Six Years of Opioid-Involved Accidental and Undetermined Fatalities among Connecticut Residents, 2009 - 2014

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Background
Heroin Deaths

- FDA efforts to increase abuse deterrent formulation of opioids within the past few years
- April 2010 reformulation of OxyContin
Some states have more painkiller prescriptions per person than others.

Connecticut

Number of painkiller prescriptions per 100 people

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

SOURCE: IMS, National Prescription Audit (NPA™), 2012.
Fatal Overdoses due to Prescription Pain Medications

1999 – 2013 National Data

• Highest risk groups:
  ➢ Male
  ➢ 25–54 years
  ➢ White, Non-Hispanic

• Rates during that time
  ➢ >4x increase for Non-Hispanic Whites
  ➢ >2x increase for African Americans

CDC  http://www.cdc.gov/drugoverdose/data/overdose.html
Source of Prescription
Pain Medications for Non-Medical Use

Friends and relatives

Sources of Prescription Painkillers 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

Percent of Users

Number of Days of Past-Year Non-Medical Use

Any
1-29
30-99
100-199
200-365

* Obtained from the US National Survey on Drug Use and Health, 2008 through 2011.
* Estimate is statistically significantly different from that for highest-frequency users (200-365 days) [P<.05].
* 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.

Methods
OCME Fields

• **Immediate cause of death** (toxicity, disease, trauma, natural causes)

• **Manner of death** (accidental, undetermined, homicide, suicide, natural)

• **Description of injury** (ingestion, inhalation, injection, drug use, EtOH use, etc.)

• **Circumstances of Death** (narrative completed at time of discovery)
Methods

• Searched all Accidental or Undetermined Deaths for the following words in the Cause of Death fields.

- Substance
- Intoxication
- Poisoning
- Overdose
- Abuse
- Heroin
- Stimulant
- Prescription
- Sedative
- Oxycodone
- Opiate
- Opioid
- Narcotic
- Amphetamine
- Cocaine
- Analgesic
- Methadone
- Morphine
- Polydrug
- Fentanyl
- Oxycontin

• Reviewed Narrative, External Exam, and Toxicology report for each case
Data Analysis

• Descriptive statistics

• Compared 2009-2011 to 2012-2014 for trends in heroin- and pharmaceutical opioid-involved deaths

• Geospatial analyses of opioid type by Deceased’s town of residence

• Spatial metrics were applied to adjust regression estimates using algorithms within the advanced GeoDa spatial analysis software
Results
Demographics (N = 1973)

• 70.2% Male
• Mean age = 40.5 years (12.0 SD)
  ➢ Median = 41 years
  ➢ 50% of sample falls between 30 and 50 years
• Race/Ethnicity
  ➢ White = 84.2%
  ➢ African American = 5.0%
  ➢ Hispanic* = 9.8%
• 1.1% Homeless

* Presumed to be an underestimate as reporting policies varied
All Opioid-Involved Deaths by Age

- Possibly two age clusters
  - 22 – 30 yrs
  - 40 – 56 yrs
All Opioid-Involved Deaths by Gender and Year

Overdose Deaths by Year and Sex

- Female
- Male
- All

Yellow = Total    Blue = Females    Gray = Males
<table>
<thead>
<tr>
<th>Year</th>
<th># of TownsAffected</th>
<th>Total Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>87</td>
<td>260</td>
</tr>
<tr>
<td>2010</td>
<td>85</td>
<td>251</td>
</tr>
<tr>
<td>2011</td>
<td>89</td>
<td>260</td>
</tr>
<tr>
<td>2012</td>
<td>92</td>
<td>295</td>
</tr>
<tr>
<td>2013</td>
<td>107</td>
<td>420</td>
</tr>
<tr>
<td>2014</td>
<td>116</td>
<td>487</td>
</tr>
</tbody>
</table>

Over the past six years, all but 17 of the 169 municipalities in Connecticut have experienced at least one fatal opioid overdose.
Common Locations of Injury and Death

Injury
- Residence = 85.4%
- Hotel/Motel = 3.3%
- Road/Outdoors = 3.2%
- Bar/Restaurant = 0.6%
- Auto* = 1.1%
- Unknown = 2.6%

Death
- Residence = 59.8%
- Hospital = 32.9%
- Hotel/Motel = 2.8%

* Not a motor vehicle accident
Manner and Immediate Cause of Death

- Accidental = 97.7%
- Undetermined = 2.2%

- Heroin/Morphine-Involved = 61.1%
- Pharmaceutical Opioid-Involved = 54.0%

- Fatalities for the 2012-2014 period were significantly more likely to involve heroin (p < 0.0001)
Heroin /Morphine Deaths (blue) vs. Pharmaceutical Opioid Deaths (green)
Heroin/Morphine-Involved Deaths

Heroin/Morphine (per 100,000 population)

Individuals With Heroin Reported in Toxocology: approximate location of residence *
Pharmaceutical Opioid-Involved Deaths

Pharmaceutical Opioids (per 100,000 population)

Deaths per 100K
- 0
- 1 - 29.9
- 30 - 99.9
- 100 - 249.9
- 250 - 549.9
- 550 - 1000
- 1000+

*Source: Connecticut Medical Examiner

Individuals With Pharmaceutical Drugs Reported in Toxocology: approximate location of residence

*Source: Connecticut Medical Examiner
Opioid Type
Geospatial Analyses

• Used this spatial influence to weight our regression analysis.

• We should note that unweighted analysis found fewer of these inferences.

• Spatial influence noted for Heroin/Morphine- and Pharm-only but not for Combo.
Pharmaceutical-only Deaths

- Significantly more likely to occur among those who were older, White, or female.
Heroin/Morphine-only Deaths

• Those who were younger or male were significantly more to have heroin/morphine as the only opioid in their toxicology report.
Combo Deaths

• Older individuals were significantly more likely to have had a combination of heroin/morphine and pharmaceutical opioids in their toxicology reports.
• The absence of spatial influence suggests a widely dispersed problem across the state.
Implications of Study Findings
• The absolute number of opioid-involved deaths is increasing in Connecticut.

• Abuse-deterrent formulations do not appear to have had much effect in CT.
• **Age:** Two age groups at particular risk: 22-30 years and 40-56 years.
  – Need to reach people early in their drug use career.
  – Need to reach older individuals who may suffer from chronic pain and are perhaps being over-medicated.
  – Prescription monitoring plan is one important strategy for managing over-prescribing of pharmaceutical opioids.
• **Residence**: Most opioid-involved injuries and deaths occur either in the Deceased’s residence or in that of a friend or family.
  – Expand access to **naloxone** via SEPs, pharmacies, treatment programs, prescribers
• **Expand training** about overdose recognition and prevention
  – Use geospatial data to target OD training in hot spots
  – SEPs, pain clinics, treatment programs
  – Continued **cross-departmental collaboration** for data collection and analysis, policy planning, improving and enhancing cooperation and program planning.

• Explore more **evidence- and harm reduction-based treatments** (cf traditional 12-step model)
Acknowledgements

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