Understanding Links among Opioid Use, Overdose, and Suicide

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  - These are my opinions and do not necessarily represent those of VHA
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  - Arbor Sense
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Overdose Deaths Involving Opioids, by Type of Opioid, United States, 2000-2015

- Any Opioid
- Heroin
- Natural & Semi-Synthetic Opioids (e.g., fentanyl, tramadol)
- Other Synthetic Opioids
- Methadone

Relative Change in Common Causes of Death

- Unintentional Overdose
- Suicide
- Diabetes
- Cancer
- Heart Disease
- Influenza & Pneumonia
Table 1. Rates of Death from Suicide and Overdose in the United States, According to Year.\(^*\)

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Age-Adjusted Rate per 100,000 Americans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>10.4</td>
</tr>
<tr>
<td>Intentional overdose</td>
<td>1.2</td>
</tr>
<tr>
<td>Intentional overdose involving opioids</td>
<td>0.3</td>
</tr>
<tr>
<td>Unintentional overdose</td>
<td>4.3</td>
</tr>
<tr>
<td>Involving opioids</td>
<td>2.2</td>
</tr>
<tr>
<td>Suicide and unintentional overdose combined</td>
<td>14.7</td>
</tr>
<tr>
<td>Involving opioids</td>
<td>2.5</td>
</tr>
</tbody>
</table>

\(^*\) Categories were determined on the basis of the codes of the *International Statistical Classification of Diseases and Related Health Problems, 10th Revision*, that were obtained from death records. Suicide deaths were those with an underlying cause of death coded as X60 through X84, Y87.0, or \(^*\)U03. Unintentional overdose deaths were those with an underlying cause of death coded as X40 through X45. Deaths involving opioids were those with multiple cause of death codes recorded as T40.0 through T40.4 or T40.6. Data were obtained from the Centers for Disease Control and Prevention.\(^2\)
Potential Causes of this Link

• Difficulties in classifying intent of overdose deaths
Potential Causes of this Link

- Pain
- Opioid Use
- Suicide Risk
- Overdose Risk
Potential Causes of this Link

- Pain
- Opioid Use
- Depression
- Suicide Risk
- Overdose Risk
Potential Causes of this Link

- Supply/Availability
Potential Causes of this Link

- Economic factors

**Mortality rate for whites ages 45-54 without a college degree, by country**

Angus Deaton, Princeton University*

*MOLLY QUINN/THE SPOKESMAN-REVIEW*
THE OPIOID CRISIS AND ECONOMIC OPPORTUNITY: GEOGRAPHIC AND ECONOMIC TRENDS

By Robin Ghertner and Lincoln Groves, Ph.D.

Figure 1. Past Year Opioid Misuse and Use Disorder by Poverty Status, 2016

Source: 2016 National Survey on Drug Use and Health.
Figure 2. National Trends in Unemployment, Poverty, and Measures of Substance Use and Opioid Prevalence

- **Retail Opioid Sales**
  - Sales (thousands of kg morphine equiv.)
  - Poverty Rate
  - Unemployment Rate
  - 2000-2016

- **Medicare Part D Opioid Prescriptions**
  - Prescriptions (millions)
  - Claims
  - Poverty Rate
  - Unemployment Rate
  - 2000-2016

- **Drug Overdose Deaths**
  - Deaths (thousands)
  - Poverty Rate
  - Unemployment Rate
  - 2000-2016

- **Opioid-Related Hospitalizations**
  - Stays (thousands)
  - Poverty Rate
  - Unemployment Rate
  - 2011-2014
The association between opioid dosage and suicide risk in VHA patients
Potential Causes of this Link

- Pain
- Depression
- Opioid Use
- Suicide Risk
- Overdose Risk
Pain and suicide-related outcomes

• Several studies have documented:
  • The elevated prevalence of suicidal thoughts and behaviors in pain clinic patients (Fishbain, Clin J Pain, 1991)
  • The cross-sectional association between self-reported pain and suicidal ideation and non-fatal attempts (Breslau, Neurology, 1992; Ilgen et al., Gen Hosp Psych, 2008)
  • The longitudinal relationship between
    • Self-reported pain severity and suicide mortality (Ilgen et al., SLTB, 2010)
    • Pain conditions and suicide mortality (Ilgen et al., JAMA Psychiatry, 2013)
Treating pain with opioids: A “lifeline” that could help reduce risk of suicide

LYNN R. WEBSTER, MD: President, American Academy of Pain Medicine
Opioid Access and Suicide Prevention

• Limiting Access to Means of Suicide
  • Most studies looking at access to means—whether guns, pills, carbon monoxide, bridges, or other suicide methods—have found that making these methods less available reduces suicide rates.

www.afsp.org/preventing-suicide
Methods

• Case-cohort design

• For each of the two study years, a 5% random sample of patients was drawn, irrespective of case status.
  • Cases were all FY04-FY05 VHA patients who died by suicide before the end of FY09.
  • Both cases and controls were further restricted to all individuals with a chronic pain condition who were treated with an opioid.
  • Individuals with indicators of palliative care consultations or hospice care in their VHA medical records were excluded (n=1926)

• The sample size was 123,946.
### Results: Cox Proportional Hazards Models of Risk of Death by Suicide

<table>
<thead>
<tr>
<th>Prescribed Daily Opioid Dose</th>
<th>Suicide, Any Mechanism</th>
<th>Intentional Overdose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to &lt; 20 mg/d</td>
<td>HR (95% CI)</td>
<td>HR (95% CI)</td>
</tr>
<tr>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>20 to &lt; 50 mg/d</td>
<td>1.48 (1.25, 1.75)</td>
<td>1.59 (1.12, 2.27)</td>
</tr>
<tr>
<td>50 to &lt; 100 mg/d</td>
<td>1.69 (1.33, 2.14)</td>
<td>1.74 (1.09, 2.76)</td>
</tr>
<tr>
<td>100+ mg/d</td>
<td>2.15 (1.64, 2.81)</td>
<td>2.09 (1.22, 3.56)</td>
</tr>
</tbody>
</table>

Adjusted for age, sex, race, Hispanic ethnicity, number of pain conditions, number of psychiatric conditions, Charlson comorbidity Index, and opioid schedule.
Clarification

• These results reflect the association between daily dosage and suicide risk
• The findings may not be directly relevant to questions related to tapering
  • (and should not be used as justification for abrupt tapers)
Conclusion: Opioids and suicide

• Limitations: This is an observational study
  • Patient: Is opioid dose a proxy for increased pain?
  • Treatment: Is higher opioid dose a proxy for poor pain care?
• No signal for potential protective effect of opioids on risk of suicide
• Increases in opioid dose are associated with increased risk of suicide
  • This association is not limited to intentional overdose
• Chance that opioids impair judgment and could increase the likelihood of engaging in suicidal behaviors
• The magnitude of the observed association was much lower than what has been described for unintentional overdose.

Shared prevention approaches
### Table 2. Interventions to Address the Risk of Suicide and Overdose Related to Opioid Use.

<table>
<thead>
<tr>
<th>Goal and Intervention</th>
<th>Population, Defined According to Level of Opioid Exposure and Misuse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low-Risk Regimen of Prescription Opioids</td>
</tr>
<tr>
<td><strong>Identifying who is at risk for suicide and overdose</strong></td>
<td></td>
</tr>
<tr>
<td>Determination of risk score on basis of medical record</td>
<td>+</td>
</tr>
<tr>
<td>Assumption that high level of opioid exposure and misuse puts the patient at risk</td>
<td></td>
</tr>
<tr>
<td><strong>Preventing suicide or overdose among those identified as being at risk</strong></td>
<td></td>
</tr>
<tr>
<td>Treatment for mental health conditions, when present</td>
<td>+</td>
</tr>
<tr>
<td>Cognitive behavioral therapy for suicide risk and motivational interviewing for overdose risk*</td>
<td></td>
</tr>
<tr>
<td>Patient-centered taper of opioid dosage†</td>
<td>+</td>
</tr>
<tr>
<td>Overdose education and naloxone distribution*</td>
<td>+</td>
</tr>
<tr>
<td>Medication-assisted treatment‡</td>
<td></td>
</tr>
</tbody>
</table>

* Although these interventions would ideally be available to all persons identified as having any risk of suicide or unintentional overdose, resource constraints are likely to preclude this approach. Given that these approaches can address risks specifically related to opioid use, they should be prioritized for those with riskier levels of use.

† Patient-centered tapering is based on an evaluation of the risks and benefits for a specific patient, at a reasonably slow pace of dosage reduction and with the patient’s engagement in the treatment decision making.

‡ Treatments include methadone, buprenorphine–naloxone, and naltrexone.
“The percent decrease in average overdose risk behavior frequency was 40.5% in intervention participants and 14.7% in EUC only participants among those participants with data at both timepoints.”

Bohnert et al. (2016) *Drug and Alcohol Dependence*
Controversies and Summary of Recommendations

• Controversies/Emerging areas of study:
  • The role of tapering
    • who, when, how to taper?
  • Understanding within person risk
    • When are individuals at the greatest risk?
    • Need for more granular data
  • The need to manage multiple comorbidities while managing risk
  • New risks on the horizon (e.g., fentanyl, benzodiazepines)

• Summary
  • The increases in overdose and suicide likely share similar pathways (involving poorly managed pain, disability and access to opioids)
  • Addressing overdose and suicide will require attending to and addressing multiple drivers of risk
Thank You!

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