

Postmarketing Surveillance of Prescription Drug Abuse

August 13, 2013

Richard C. Dart, MD, PhD
Director, Rocky Mountain Poison and Drug Center,
Denver, Colorado
Professor, University of Colorado School of Medicine

RADARS[®] System Description

- Focus on surveillance of abuse, misuse and diversion
- Mosaic approach to detecting abuse, misuse and diversion
- RADARS[®] System is a department of the Denver Health and Hospital Authority (DHHA), the public safety net hospital for Denver, Colorado
- The system is funded by subscriptions from several pharmaceutical companies.
- All data are owned and held exclusively by DHHA.
- Restrictions placed on subscriber's use of data

Issues in Pharmacovigilance of Opioid Analgesics

- Established drugs with well known safety profiles
 - Exception: Misuse, Abuse, Diversion and Addiction
- Abuser ≠ patient
 - Some start as patients, other do not
- Occult phenomenon
 - Cannot be overemphasized
- Product specificity
 - Many patients seem to prefer particular products
- Geography
 - Preferences seem to vary in different regions.
- Availability
 - Drug can't be abused if not available
- Time
 - Changes in abuse may be common

RADARS System Design Response

- Occult phenomenon
 - Measure when person is exposed or anonymous
- Product specificity
 - Include identification to specific product level including dosage size if possible.
- Geography
 - Localize case to 3 digit Zip Code
- Availability
 - Concept of Unique Recipient of Dispensed Drug (URDD)
- Time
 - Data reported quarterly, 3 months after end of quarter.

RADARS System Mosaic

Entering Treatment

OTP
73 programs
33 states

M Parrino, A Rosenblum

Entering Treatment

SKIP
125 practices
50 states

T Cicero

Acute Events from Abuse

53 Poison Centers
46 States

R Dart

Drug Transactions

Criminal Justice
280 investigator
50 states

H Suratt, S Kurtz

New Initiates

2000 college students
50 States
3x each year

R Dart

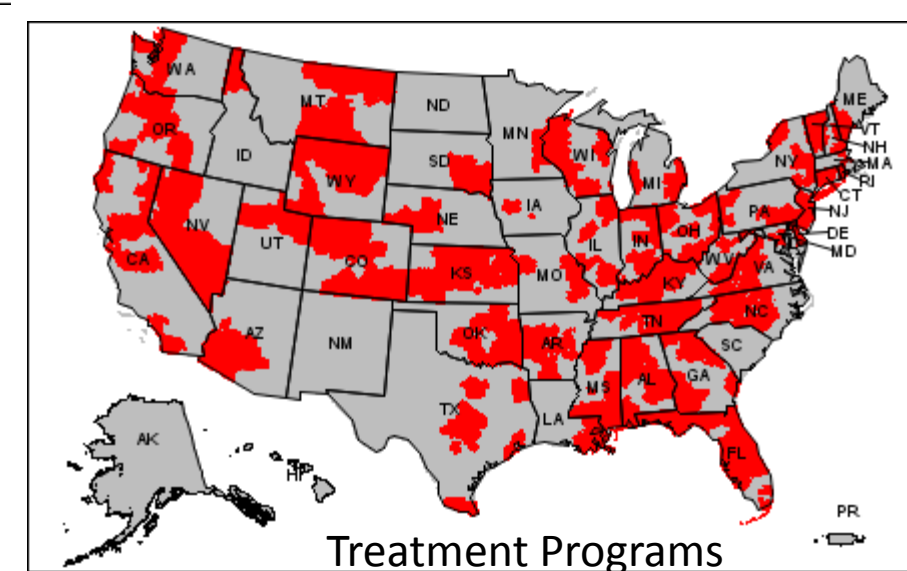
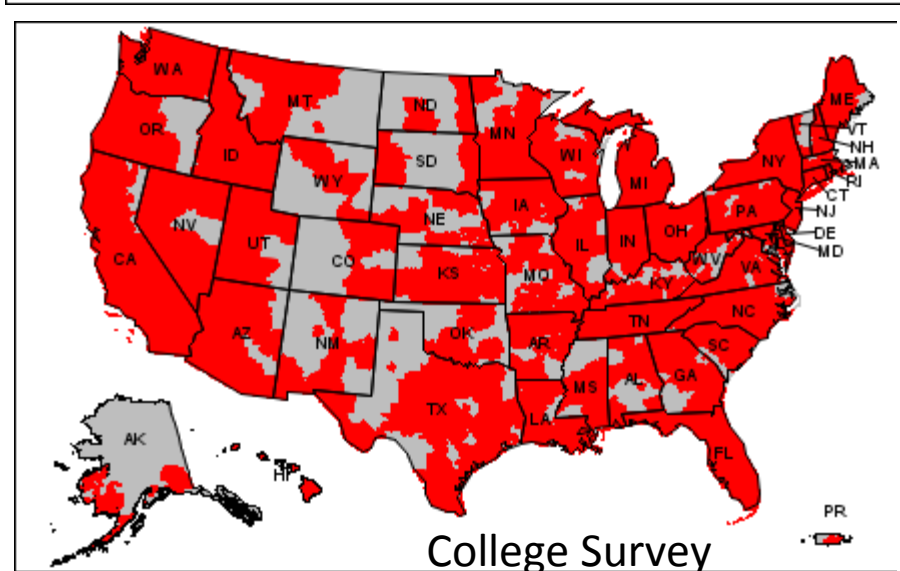
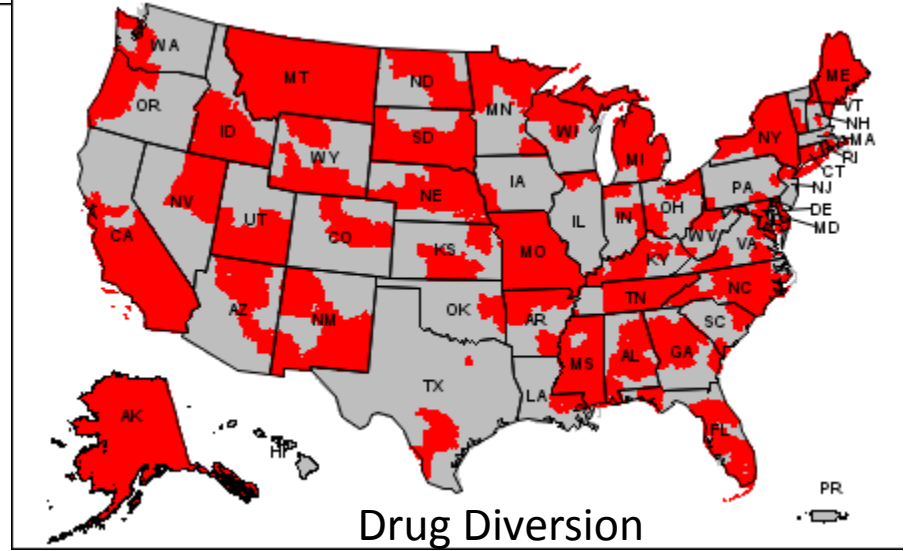
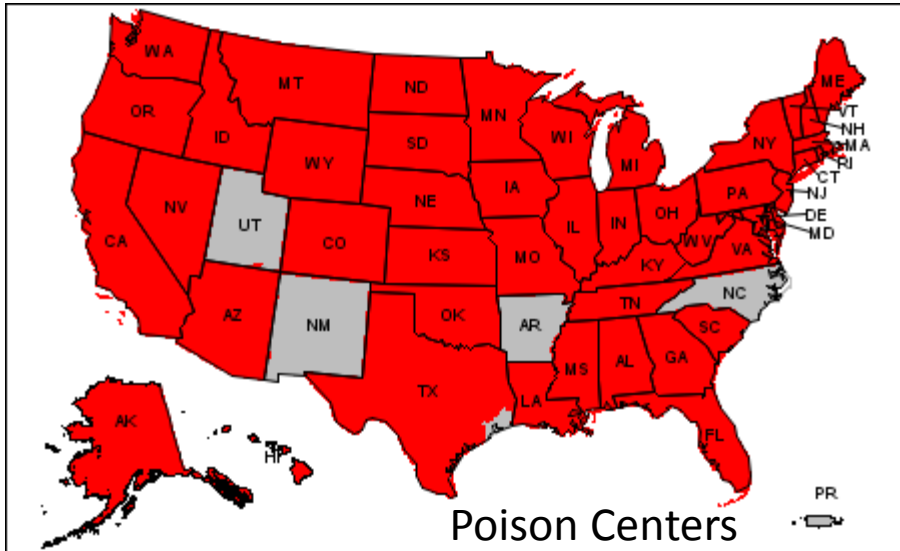
Illicit Market Price
StreetRx.com

Users/Buyers Crowdsourcing
50 states

N Dasgupta



RADARS System Coverage Maps

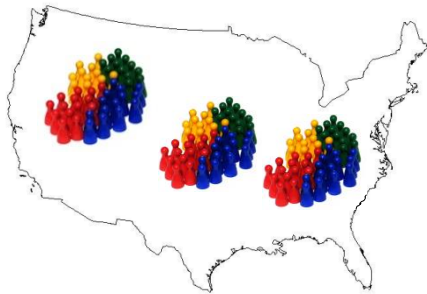


RADARS[®] System Process

Product Availability



Numerators compiled by each program each quarter



POPULATION RATE = $\frac{\text{Counts by System}}{\text{US Population}}$

- Disease burden on whole population
- Does not account for drug availability



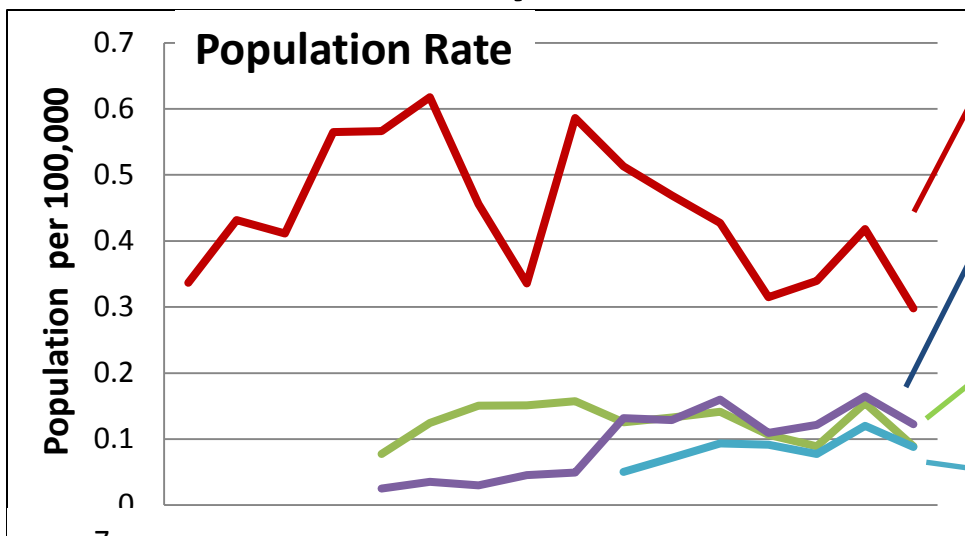
UNIQUE RECIPIENTS OF DISPENSED DRUG (URDD) RATE = $\frac{\text{Counts by System}}{\text{URDD}}$

- Number of unique people filling prescription for drug (refills excluded)

Importance of Availability

Survey of Key Informant Patients

Past 30 Day Endorsements, 2009-2012

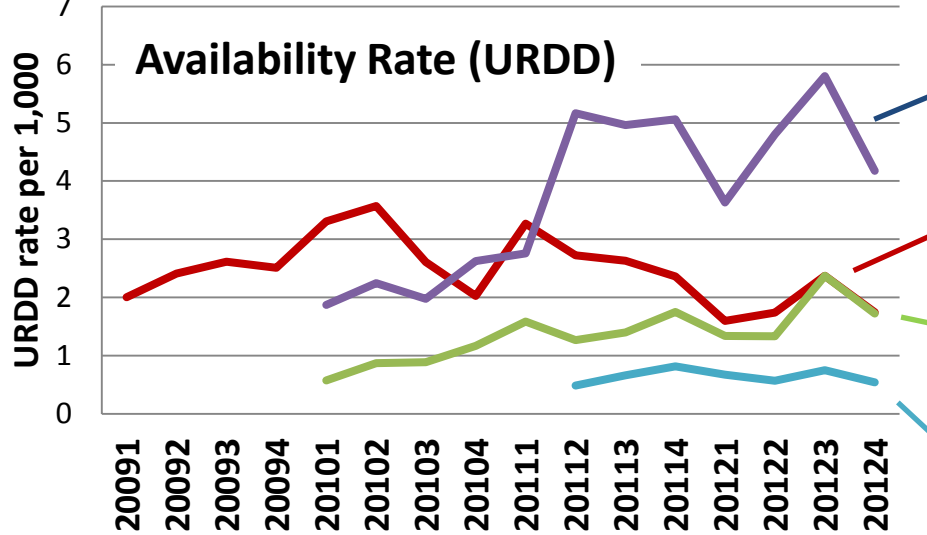


Methadone high, but decreasing

Bup-Single Ingredient Increasing slightly

Bup-Naloxone Combination Increasing Flat

Bup-Naloxone Film Strip Increasing slightly



Bup-Single Ingredient Increasing Dramatically

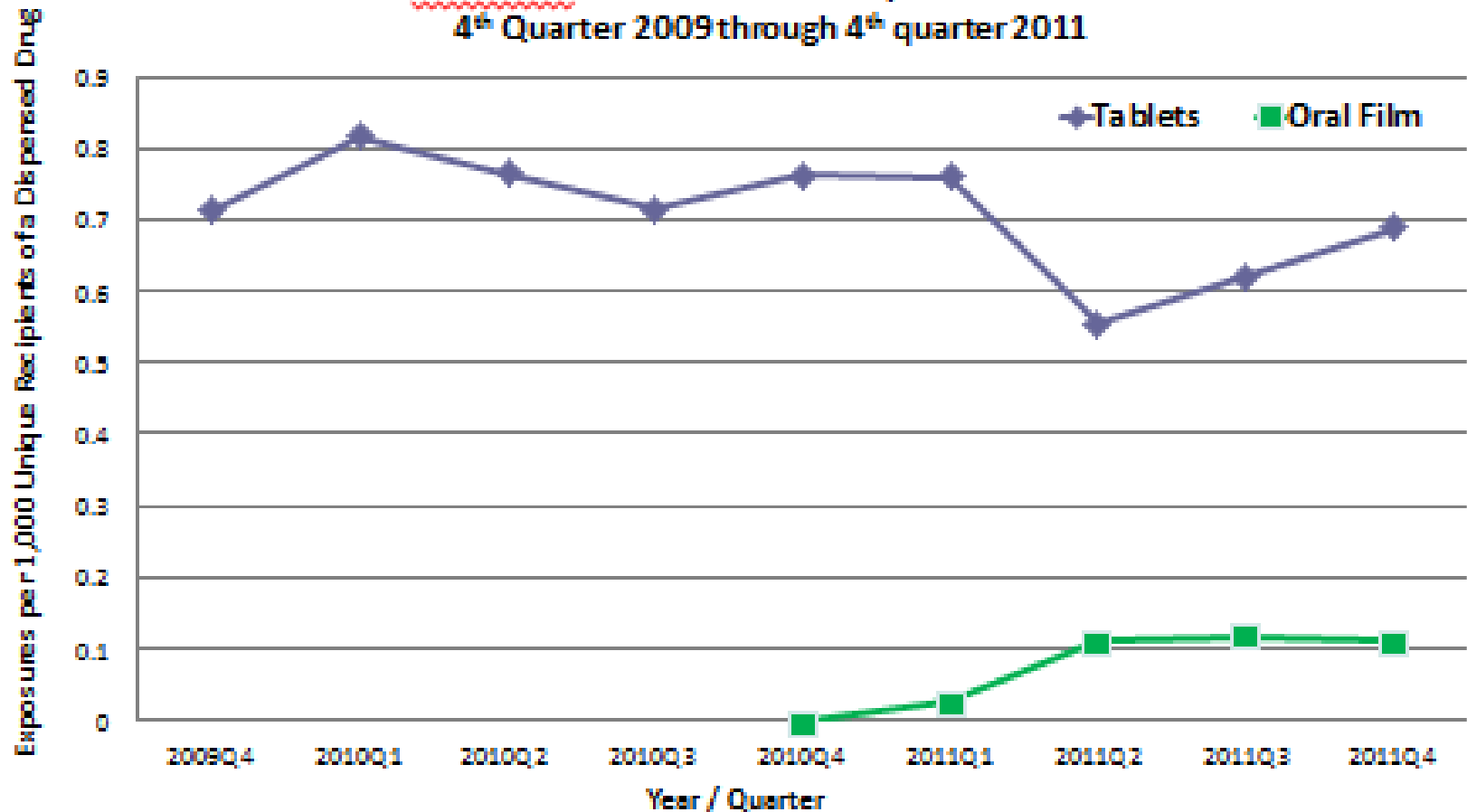
Methadone Slight Decrease

Bup-Naloxone Combination Increasing

Bup-Naloxone Film Strip low, flat

Importance of Product Specificity

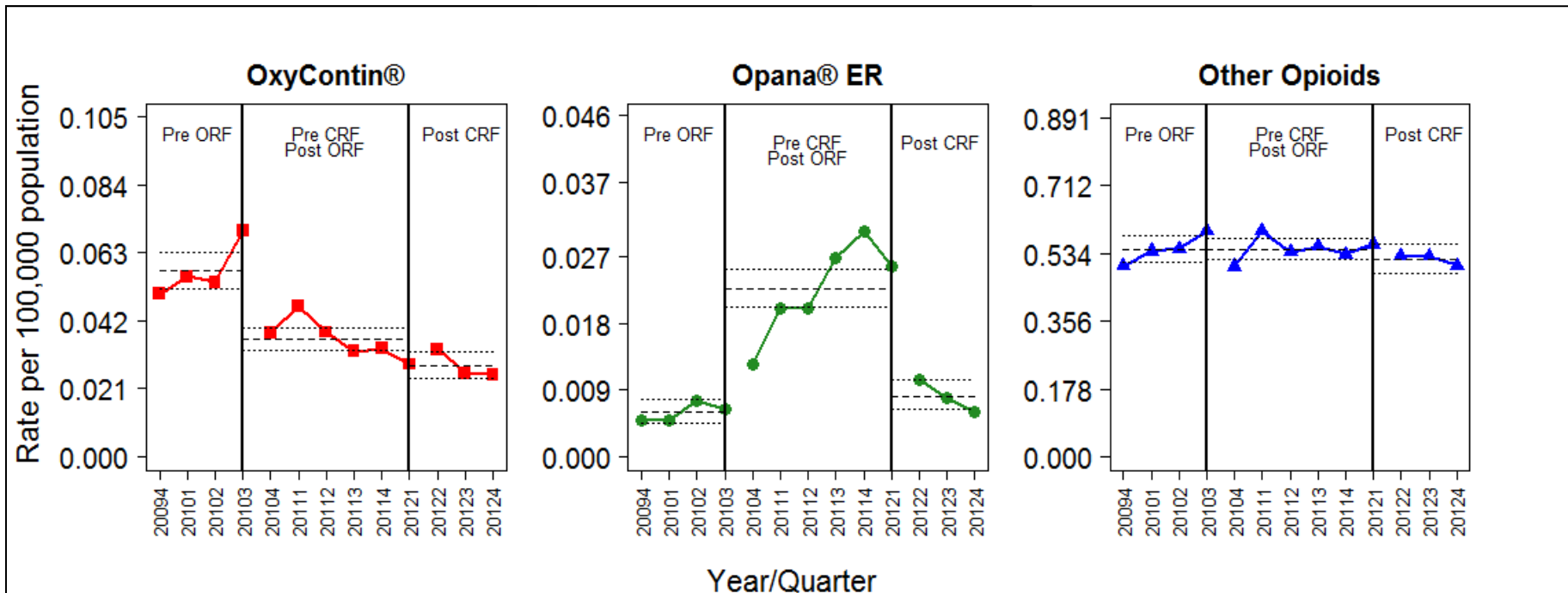
The RADARS[®] System Poison Center Program
Unintentional exposure rates of children aged 0 - 5 years to
Suboxone tablets and oral film per 1,000 URDD
4th Quarter 2009 through 4th quarter 2011



Poison Center Program

Contacts Involving Intentional Abuse

OxyContin[®], Opana[®] ER, Other Opioids



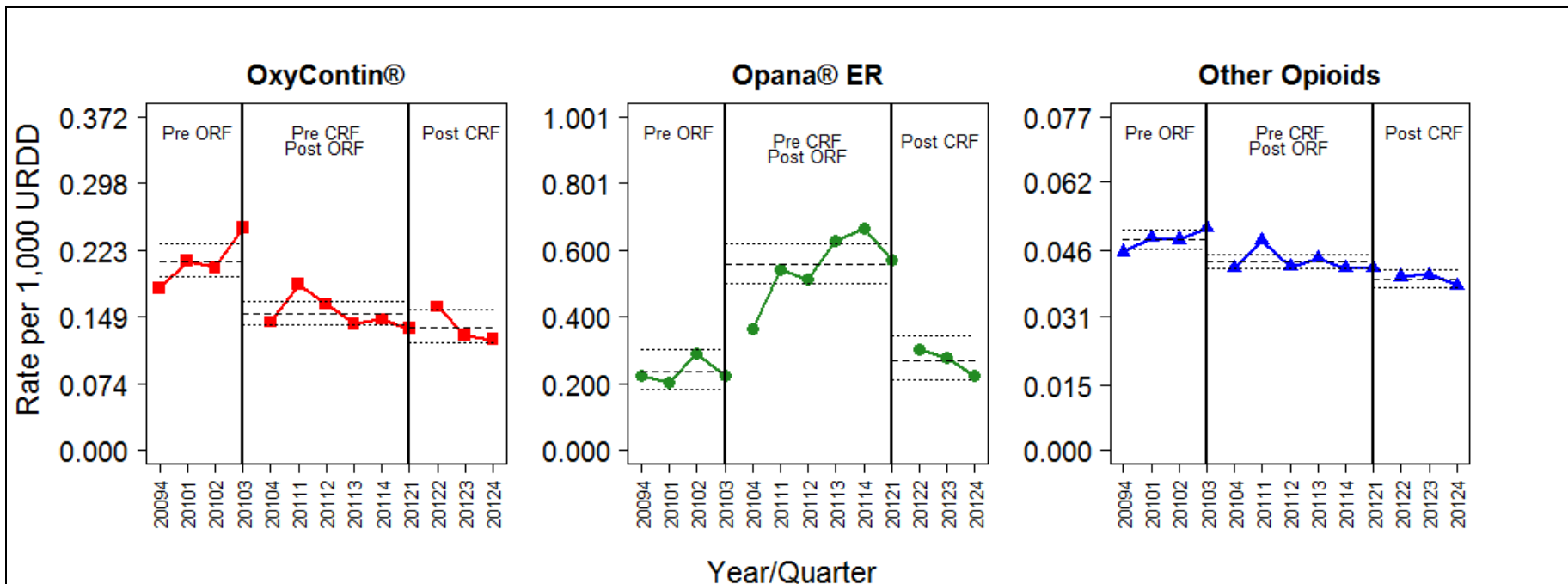
ORF = OxyContin ADF, CRF = Opana ER ADF

Intentional Abuse: An exposure resulting from intentional improper or incorrect use of a substance where the victim was likely attempting to gain a high, euphoric effect or some other psychotropic effect.

Poison Center Program

Contacts Involving Intentional Abuse

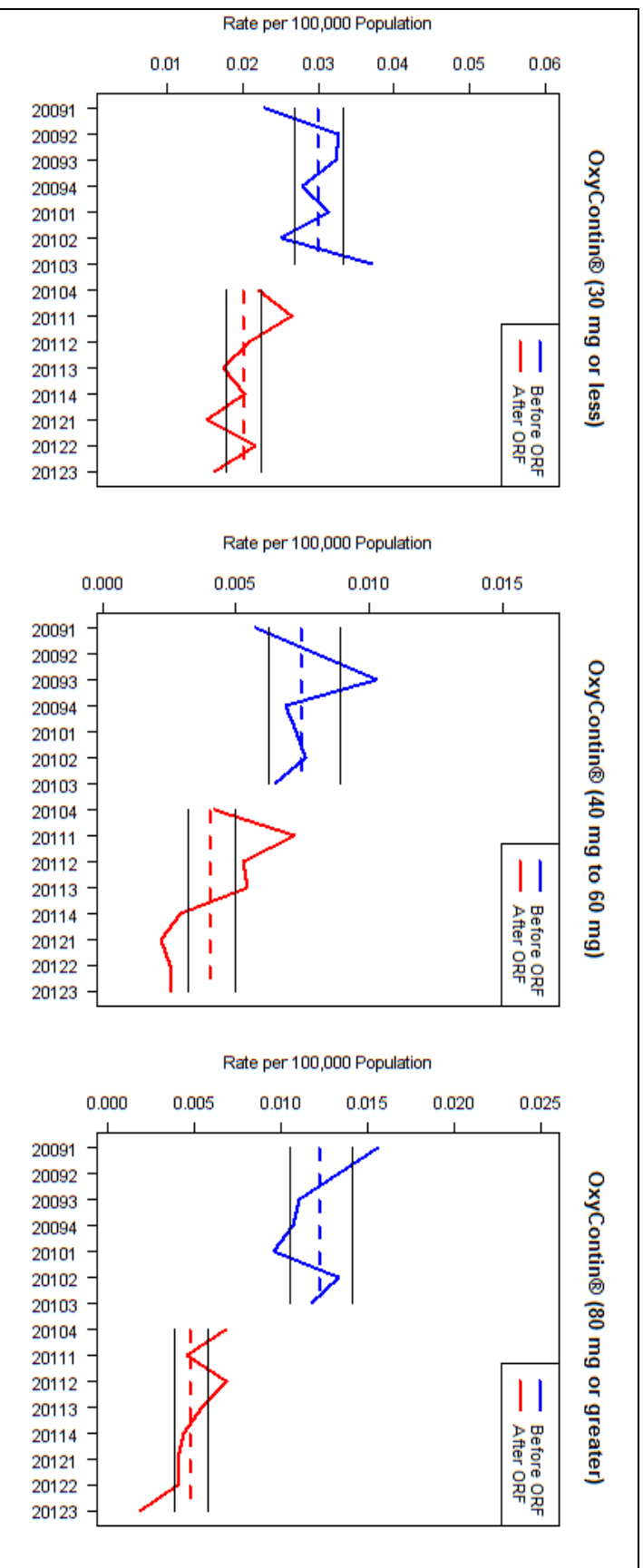
OxyContin[®], Opana[®] ER, Other Opioids



ORF = OxyContin ADF, CRF = Opana ER ADF

Intentional Abuse: An exposure resulting from intentional improper or incorrect use of a substance where the victim was likely attempting to gain a high, euphoric effect or some other psychotropic effect.

Poison Center Program Contacts Involving Intentional Abuse OxyContin® Tablet Size

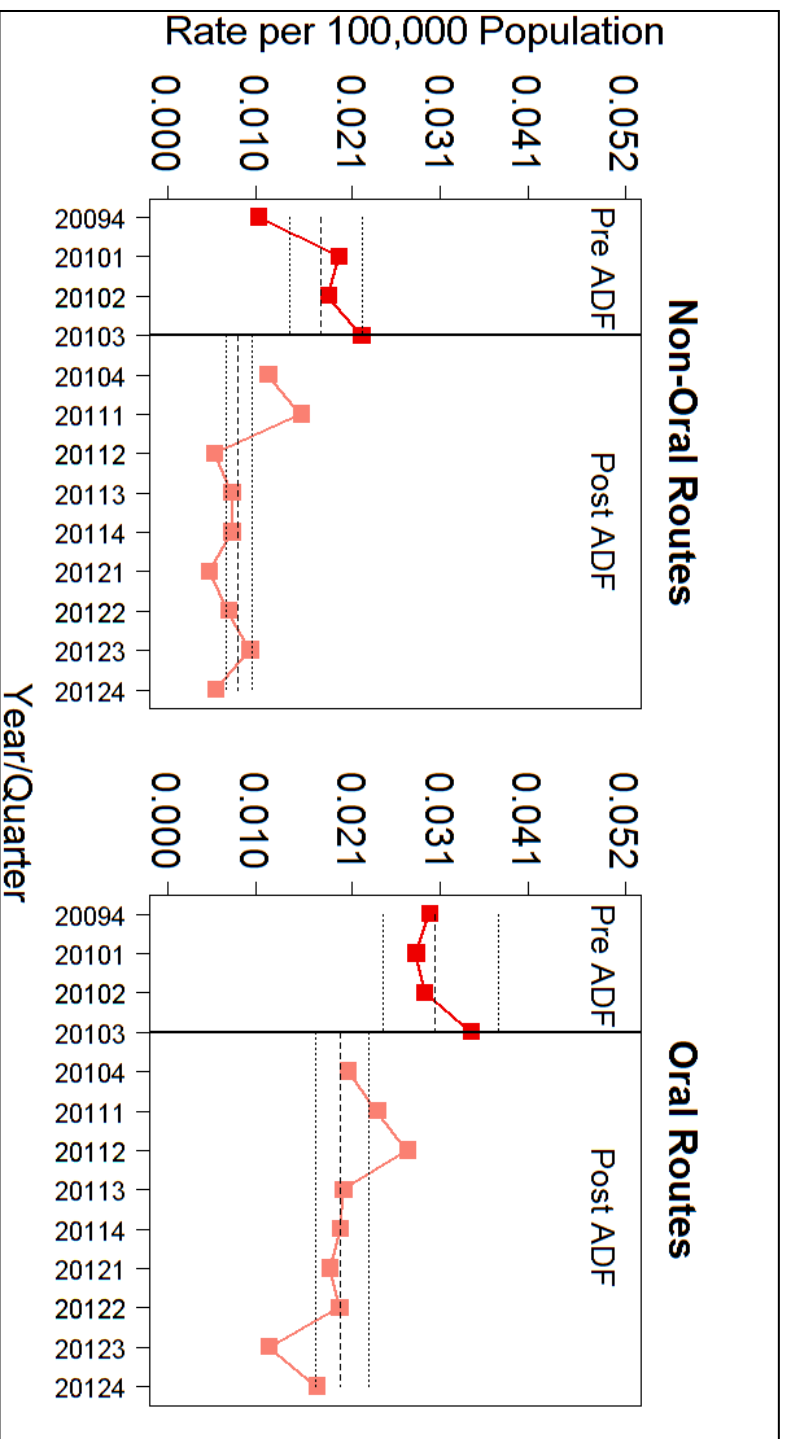


ORF = OxyContin ADF, CRF = Opana ER ADF

Non-oral Routes of OxyContin Abuse

Poison Center Center Intentional Abuse

OxyContin



Opioid Evaluation

Poison Center:

- ADFs 30% - 68% decrease in abuse rate. Effect is increasing overtime
- Non-oral rates of abuse are decreased
- No change in rate for other opioids

Drug Diversion

- ADFs: 30%-60% decrease in diversion rates
- No change in abuse cases for other opioids



StreetRx

ADF version value 27% - 38% less in the black market

Treatment Programs

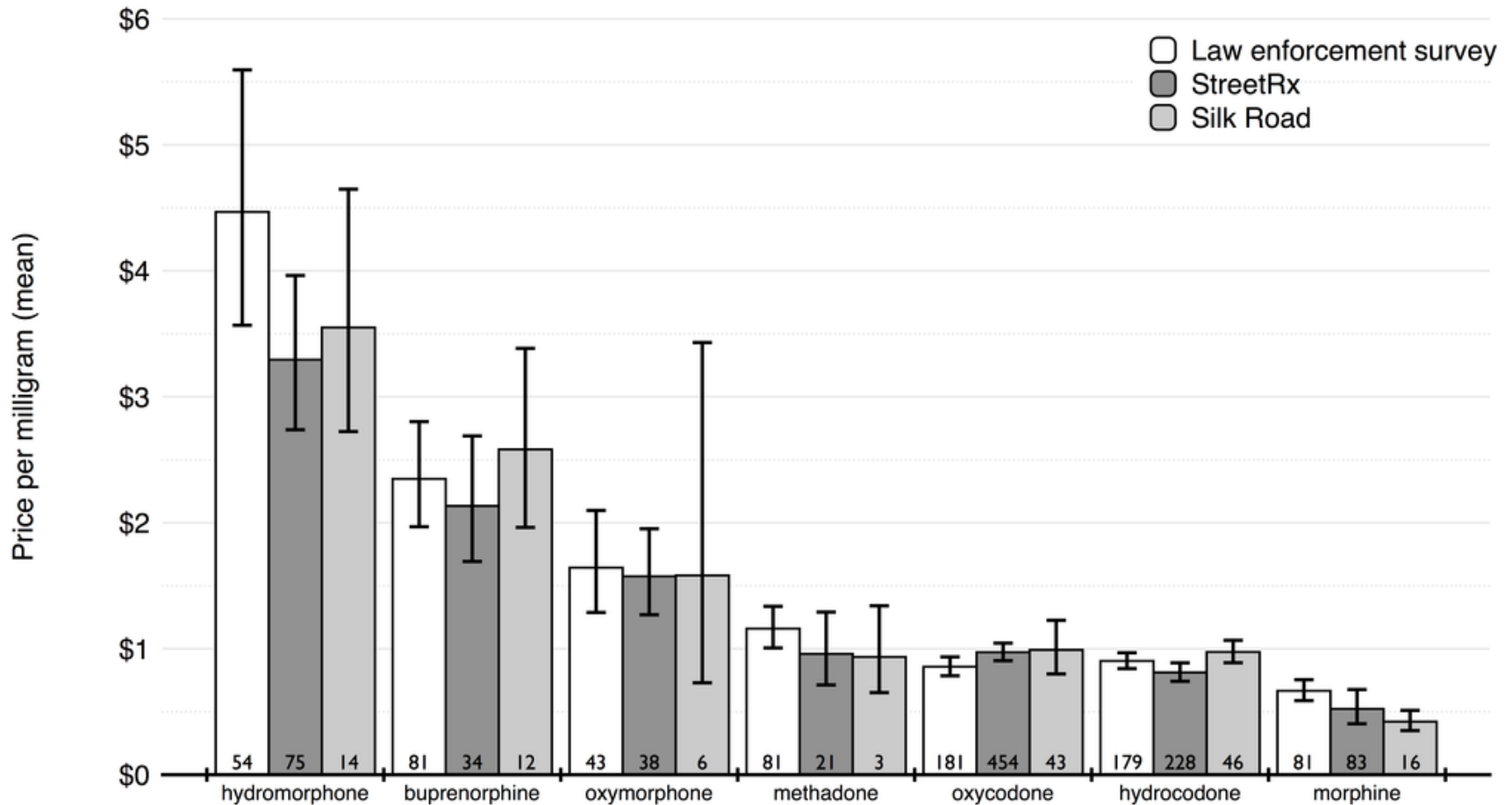
- ADFs: rates decreased 0% to 20%
- No change in rate for other opioids

College Survey

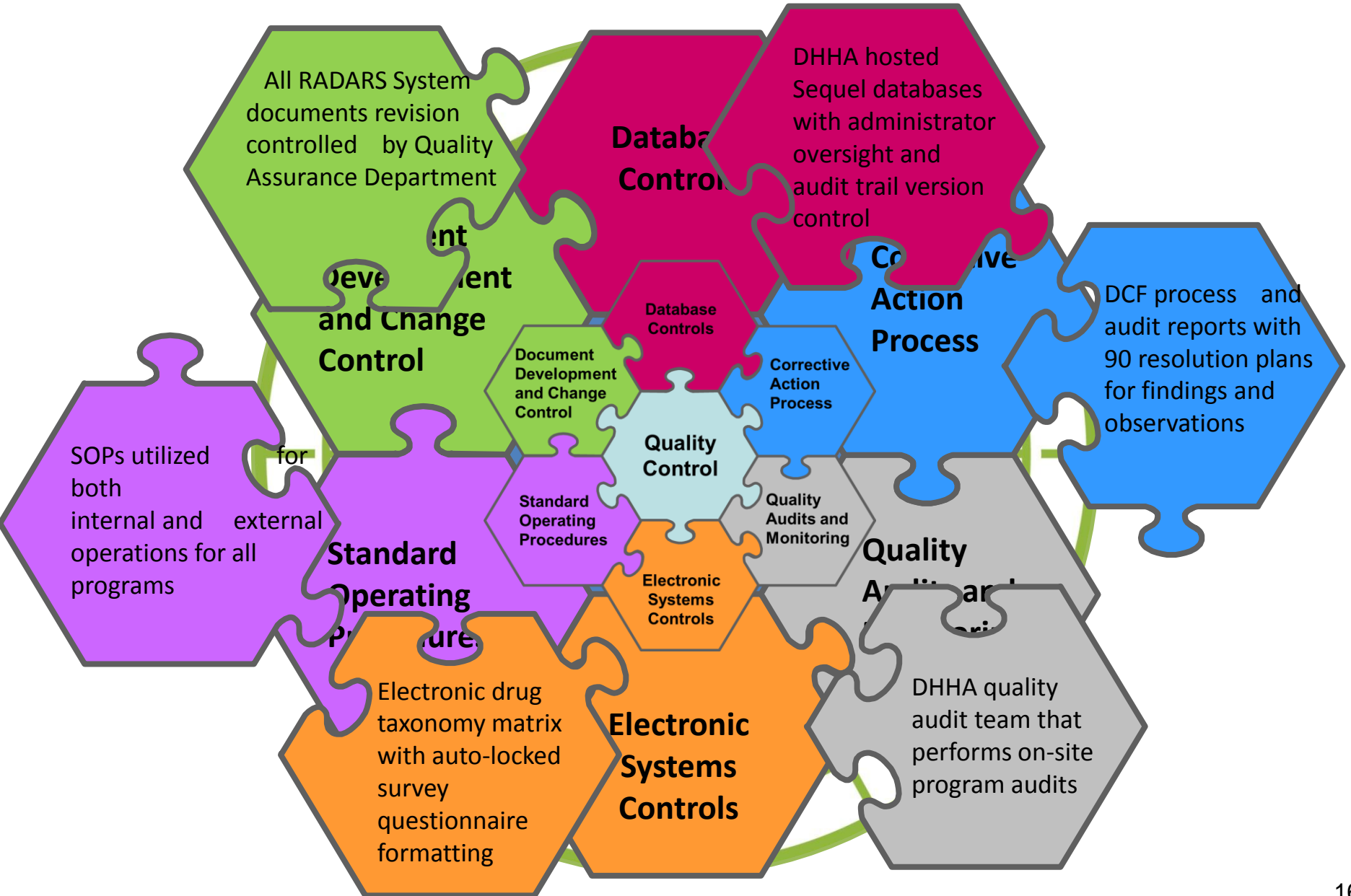
- No difference in rates
- Very low abuse before and after ADF introduction

Example of Validation

Comparison of StreetRx, RADARS System Drug Diversion and Silk Road



Quality Assurance Program



Additional Considerations

- Do we care about all abusers equally?
- Does abuse or addiction have a spectrum of severity?
- Two populations of abusers, which overlap
 - Are new abusers different than relapsing addicts?
- Concurrent substances
 - Benzodiazepines, stimulants
- Other confounders or risk factors
 - Is pain a modifier?

The End

Additional Considerations

- Do we care about all abusers equally?
- Does abuse or addiction have a spectrum of severity?
- Two populations of abusers, which overlap
 - Are abusers different than relapsing addicts?
- Concurrent substances
 - Benzodiazepines, stimulants
- Other confounders or risk factors
 - Is pain a modifier?