INTRODUCTION

- There are 40 deaths every day from prescription opioids.14
- 1 in 4 people using long term opioids struggles with addiction.15
- 75% of Americans have difficulty complying with daily meds.2
- Medication adherence problems in America are estimated to cost $100 to $300 billion.3
- Poor medication adherence leads to poor outcomes and increased usage of healthcare services and increased costs.4
- To break the non-adherence cycle, patients, in partnership with their doctors and pharmacist, need to commit to a mutually agreed schedule for optimal medication compliance.
- Adherence is a team effort involving the patient, healthcare providers, and other supportive individuals (spouse, friends, etc.).

Medication non-adherence is often hidden from healthcare providers. There is generally a lack of objective data to verify adherence. Using a patient-sensitive manner of discovering medication usage information is crucial for discovering non-adherence.6 Developing a method for objectively measuring the non-adherent behaviors of taking too much of a medication or taking a medication too early will help facilitate more honest conversations between providers and patients.

BACKGROUND

Three existing medication compliance apps were reviewed:
- Medisafe®
  Popular and robust app for chronic medication usage.
- Dosecast®
  Not as refined as Medisafe; has some “as needed” functionality.
- Memo Health®
  Utilizes sensors, automated interface with a pill box.

All three apps worked well, but lacked usefulness for assisting compliance with as needed opioid medications.

We need to “provide tools and information for healthcare professionals working on overdose prevention and treatment,” and “increase awareness and share best practices with providers and patients.”10

- Using digital health technology for medication tracking does improve adherence at a relatively low cost for implementation.9
- Using digital health technology can help patients track their medication usage and disease progression resulting in a better understanding of appropriate medication usage and support their medication self-management.11

PROJECT FOCUS

Mission Statement

Helping involved individuals take control of their opioid usage
- Develop a smartphone app to assist individuals with tracking usage of as needed medications including opioids.
- Help individuals to improve medication compliance.
- Maintain objective data about a person’s medication usage.
- Improve communication between patients and providers.
- Research automation methods of tracking medication usage.

PROJECT DESIGN

Selected User Stories

Persona: All Users
- Scenario 0: Taking Medication
  Given that I am prescribed medication
  And MedConformity has accurate medication information.
  When I notify MedConformity that medication is taken.
  Then I am informed when my Next Dose is due to be taken.

Persona: “As Needed Medication” Users
- As a user of as needed medications
  I want a tool like MedConformity
  So that I can keep track of the medications I have taken and when my next dose is due.

Scenario 1: Next Dose Lookup.
- Given that I am prescribed medication
  And MedConformity has accurate medication information.
  And I am concerned about taking too much medication.
  When I check MedConformity for next dose information,
  Then I take my prescribed medication if enough time has elapsed.
  Or, I can set a timer to have MedConformity remind me when my next dose would be due.

Design for MedConformity App

Resources

- Android Studio (version 2.3.3)12 was used as the integrated development environment for creating MedConformity.
- Github was used for importing a similar open-source project (“DrugBug”)13 that was designed for tracking chronic medication usage.
- Logic for DrugBug was altered to adapt the application for dealing with as needed medication usage.
- The DrugBug user interface was altered to match the requirements discovered through the User Stories above.

REFERENCES

6. Rabin, A; Glassman, J; Bell, S; Elliott, D; Types, D; Konkel, P; Ewalt, D; King, D (2017). Development and Testing of New Mobile Measures of Medication Adherence. Journal of Medical Internet Research, 18(12), e153.
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