Using data to identify risky prescribing habits in physicians:

A first project with R
Presenter

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• This presentation is for information and education only and must not be construed as professional medical advice. Furthermore, this presentation and information must not be construed as a statement or opinion regarding any prescriber’s decision to prescribe or not prescribe opioids. Prescribers use their professional medical judgment to decide whether or not to prescribe opioids. The prescribers’ professional medical judgment is based on their education, training, and experience.
• The prescribers in the CMS data reviewed may or may not be insured for professional liability through ProAssurance or any other professional liability carrier.
Project Inspiration

• News Article

• Asst. US Attorney for Western District of Michigan
Current Status of Problem
Some states have more opioid prescriptions per person than others.

Number of opioid prescriptions per 100 people

- **52-71**
- **72-82.1**
- **82.2-95**
- **96-143**

SOURCE: IMS, National Prescription Audit (NPA™), 2012.
Source: CMS
Michigan came in at No. 10 on the list which ranked the 50 states and the District of Columbia across 15 key metrics, ranging from arrest and overdose rates to opioid prescriptions and meth-lab incidents per capita.”
Sources of Prescription Opioids Among Past-Year Non-Medical Users

- Given by a friend or relative for free
- Prescribed by ≥1 physicians
- Stolen from a friend or relative
- Bought from a friend or relative
- Bought from a drug dealer or other stranger
- Other

Number of Days of Past-Year Non-Medical Use

Percent of Users

- Any
- 1-29
- 30-59
- 100-199
- 200-365

a Obtained from the US National Survey on Drug Use and Health, 2008 through 2011.
b Estimate is statistically significantly different from that for highest-frequency users (200-365 days) (P< .05).
c Includes written fake prescriptions and those opioids stolen from a physician’s office, clinic, hospital, or pharmacy; purchases on the Internet; and obtained some other way.

Opioid-Related Deaths, Especially From Synthetic Opioids Like Fentanyl, Are On The Rise In The U.S.

Drug overdose deaths involving opioids, by type, per 100,000 population

- Any opioid
- Natural and semi-synthetic opioids (includes drugs like oxycodone and hydrocodone)
- Synthetic opioids (includes drugs like fentanyl and tramadol)
- Heroin
- Methadone

Source: CDC

The Huffington Post
Current Method(s) of Analysis

1. Generalizations
2. Comparisons
3. Outliers
CMS Data on Michigan Prescribers

Opioid Prescribing Rate:
   National: 5.74%
   State: 7.38%
Opioid Claims: 3,425,448
Overall Claims: 46,424,478
Medicare Part D Prescribers: 38,696

CMS Medicare Part D Opioid Prescribing Mapping Tool
https://cms-oeda.maps.arcgis.com/apps/MapSeries/index.html?appid=326dd900946f4aba90a49e6c6616b16f
“It is frequently argued that the prescribing behavior of physicians has been a driver of the opioid epidemic. . . This growth may be driven in part by high variability in physician prescribing of opioids; this variability may reflect overprescribing beyond what is required for appropriate pain management. . . However, few studies have investigated the extent to which individual physicians vary in opioid prescribing and the implications of that variation for long-term opioid use and related adverse outcomes in patients.”
“It is frequently argued that the prescribing behavior of physicians has been a driver of the opioid epidemic. . . This growth may be driven in part by high variability in physician prescribing of opioids; this variability may reflect overprescribing beyond what is required for appropriate pain management. . . However, few studies have investigated the extent to which individual physicians vary in opioid prescribing and the implications of that variation for long-term opioid use and related adverse outcomes in patients.”

New England Journal of Medicine 376;7 Feb. 16, 2017
Questions

1. Is it possible to identify the extent to which individual prescribers vary in opioid prescribing? and
2. Could that variance indicate elevated risk of adverse patient outcomes, medical malpractice claims, or criminal charges?
Project Overview

• Identifying & Getting Data
• Cleaning Data
• Analyzing & Visualizing Data
• Develop Model
• Reports
• Action
Visualization and Initial Observations

• High variability
• Low variability
Pain Management

Opioid Prescriptions by Pain Management Physicians
Urology
General Practice
Physician Assistants

Total Opioid Prescriptions by Physician Assistants
Modeling

- Limited historic data
- Collecting opioid claims
- News searches
Pain Management

Opioid Prescriptions by Pain Management Physicians
General Practice
DEA agents raid pharmacy in Albion

by Mike Krafcik | Tuesday, January 17th 2017

ALBION, Mich. (NEWSCHANNEL 3) – Drug enforcement agents raided a pharmacy in Albion Tuesday.
Urology
Tuscola Co. prosecutor issues arrest warrant for doctor who allegedly ran mid-Michigan ‘pill mills’

Posted by newsmanager on December 27, 2016

Tuscola County Prosecuting Attorney Mark Reene has authorized a seven-count felony warrant for the arrest of Dr. Joseph Edwin Oesterling, a mid-Michigan physician charged with running a criminal enterprise, maintaining a drug building, and five counts of delivery of a controlled substance.

If convicted, Oesterling faces up to 20 years in prison.

Reene said the arrest is the result of a seven-month investigation conducted by the Federal Drug Enforcement Administration (DEA) Tactical Diversion Squad and the Thumb Narcotics Unit into alleged over-prescribing practices at Osterling's clinics in Caro, Saginaw, and Mount Pleasant.

Reene said Oesterling specializes in urology and “the allegations include the massive over-prescribing of such substances as hydrocodone (commonly branded as Norco), methadone, amphetamines, phentermine, oxycodone, and alprazolam (commonly branded as Xanax).”
Physician Assistants

Total Opioid Prescriptions by Physician Assistants

Restricted
Local physician assistant blocked from issuing prescriptions for pain killers

by Walter Smith-Randolph | Monday, January 16th 2017

STURGIS, Mich. (NEWSCHANNEL 3) – A Sturgis physician assistant accused of incompetence and negligence by Michigan’s Attorney General is no longer allowed to issue prescriptions for pain killers.
Types of “Risky” Prescribers

1. Intentional
2. Unknowingly
3. Adjustment/Model errors
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LANSING, MI -- Ten people from mid-Michigan are facing felony charges for their alleged role in what Michigan Attorney General Bill Schuette is calling an opioid drug ring.

At the center of the ring is Lansing resident Jennifer Bicego, 30, who is accused of illegally obtaining a prescription pad from a doctor's office she used to work at, according to a news release from Schuette's office.

Authorities believe Bicego and company used the pad to forge prescriptions for OxyContin, Norco, Percocet and Adderall.

They then took the fake prescriptions to several pharmacies in mid-Michigan, obtained the drugs, and sold them in exchange for cash or other drugs, authorities believe.
Types of Physician Prescribers

1. Intentional
2. Unintentionally
3. Adjustment/Model errors
General Practice
Data Application & Risk Management Opportunities

1. Intentional – Further investigation or action
2. Unknowing
   1. Resources- pain management contracts, checklists, best practices, MAPS etc.
   2. Education- online courses, clinical guidance, CDC recommendations
   3. Individual risk assessment
3. Adjustment/Model Errors
Potential Improvements

• MySQL, SHINY Dashboard
• Incorporating prescription level data
• Modeling based on drugs prescribed
• Including year-to-year comparisons
Questions?