

RADARS[®] System
**Subutex & Suboxone: How Much is
Prescribed vs. Abuse/Diversion Reports**

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Disclosure of Potential Conflicts of Interest

- The RADARS System is a governmental nonprofit operation of the Rocky Mountain Poison and Drug Center, an agency of Denver Health and Hospital Authority, and provides data to industry and researchers on a subscription basis. RMPDC employees only receive their salary for their participation in system operations and research activities.
- Reckitt Benckiser Pharmaceuticals Inc., supported the pediatric analyses through an unrestricted educational grant but did not participate in the study design or analysis.

Outline

- RADARS System Overview
- Buprenorphine Abuse and Diversion Overview
- Buprenorphine Abuse Data: Abstracted Poison Center Data
- Buprenorphine Mortality Data
- Buprenorphine Pediatric Exposures

RADARS System Organization

Rocky Mountain Poison & Drug Center of Denver Health

Drug
Diversion

Key
Informant

Poison
Center

Opioid
Treatment
Program

Impaired
Health Care
Worker

College
Survey

Numerators are compiled by each signal detection system

Denominator includes Population and
Unique Recipients of a Dispensed Drug (URDD)

RADARS System calculation of rates

Review by Scientific Advisory Board

Reports sent to subscribers

Data results are submitted for publication

Six Views on Prescription Drug Abuse

Law Enforcement

- Drug Diversion
- Criminal justice perspective

Key Informant

- Dependent/addicted patients
- Health care provider perspective

Poison Center

- Acute incident – calling for care advice
- All ages and geographic regions

Opioid Treatment Program

- Dependent/addicted patients
- Patient perspective

Impaired Health Care Worker

- Subset of all signal detection systems
- Early adopter group ?

College Survey

- Experimentation
- Early abuse perspective

Drug Dependence Pathway



Drug Diversion

URDD

College Survey

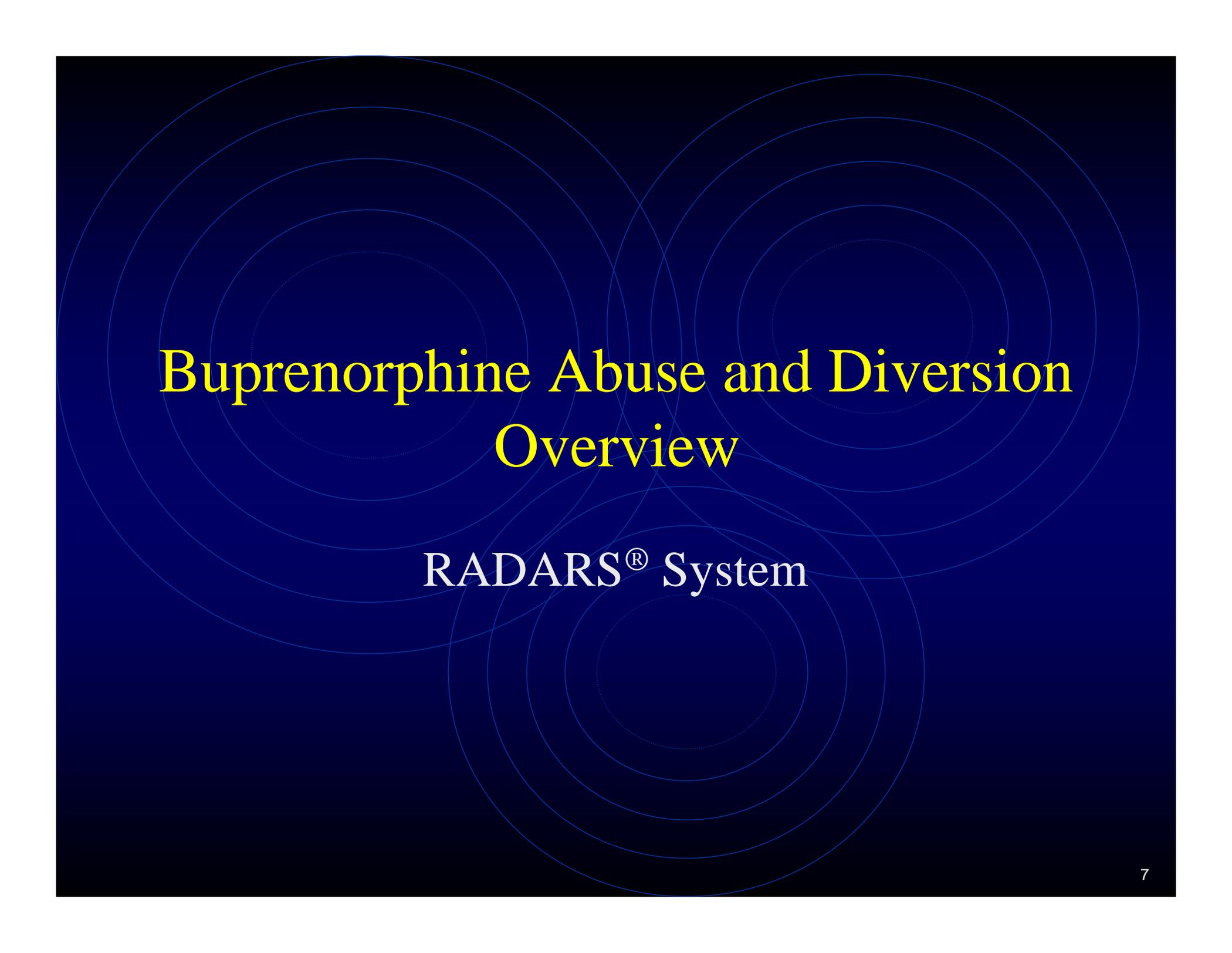
Poison Center

Impaired Health Care Worker

Key Informant

Opioid Treatment Program

Source: Chilcoat HD, Johanson CE. Vulnerability to Cocaine Abuse. Higgins ST, Ed. *Cocaine Abuse: Behavior, Pharmacology, and Clinical Applications*. San Diego, CA: Academic Press; 1998: 313-341.
Institute of Medicine – Committee on Opportunities in Drug Abuse Research. *Pathways of Addiction*. Washington, DC: National Academy Press; 1996.

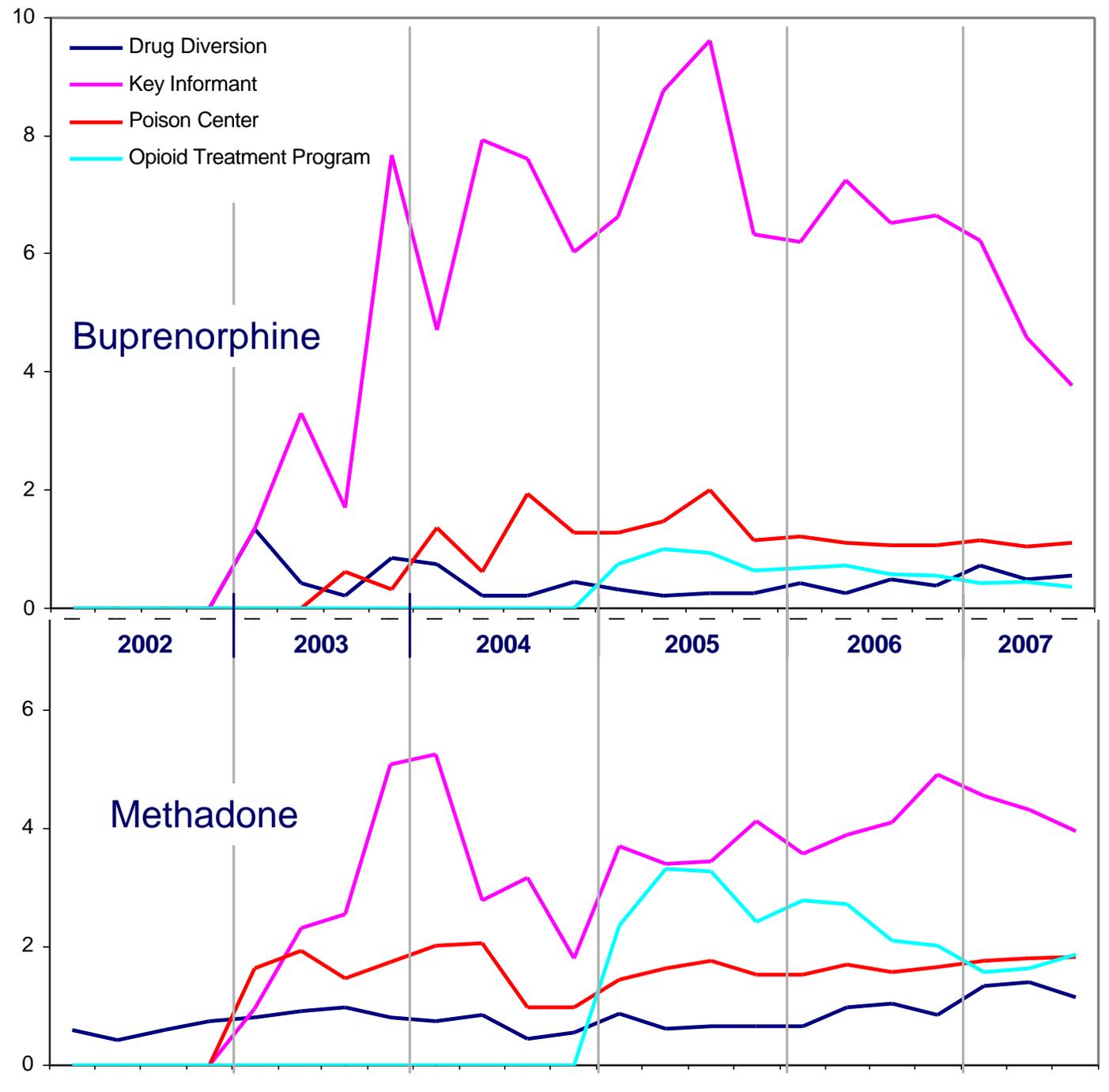
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Buprenorphine Abuse and Diversion Overview

RADARS[®] System

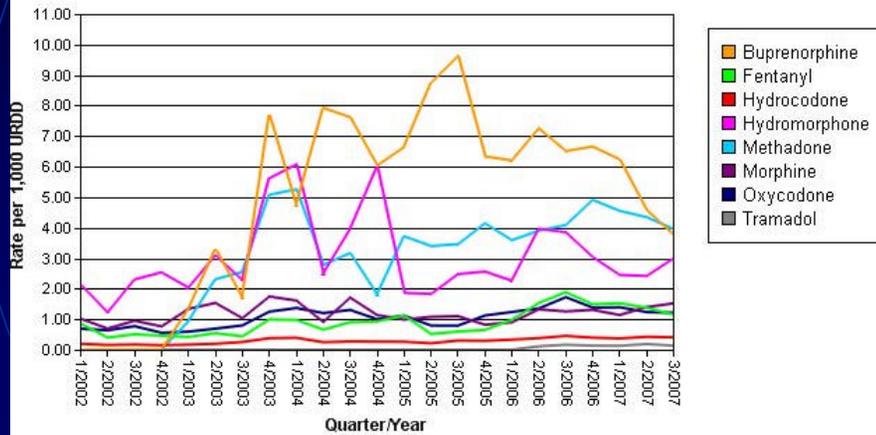
RADARS System Signal Detection Studies

Abuse & Diversion Rates 2002-07

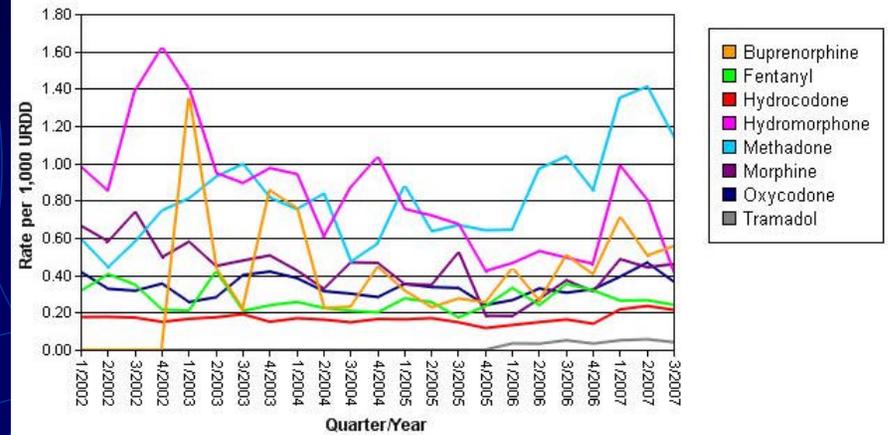


Abuse, Misuse and Diversion Rates per 1,000 URDD

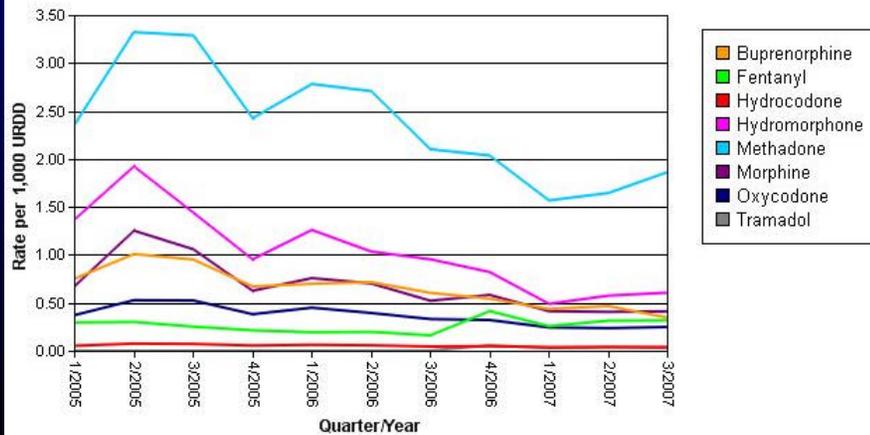
Drug Diversion



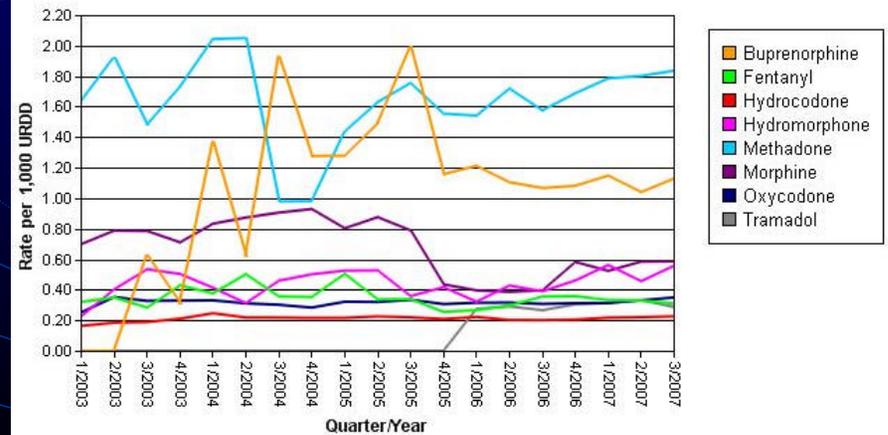
Key Informant



Opioid Treatment Program



Poison Center

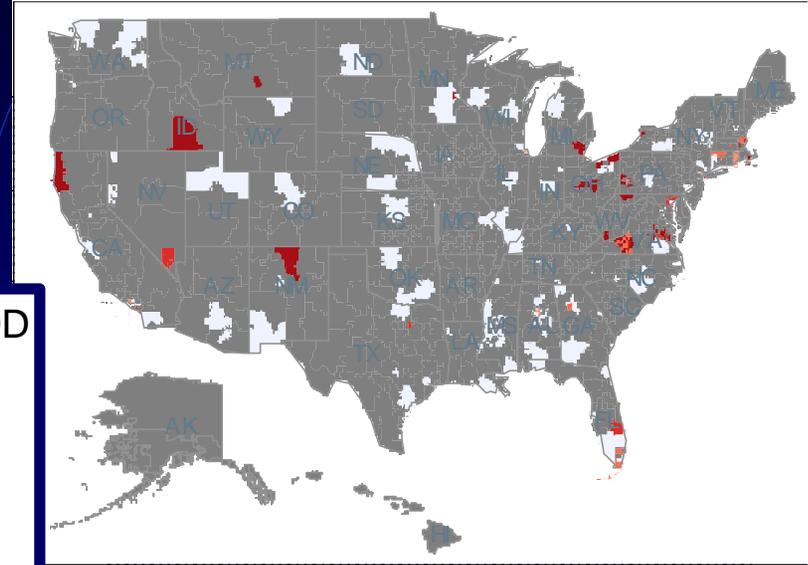
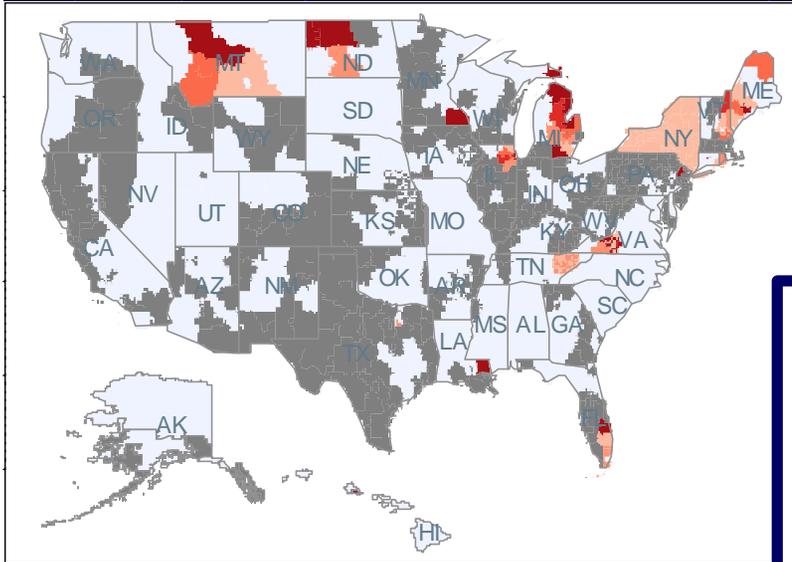


Buprenorphine Rates per 1,000 URDD

3rd Quarter 2007

Drug Diversion

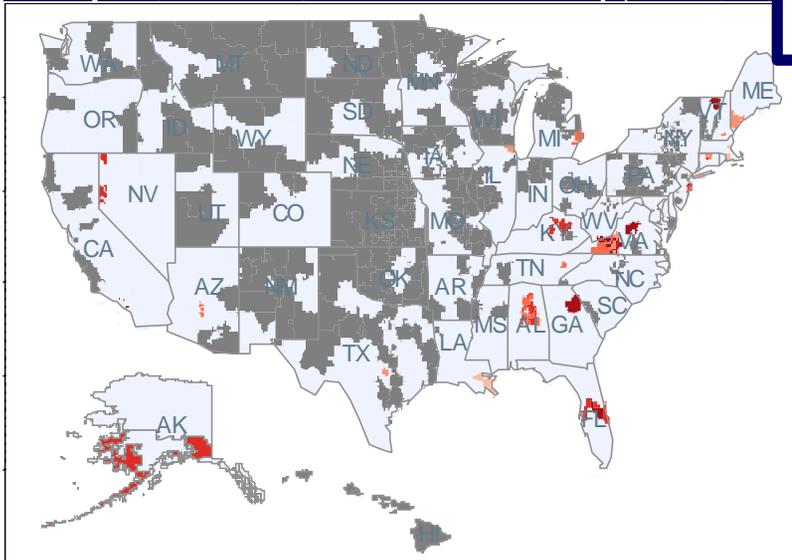
Key Informant



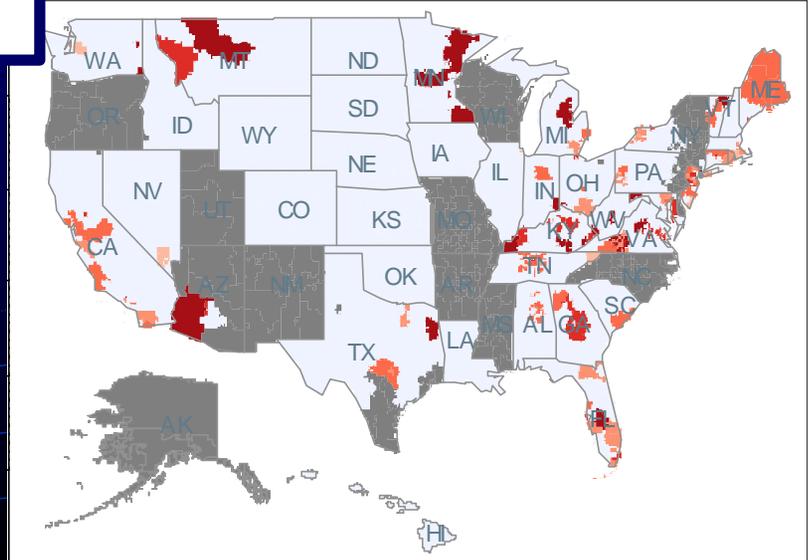
Cases/1,000 URDD

- > 10
- 5.01 - 10
- 2.01 - 5
- 1.01 - 2
- 0.01 - 1
- 0.00
- Noncovered

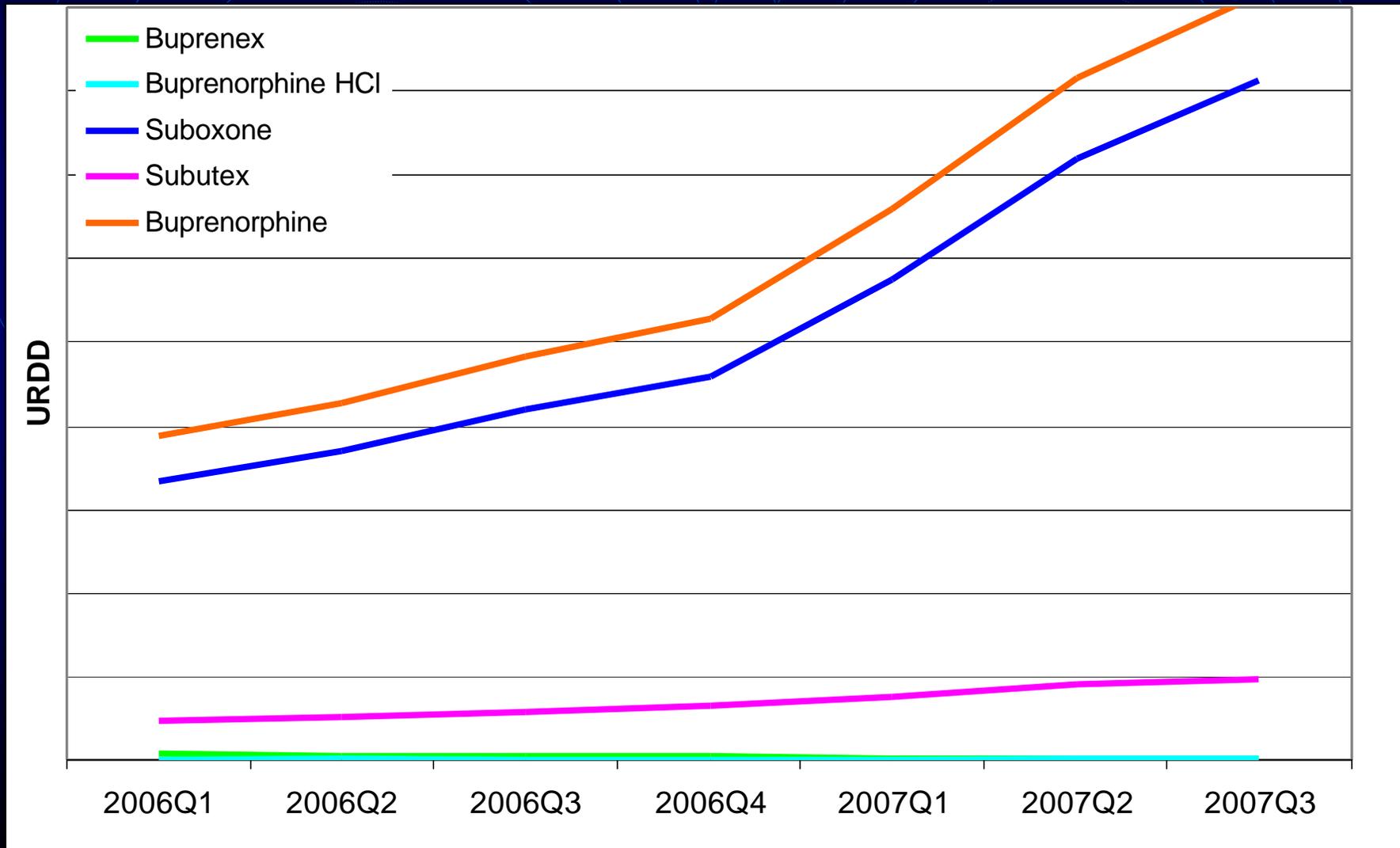
Opioid Treatment Program



Poison Center



Unique Recipients of Dispensed Drug (URDD)



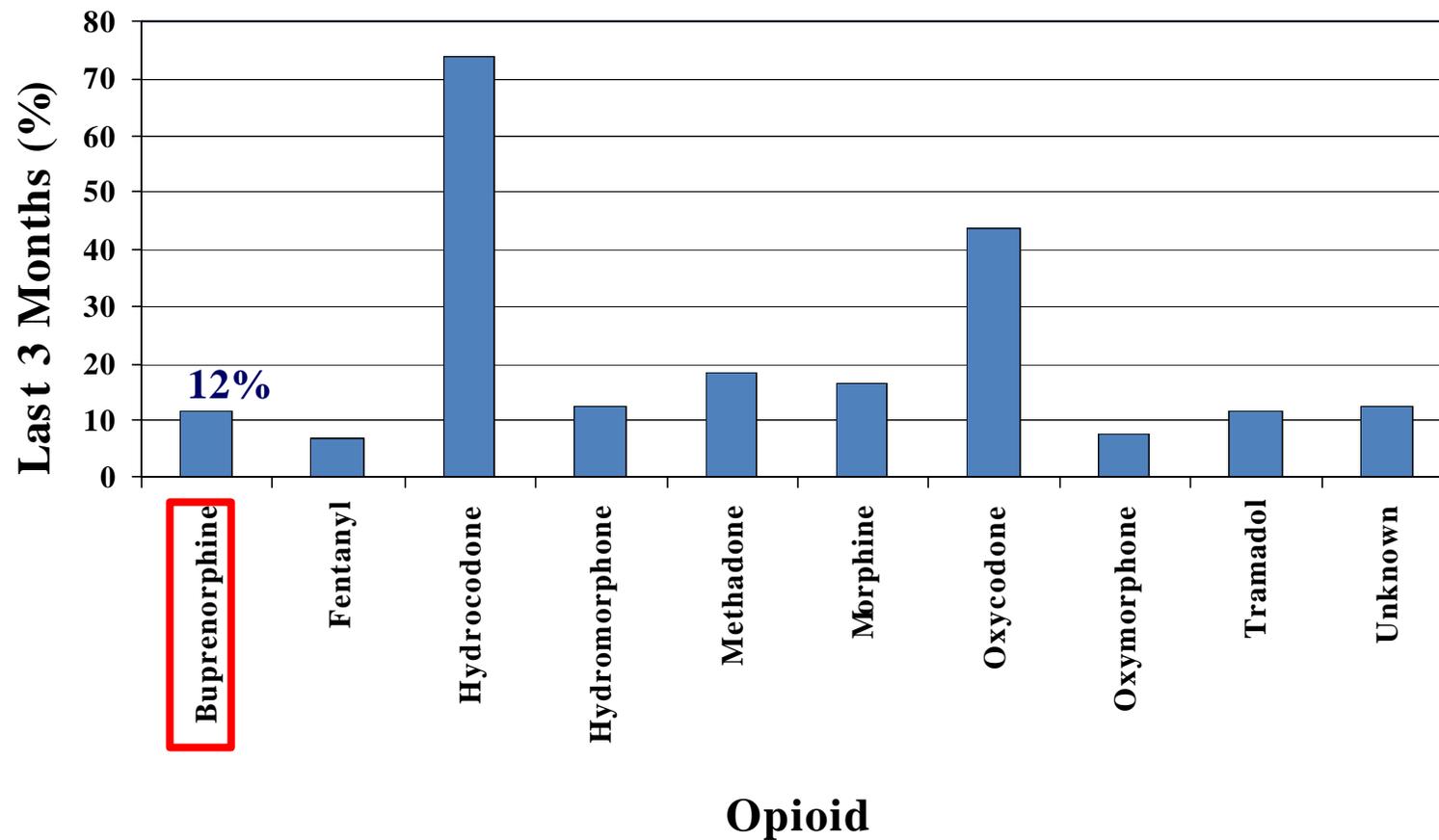
Buprenorphine Endorsement

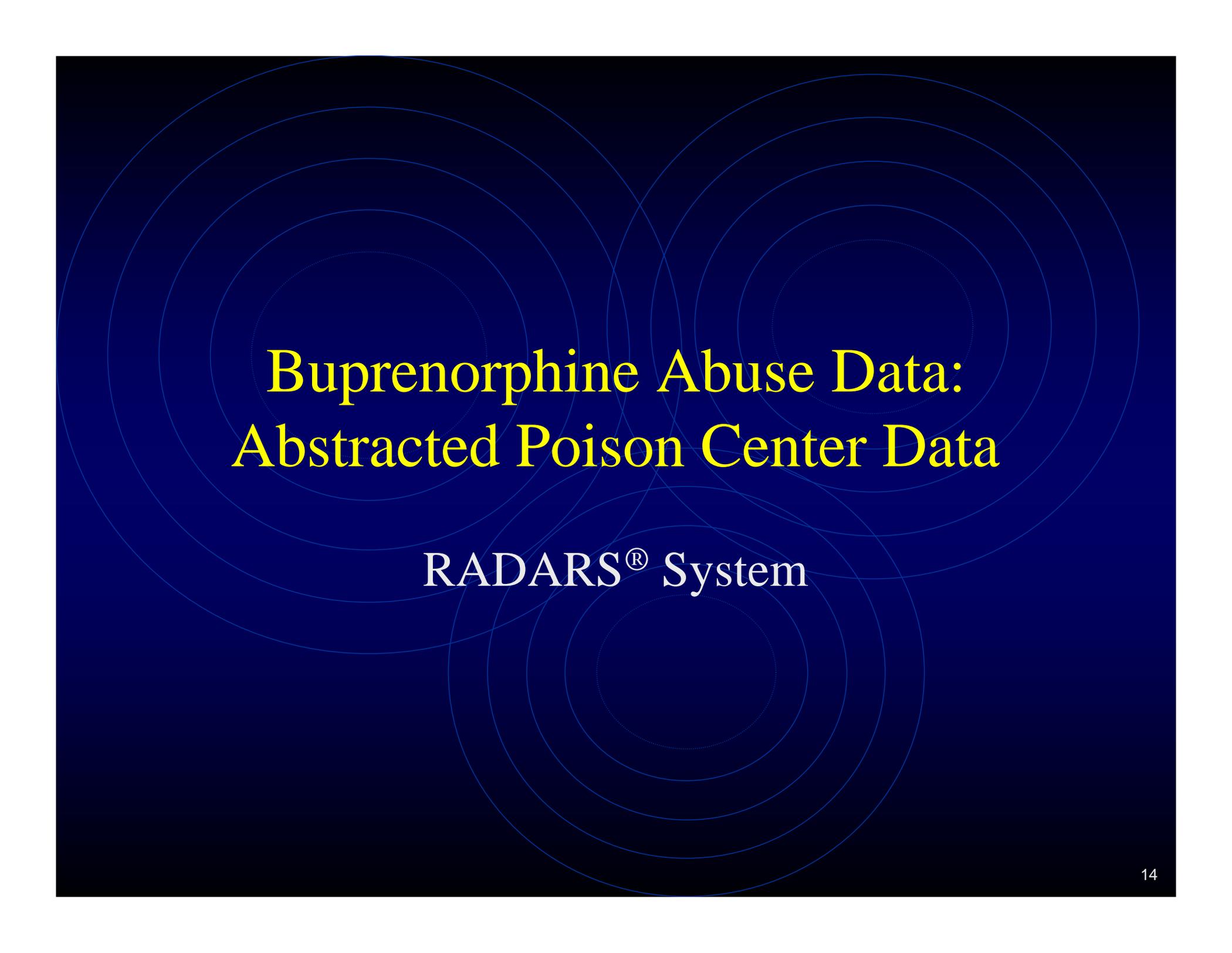
Table 1
Opioid abuse among MMTP enrollees, by primary drug of choice

	Prescription opioid (<i>n</i> = 2174) (%)	
	Ever	Past 30 days
Heroin	33	13
Prescription opioids	100	99
Oxycodone, any formulation	89	79
CR-Oxycodone (e.g., OxyContin [®])	89	71
IR-Oxycodone (e.g., Percocet [®])	81	59
Hydrocodone (e.g., Vicodin [®])	88	67
Methadone	58	40
Morphine	59	29
Hydromorphone (e.g., Dilaudid [®])	37	16
Fentanyl	30	9
Buprenorphine	5	1
Ever injected primary drug	33	<i>n/a</i>

RADARS System College Survey

Abuse & Misuse by Self Identified College Students



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Buprenorphine Abuse Data: Abstracted Poison Center Data

RADARS[®] System

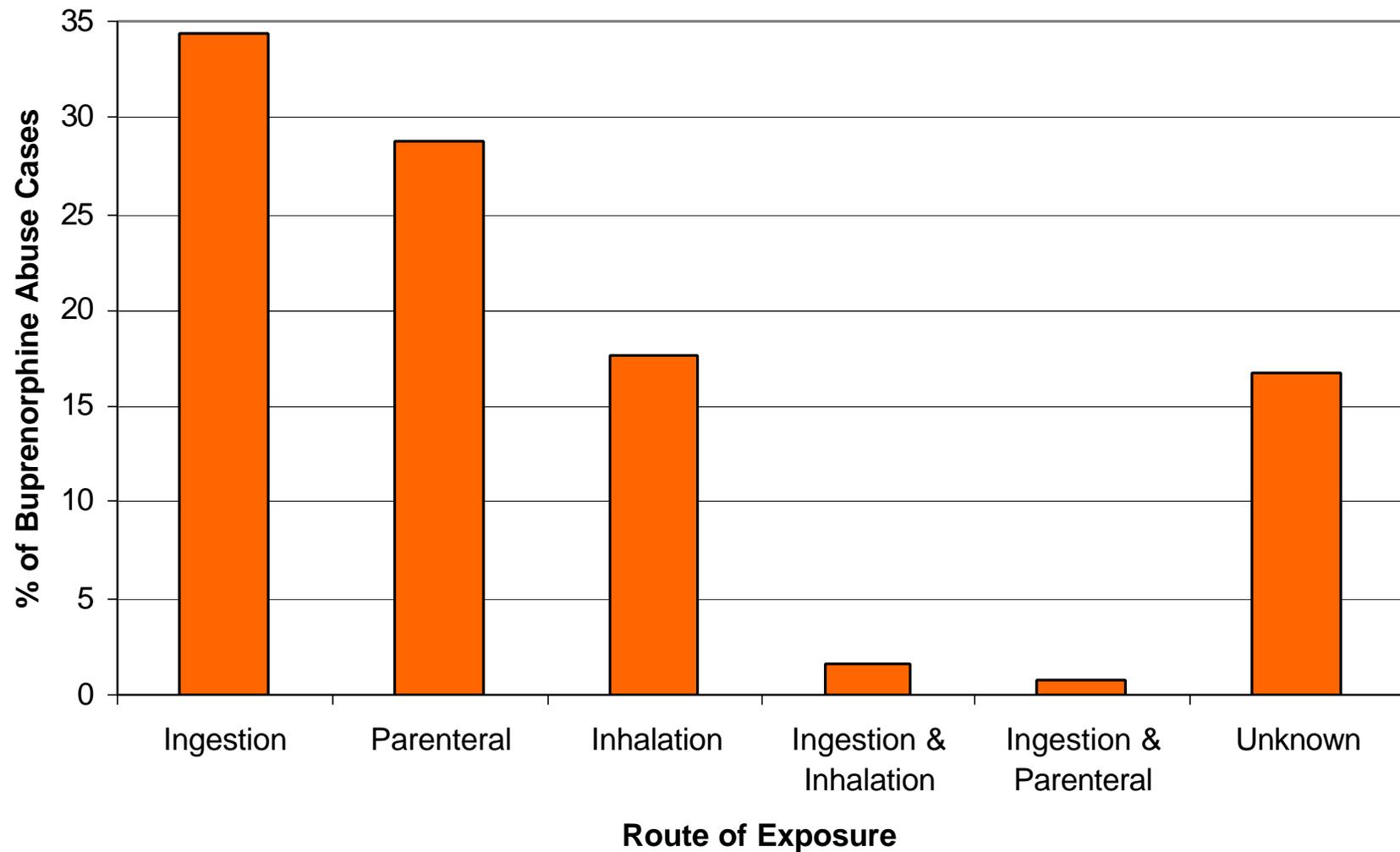
Buprenorphine Case Abstraction Methodology

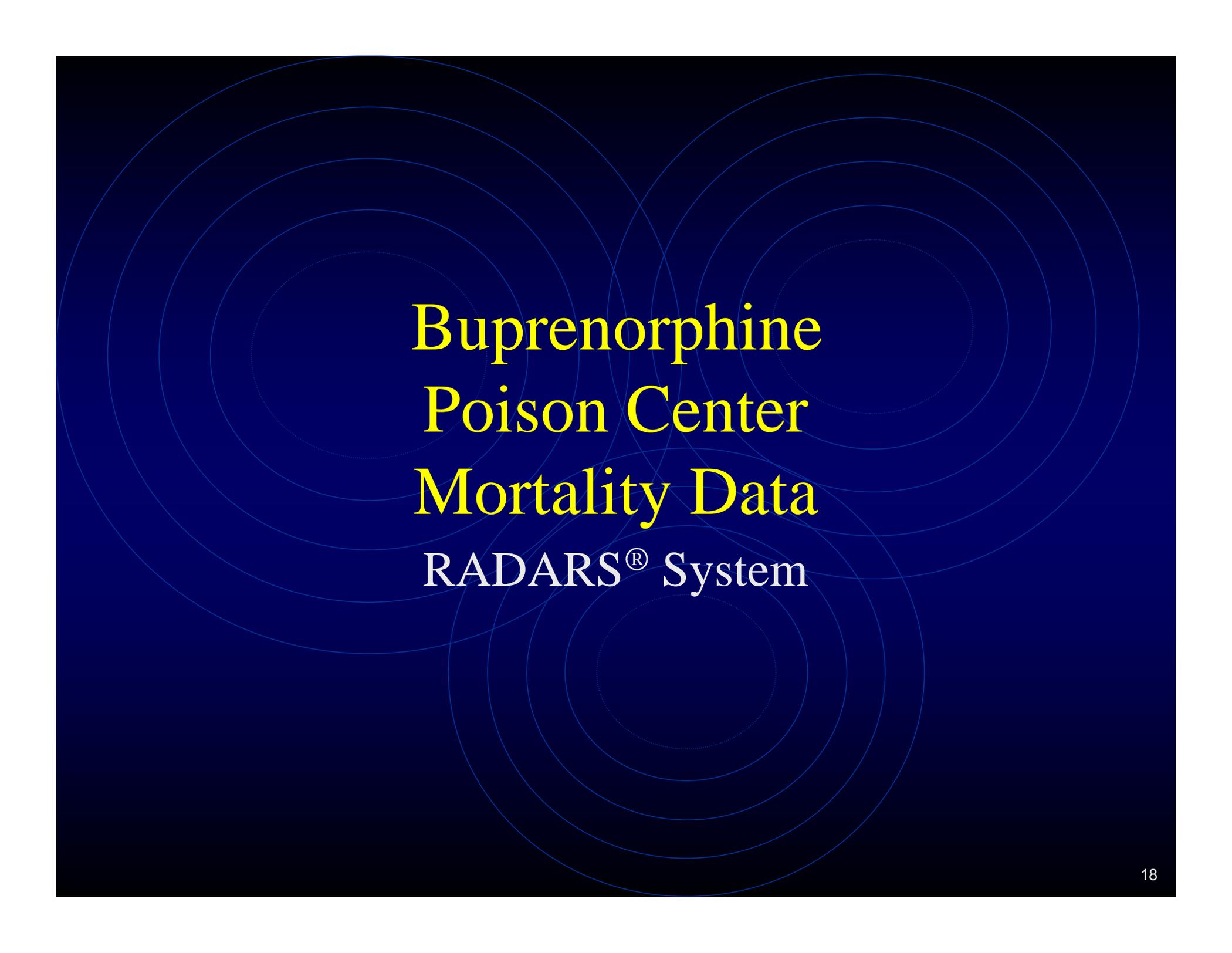
- Data collected from 2003 – 2007Q2
 - 11 of 60 US centers (18%) in 1st quarter 2003
 - 43 of 60 US centers (72%) in 2nd quarter 2007
- All intentional exposure case notes were reviewed for abuse
 - “injected”, “snorted”, “abused”, “to get high”, “recreationally”, and similar terms

Buprenorphine Case Abstraction Results

- 125 cases were abuse cases as defined in the methodology
- Mean age: 27 years
- 65% male
- 7% of the case notes described chronic buprenorphine abuse

Route of Exposure



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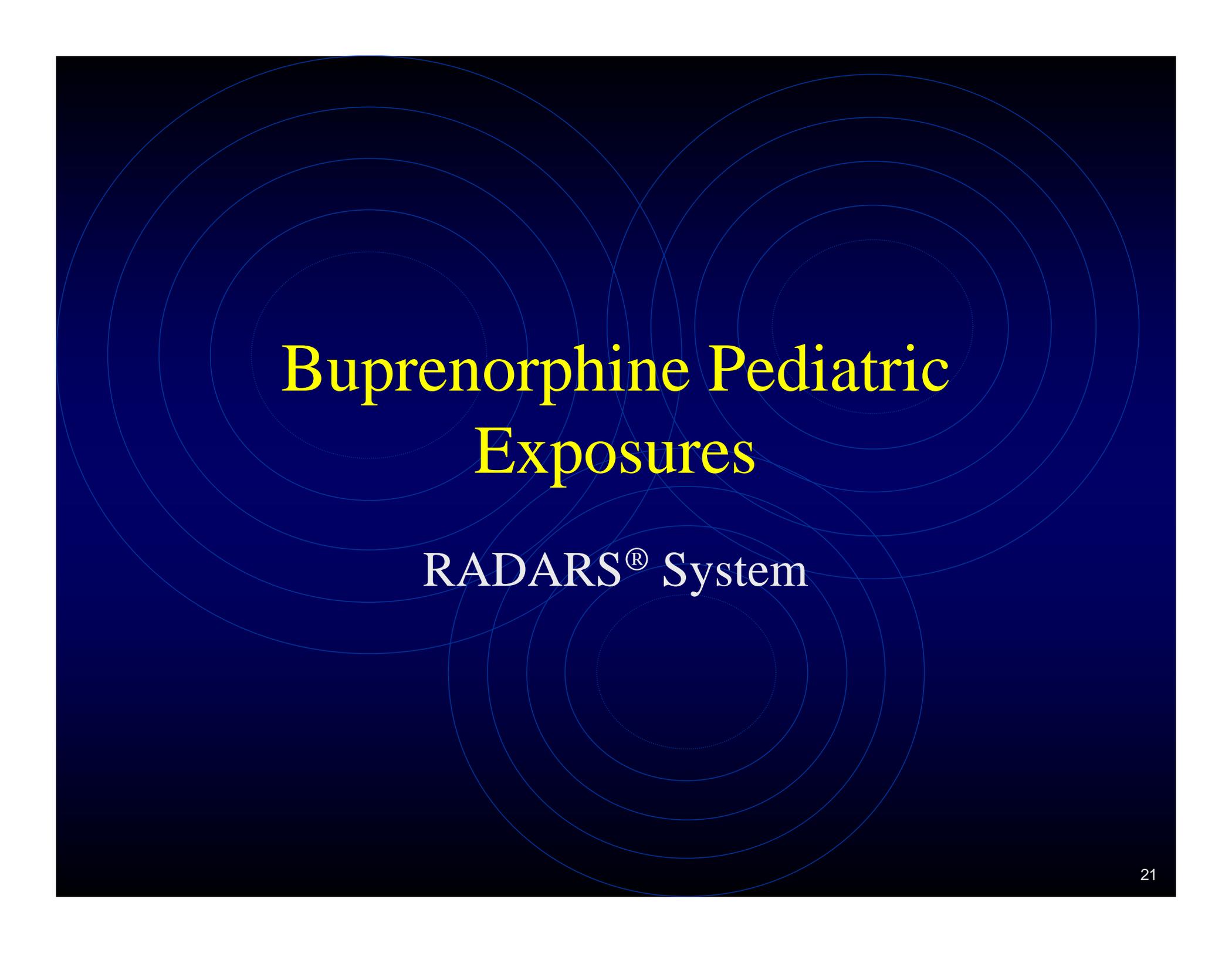
**Buprenorphine
Poison Center
Mortality Data
RADARS[®] System**

Mortality Data Methodology

- Poison center “associated medical outcome”
- Poison center intentional exposures
- Data collected from 2003 – 2007Q3
 - 11 of 60 US centers (18%) in 1st quarter 2003
 - 43 of 60 US centers (72%) in 3rd quarter 2007
- Not causally linked to death

Mortality reported to Poison Centers

- 5 deaths associated with buprenorphine intentional exposures
 - Methadone 126 deaths in same time period
- Ages: 17-50+ years
- 60% for intentional self-harm

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Buprenorphine Pediatric Exposures

RADARS[®] System

Rx Opioid Pediatric Exposures

RADARS System Poison Center 2003 - 2006

	<i>Buprenorphine</i> (n=176)	<i>Hydrocodone</i> (n=6,003)	<i>Fentanyl</i> (n=123)	<i>Oxycodone</i> (n=2,036)
Age Mean (SD)	2.1 (0.9)	2.3 (1.2)	2.0 (1.2)	2.1 (1.1)
Male N (%)	99 (56.3) Referent	3,232 (53.9) OR 1.1 (0.81, 1.5)	64 (52.5) OR 1.2 (0.75, 1.89)	1,081 (53.5) OR 1.1 (0.83, 1.54)
Site N (%)				
Own Home	169 (96.0) Referent	5,581 (93.0) OR 1.8 (0.85, 3.91)	111 (90.2) OR 2.6 (1.00, 6.83)	1,821 (89.4) OR 2.8 (1.32, 6.15)
Other Home	3 (1.7)	335 (5.6)	4 (3.3)	155 (7.6)
Route N (%)				
Ingestion	175 (99.4) Referent	5,993 (99.8) OR 0.29 (0.04, 2.30)	77 (62.6) OR 104.5 (14.2, 771)	2,020 (99.1) OR 1.39 (0.18, 10.5)

Conclusion

- Buprenorphine abuse and diversion appears to be localized, but occurs in many parts of the country
- While there was an initial increase in abuse/diversion reports, rates appear to have stabilized or decreased since 2006
- Buprenorphine abuse/diversion follow similar patterns to other opioids

Acknowledgements

Key Informant Signal Detection System

Theodore J. Cicero, PhD, *Principal Investigator*, Washington University at Saint Louis
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Yuhong Tian, PhD, Washington University at Saint Louis

Drug Diversion Signal Detection System

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Hilary Surratt, PhD, *Co-Principal Investigator*, University of Delaware
Yamilka Lugo, *Research Associate II*, University of Delaware

Opioid Treatment Program Signal Detection System

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