How Can We Determine the Issues Related to Prescription Medicine Misuse and Problems in the US?

Richard C. Dart, MD, PhD
Executive Director, RADARS System, Denver Health
Professor, University of Colorado
Competing Interests

- The RADARS System is the property of Denver Health and Hospital Authority, a political subdivision of the State of Colorado
  - Employees are prohibited from personal financial relationships with any company
- Many manufacturers of prescription opioids subscribe to RADARS
  - Subscribers receive information, but do not participate in developing the System, data collection, or analysis
  - Subscribers do not have access to the raw data
  - Subscribers may not use RADARS data for promotional purposes
The Problem

WHO: Total Opioid Consumption (Morphine Equivalence Mg/Capita), 1980-2015
Drugs and alcohol are not my problem, reality is my problem, drugs and alcohol are my solution.

Russell Brand: My Life Without Drugs

<table>
<thead>
<tr>
<th>Opioids</th>
<th>Benzodiazepines</th>
<th>Antipsychotics</th>
<th>AEDs</th>
<th>NPS/synthetics</th>
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</thead>
<tbody>
<tr>
<td>• Heroin</td>
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<td>• Quetiapine</td>
<td>• Pregabalin</td>
<td>• Mephedrone</td>
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<td>• Fentanyl</td>
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<td>• Rx analgesics</td>
<td>• Cocaine</td>
<td>• Ketamine</td>
<td>• Synth Cann’oids</td>
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<td>• Loperamide</td>
<td>• Amphetamine</td>
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- Opioids: Heroin, Fentanyl, Rx analgesics, Loperamide
- Benzodiazepines: Alprazolam, Diazepam
- Antipsychotics: Quetiapine, Olanzapine
- AEDs: Pregabalin, Gabapentin
- NPS/synthetics: Mephedrone, Cathinones, Synth Cann’oids
Challenges of Postmarketing Surveillance of Prescription Drugs

• All the usual challenges of postmarketing surveillance +
  – Regulators’ focus on *intended* use of a drug
    • *Unexpected* Adverse Events
  – Not on Expected Events from Unusual and Inappropriate Uses of the Drug!

• Hidden nature of substance abuse
  – Illegal behaviors
  – Anonymity and Confidentiality

• Product identification
Mosaic Surveillance

- Poison Center
- Treatment Center
- Illicit Market Price
- Drug Transactions
- Drug Diversion
- Survey of Non-Medical Use
- Online Chatter
- Non-Medical Use
- Acute Health Events
Rx Drug Abuse Decreasing in US Since 2011

Rate of Drug-Diversion Cases Opened

Rate of Poison Center Intent. Abuse

Rate of Endorsement – OTP

Rate of Endorsement – SKIP

United States, RADARS Poison Center Program
Intentional Abuse, 2006 - 2018

Per 100,000 population

oxycodeone, hydrocodone, hydromorphone, fentanyl, morphine, tramadol
United States, RADARS Drug Diversion Program
Intentional Abuse, 2006 - 2018

oxycodone, hydrocodone, hydromorphone, fentanyl, morphine, tramadol
Abuse Deterrent Formulations - Oxycodone ER (OxyContin), Drug Diversion Program, 2009 - 2015

250 law enforcement investigators in 49 states

Separation occurs in first 18 months

OxyContin®
Hydrocodone
Hydromorphone
IR oxycodone
Morphine
Other opioids group
ER Opioids Caused the Opioid Epidemic?

Poison Center

Drug Diversion

Treatment Centers
StreetRx: If the Prescription Drug Market is Decreasing, Where is the Drug Coming From?

- 4 months: 67 reports of Rx oxycodone from Canada reported to US StreetRx website.
  - 51 (76%) confirmed drug was acquired in the US and used in Canada.
  - 9 (13%) - the drug was acquired in Canada but used in the US.
  - 7 (10%) did not report country

- 62 (92.5%) reports of crushable oxycodone products
- 5 (7.5%) reports of OxyNEO, the only difficult to crush (tamper-resistant) oxycodone product in our analysis.
Many Thanks - Questions?
Richard.Dart@RMPDS.org