Falling Rates of Prescription Opioid Abuse and Death in the United States: Formulations and Ramifications

ISAM 2015
Dundee, Scotland

Janetta Iwanicki, MD
Rocky Mountain Poison and Drug Center
Denver Health Medical Center
Disclosures

• Most manufacturers of prescription opioids or stimulants subscribe to RADARS System.
• RADARS System is the property of Denver Health and Hospital Authority, a political subdivision of the State of Colorado.
• Subscribers receive information, but do not participate in developing the System, data collection, or analysis of the data. They do not have access to the raw data.
• Employees are prohibited from personal financial relationships with any company.
Outline

• Conceptual Framework for Abuse Deterrent Formulations (ADFs)
• Effectiveness of ADFs
• Unanticipated Consequences?
The Epidemic
US Consumption of Prescription Opioids, 1964 - 2012

800 ME/capita

http://www.painpolicy.wisc.edu/global
More Drug Production = More Drug Abuse
But - the Slope Varies by Drug

Instead of this?

How do we get this?

How Do Abuse, Addiction and Death Occur?
Progression of Rx Opioid Abuse

Population of People with Addiction Risk

Exposed to Opioid

Swallow

*Chew

Can ADF’s Minimize Progression?

*Crush

*Snort

*Inject
Abuse Deterrent Formulations
Strategies for Abuse Deterrence

- **Physical/Chemical barriers** - physical form of an oral drug is less amenable to abuse.
- **Agonist/Antagonist combinations** - interfere with euphoria
- **Aversion agents** - unpleasant effect if dosage form is manipulated or a higher dosage is used.
- **Delivery System** depot/implants to reduce release (e.g. SR depot SQ injectable formulation).
- **Prodrug** lacks opioid activity until transformed (e.g. GI tract).
- **Combination** – Two or more methods combined
- **Holy Grail** - Overdose only releases therapeutic amount.

Mosaic Surveillance of Prescription Drug Abuse

- **Acute Health Events**: 49 Poison centers, 491,874 opioid mentions
- **Drug Transactions**: Criminal Justice 260 agency, 146,786 opioid mentions
- **Entering Treatment**: Opioid Tx Program, 66 programs, 183,573 mentions
- **Survey Key Informant Pts**: - 109 practices, 45 states, 64,678 mentions
- **New Initiates**: College Survey 2000 students, 11,871 mentions
- **Illicit Market Price**: StreetRx.com Users/Buyers, 50 states, 8,441 price entries
- **Entering Treatment**: Survey Key Informant Pts - 109 practices, 45 states, 64,678 mentions
- **Web Monitoring**: > 150 M sites, > 35,000 posts coded for analysis

- **Poisons Center Program**: 491,874 opioid mentions
- **Drug Diversion Program**: 183,573 mentions
- **Survey of key informant patients program**: 64,678 mentions
- **College survey program**: 11,871 mentions
- **StreetRx:** 8,441 price entries

- **Mosaic Surveillance of Prescription Drug Abuse**: > 150 M sites, > 35,000 posts coded for analysis
Poison Center Program
Oxycodone ER Population and Prescription Rates, 2009-2013
Drug Diversion Program
Oxycodone ER Population and Prescription Rates, 2009-2013
Treatment Centers Combined Oxycodone ER Population and Prescription Rates, 2009-2013
Oral and Non-oral Abuse Decrease after Oxycodone ADF - Poison Center Program
Deaths Associated with Oxycodone ER Decreased Poison Center Program, 2008 - 2013
Refining Our Understanding of Abuse Deterrent Formulations
Squeezing the Balloon: ADFs Have Limited Impact Unless All Opioids Included

Switch opioid or enter treatment program

New opioid-addicted patients
Poison Center Program
Population Rate, 2009-2013

*Other opioids excluding ER oxycodone and ER oxymorphone
National Trends in Opioid Abuse and Diversion

Prescriptions of Opioid Analgesics

A  Prescriptions Dispensed for Opioid Analgesics

RADARS Drug Diversion Program

B  Drug Diversion Program

RADARS Poison Center Program

C  Poison Center Program, Intentional Abuse

D  Opioid Treatment Program

RADARS Opioid Treatment Program
Endorsement of Heroin Use
National Survey of Drug Use and Health

[Graph showing trends in numbers in thousands for Past Month and Past Year from 2002 to 2012]
Progression of Rx Opioid Abuse

- ADFs are not for the addicted
- More drug = more abuse, but formulation can change relation
- Need ADFs for IR as well as ER
- Need greater treatment capacity for opioid addiction
Need to Stop Inflating the Balloon

Switch opioid or enter treatment program

Need additional patients?
Questions?