RADARS® SYSTEM
RADARS® SYSTEM

Goals of the RADARS System:
• Sentinel events involving the misuse, abuse and diversion of prescription drugs nationwide
• Measure rates of misuse, abuse and diversion of prescription drugs
• Provide experienced and expert analysis and interpretation of the data
History of the System

- Created in 2002 by Purdue Pharma
- 2004 – Expanded to 4 signal systems
- January 1, 2006 transferred to Denver Health Authority
Organization of the RADARS® System

Poison Centers
Richard C. Dart, MD, PhD

Key Informants
Theodore Cicero, PhD

Law Enforcement
Jim Inciardi, PhD

Methadone Programs
Mark Parrino, MPA

RMPDC
Denver Health

Numerator includes
URDDS

Calculation of Rates

Scientific Advisory Board

Reports to Subscriber
Signal Systems

• **Drug Diversion – James Inciardi, PhD**
  - Experienced NIDA investigator, War on Drugs
  - **All 50 states, Puerto Rico, U.S. Virgin Islands. Includes rural, suburban, urban**

• **Key Informant - Theodore Cicero, PhD**
  - Key informant - clinician, epidemiologist, treatment counselor, other observer knowledgeable about new and emerging drug problems
  - **Criteria needed for a case of drug abuse: (One)**
    - Use to get high or substitute for other DOA
    - Use to treat opioid withdrawal
Signal Systems

• American Association for the Treatment of Opioid Dependence – Mark Parrino, MPH
  • 75 treatment programs, rural areas
  • All patients admitted are asked to complete a one-page anonymous survey
  • Opioid use (past month, lifetime age of first use)
  • Primary opioid of abuse, source of opioid drug

• Poison Centers
  • Spontaneous reporting
  • 100% coverage in service area
  • Skilled staff (RNs, PharmD), nationally certified
  • Product specific, standardized data collection, QC
Four Views on Prescription Drug Abuse

<table>
<thead>
<tr>
<th>Poison Centers</th>
<th>Key Informants</th>
<th>Law Enforcement</th>
<th>Opioid Treatment Programs</th>
</tr>
</thead>
</table>
| • Acute incident - calling for care advice  
  • All ages and geographic regions | • Dependent or addicted patients  
  • Health care provider perspective | • Drug Diversion  
  • Criminal justice perspective | • Dependent or addicted patients  
  • Patient’s perspective |
Tale of Two Denominators

- Populations
  - Tried and true
  - Doesn’t account for drug availability
- Unique recipients of dispensed drug (URDD)
  - Number of people filling a prescription for specific drug
  - Accounts for availability of drug in community
After the Data Collection: Scientific Advisory Board

- Edgar H. Adams, ScD, Covance
- John Burke, President Pharmaceutical Diversion Education, Inc
- Theodore J. Cicero, PhD, Professor, Washington University
- Richard C. Dart, MD, PhD, Director, RMPDC; Professor, UCHSC
- Danna C. Droz, RPh, JD, President, PMP Director, Ohio
- James A. Inciardi, PhD, Professor, Center for Drug & Alcohol Studies, University of Delaware Research Center
- Herbert D. Kleber, MD, Professor of Psychiatry, Columbia
- Alvaro Munoz, PhD, Professor, Johns Hopkins University
- Mark W. Parrino, MPA, President, AATOD
- Sid Schnoll, MD, PhD, Pinney Associates
- Edward C. Senay, MD, Professor Emeritus, University of Chicago
- George E. Woody, MD, Professor, University of Pennsylvania
Summary of the System

- RADARS System Data
  - Multiple perspectives
  - Rapid
  - Geographically specific
  - Address rural nature of Rx opioid abuse
  - Non abuser victims

- Inform subscribers → FDA
2006
The Extent of Prescription Drug Abuse

- The RADARS System has at least one system active in 854 of the 930 3 digit zip codes in the United States.
- 792 of 854 (93%) had at least one case.
RADARS System 2006 US Coverage

3 DZ with cases
2006 RADARS System National Annualized Rates

Rate per 100,000 population

Rate per 1000 URDDs
Rates per 100,000 Population

Drug Diversion

Key Informant

Poison Centers

AATOD
Rates per 1,000 URDD

Drug Diversion

Key Informant

Poison Centers

Methadone Clinics
2nd Quarter 2004, Hydrocodone Rates per 100,000 Population
Western Kentucky Hydrocodone Rates by Population and 3 Digit Zip Code
Source of primary opioid among primary opioid abusers (%)

- Dealer: 80%
- A friend or relative: 50%
- Doctor prescription: 30%
- Emergency room: 20%
- Stealing: 10%
- Internet: 5%
- Forged prescription: 5%
- Other way: 5%
Urban vs. Rural

Rx vs. Heroin

*Intentional Exposures per 100,000 population served by 3 digit zip code
The Power of Pill Identification

All Calls to Poison Centers

Exposure Call
  - Intentional
    - Suicide
    - Abuse
    - Misuse
    - Intent. - Unk
  - Unintentional

Information Call
  - Pill ID
  - Drug Info
  - Other
Young Children

- **PC data:** December 29, 2002 – July 2, 2006
  - 11 to 40 centers (of 60 US centers)
  - Population served: 59 million to 176 million
- **Pediatric (0 – 5 years old) exposure mentions to:**
  - Buprenorphine
  - Fentanyl
  - Hydrocodone
  - Hydromorphone
  - Methadone
  - Morphine
  - Oxycodone
Results

- 9,241 pediatric exposures
- Mean age: 2.3 ± 1.2 years, 54% male
- Site: home (92%), Route: ingestion (99%)
- Buprenorphine significantly more likely to be associated with an effect (p<0.001)
- Deaths after hydrocodone, methadone, oxycodone
- Methadone significantly more likely to be associated with death or major effect
## Results: Pediatric Exposure Rates

<table>
<thead>
<tr>
<th>Opioid</th>
<th>Population Rate</th>
<th>URDD Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine</td>
<td>0.1</td>
<td>0.5*</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>0.09</td>
<td>0.03*</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>4.6*</td>
<td>0.06</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>0.05*</td>
<td>0.06*</td>
</tr>
<tr>
<td>Methadone</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Morphine</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>1.6*</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7.1</strong></td>
<td><strong>0.06</strong></td>
</tr>
</tbody>
</table>

* Significantly different from all other exposure rates (p<0.01)
Discussion

• Thousands of children are exposed to prescription opioids each year
• As availability in home increases, number of exposures increases
• For each Rx dispensed, buprenorphine is the most likely to end up in hands of a child
• Only deaths associated with methadone, hydrocodone and oxycodone
• Poison prevention strategy often tries to simply delay child (blister packaging)
• This is inadequate when “one pill can kill”
Operation UNITE

- Unlawful Narcotics Investigations, Treatment and Education
A + W Rates per 1,000 URDD

<table>
<thead>
<tr>
<th>Year/Quarter</th>
<th>Rate per 1,000 URDD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit</td>
</tr>
<tr>
<td></td>
<td>Central</td>
</tr>
<tr>
<td></td>
<td>Western</td>
</tr>
<tr>
<td></td>
<td>All of KY</td>
</tr>
</tbody>
</table>

Entire Slope (p*)  
0.00 (>0.05)  
0.00 (>0.05)  
0.00 (>0.05)  
0.00 (>0.05)

Slope Before 20043 (p*)  
0.00 (>0.05)  
0.00 (>0.05)  
0.00 (>0.05)  
0.01 (0.05)

Slope 20043 and After (p*)  
0.04 (<0.05)  
0.00 (>0.05)  
-0.01 (>0.05)  
0.00 (>0.05)

Difference Before/After (p**)  
-0.05 (0.005)  
-0.007 (>0.05)  
-0.007 (>0.05)  
-0.02 (0.019)
Conclusions

• No community is immune.
  • Prescription drug abuse is widespread, affecting nearly all areas of the United States.
• The level of abuse is high and still increasing in some areas, although it may be flattening out.
• No one drug seems to be responsible. Our data indicate that users typically take advantage of multiple opioids.