Prescription Drug Overdose
The National Public Health Perspective

Christopher M. Jones, PharmD, MPH
LCDR, US Public Health Service
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
The Public Health Approach to Prevention

1. Define the Problem
2. Identify Risk and Protective Factors
   - Develop and Test Prevention Strategies
3. Ensure Widespread Adoption
The Public Health Approach to Prevention

1. Define the Problem
2. Identify Risk and Protective Factors
3. Develop and Test Prevention Strategies
4. Ensure Widespread Adoption
Drug overdose death rates continue to increase US, 1980-2010

NCHS Data Brief, December, 2011, Updated with 2009 and 2010 mortality data
Opioid and benzodiazepine trends different than heroin and cocaine, US, 1999-2010

Prescription drugs primary driver of overdose deaths, US 2010

Opioids commonly involved in overdose deaths involving other drugs, US, 2010

Opioids more likely to be involved in single drug class deaths, US, 2010

Jones et al Pharmaceutical overdose deaths, United States, 2010. JAMA 2013
# Deaths are the tip of the iceberg

For every opioid overdose death in 2010

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance abuse treatment admissions</td>
<td>15</td>
</tr>
<tr>
<td>Emergency department Visits</td>
<td>26</td>
</tr>
<tr>
<td>People who meet abuse or dependence criteria</td>
<td>115</td>
</tr>
<tr>
<td>Past Year nonmedical users</td>
<td>733</td>
</tr>
<tr>
<td>Healthcare-related costs</td>
<td>$4,350,000</td>
</tr>
</tbody>
</table>

SAMHSA NSDUH, DAWN, TEDS data sets
The Public Health Approach to Prevention

1. Define the Problem
2. Identify Risk and Protective Factors
3. Develop and Test Prevention Strategies
4. Ensure Widespread Adoption
Rates of opioid overdose deaths, sales and treatment admissions increased in parallel, US, 1999-2010

[Graph showing trends in opioid sales, deaths, and treatment admissions from 1999 to 2010]

National Vital Statistics System, DEA’s Automation of Reports and Consolidated Orders System, SAMHSA’s TEDS
States with higher overdose death rates tend to have higher opioid sales rates

National Vital Statistics System and DEA’s Automation of Reports and Consolidated Orders System
Oregon PDMP report top 8.1% of providers prescribe 79% of CII-CIV drugs

- Remaining 45,330 Providers (21%)
- 2,001-4,000 Providers (19%)
- Top 2,000 Providers (60%)

Top 10% of prescribers account for 76% of total CII opioid Rxs
CA Workers Compensation, 2005-2009

Swedlow et al. Prescribing patterns of schedule II opioids in California Workers’ Compensation, CWCI Institute, 2011
Top 20% of prescribers account for 72% of Rxs, Public Drug Program, Ontario, Canada, 2006

Top 20% of prescribers account for 63% of overdose deaths
Ontario Public Drug Program, 2006

Adapted from data from Dhalla et al. Can Fam Physician 2011;57:e92-e96
More patients on opioids = more doctor shoppers among patients

Majority of opioids consumed by small percentage of patients, Arkansas Medicaid, 2005

Edlund et al. J Pain Symp Manage 2010;40:279289
Most opioids consumed by small percentage of patients at high dosage levels, NM, 2007-2008

Unpublished data from New Mexico case-control study.
Overdose risk highest among small percentage of patients at high dosage, Group Health, 1997-2005

Distribution of Patients and Overdoses by Risk Group

- Patients seeing one doctor, low dose
- Patients seeing one doctor, high dose
- Patients involved in drug diversion

Majority of people who used opioids and heroin in the past year reported nonmedical use of opioids before heroin initiation
US, 2002-2004 and 2008-2010

## Frequent nonmedical users of opioids more likely to engage in risky use behaviors, US, 2008-2010.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>1-29 Days of PYNMU of Opioid Pain Relievers</th>
<th>30-99 Days of PYNMU of Opioid Pain Relievers</th>
<th>100-365 Days of PYNMU of Opioid Pain Relievers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aOR (95% CI)</td>
<td>aOR (95% CI)</td>
<td>aOR (95% CI)</td>
</tr>
<tr>
<td>Past Year Heroin Use</td>
<td>referent</td>
<td>2.8 (1.7-4.5)</td>
<td>6.4 (3.7-11.1)</td>
</tr>
<tr>
<td>Ever Inject Heroin</td>
<td>referent</td>
<td>1.6 (0.9-2.9)</td>
<td>4.3 (2.5-7.3)</td>
</tr>
<tr>
<td>Ever Inject Opioid Pain Relievers</td>
<td>referent</td>
<td>3.8 (1.9-7.8)</td>
<td>13.3 (7.7-23.0)</td>
</tr>
<tr>
<td>Past Year Heroin Abuse or Dependence</td>
<td>referent</td>
<td>3.2 (1.7-6.1)</td>
<td>7.8 (4.7-12.8)</td>
</tr>
<tr>
<td>Past Year Opioid Pain Reliever Abuse or Dependence</td>
<td>referent</td>
<td>2.9 (2.3-3.8)</td>
<td>8.9 (7.1-11.3)</td>
</tr>
<tr>
<td>Heroin Fairly or Very Easy to Obtain</td>
<td>referent</td>
<td>1.4 (1.1-1.7)</td>
<td>2.1 (1.8-2.6)</td>
</tr>
</tbody>
</table>

Abbreviations: PYNMU, past year nonmedical use; aOR, adjusted Odds Ratio; 95% CI, 95% Confidence Interval

Odds ratio adjusted for sex, age, race/ethnicity, total family income, and county type

---

Potential markers for risk of opioid overdose

- **Demographic**
  - Male sex
  - Age:
    - 45-54 years old
    - 35-44 years old
  - White race
  - AI/AN race
  - Urbanization:
    - non-metro county
  - Low income/Medicaid

- **Personal Characteristics**
  - Substance abuse
  - Other mental health diagnosis
  - Nonmedical use of prescription
  - Nonmedical routes of administration

- **Prescription history**
  - Multiple prescriptions
  - Multiple prescribers
  - High daily dosage
The Public Health Approach to Prevention

1. Define the Problem
2. Identify Risk and Protective Factors
3. Develop and Test Prevention Strategies
4. Ensure Widespread Adoption
Reduce abuse and overdose of opioids and other controlled prescription drugs while ensuring patients with pain are safely and effectively treated.
PRESCRIPTION DRUGS

Strategies and points of intervention for preventing misuse, abuse, and overdose, while safeguarding access to treatment.

NOTE: What is presented here are the priority strategies that are likely to have the greatest impact. This is not an exhaustive list.
Public Health Policy Options

- Prescription Drug Monitoring Programs (PDMPs)
- Patient Review & Restriction Programs
- Laws/Regulations/Policies
- Insurers & Pharmacy Benefit Managers (PBM) Mechanisms
- Clinical Guidelines
- Substance Abuse Treatment
# SAME Strategy = Multiple Intervention Points

<table>
<thead>
<tr>
<th>Intervention Points</th>
<th>Key Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pill Mills</strong></td>
<td>PDMPs, Laws/Regulations/Policies</td>
</tr>
<tr>
<td><strong>Problem Prescribing</strong></td>
<td>PDMPs, Laws/Regulations/Policies, Insurers/PBMs, Clinical Guidelines</td>
</tr>
<tr>
<td><strong>General Prescribing</strong></td>
<td>PDMPs, Laws/Regulations/Policies, Insurers/PBMs, Clinical Guidelines</td>
</tr>
<tr>
<td><strong>EDs &amp; Hospitals</strong></td>
<td>PDMPs, Laws/Regulations/Policies, Insurers/PBMs, Clinical Guidelines</td>
</tr>
<tr>
<td><strong>Pharmacies</strong></td>
<td>PDMPs, Patient Review &amp; Restriction Programs, Laws/Regulations/Policies, Insurers/PBMs, Clinical Guidelines</td>
</tr>
<tr>
<td><strong>Insurers &amp; Pharmacy Benefit Managers</strong></td>
<td>PDMPs, Patient Review &amp; Restriction Programs, Laws/Regulations/Policies, Insurers/PBMs</td>
</tr>
<tr>
<td><strong>People at High Risk of Overdose</strong></td>
<td>PDMPs, Patient Review &amp; Restriction Programs, Laws/Regulations/Policies, Insurers/PBMs, Clinical Guidelines, increase access to substance abuse treatment</td>
</tr>
<tr>
<td><strong>General Patients &amp; The Public</strong></td>
<td>PDMPs, Insurers/PBMs, Clinical Guidelines</td>
</tr>
</tbody>
</table>
The Public Health Approach to Prevention

1. Define the Problem
2. Identify Risk and Protective Factors
3. Develop and Test Prevention Strategies
4. Ensure Widespread Adoption
Pill Mill Laws

CDC PHLP 2013
Prescription Limits

CDC PHLP 2013
Immunity from Prosecution

[Map showing states with and without immunity from prosecution]
PDMPs and Health Information Technology

- **Interoperability**
  - **Active** – Alabama, Arizona, Connecticut, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Michigan, New Mexico, North Dakota, Ohio, South Carolina, South Dakota, Virginia
  - **In Process** – California, Colorado, Delaware, Idaho, Massachusetts, Minnesota, Mississippi, Montana, Nevada, New Jersey, North Carolina, Rhode Island, Texas, Utah, Washington, West Virginia

- **EHR Integration**
  - Florida, Illinois, Indiana, Kansas, Maine, Ohio, Texas, Washington, West Virginia

PDMP CoE at Brandeis University, NABP PMPi, MITRE Corp, SAMHSA
EMERGING SUCCESSES
Oxycodone sales decreased in Florida after Pill Mill law implemented, rest of US saw increases, ARCOS 2007-2011

DEA ARCOS 2007-2011
Oxycodone and alprazolam deaths decreased in Florida after Pill Mill law implementation, Florida, 2007-2011.

![Graph showing the number of deaths from various opioids in Florida from 2007 to 2011.](image-url)
Real-time PDMP reporting in Oklahoma

Information provided by Don Vogt, OK PDMP, 2013.
As PDMP use increased in Oklahoma, doctor shopping decreased

Information provided by Don Vogt, OK PDMP, 2013.

CDC/NCHS and Washington State Department of Health, Death Certificates. Provided by Jennifer Sabel, PhD, 2013

Note for WA State: * Tramadol only deaths included in 2009, but not in prior years.
Decline in Washington State involves multiple opioids

Conclusions

- **BURDEN**: Overdose deaths from prescription drugs have reached epidemic levels in the United States.

- **KEY DRIVERS**: Defining the drivers of the epidemic are critical to effective policy development.

- **SCOPE OF SOLUTION**: Multifaceted policy approach is needed.

- **KNOWN EFFECTIVENESS**: Interventions must be evaluated to determine effectiveness and need for state-specific adaptation.

Additional Information

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6043a4.htm


http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6126a5.htm?s_cid=mm6126a5_w
Thank You

Christopher M. Jones, PharmD, MPH
cjones@cdc.gov

The findings and conclusions in this report are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.