a Poison Control Center right away.

**Directions**

Install 1 or 2 drops in the affected eye(s) as needed

**Packaging**

- easy to identify symbol
- icons for number of drops per application and number of applications per day