Prescription Drug Abuse: Colorado and Nationwide

Eric Lavonas, MD
Associate Director, Rocky Mountain Poison and Drug Center
Associate Professor, University of Colorado School of Medicine
What’s the Problem?
What’s the Problem?

![Graph showing the increase in deaths due to opioid analgesics, cocaine, and heroin from 1999 to 2007.](image)

CDC, MMWR, 2012
What’s the Problem?

For every 1 death there are...

- 10 treatment admissions for abuse
- 32 emergency dept visits for misuse or abuse
- 130 people who abuse or are dependent
- 825 nonmedical users

CDC graphic
# Opioid Pain Relievers

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Common Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocodone</td>
<td>Vicoden, Lortab, Norco</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>OxyContin, Tylox, Percocet</td>
</tr>
<tr>
<td>Morphine</td>
<td>MS Contin</td>
</tr>
<tr>
<td>Oxymorphone</td>
<td>Opana</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>Dilaudid, Exalgo</td>
</tr>
<tr>
<td>Tapentadol</td>
<td>Nucynta</td>
</tr>
<tr>
<td>Tramadol</td>
<td>Ultram</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>Subutex, Suboxone</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>Duragesic, Actiq, Fentora</td>
</tr>
<tr>
<td>Methadone</td>
<td>Methadose</td>
</tr>
</tbody>
</table>
# Benzodiazepines

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Common Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alprazolam</td>
<td>Xanax</td>
</tr>
<tr>
<td>Clonazepam</td>
<td>Klonopin</td>
</tr>
<tr>
<td>Diazepam</td>
<td>Valium</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>Ativan</td>
</tr>
<tr>
<td>Temazepam</td>
<td>Restoril</td>
</tr>
<tr>
<td>Chlordiazepoxide</td>
<td>Librium</td>
</tr>
<tr>
<td>Clorazepate</td>
<td>Tranxene</td>
</tr>
</tbody>
</table>
# Stimulants

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Common Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamine / dextroamphetamine</td>
<td>Adderall</td>
</tr>
<tr>
<td>Methylphenidate</td>
<td>Concerta, Ritalin, Daytrana</td>
</tr>
</tbody>
</table>
## Let’s Not Forget…

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Common Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextromethorphan</td>
<td>Coricidin, Robitussin</td>
</tr>
<tr>
<td>Bupropion</td>
<td>Wellbutrin</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>Seroquel</td>
</tr>
<tr>
<td>Zolpidem</td>
<td>Ambien, Intermezzo,</td>
</tr>
<tr>
<td>Zopiclone / Eszopiclone</td>
<td>Lunesta</td>
</tr>
</tbody>
</table>
The RADARS System

- Operated by Rocky Mountain Poison and Drug Center – Denver Health
- Measures rates of abuse, misuse, and diversion of prescription opioids and stimulants
  - Also street price
- Product-specific
- Geographic (3 digit Zip code level)
- Timely
RADARS® System Mosaic Approach

College Survey  Early Experimenters  Poison Center  Acute Events
RADARS® System Mosaic Approach

- College Survey
- Early Experimenters
- Poison Center
- Acute Events
- OTP Opioid Tx Program
- Patients in Treatment
- SKIP Survey of Key Informant Pts
- Patients in Treatment
- Drug Diversion
- Criminal Justice/Law Enforcement
RADARS® System Mosaic Approach

- College Survey
- Early Experimenters
- Poison Center
- Acute Events
- OTP Opioid Tx Program
- Patients in Treatment
- SKIP Survey of Key Informant Pts
- Patients in Treatment
- Drug Diversion
- Criminal Justice/Law Enforcement
- Street Price
- Users/Buyers
RADARS System Denominators

COUNTS BY SYSTEM
UNITED STATES POPULATION

= POPULATION RATE
• Tried and true
• Disease burden on whole population
• Does not account for drug availability

COUNTS BY SYSTEM
URDD

= UNIQUE RECIPIENTS OF DISPENSED DRUG (URDD) RATE
• Number of unique people filling prescription for drug
• Accounts for availability of drug in community
• Relates events to corresponding patient benefit
RADARS® System
Colorado Data
Prescription Opioids
The RADARS® System Poison Center Program
Population Rates per 100,000 by region
1st Quarter 2003 through 3rd Quarter 2012
The RADARS® System Drug Diversion Program
Population Rates per 100,000 by region
1st Quarter 2002 through 3rd Quarter 2012

- United States
- Colorado
- Denver
Poison Center Oxycodone Signals
3rd Quarter 2011 – 2nd Quarter 2012

[Map showing signal locations in Colorado]
Drug Diversion Oxycodone Signals
3rd Quarter 2011 – 2nd Quarter 2012
Poison Center Hydrocodone Signals
3rd Quarter 2011 – 2nd Quarter 2012

[Map showing locations with signals and no signals]
Drug Diversion Hydrocodone Signals
3rd Quarter 2011 – 2nd Quarter 2012
RADARS® System
Colorado Data
Stimulants
The RADARS® System Poison Center Program
Intentional Exposures per 100,000 population
by location
From 3rd quarter 2007 to 2nd quarter 2012
The RADARS® System Drug Diversion Program
Diversions per 100,000 population
by location
From 3rd quarter 2007 to 2nd quarter 2012
Colorado Summary

- Opioid abuse
  - Poison Center calls related to abuse are similar to or lower than national rates
  - Drug diversion investigations are similar to or higher than national rates
  - Oxycodone signals are detected in several Colorado regions
  - Minimal signals related to hydrocodone abuse
Colorado Summary: Opioids

• Poison center call rates are similar to or below national rates
• Drug diversion investigation are similar to or slightly higher than national rates
• Oxycodone signals are detected in several regions
• Few hydrocodone signals
Colorado Summary: Stimulants

• Poison center call rates are consistently at or below national rates
• Drug diversion investigation rates have increased rapidly in the past 12 months, and now greatly exceed national rates
Prescription Drug Monitoring Programs

Intentional Abuse Reports – Poison Center Program

Average Annual Change

-6% -4% -2% 0% 2% 4% 6% 8% 10% 12% 14%

Hydrocodone

Schedule II Opioids

PDMP
No PDMP
Prescription Drug Monitoring Programs

Prescription Opioid Abuse Mentions – Treatment Programs

Average Annual Change

- Hydrocodone
- Schedule II Opioids

PDMP
No PDMP
Abuse Deterrent OxyContin
Sales Decreased 15%
Intentional Abuse Calls to Poison Centers Down 42%
More Decrease by Non-Oral Routes than Oral Routes

54% vs 35%; interaction $p = 0.093$
Drug Diversion Cases Down 60%
# ADF is Worth Less on the Street

<table>
<thead>
<tr>
<th>Product</th>
<th>Street Price Median (IQR) $US / mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>OxyContin OC (non-ADF)</td>
<td>$1.00 ($0.63, $1.25)</td>
</tr>
<tr>
<td>OxyContin OP (ADF)</td>
<td>$0.63 ($0.50, $1.00)</td>
</tr>
</tbody>
</table>
Endorsements by Patients Entering Treatment Down 24%
Squeezing the Balloon

The RADARS System Poison Center Program
Intentional Abuse Cases: Opana ER
Rate per 1,000 URDD

Opana® ER

<table>
<thead>
<tr>
<th>Year/Quarter</th>
<th>Pre ORF</th>
<th>Pre CRF</th>
<th>Post ORF</th>
<th>Post CRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Downward Spiral of Chronic Pain, Stress, and Addiction

- Mindlessness, Addiction, Chronic Suffering
  - Hyperalgesia
  - Loss of Control Over Opioid Use
  - Increased Sensitivity To Pain
  - Stress and Negative Emotion
  - Pain
  - Stress And Negative Emotion

- Temporary Relief From Opioid Use
  - Insensitivity To Natural Reward

- Attentional Fixation And Rumination
  - Temporary Relief From Opioid Use

ADFs and PDMPs Work Here ➔

Image source: http://drericgarland.com
Other Interventions

- Community awareness
- Provider education
- Resilience training
- Enhanced PDMPs
- Improved access to treatment
- Drug courts