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## Improvements on the Inhaler

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**Project Title:** Improvements on the Inhaler

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**Background:**

Inhalers are a commonplace in American health care and deliver crucial drugs to patients with COPD and asthma. Inhaler use has been shown to be unsatisfactory among patients resulting in ineffective medication delivery. The goal of this project was to improve the inhaler design for increased effectiveness and ease of use.

**Methods:**

Our team first interviewed a Pulmonologist regarding patient inhaler use. Dr. Harry Kane demonstrated the proper use of an inhaler as well and described errors in inhaler use are due to patient technique. A variety of inhalers currently available were examined and were compared for ease of use.

**Results:**

Interview with attending physician revealed numerous patient errors that impede effectiveness of inhaled medication. Two common mistakes were identified: patients inhaling too rapidly and patients dispensing the medication too late. Inhaling too rapidly decreases the fraction of drug that reaches the lungs, decreasing effectiveness. Dispensing the medication after a patient reaches total lung capacity (TLC) prevents the drug from reaching their lungs, decreasing effectiveness.

**Conclusions:**

We conclude that inhalers could be used more effectively by addressing patient education and feedback mechanisms. Possible solutions discuss audible feedback to help coordinate patient breath with optimal dispersal timing. Future work includes prototyping a design and eliciting patient feedback.

**Word Count:** 23 words