SenseRx

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

F11=size window (best fit)

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

New prescription

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

Privacy notice ☐ Privacy notice date   Privacy note

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:

Prescriber WALDO GENTRY   Phone: 3019998888

PCCA CPM
DEA:

DAW 0. No DAW   Original Rx info.

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

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

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

Upper case   Bold   Add auto sigs
Lower case   Un-Bold
Sig editor

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

Date Written **4/15/2011**

Doctor **Gentry, Waldo**   Phone **3019998888**

Address **543 Apple Road Wheaton, MD 23223**

DEA _____

Farrow, Ralph

Name _____   Phone **4052461242**

Address **51638 NE 22nd St Tornado, OK 73004**   DOB **5/26/1954**
                                                        M

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

Instructions:
 APPLY TID PRN External FOR 14 days

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

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

Save   Cancel   Prior authorization

Insert

SOFTWARE, PK/<NONE>, -   NUM   3/6/2012 3:17 PM

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

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Data

Tables

Admissions: ADMISSION_TYPE, ADMISSION_LOCATION, ICUSTAY_ID

Patient: DOB, GENDER, ICUSTAY_ID

Prescriptions: startdate, enddate, drug

labsfirstday: every field was used

Services: transfertime, curr_service, icustay_id

Johnson, Alistair EW, et al. "MIMIC-III, a freely accessible critical care database." Scientific data 3 (2016): 160035.

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Methodology

1. **Gathering & preparing the data**
   a. Identified and wrangled pertinent data tables
      i. <u>Primary key:</u> ICUSTAY_ID
      ii. <u>Time points:</u> First time/date observation in ICU

2. **Building a machine learning pipeline**
   a. Pre-processing (scaling, standardization, etc.) with <u>scikit-learn</u> and train/test + deployment with <u>keras/TF</u>

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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Model Metrics

Microaverage	
Precision	**0.149**
Recall	**0.665**
ROC AUC	**0.973**
F1	**0.243**

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Conclusions & Future Work

What are the limitations?

- Data is subsetted to first visit history
- Not personalized
- 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
- Make the UI more customizable using JavaScript

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Reproducibility

[github.com/AnthonyMella66/**SenseRx/**](https://github.com/AnthonyMella66/SenseRx/)

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