Motivation

Doctors write prescriptions in a language that is both difficult to interpret and error-prone. While this language is precise and unambiguous to physicians, patients commonly misinterpret doctor instructions.

- 10% - 40% of patients misinterpret prescriptions based on how complex they are.\(^1\)
- 70% of all medication errors are due to mistakes in prescription text.\(^2\)

Previous attempts to mitigate these issues have failed to gain popularity, as they require doctors to fill out complex forms.

Abstract

We created a two-sided iOS application, which encourages accurate prescription writing and provides explicit medication instructions to patients.

Physician-side application
- Accepts a doctor’s prescription as she would normally write it and automatically converts it to standardized form.
- Guides her through a quick preview of the prescription in standardized form.

Patient-side application
- Arranges all of a patient’s prescriptions into a custom schedule.
- Takes into consideration medication conflicts and personal daily activities.

This application guides smarter, less error-prone prescription handling in both physician and patient contexts.

Features

- Guided Prescription Writing
- Personalized Medication Schedules
- Active Ingredient Conflict Handling

System Process

Prescription Input

- Prescription text is converted to standardized form
- 51 fields per prescription

No error for 73% of prescriptions.
- Sample Size: 498 prescriptions

Sample Prescriptions

- **Correct**
  - Oxycodone/Aspirin 2 tab oral q4h with meals 3 times daily
  - Ondansetron [Zofran] inj 4 mg/2 ml vial 4 mg pm syp
  - Ibuprofen 500 mg 1 tab by mouth every 4-6 hrs for pain 20 qty

- **Almost There**
  - Allopurinol 300 mg tablet take one-half tablet by mouth daily
  - Chlordiazepoxide HCL 25 mg po as directed 30 qty 1 tab tid x 5 days, 1 tab bid x 5 days, 1 tab daily x 5 days
  - Coumadin 7.5mg oral tablet mon,wed.fri.sat

Verification

Schedule

- 7:00 am
- 12:00 pm
- 9:00 pm

Time Preferences

- Wakeup
- Lunch
- Dinner
- Bed
- Breakfast

Algorithms Overview

- Natural Language Processing
  - Prescription Text (Motrin Q4H)
  - Doctor Language Database
  - Converter Algorithm

- Scheduler
  - Prescription Structured Form
  - Patient Time Preferences
  - Calculate Potential Daily Schedules
  - Score Potential Schedules Based Off User Preferences
  - Check For: Medication Conflicts - Event Conditions (Take with Food)
  - Replicate Daily Schedule Over Window