Mapping Opioid, Hepatitis C and Pharmacy Data to Identify Areas for Intervention

Section 3C
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• Discuss opioid overdose statistics in the US and Minnesota
• Review Minnesota harm reduction legislation
• Describe the results of the Minnesota Pharmacist Opioid Survey
• Explain how geospatial analysis can enhance research findings
• Identify how geospatial findings can catalyze new research and practice initiatives
Since 2000, 700,000 people died of a drug overdose

68% of the 70,200 drug overdoses in 2017 were opioid related

In 2017, the opioid overdoses were 6X higher than 1999

On average, 130 Americans die everyday from opioid overdose

Social Determinants of Health:
- Low educational attainment
- Poverty
- Unemployment
- Isolation

CDC data
3 Waves of the Rise in Opioid Overdose Deaths

Wave 1: Rise in Prescription Opioid Overdose Deaths
Wave 2: Rise in Heroin Overdose Deaths
Wave 3: Rise in Synthetic Opioid Overdose Deaths

Other Synthetic Opioids
- e.g., Tramadol and Fentanyl, prescribed or illicitly manufactured

Commonly Prescribed Opioids
- Natural & Semi-Synthetic Opioids and Methadone
- Heroin

Deaths per 100,000 population


Change in national numbers

Interactive Maps:
http://time.com/4260798/drug-epidemic-america/
Minnesota Opioid Overdose Deaths

Opioid-involved drug overdose deaths by non-exclusive drug category, MN residents, 2000-2017

- All opioid-involved deaths: 422
- Other Opioids and Methadone: 195
- Synthetic Opioids: 184
- Psychostimulants: 161
- Heroin: 111
- Benzodiazepines: 92
- Cocaine: 68

Year range: 00-17
Number of deaths range: 0-500
Different patterns emerge in Metro and Greater MN.
Working-age adults have highest number of deaths
State rate masks significant racial disparities

Drug Overdose Mortality Rates by Race, MN Residents, STATEWIDE, 2015-2017

- American Indian:
  - 2015: 47.3
  - 2016: 64.6
  - 2017: 76.2

- African American:
  - 2015: 20.8
  - 2016: 24.0
  - 2017: 27.6

- White:
  - 2015: 10.1
  - 2016: 11.7
  - 2017: 12.1
In 2016, there were 395 opioid overdose deaths. For every 1 death there were...

- Death: 1
- Hospital admissions: 2
- Emergency department visits: 4
- EMS responses: 7
Increase in injection drug use

PROTECTING, MAINTAINING AND IMPROVING THE HEALTH OF ALL MINNESOTANS

Source: Minnesota Department of Human Services, BHD, DAANES (8/16/2017)
It’s not what you think it is

- Internet sales
- Pill presses

Fentanyl
Synthetics
?
PROTECTING, MAINTAINING AND IMPROVING THE HEALTH OF ALL MINNESOTANS
Minnesota Pharmacists Role in Addressing the Opioid Crisis

University of Minnesota, MN Board of Pharmacy, MN Department of Health and MN Pharmacists Association

- Use of legislation that supports the pharmacists public health role in the opioid crisis
- Pharmacists’ perceptions on their role in the opioid crisis
Legislation For Pharmacists to Address Opioid Crisis

- **MN Opiate Antagonist Protocol**: Pharmacists may dispense naloxone using protocol rather than individual provider prescription.

- **Syringe Access Initiative**: Pharmacists may dispense a 10 pack of syringes without a prescription.

- **Authorized Collector Program**: Pharmacists may collect and waste unused medications.
Minnesota Pharmacist Survey

Anonymous survey emailed to 8405 MN licensed pharmacists
1564 pharmacists responded (18.6% response rate)
1267 pharmacist report practicing in Minnesota

Age of MN respondents (n= 1235)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30 years</td>
<td>202</td>
<td>16.40</td>
</tr>
<tr>
<td>31-40 years</td>
<td>392</td>
<td>31.74</td>
</tr>
<tr>
<td>41-50 years</td>
<td>224</td>
<td>18.14</td>
</tr>
<tr>
<td>51-60 years</td>
<td>223</td>
<td>18.06</td>
</tr>
<tr>
<td>60+ years</td>
<td>194</td>
<td>15.71</td>
</tr>
</tbody>
</table>

Data analyzed by University of MN CTSI
Minnesota Pharmacist Survey: Community Practice

### Table 1. Demographics of Community Practice Participants.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community practice respondents</td>
<td>586 (37.46)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>352 (60.48)</td>
</tr>
<tr>
<td>Male</td>
<td>222 (38.14)</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>12 (2.05)</td>
</tr>
<tr>
<td>Age in years</td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>112 (19.58)</td>
</tr>
<tr>
<td>31-40</td>
<td>174 (30.42)</td>
</tr>
<tr>
<td>41-50</td>
<td>104 (18.18)</td>
</tr>
<tr>
<td>51-60</td>
<td>106 (18.53)</td>
</tr>
<tr>
<td>60+</td>
<td>76 (13.29)</td>
</tr>
<tr>
<td>Not answered</td>
<td>14 (2.45)</td>
</tr>
</tbody>
</table>

Data analyzed by University of MN CTSI
I am aware of the Opiate Antagonist Protocol (through the Minnesota Board of Pharmacy) that allows pharmacists to dispense naloxone using this collaborative practice agreement without an additional written prescription from each individual provider.

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am aware of the Opiate Antagonist Protocol</td>
<td>66.3%</td>
<td>15.2%</td>
<td>18.5%</td>
</tr>
</tbody>
</table>
## Minnesota Survey Results: Syringe Access Legislation

<table>
<thead>
<tr>
<th>I understand the process by which pharmacists are able to dispense syringes and needles based on the Minnesota Syringe Access Initiative.</th>
<th>Agree</th>
<th>80.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neutral/not sure</td>
<td>7.8%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>11.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I am comfortable and would dispense syringes (non-insulin) in my pharmacy under the Minnesota Syringe Access Initiative.</th>
<th>Agree</th>
<th>60.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neutral/not sure</td>
<td>13.5%</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>25.9%</td>
</tr>
</tbody>
</table>
I understand the process by which unwanted pharmaceuticals (including controlled substances) can now be collected at pharmacies which become Authorized Collectors through the Board of Pharmacy.

<table>
<thead>
<tr>
<th>Agree</th>
<th>47%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>23.4%</td>
</tr>
<tr>
<td>Disagree</td>
<td>29.6%</td>
</tr>
</tbody>
</table>
• Provides support and expertise in classrooms and for research projects across campus.
  • Project design, Identification of system and data needs, Data acquisition and analysis, Budget estimates, Workshops, Teaching/Research Support & Cartography.

• Recognition that zipcode data collected in the pharmacist survey provided opportunities for examining rural/urban trends and potential disparities with a new partnership

• Potential for a more impactful examination of rural/urban trends when later combined with additional statewide data sources
• Identify relationships that could be explored spatially from the survey
• Interpret and format the survey data to show values by zipcode.
• Integrate MDH data
• Identify suitable cartographic expressions and prepare maps
• Provide on-going support
Collaboration with UMD Geospatial Analysis Center

- 1267 Participants reported practicing in Minnesota
- Mapped using reported practice zip code
- Representation of Minnesota Pharmacists Population

Funding by MN Drive Updraft Grant
Reported naloxone dispensing

- Rural vs. urban
• Are pharmacists practicing in zip codes with high opioid overdose rates dispensing naloxone?
• Are pharmacists practicing in zip codes with high Hepatitis C rates dispensing syringes?
• What Minnesota zip codes have both high opioid overdose rates and high Hepatitis C rates?
Developing better public health surveillance data systems...

Mortality
Morbidity
Dissemination
Drug Overdose Surveillance in Minnesota

**MNDOSA** (Minnesota Drug Overdose and Substance Abuse Pilot Surveillance System) – collects data on ED visits and hospitalizations attributed to the recreational use of drugs/substances, currently piloted at 3 hospitals in Minnesota

**Death certificate data** – overdose deaths

**Hospital discharge data** – nonfatal overdose (e.g., ED and inpatient encounters)

**EMS data** – nonfatal overdose (e.g., naloxone administration, transport refusal)

**Syndromic Surveillance** – real-time ED reporting (e.g., cluster and outbreak identification)

**MNVDRS** (Minnesota Violent Death Reporting System) – collects data on all violent deaths occurring in Minnesota, including homicide, suicide, and undetermined causes of death

**SUDORS** (State Unintentional Drug Overdose Reporting System) – collects data on all unintentional and undetermined opioid-involved deaths
HCV cases increase nationally and associated with IDU

- Reported cases of acute HCV increased about 3.5 fold from 2010 to 2016.
- Increase in cases reflects association with rising rates of IDU.
- Most new cases occur among young, white persons who inject drugs, and live in non-urban areas.
Trends in HCV in Minnesota

- Newly reported cases among those under age 30 are on the rise.
- In 2015, 25% of newly reported cases were in persons under age 30, compared with 9% in 2005.
- Most common route of administration is injection drug use.
Legend for Minnesota Data Map

- Data aggregated at the zip code level (if more than one response) and then assigned a weighted value.
- Opioid overdose and HCV case rates were grouped into three classifications using natural breaks for the bivariate symbology.
- Any zip code with fewer than 1000 people was coded as “no data,” as were zip codes without a response.
Opioid overdose rates compared to Hepatitis C rates

Funding by MN Drive Updraft Grant
Hepatitis C rates compared to dispensing of syringes

Funding by MN Drive Updraft Grant
Opioid overdose rates compared to naloxone dispensing

Funding by MN Drive Updraft Grant
Benefits of Geospatial Analysis

• Allows visual of:
  • “hot spot” areas for targeted public health and healthcare interventions
  • Representation of population locations
  • Comparison of rural vs urban
• Small numbers of overdoses and HCV by ZIP Code.
• Overdose data by ZIP Code of residence; do not know where the injury occurred.
• May underrepresent rural communities
• There may be other important factors underlying the relationship between infectious disease and opioid overdose that are not presented here.
Future Directions: Disseminating Results

• Data published
  • Focused on legislation--Journal of Pharmacy Practice
  • Focused on pharmacist perceptions of opioid use and related legislation--Journal of the American College of Clinical Pharmacy
• Data presented at University of Minnesota Geospatial Conference
• Community forums

• Further work to increase pharmacist involvement
Where do you see this being most useful?
Acknowledgements

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z.umn.edu/naloxone

1 hour continuing education and naloxone resources
Thank you.

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