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SenseRx

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PK Software-The Compounder Rx-PCCA-Server (4.9.7.0)

File Edit View Lists Activities QA/QC Reports Accounts-QB Window News Help

Log off Patient Rx E-Scripts Recall Rx Tracker ValidateRx Quote Doctors Insurances Scheduler Logs Make log To Do Drugs Chemicals Chemical inv. Backup

F11=Size window (best fit)

New prescription

Patient **RALPH B FARROW** Birthdate **5/26/1954** Age **57** S-Cap ☒ Account # **1**
51638 NE 22ND ST Sex **M** Credit card **1**
TORNADO, OK 73004 Phone **4052461242** Prim Ins **CASH CUSTOMERS** Credit card# **1**
 Card # **1** Credit card exp. **1**
 Ship method **1**

Privacy notice ☐ Privacy notice date **1** Privacy note **1**

1. Prescribed 2. Dispensed 3. Devices 4. Pricing 5. Misc. Rx information 6. DUR 7. Rx documents 8. Regimen 9. Drop Off/Pickup

Rx 262944 BRAND

Drug prescribed **BACTROBAN 2% OINT 2**

Gen. name: **WALDO GENTRY** PCCA CPM **1**
 Prescriber **WALDO GENTRY** Phone: **3019998888** DEA: **1**

DAW **0. No DAW** Original Rx info. **1**

Quantity prescribed **22.5** GRAM Refills **0** (99 = PRN) Qty on refills **1** Refill limit interval **1** days

Sig codes **APPLY TID PRN EXTERNAL FOR 14 DAYS**

Sig **Apply tid as needed external for 14 days**

Sig codes lookup **1**
 Upper case **1** Bold **1** Add auto sigs **1**
 Lower case **1** Un-Bold **1**
 Sig editor **1**

Date written **4/15/2011** Rx expiration date **4/15/2012** Calc **1** Rx origin **3. Electronic**

Rx note (right click on note for options) Add time stamp **1**

Save Cancel Prior authorization Insert

SOFTWARE, PK/(NONE), .

NUM 3/6/2012 3:17 PM

Date Written **4/15/2011**
 Doctor **Gentry, Waldo** Phone **3019998888**
 Address **543 Apple Road Wheaton, MD 23223** DEA **1**

Farrow, Ralph
 Name **Farrow, Ralph** Phone **4052461242**
 Address **51638 NE 22nd St Tornado, OK 73004** DOB **5/26/1954** **M**

Rx Qty **22.5 GRAM**
BACTROBAN 2% OINT 2

Instructions:
APPLY TID PRN External FOR 14 days

DAW **No** Refills **0**

**Can we make a smart search tool using
machine learning to pick contextually
appropriate medications?**

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Agenda

Data

Methodology

Demo

Results

Conclusion

Data



Tables

Admissions: ADMISSION_TYPE, ADMISSION_LOCATION, ICUSTAY_ID

Patient: GENDER, ICUSTAY_ID

Prescriptions: STARTDATE, ENDDATE, DRUG

labfirstday: Everything!

Services: TRANSFERTIME, CURR_SERVICE, ICUSTAY_ID

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Methodology

1. Gathering & preparing the data

- a. Identified and wrangled pertinent data tables
 - i. Primary key: ICUSTAY_ID
 - ii. Time points: First time/date observation in ICU

2. Building a machine learning pipeline

- a. Pre-processing (scaling, standardization, etc.) with scikit-learn and train/test + deployment with keras/TF

3. Constructing a UI for patient query and interfacing with the model

- a. Practitioner inputs `ICUSTAY_ID` and creates a prescription list

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Demo

Model Metrics

Microaverage	
Precision	0.149
Recall	0.665
F1	0.243

Conclusions & Future Work

What are the limitations?

- Data is subsetting to first day
- Every patient on day 1 in the ICU is a “new patient”
- Our wrangled data does not include age

If you had more time, what would you do?

- Make it more personalized to include individual patient history such as recent prescriptions, microbiology
- Rank the probability of drugs
- Increase the recall of the model
- Customize the UI more using JavaScript

Reproducibility

Notebook files, this presentation and more at:

github.com/AnthonyMella66/toronto_health_hack_2019