

# **Thesis Project Portfolio**

## **Development of a Novel Pillbox Design**

(Technical Report)

## **How Has Human Desire for Convenience Shaped Medical Treatment?**

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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## **Table of Contents**

Sociotechnical Synthesis

Development of a Novel Pillbox Design

How Has Human Desire for Convenience Shaped Medical Treatment

Prospectus

## Sociotechnical Synthesis

Medication non-adherence is an immense issue facing the United States today. Medication nonadherence costs the American healthcare system almost \$300 billion annually. It also increases the number of hospitalizations, prolongs patient recovery, and contributes to avoidable fatalities. This issue can be technically aided through the development of a novel pillbox design that allows for portable pill storage. It can also be addressed by focusing on developing medical products and services that emphasize convenience.

A novel pillbox design was developed to provide a more convenient method to take medication. By creating a portable pillbox, patients can carry medicine in a wallet, bag, or purse. The pillbox emphasizes maximized pill capacity, discreetness, compartmentalization, and a cheap price point. Using a portable pillbox offers greater convenience over more traditional pillboxes because it can be easily transported and stored on-hand at all times. Standard prescription bottles are bulkier and not practical for transportation throughout the day. They also are not very inconspicuous, and obviously carrying medication on-hand can indicate sickness or disease. Self-consciousness around this issue is one of many factors that contribute to nonadherence. Furthermore, refilling a portable pillbox daily before leaving home works to install a habit of paying more attention to a medication routine and can remind patients to take their medicine. A novel portable pillbox design maintains patient privacy, offers immediate availability of medication throughout the day, and is financially available to nearly all consumers at an affordable price.

Medical treatment as a whole must also respond to the culture-wide shift towards convenience. Consumers desire products and services that will make their lives easier or those that emphasize ease of use, utility, and simplicity. In the healthcare industry, patients value easily

accessible medical treatment. Services like mail-order prescriptions and telemedicine are solutions that offer greater convenience to improve patient care. Mail-order prescriptions specifically are shown to improve rates of medication adherence. Greater rates of medication adherence and patient care will benefit not only patients, but also physicians, healthcare systems, governments, and insurance companies. Products and services that emphasize convenience for patients are essential for adapting to new social demands.

Lack of medication adherence is an issue in the United States that must be addressed. Medical treatment must prioritize convenience to best improve patient care and increase adherence rates. Developing an effective portable pillbox aims to maximize convenience in medication storage and transportation. Further steps must be taken to incorporate convenience into other aspects of healthcare. This will pave the way for a healthier population in the future and help address the issue of rising healthcare costs.