

# The Prescription Drug Overdose Epidemic: Epidemiology and Policy

Len Paulozzi, MD, MPH

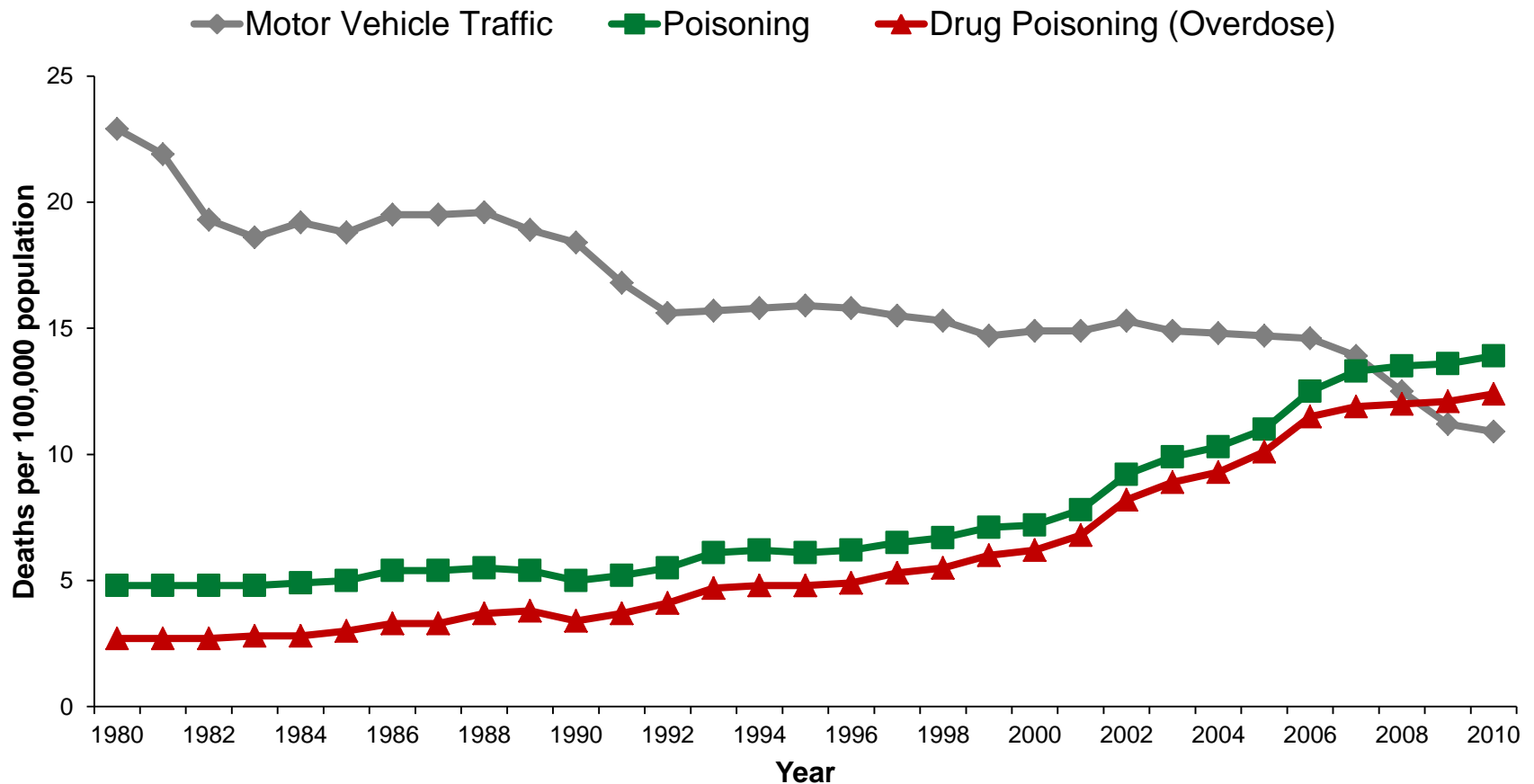
March 27, 2014

National Center for Injury  
Prevention and Control

Centers for Disease Control and Prevention



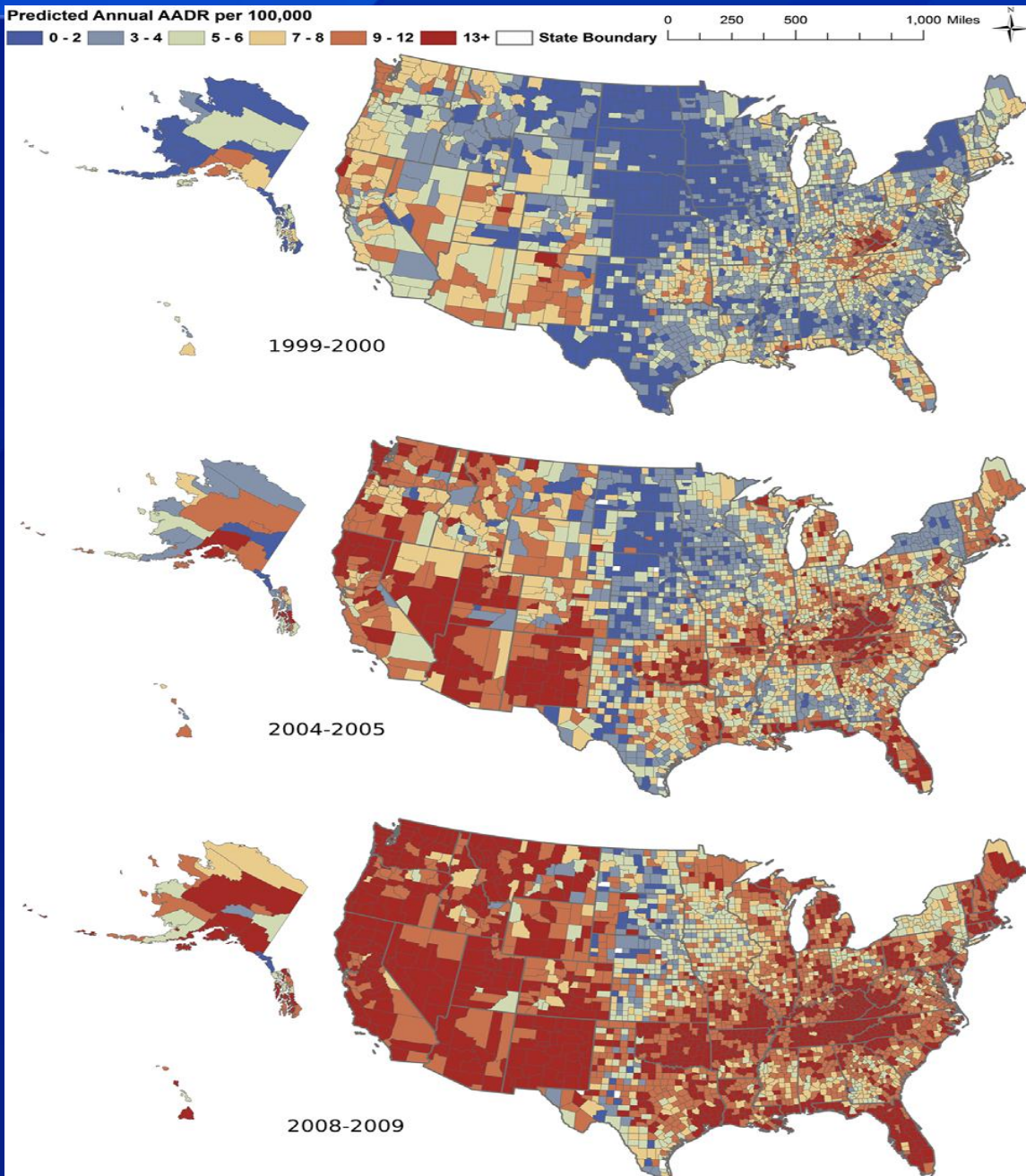
# Drug overdoses have surpassed motor vehicle crashes as the leading cause of injury death



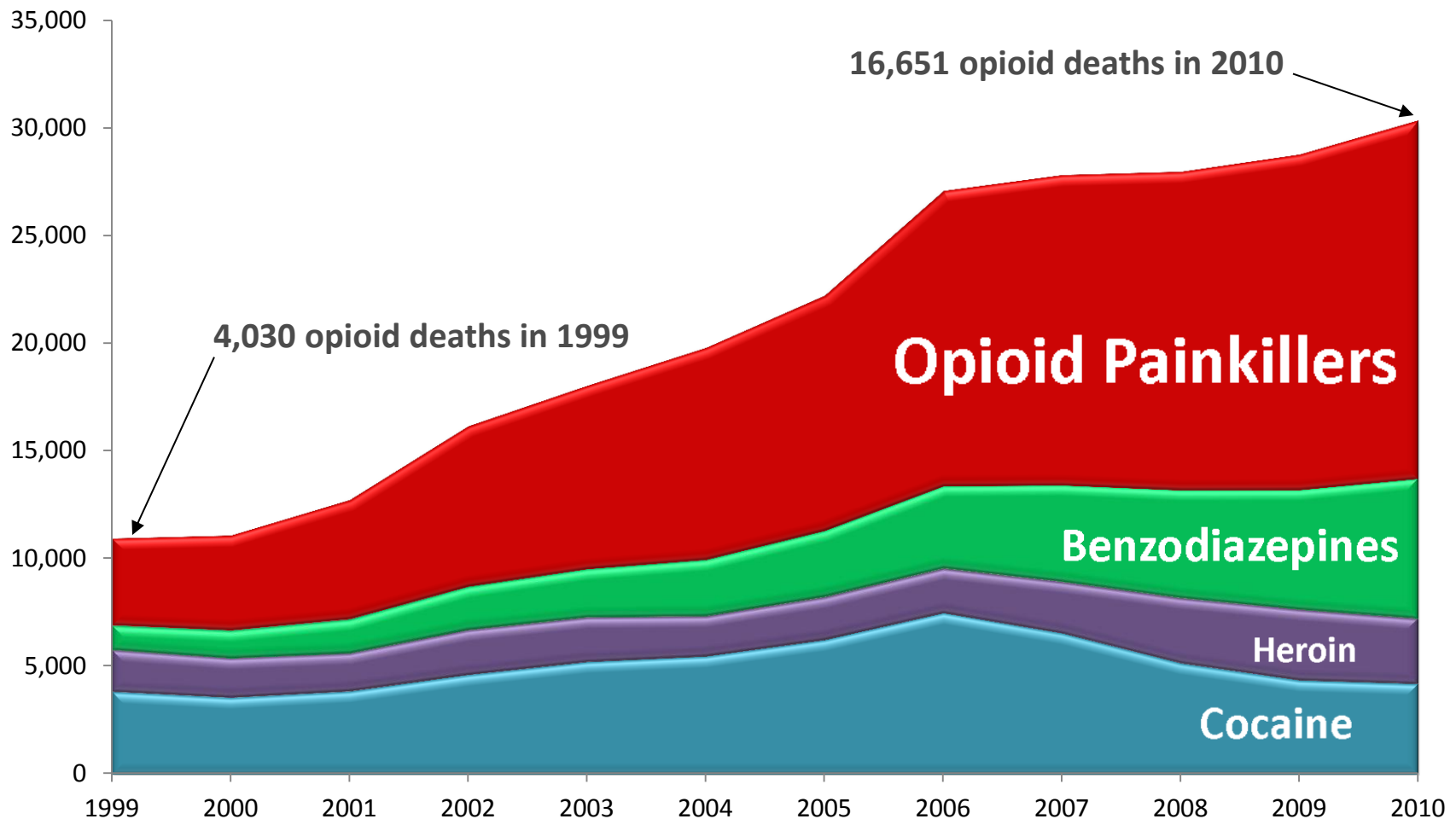
# Predicted Age-Adjusted Death Rates due to Drug Poisoning:

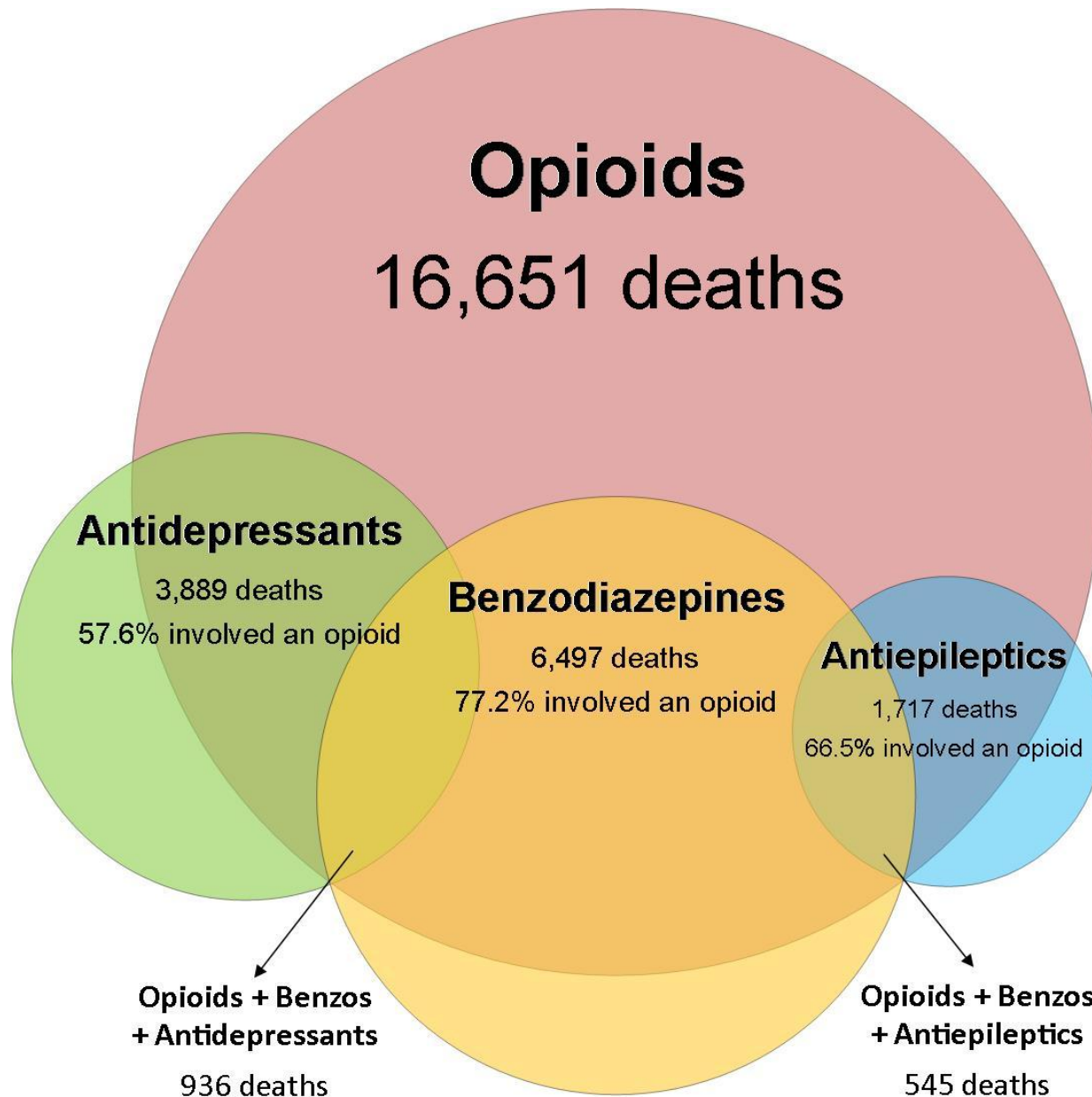
1999-2000  
2004-2005  
2008-2009

Source: Rossen et al,  
2013 , AJPM



# Opioid overdoses have driven the surge in overdose deaths





# Risk Factors

## ■ Demographics

- Men
- 35-54 year olds
- Whites
- American Indians/Alaska Natives



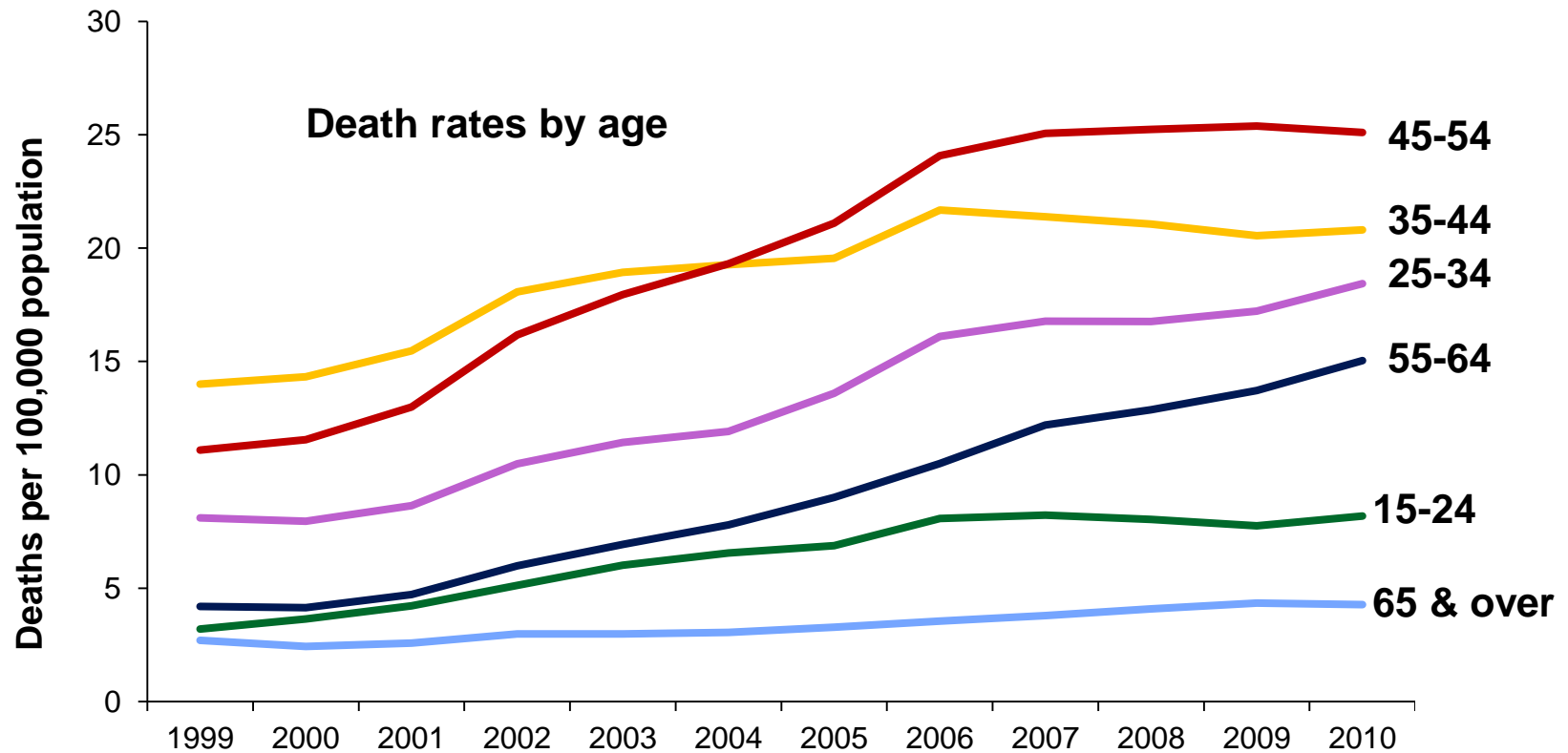
## Socioeconomics and Geography

- Medicaid
- Rural

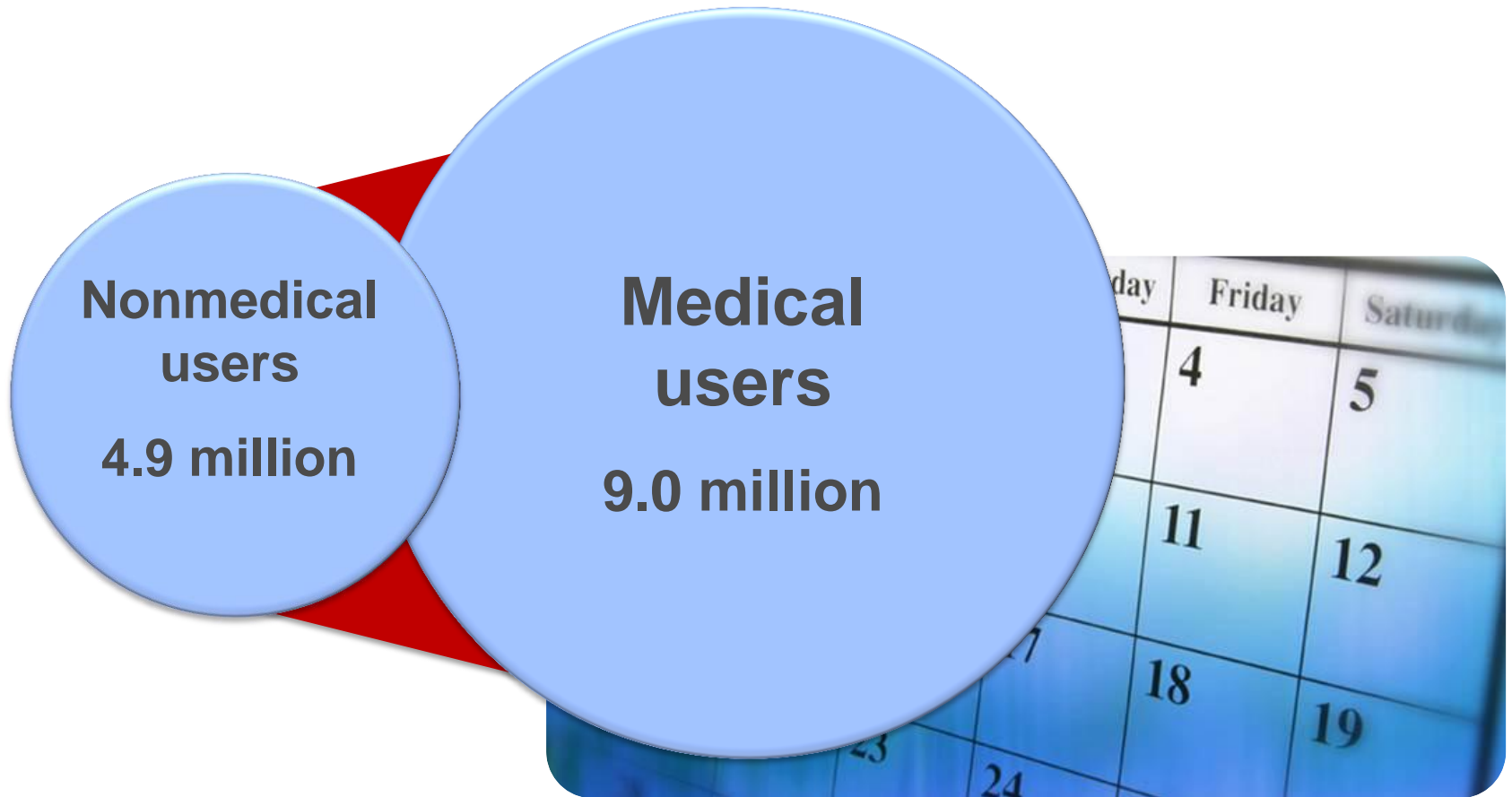
## Clinical Characteristics

- Chronic pain
- Substance abuse
- Mental health
- Nonmedical use
- Multiple prescriptions
- Multiple prescribers
- High daily dosage

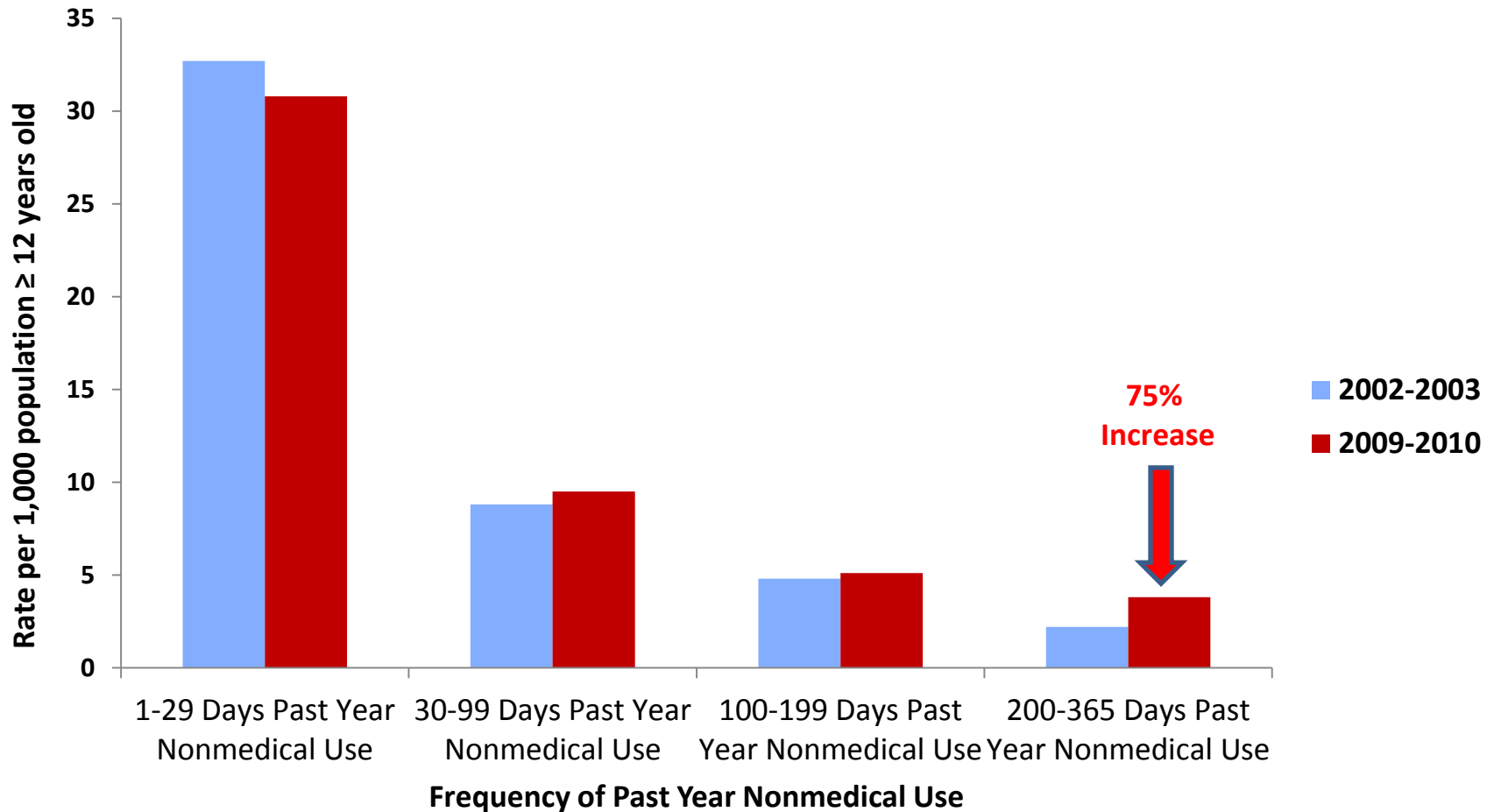
# Middle-aged adults are at greatest risk for drug overdose in the US



# Opioid analgesics users in the past month

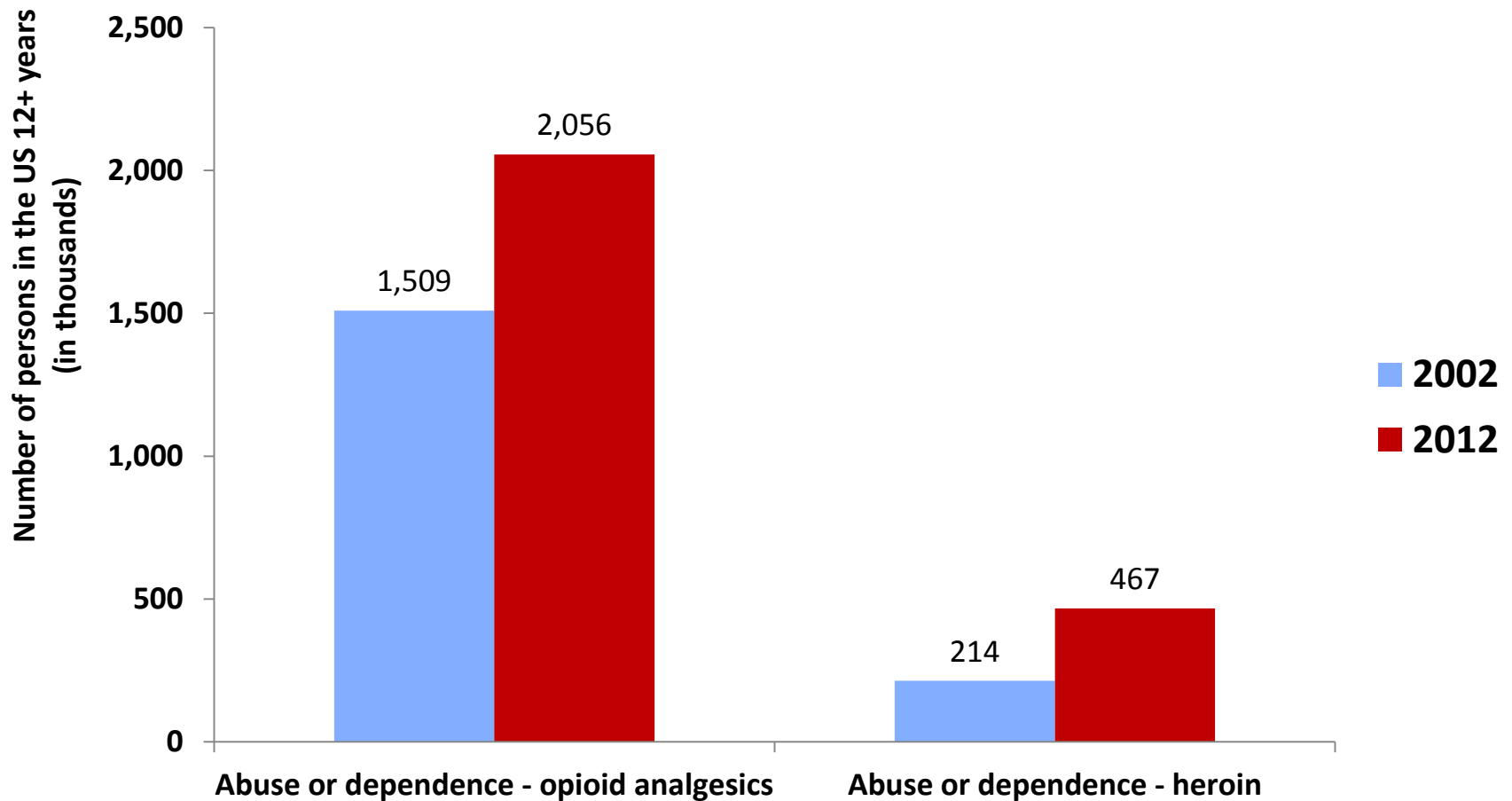


# Chronic nonmedical use of opioid analgesics has increased more than less frequent use



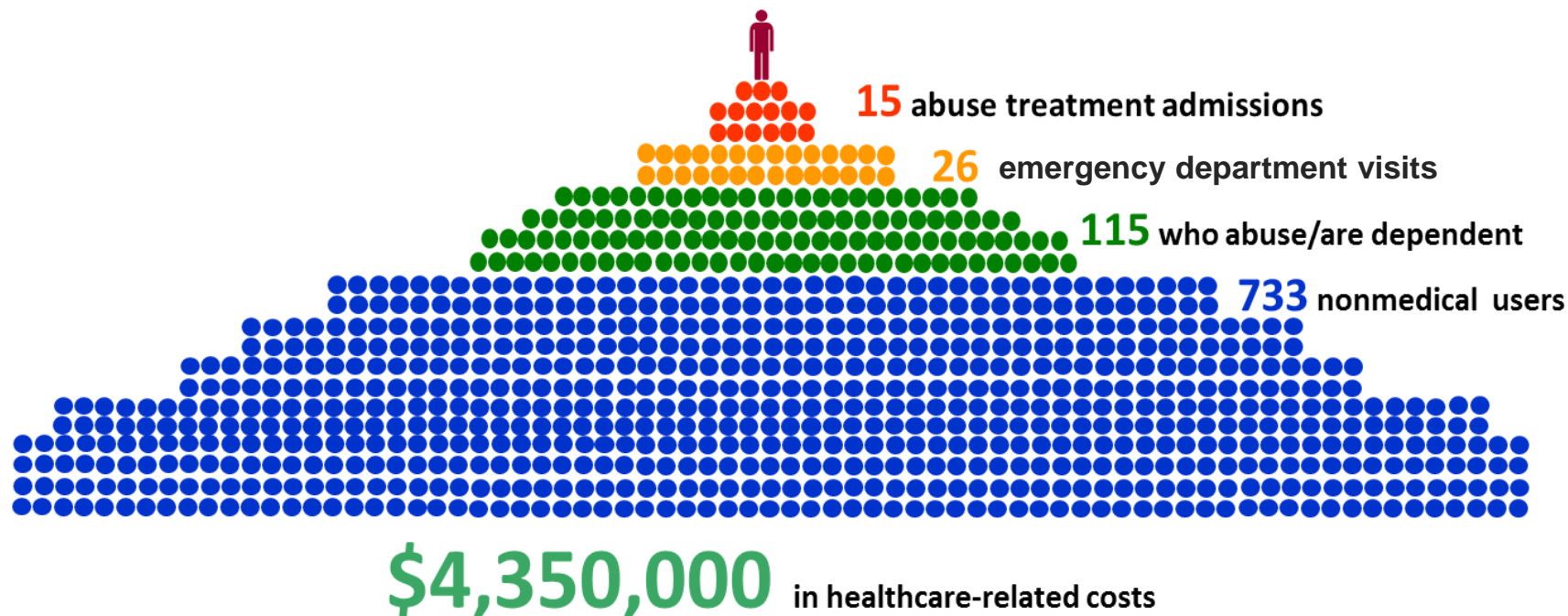
- Jones CM. Frequency of prescription pain reliever nonmedical use, 2002-2003 and 2009-2010. Arch Intern Med. 2012 Sep 10;172(16):1265-7;

## Emerging Issue: Increased heroin abuse or dependence



# Overdose deaths are the tip of the iceberg

For every **1** opioid overdose death in 2010 there were...



# Economic costs are high

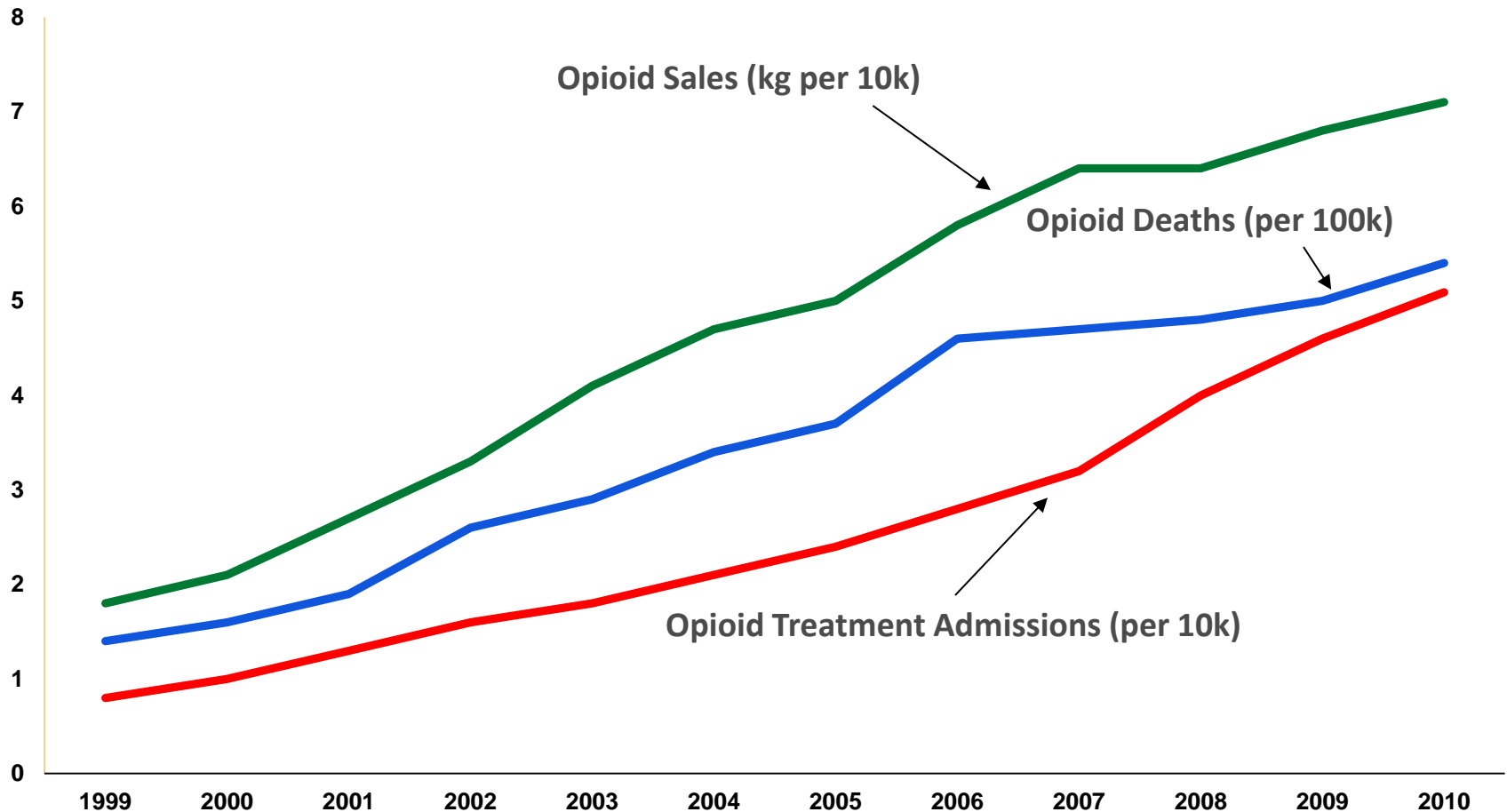


- ❑ **\$72.5 billion in healthcare costs<sup>1</sup>**
- ❑ **Opioid abusers generate, on average, annual direct health care costs 8.7 times higher than nonabusers<sup>2</sup>**

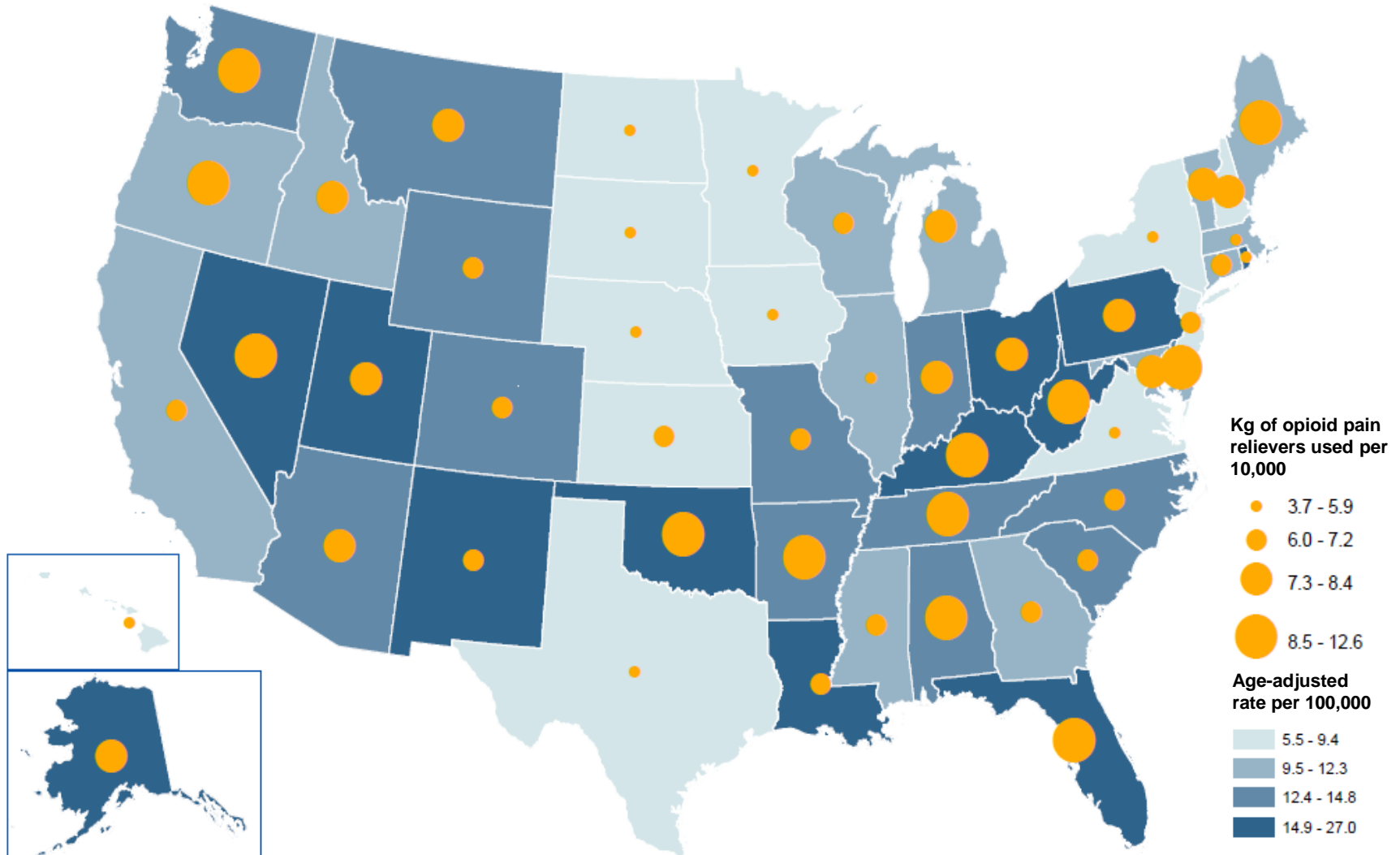


1. Coalition Against Insurance Fraud. Prescription for peril: how insurance fraud finances theft and abuse of addictive prescription drugs. Washington, DC: Coalition Against Insurance Fraud; 2007
2. White AG, Birnbaum, HG, Mareva MN, et al. Direct Costs of Opioid Abuse in an Insured Population in the United States. *J Manag Care Pharm.* 11(6):469-479. 2005

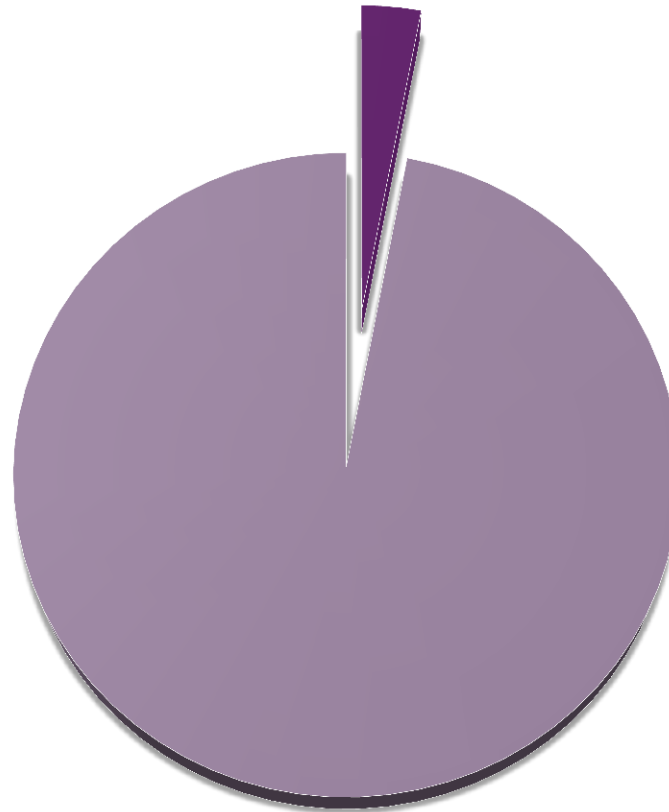
# Opioid deaths, sales, and treatment admissions have increased in lockstep



# Drug overdose death rate 2008 and opioid pain reliever sales rate 2010



# Just 3% of California workers compensation opioid prescribers...



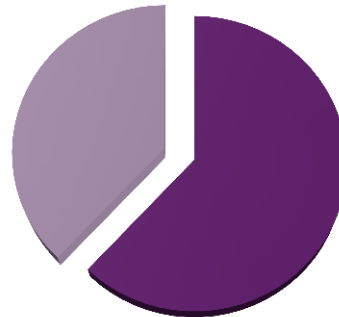
**3% of prescribers**



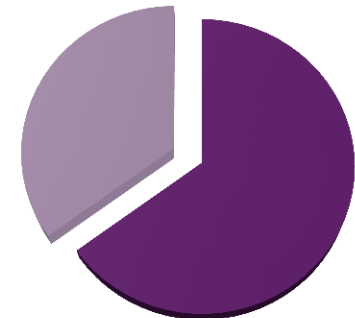
**55% of all CSII  
opioid Rx**



**62% of all  
morphine  
equivalents**



**65% of all  
associated  
payments**

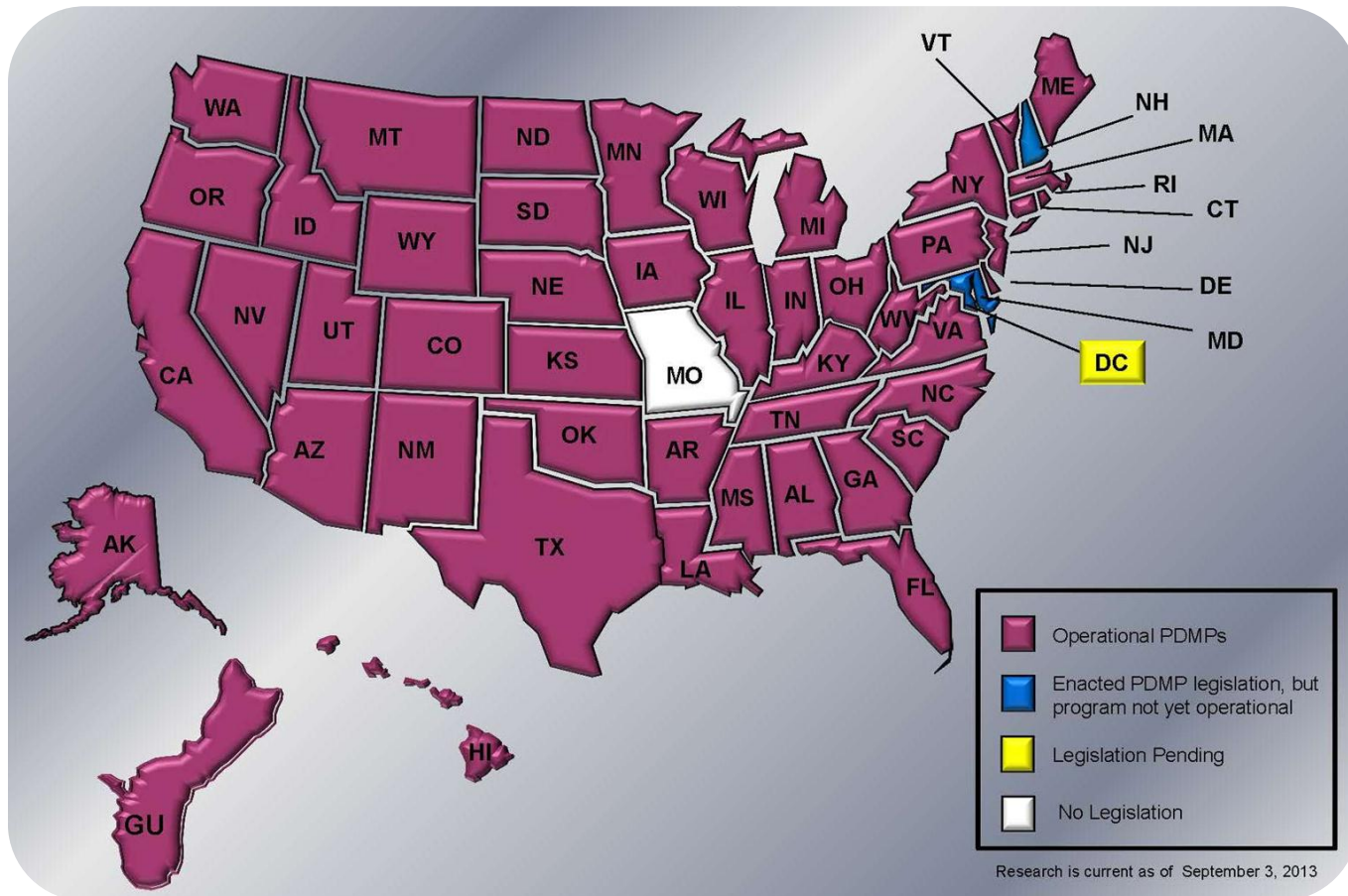


# Pivot to Prevention

- ❑ Prescription Drug Monitoring Programs (PDMPs)
- ❑ Patient Review & Restriction Programs
- ❑ Laws/Regulations/Policies
- ❑ Insurers & Pharmacy Benefit Managers (PBM)
- ❑ Clinical Guidelines

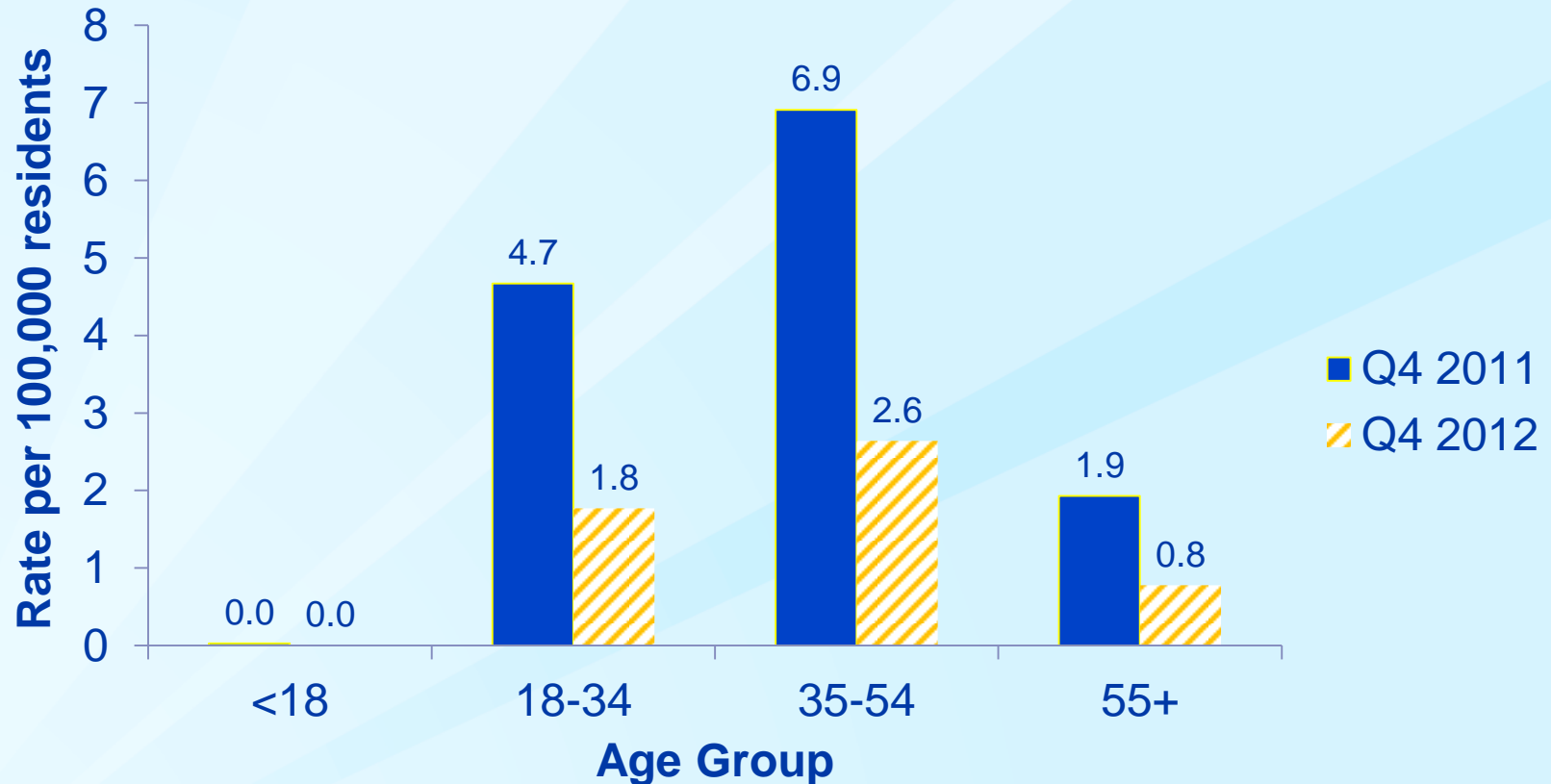


# Prescription Drug Monitoring Programs (PDMPs)



Source: Alliance of States with Prescription Monitoring Programs

## Multiple-provider episode rates\* for CS II drugs, Quarter 4 of 2011 vs. Quarter 4 of 2012, Florida



\*Having CSII rx from 5+ prescribers dispensed at 5+ pharmacies during one quarter. Limited to state residents. Source:

Prescription Behavior Surveillance System

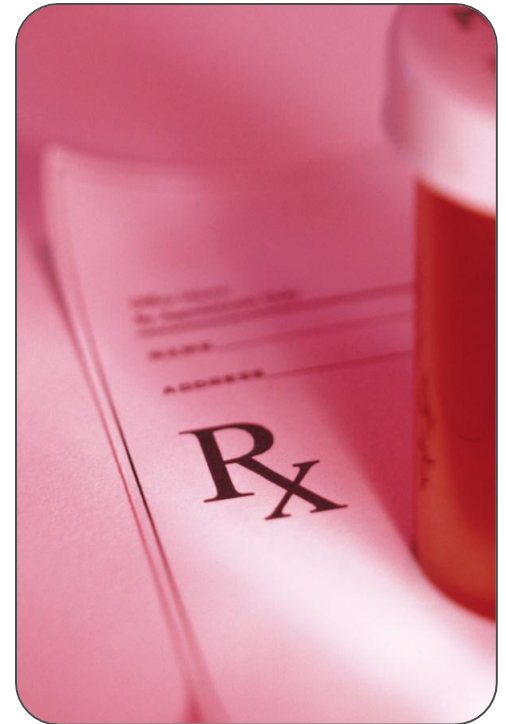
# Patient Review and Restriction Programs (aka “Lock-In” Programs)



- ❑ **APPLICATION**: Patients with inappropriate use of controlled substances
- ❑ **STRATEGY**: 1 prescriber and 1 pharmacy for controlled substances
- ❑ **OUTCOME**: Improve coordination of care and ensure appropriate access for patients at high risk for overdose
- ❑ **IMPACT**: Cost savings as well as reductions in ED visits and numbers of providers and pharmacies

# Laws/Regulation/Policies

- ❑ **STATE RESPONSE**: Some states have enacted laws & policies aimed at reducing diversion, abuse & overdose
- ❑ **KEY AIM**: Strengthen health care provider accountability
- ❑ **PATIENT PROTECTION**: Safeguard access to treatment when implementing policies
- ❑ **GAP**: Rigorous evaluations to determine effectiveness and identify model components



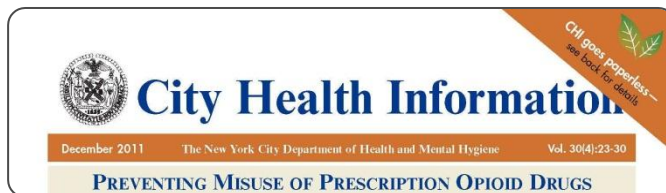
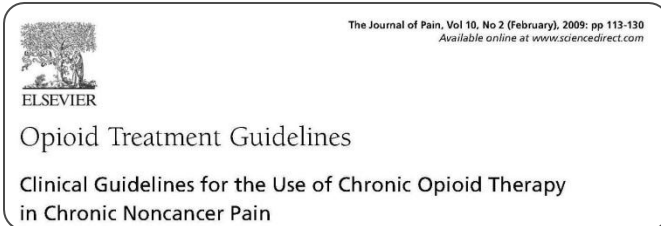
# Insurer/Pharmacy Benefit Manager (PBM) Mechanisms

- ❑ Reimbursement incentives/disincentives
- ❑ Formulary development
- ❑ Quantity limits
- ❑ Step therapies/Prior Authorization
- ❑ Real-time claims analysis
- ❑ Retrospective claims review programs

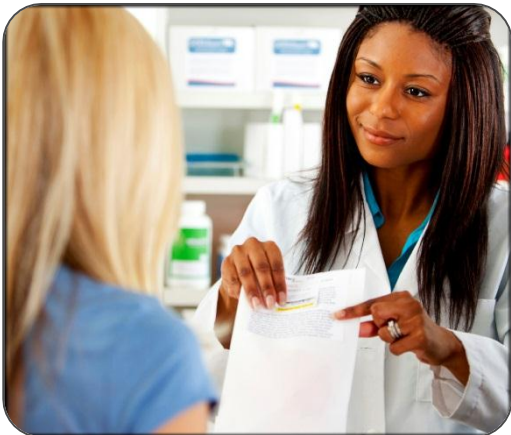


# Clinical Guidelines

- ❑ Improve prescribing and treatment
- ❑ Basis for standard of accepted medical practice for purposes of licensure board actions
- ❑ Several consensus guidelines available
- ❑ Common themes among guidelines



# Conclusions



- ❑ **BURDEN**: Overdose deaths from prescription drugs have reached epidemic levels in the United States
- ❑ **KEY DRIVERS**: Defining the drivers of the epidemic are critical to effective solutions
- ❑ **SCOPE OF SOLUTION**: Multifaceted approach is needed. Recent successes promising
- ❑ **KNOWN EFFECTIVENESS**: Interventions must be evaluated to determine effectiveness and need for state-specific adaptation

# Thank You



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The findings and conclusions in this report are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.

# **The Prescription Drug Action Committee (PDAC)**

## **Injury Prevention Prescription Drug Webinar State of Delaware Update**

**March 27, 2014**

### **Co-Chairs**

**Karyl Rattay, MD, MS, Director, Delaware Division of Public Health**

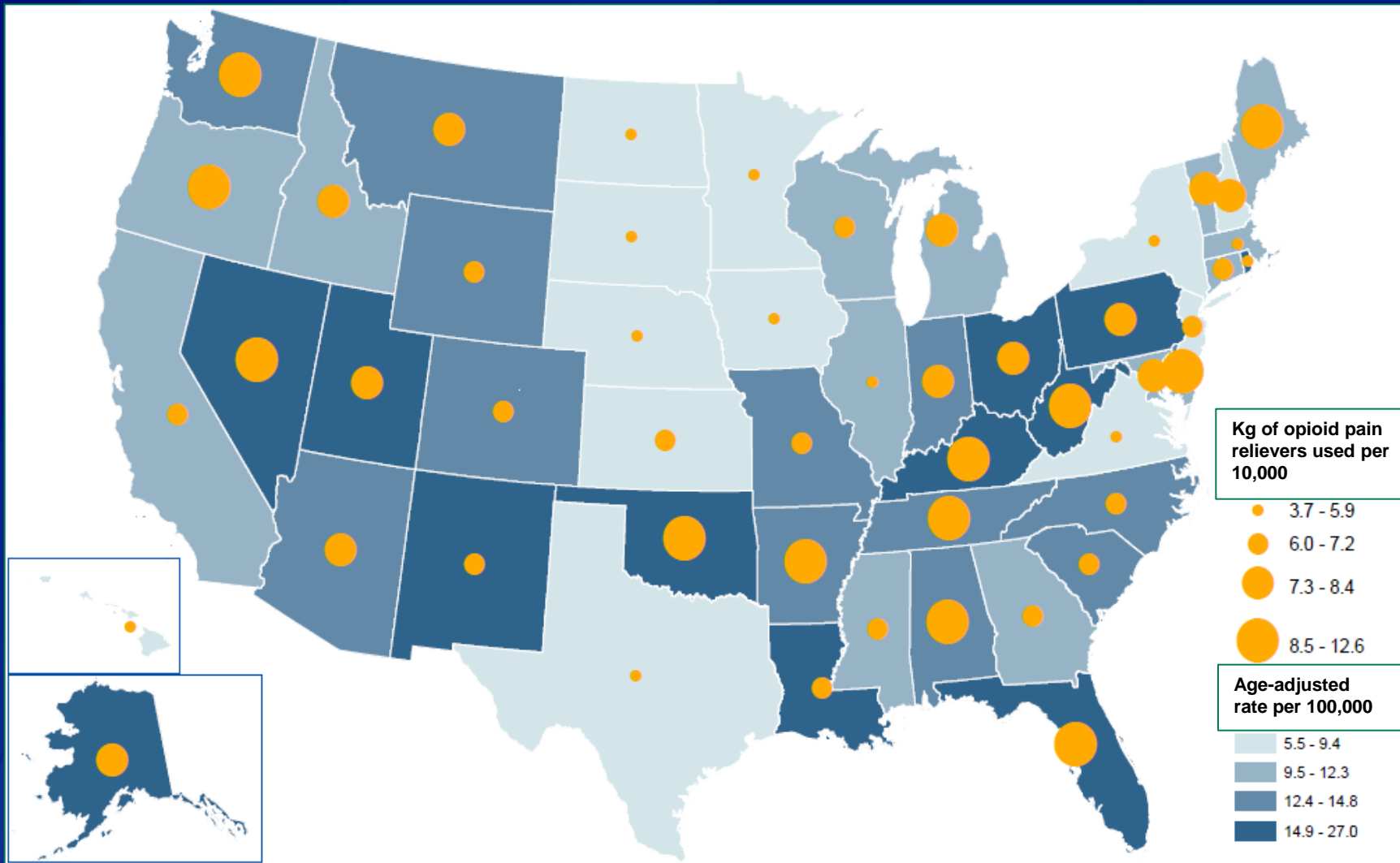
**Randeep Kahlon, MD, Past President of the Medical Society of  
Delaware**

**Presentation By: J. Kevin Massey**

# Prescription Drug Abuse and Misuse in Delaware

- Delaware: 9<sup>th</sup> highest drug overdose death rate (2009)
  - DE average deaths per 100,000 population: 12.6
  - National average deaths per 100,000: 12.0
  - Drug overdose death rate increased 142% (1999-2009)
- More Delaware residents 12 and older report using non-medical use of opioid pain relievers
  - DE average: 5.6%
  - National average: 4.8%
- Substance abuse treatment admission rates for opioids increased over 2,750% (1999-2010)
- Delaware 5<sup>th</sup> highest for opioid sales (2010)
  - DE average: 10.2 KG per 100,000 population
  - National average: 7.1 KG per 100,000 population

# Drug Overdose Death Rate, 2008, and Opioid Pain Reliever Sales Rate, 2010



National Vital Statistics System, 2008; Automated Reports Consolidated Orders System, 2010.

# **A Coordinated Approach to Action – The Prescription Drug Action Committee, PDAC**

## **□ History**

- Established in February 2012.
- Focused on coordinating public, private and community efforts under the leadership of the Division of Public Health and the Medical Society of Delaware.
- The PDAC has a broad and diverse membership.
- To date, has conducted 18 full committee public meetings and over 50 sub committee meetings.
- The PDAC has developed a comprehensive set of recommendations to combat drug abuse, misuse and diversion statewide. Implementation of these recommendations is ongoing.
- You can access our PDAC report on our website address:  
<http://dhss.delaware.gov/dhss/dph/pdachome.html>

# PDAC Leadership – Co-Chairs & Sub-Committee Chairs

## □ PDAC Co-Chairs

- Karyl Rattay, MD, MS, Director of Delaware Division of Public Health
- Randeep Kahlon, MD, Past President of the Medical Society of Delaware

## □ PDAC Sub-Committee Chairs (A.C.E)

- Access to Treatment:  
Marc Richman, PhD  
Assistant Director for Delaware Substance Abuse & Mental Health
- Control:  
John Goodill, MD  
Delaware Pain Initiative
- Education:  
Sandra Retzky, MD., RPh., MPH, MBA  
Healthcare Fellow Office of US Senator Christopher A. Coons

## Policies Moved Forward

- Require all prescribers with a controlled substance registration and pharmacists to complete 2 hours of continuing education training. Two hours of prescriber training will focus on safe and effective prescribing methods. For Pharmacists, training will focus on recognizing patient abuse seeking behaviors.
- Require controlled substance prescribers to take a one hour, one time only CME on Delaware specific prescription drug abuse and pain management topics to include: the Prescription Monitoring Program (PMP), Delaware Regulation 31 and other state specific programs and policies.
- Require hospice agencies to implement a uniform procedure to dispose of controlled substances after a patient passes away.

## **Policies moved forward - continued**

- Require practitioners with controlled substance licenses to register for access to the Prescription Monitoring Program (PMP).
- Eliminate the 72 hour exemption for reporting dispensing of controlled substances to the PMP.
- Initiate a Narcan pilot project with BLS
- Standardize continuing education of law enforcement regarding controlled substance related abuse and impairment.

## **Programs Moved Forward**

- Supported the Red Clay District School Nurses to Launch two evidence-based programs in the Red Clay School District with the school nurses.
  - Up and Away for Elementary children and families
  - Smart Moves/Smart Choices for Middle and High School
- Implemented Project ECHO, education using videoconferencing to link a multidisciplinary pain management and Buprenorphine team to front line primary care clinicians and substance abuse treatment providers.

## **Next Steps – Putting the ACTION into PDAC**

- Implement CME requirements
- Maximize the use of the PMP
  - Enable staff in clinical settings to use PMP
  - Review co prescribing of Opioids and Benzodiazepines
  - Require substance abuse treatment centers to use the PMP to evaluate patient risk of abuse.
  - Require pharmacists to obtain a Prescription Monitoring Program (PMP) patient profile when there is a suspicion of abuse seeking behaviors.
- Integrate multiple data sources to develop a robust surveillance system.

## **Next Steps – Putting the ACTION into PDAC**

- Launch a statewide public education and outreach campaign based upon the successful school nurse partnership.
- Ensure that chronic pain patients have safe and consistent access to care and support provider education by increasing access to pain management and substance abuse experts.
- Work with partners to reform the substance abuse treatment and recovery system.
- Implement long term drug take-back solution; federal guidance expected soon.

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**PDAC**

<http://dhss.delaware.gov/dhss/dph/pdachome.html>

# ACCEPTABILITY AND FEASIBILITY OF OPIOID OVERDOSE PREVENTION PROGRAM (OOPP) WITH PEER-ADMINISTERED NALOXONE IN RURAL WV

Kelly K. Gurka, MPH, PhD

Assistant Professor, Department of Epidemiology

Assistant Director for Education, Injury Control Research Center

West Virginia University



# RESEARCH TEAM

- Academic team members
- Academic – Community Liaison
- Community team members

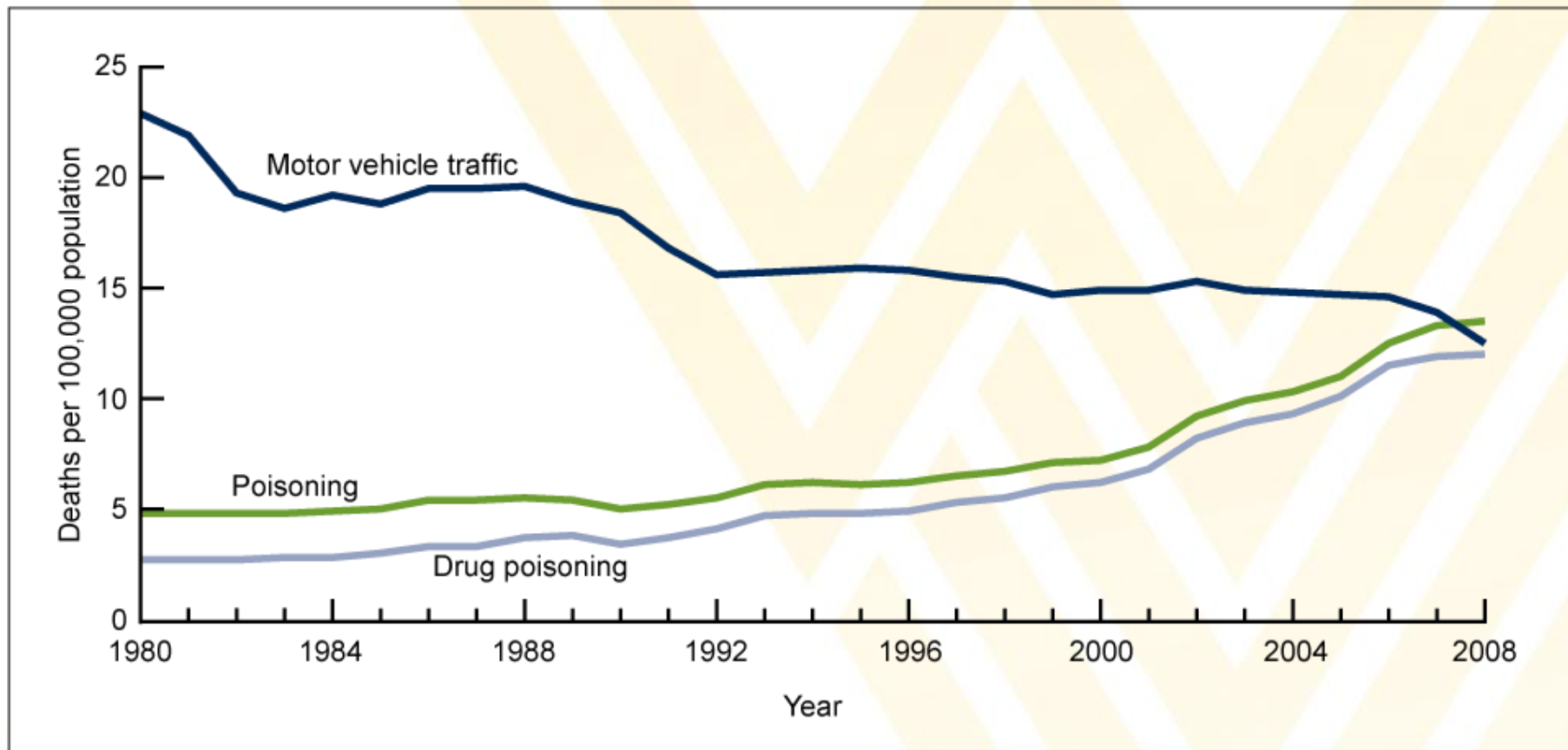


# BACKGROUND

- Growing epidemic of opioid abuse is gripping US, and WV is not immune
- Indeed, poisoning has surpassed motor vehicle crash as the leading cause of injury-related death in the US.



Figure 1. Motor vehicle traffic, poisoning, and drug poisoning death rates: United States, 1980–2008



NOTE: In 1999, the *International Classification of Diseases, Tenth Revision (ICD-10)* replaced the previous revision of the ICD (ICD-9). This resulted in approximately 5% fewer deaths being classified as motor-vehicle traffic-related deaths and 2% more deaths being classified as poisoning-related deaths. Therefore, death rates for 1998 and earlier are not directly comparable with those computed after 1998. Access data table for Figure 1 at [http://www.cdc.gov/nchs/data/databriefs/db81\\_tables.pdf#1](http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#1).

SOURCE: CDC/NCHS, National Vital Statistics System.

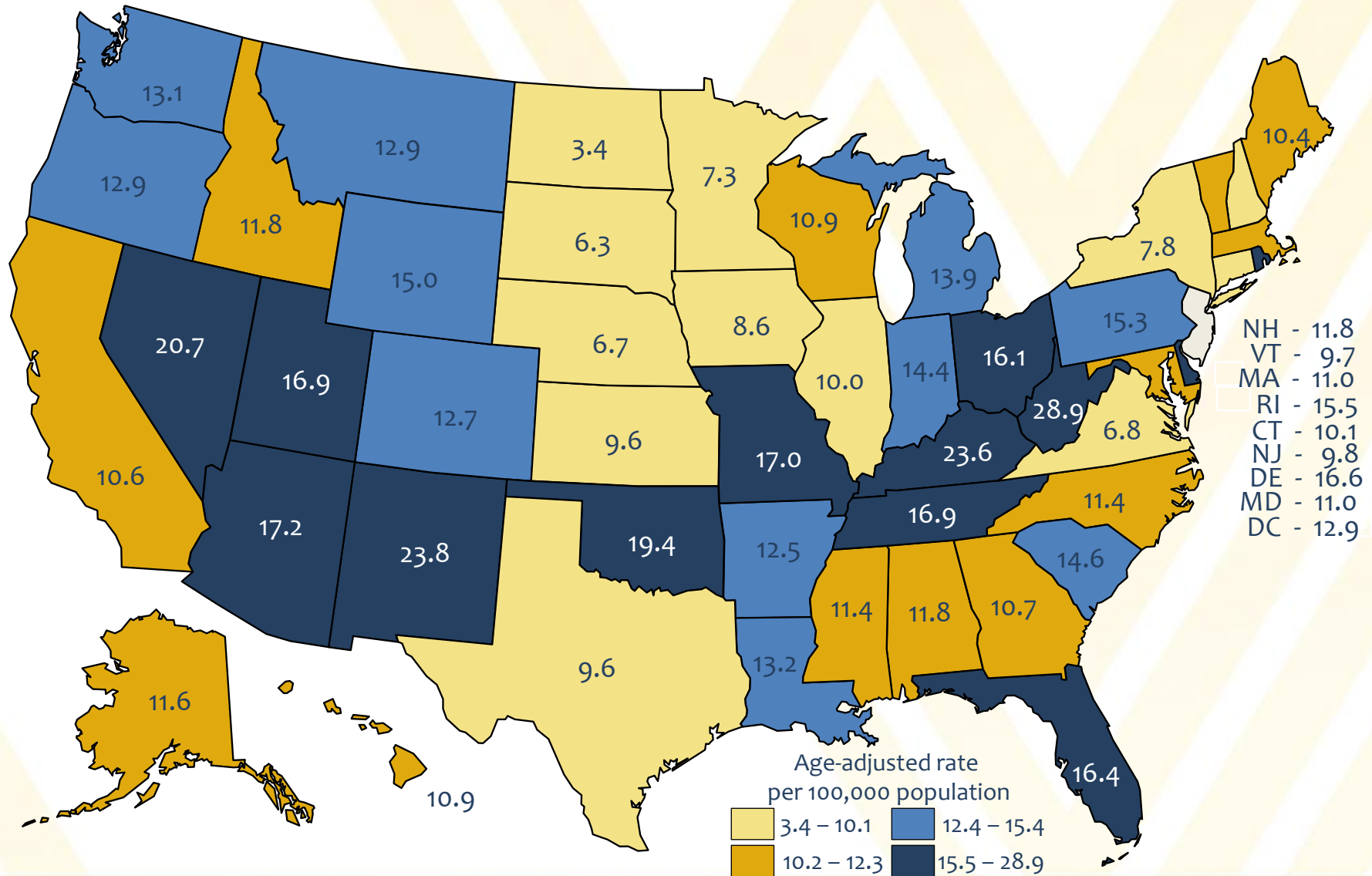


# BACKGROUND

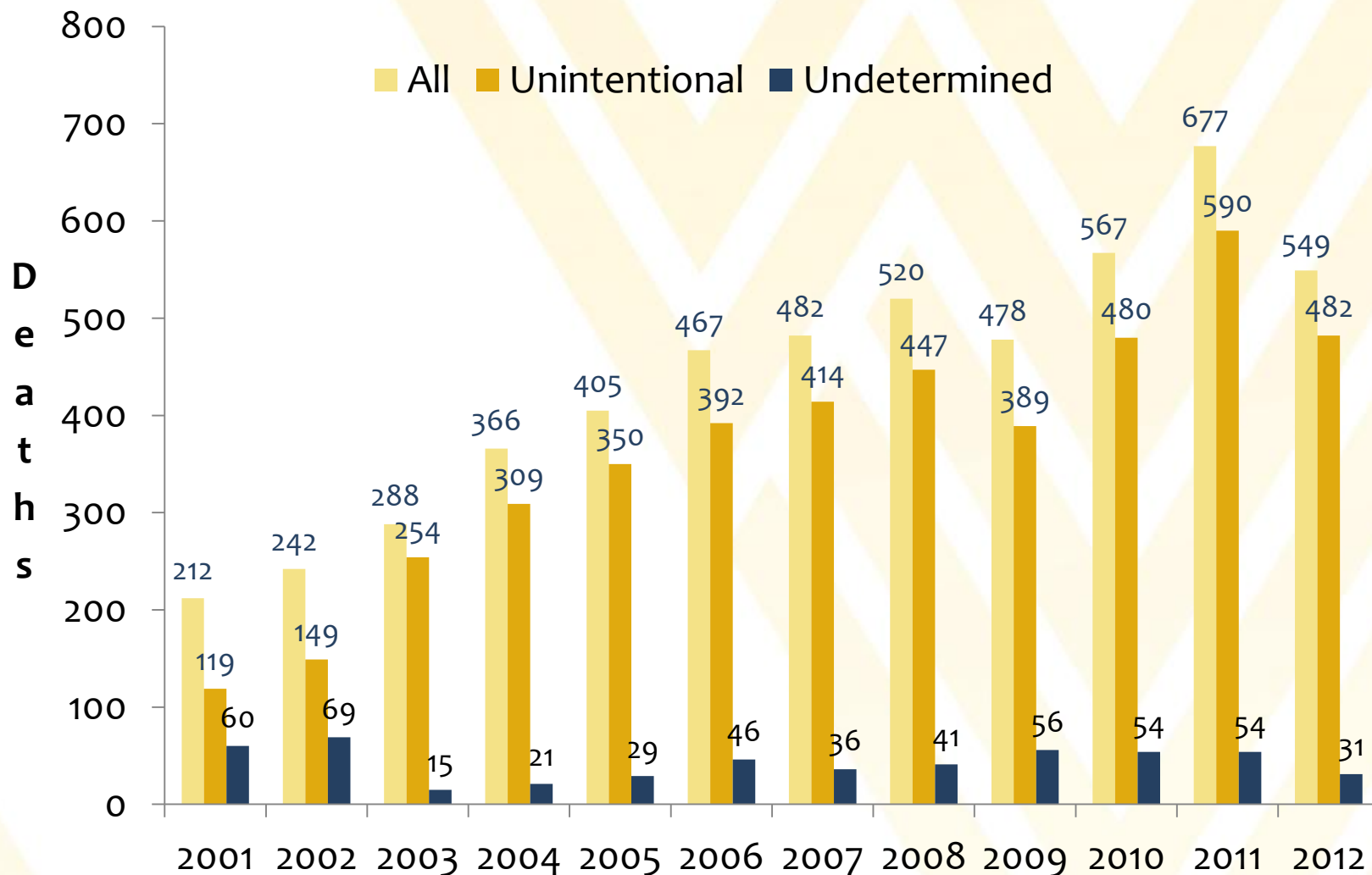
- Though traditionally concentrated in urban areas, death due to drug overdose has rapidly increased in rural areas.
- Opioid OD is a leading cause of mortality in Appalachia
- WV had the highest rate of resident overdose deaths in the nation in 2010



# RESIDENT OVERDOSE DEATHS IN THE US, 2010



## WV Drug Overdose Fatalities by Year 2001-2012 Occurrences



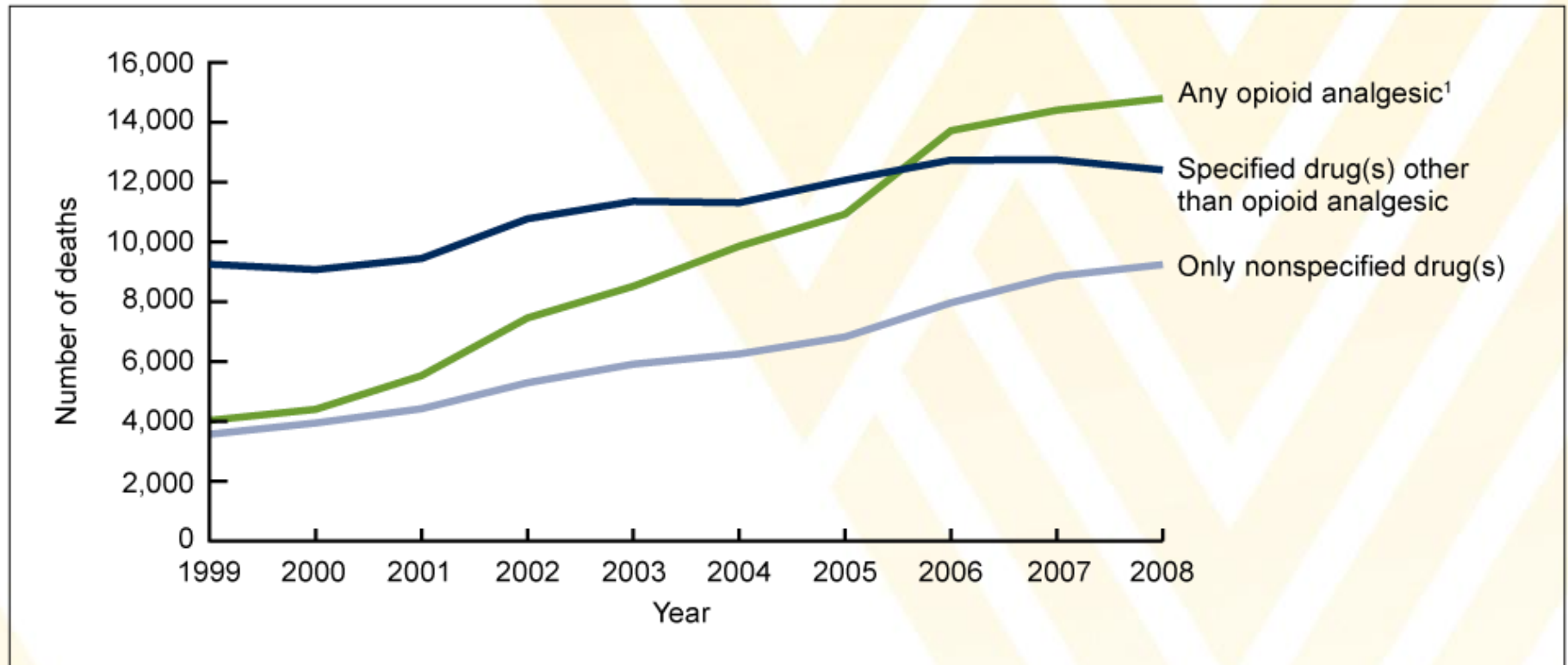
Note: Manner of suicide excluded. 2011 is preliminary and unpublished data; 2012 is cumulative.  
WV Bureau for Public Health – Health Statistics Center (closed data sets from 2001-2010; entry data sets 2011-2012).

# BACKGROUND

- Prescription drugs play an important role, replacing heroin and cocaine as the leading drugs involved in overdoses nationwide.



Figure 3. Number of drug poisoning deaths involving opioid analgesics and other drugs: United States, 1999–2008



<sup>1</sup> Opioid analgesics include natural and semi-synthetic opioid analgesics (for example, morphine, hydrocodone, and oxycodone) and synthetic opioid analgesics (for example, methadone and fentanyl). Some deaths in which the drug was poorly specified or unspecified may involve opioid analgesics.

NOTES: Drug categories are mutually exclusive. Access data table for Figure 3 at [http://www.cdc.gov/nchs/data/databriefs/db81\\_tables.pdf#3](http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#3).

SOURCE: CDC/NCHS, National Vital Statistics System.



# BACKGROUND

- In the 1990s during the heroin overdose epidemic concentrated in urban centers, overdose prevention programs utilizing peer-administered naloxone were developed, implemented, and evaluated
- Shown to be effective at reversing overdoses



# BACKGROUND

- Yet, OOPPs have not been translated and implemented widely in the Appalachian region
- To our knowledge, no OOPPs presently exist in several high-risk Appalachian states including WV.



# CRITICAL NEED

- For OOPPs to be translated for use in rural settings, including WV.



# LONG-TERM RESEARCH GOAL

- To develop, evaluate, and disseminate effective OOPPs throughout Appalachia



# RESEARCH OBJECTIVE

- To assess the feasibility and acceptability of an OOPP with peer-administered naloxone among communities in southern WV



# RATIONALE

- By assessing the feasibility of and acceptability to key constituencies of such a program, barriers can be identified and avoided, and the intervention can be tailored to the specific community in which the program will be piloted.



# AIMS

**Specific Aim #1:** Assess the feasibility of an OOPP with peer-administered naloxone and its acceptability to members of the community who misuse or abuse opioids and are at high risk of witnessing or experiencing an overdose.

**Specific Aim #2:** Assess the acceptability of an OOPP with peer-administered naloxone to prescribers and dispensers of naloxone in the community.



# AIM #1

- Participants
  - Community members, who have recently, or currently misuse/abuse opioids will be recruited.
- Recruitment
  - Respondent-driven sampling



# AIMS

**Specific Aim #1:** Assess the feasibility of an OOPP with peer-administered naloxone and its acceptability to members of the community who misuse or abuse opioids and are at high risk of witnessing or experiencing an overdose.

**Specific Aim #2:** Assess the acceptability of an OOPP with peer-administered naloxone to prescribers and dispensers of naloxone in the community.



# AIM #2

- Participants
  - Mailed survey - all community prescribers and dispensers
  - Structured interviews – two prescribers and dispensers per county (n = 6 each)



# TEAM MEMBERS

- Herb Linn
  - Director of Outreach, WVU ICRC
- Tim White, Prestera Center
  - Citizen member of the Governor's Advisory Council on Substance Abuse
  - Coordinator for Region 5 of the six regional Substance Abuse Task Forces
- Joshua Murphy
  - STOP Coalition of Mingo County
- Jeremy Farley
  - PIECES Coalition of Logan County / WVU Extension Agent
- Jeff Coben
  - Director, WVU ICRC
- Matthew Gurka
  - Chair, WVU Department of Biostatistics



# ACKNOWLEDGMENTS

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# Questions?

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# Prescription Drugs Webinar

WVU-ICRC

CDC - Funded Research

## **Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids**

Marie A. Abate, BS, Pharm.D.  
Professor of Clinical Pharmacy  
WVU School of Pharmacy

# Webinar Objectives

1. Describe the goal and objectives of the WV Forensic Drug Database (FDD) and opioid-related deaths project
2. Discuss examples of the types of prescription drug-related research currently being conducted using the FDD and future research opportunities

# Background

- Prescription opioids frequently cause/contribute to unintentional drug OD deaths; rural OD death rate often higher
- WV – highest unintentional OD death rate
- NNE states (VT, ME, NH) – similar demographics, OD death rates  $< \frac{1}{2}$  rate of WV
- Poly-drug involvement common in opioid-related deaths; benzodiazepines and alcohol often present – information lacking that details possible interactions among them
- Potential contribution of co-morbidities (other than mental illness, pain) or decedent characteristics, e.g., gender, age, BMI, to opioid-related fatalities not well studied

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Goal

Create an expanded forensic drug research database to explore potential relationships and interactions among opioids and other drugs or alcohol in opioid-related deaths in WV and NNE states

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Objectives

- Determine relationships and potential interactions for specific opioids with co-intoxicant drugs or alcohol, decedent characteristics, and concurrent co-morbidities
- Describe epidemiology of opioid poisoning deaths within/among states to determine changes over time and socio-demographic and co-morbid factors affecting mortality rates

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Analyses

*At least 5 years of complete data from  
involved states (2007-2011)*

Data entry ongoing

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Preliminary data analyses

1. Effects of # concomitant drugs, having valid prescription for opioid, and alprazolam or diazepam presence on opioid parent drug concentrations and parent drug/metabolite ratios

## Findings:

- As number of co-intoxicant drugs increased from 1-2 to 3-4, median concentrations of hydrocodone (H), methadone (M), and oxycodone (O) significantly decreased (not fentanyl [F])
- H decedents significantly older ( $\sim 53\% \geq 45$  yr old), M decedents significantly younger ( $\sim 73\% \leq 44$  yr old) than other opioids

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Preliminary data analyses

### Findings (cont):

- Alprazolam and/or diazepam present in most WV opioid deaths; M deaths least likely to have benzodiazepine; alprazolam most often present (~34%) in H and O deaths
- Significantly higher F and M concentrations found when recent prescription present compared to no prescription
- H significantly less likely to be present alone (9%) vs. O, F & M (18-27%)

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Preliminary data analyses

2. Relationships between opioid levels and presence of benzodiazepines and alcohol in WV deaths explored using multiple linear regression models

## Findings:

Analysis of 877 unintentional single opioid H, M, O and F deaths found co-intoxicant alcohol and/or benzodiazepine associated with significant effects on opioid concs:

- Alcohol significantly associated with decreased log-concentrations of O, M and H, and predicted decreases in concentrations of: 0.06 µg/ml (H), 0.18 µg/ml (M), 0.14 µg/ml (O)

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Preliminary data analyses

### Findings (Cont):

- Benzodiazepine significantly associated with decreased log-concentrations of M and H, and predicted decreases in concentrations of: 0.05 µg/ml (H), 0.08 µg/ml (M)
- Additive concentration effects observed with alcohol and benzos for H and M
- Increasing age associated with increases only in M concentrations

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Research – in progress, future plans

1. Analyze antidepressant-associated deaths and possible interactions with prescription opioids, benzodiazepines, and alcohol
2. Determine possible effects of gender, age, BMI, co-intoxicants, and other variables (e.g., co-morbidities) on opioid concentrations in deaths
3. Calculate overall & state age-adjusted mortality rates and death rates for key intoxicants and combinations, stratified by year, demographic characteristics, and drug supply/use data

# Concurrent Drug, Alcohol, and Decedent Characteristics in Deaths Due to Opioids

## Research – in progress, future plans

4. Identify mortality rate clustering by specific geographic area
5. Determine changes over time in patterns of key drug/alcohol combinations in deaths, including prescription presence
6. Determine co-morbidity patterns, particularly for BMI, cardiac, respiratory, and hepatic pathology
7. Collaborate with other states to explore similarities, differences and expand our research potential

Contact Information:  
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