

The Opioid Overdose Epidemic in the United States

NCIPC/CDC Research Priorities

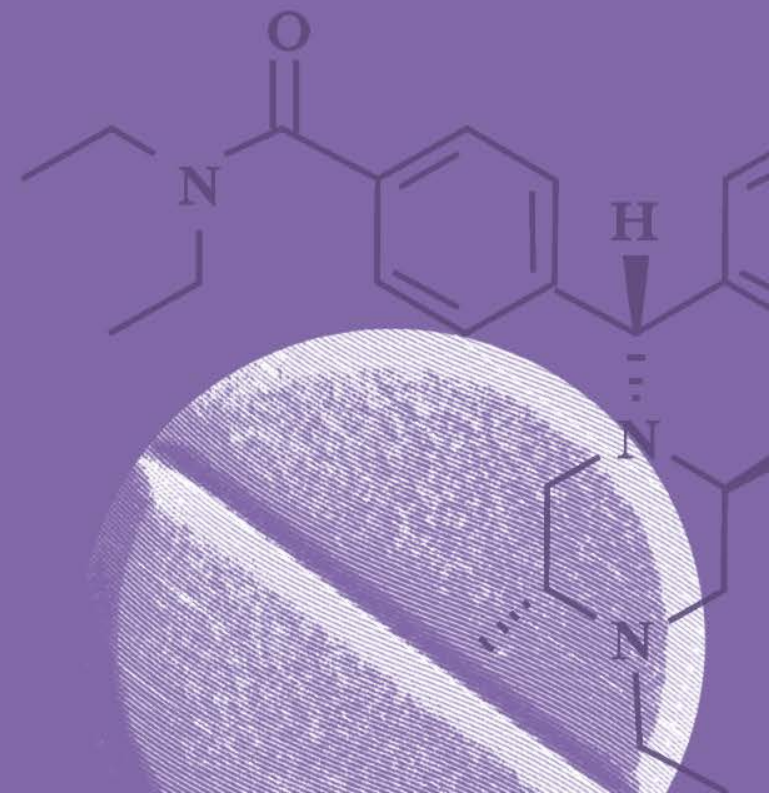
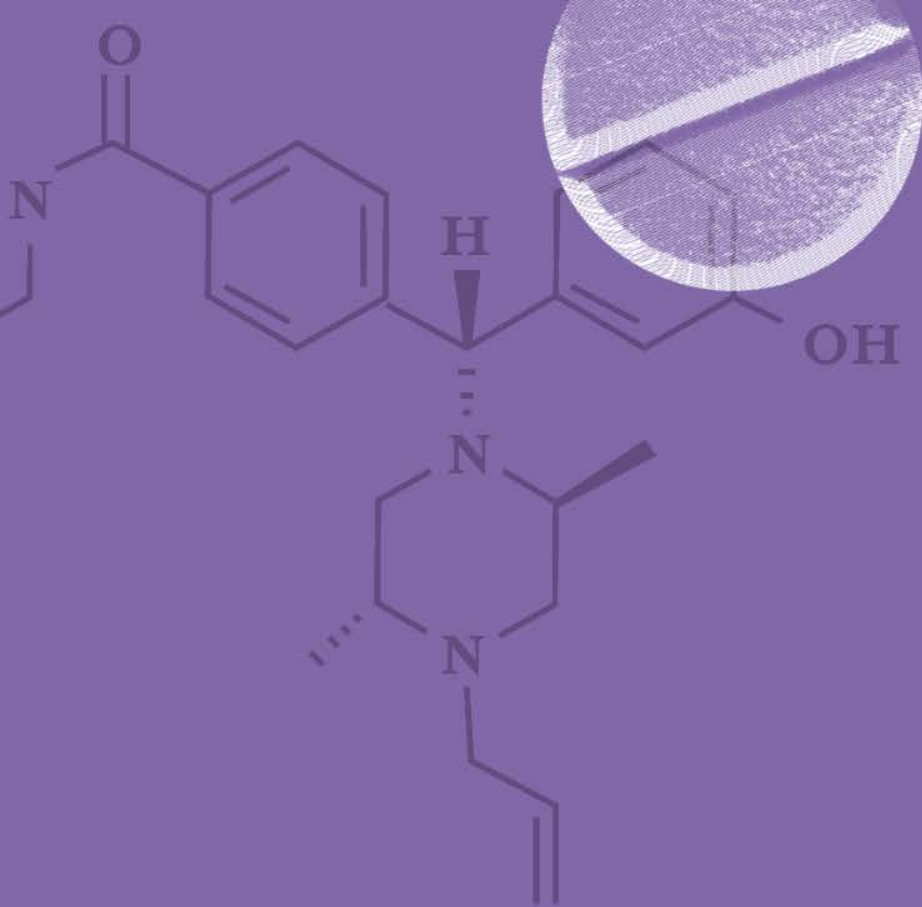
Tamara Haegerich, PhD
Associate Director for Science
Division of Unintentional Injury Prevention

NCIPC Board of Scientific Counselors Meeting
June, 2018



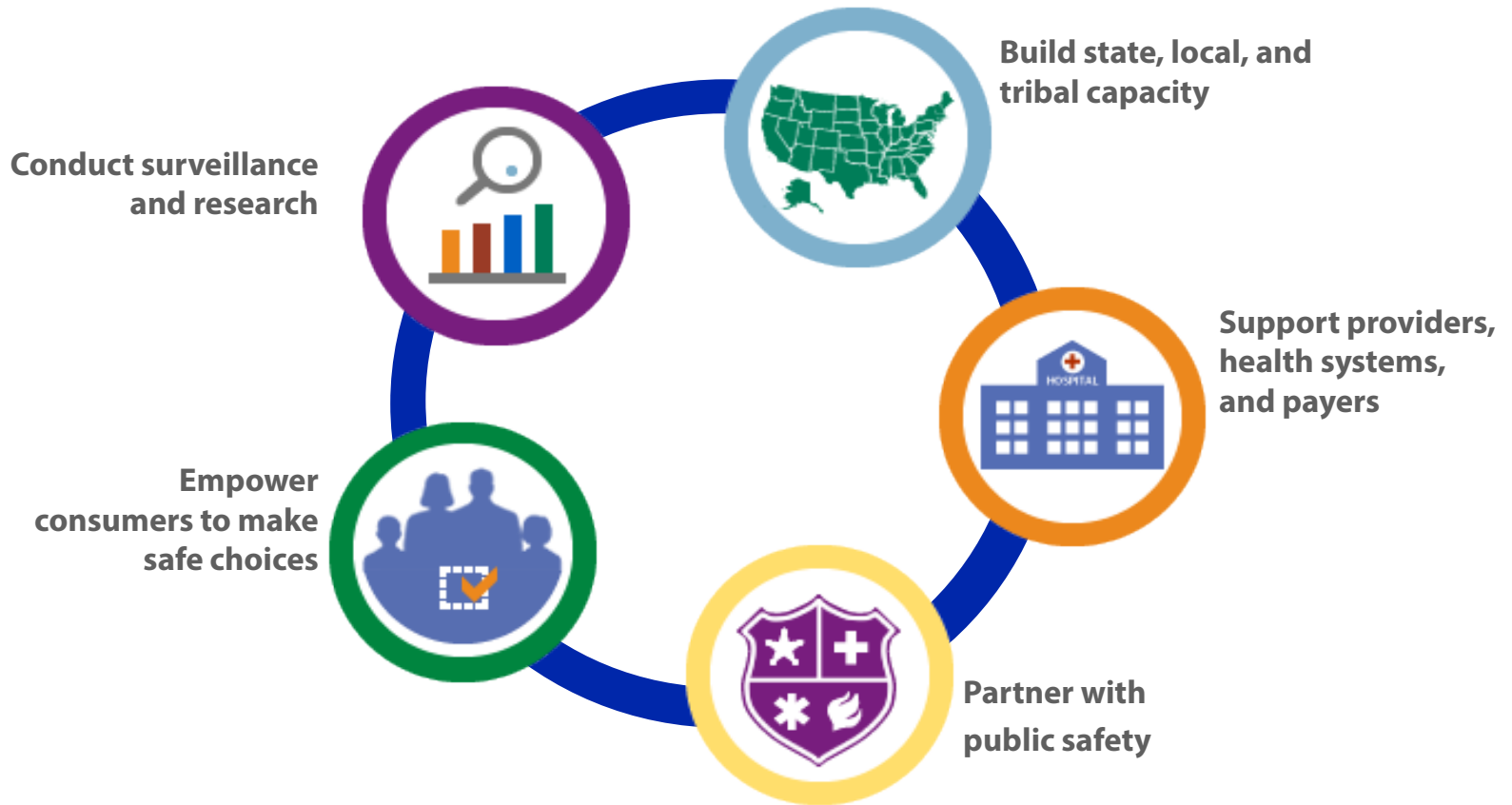
Outline of the Presentation

- Review CDC's opioid strategy
 - Present NCIPC opioid research priorities
 - Review activities and summary of progress
 - Describe how the epidemic has evolved since priorities were established
 - Describe need to integrate opioid priorities with Center and Agency priorities
-
- NIH presentation of priorities
 - BSC discussion of federal priorities and research gaps
-
- Request BSC input



Overview of CDC Opioid Strategy

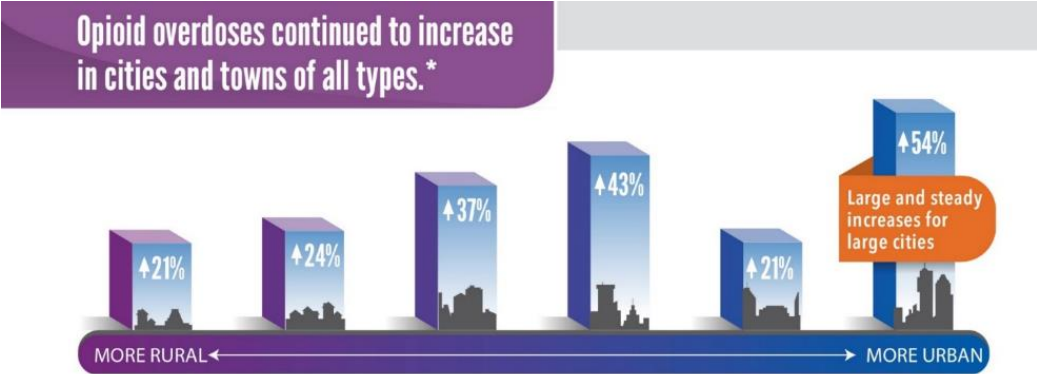
Pillars of CDC Activity



Conduct surveillance and research

↑30% Opioid overdoses went up 30% from July 2016 through September 2017 in 52 areas in 45 states.

↑70% The Midwestern region saw opioid overdoses increase 70% from July 2016 through September 2017.



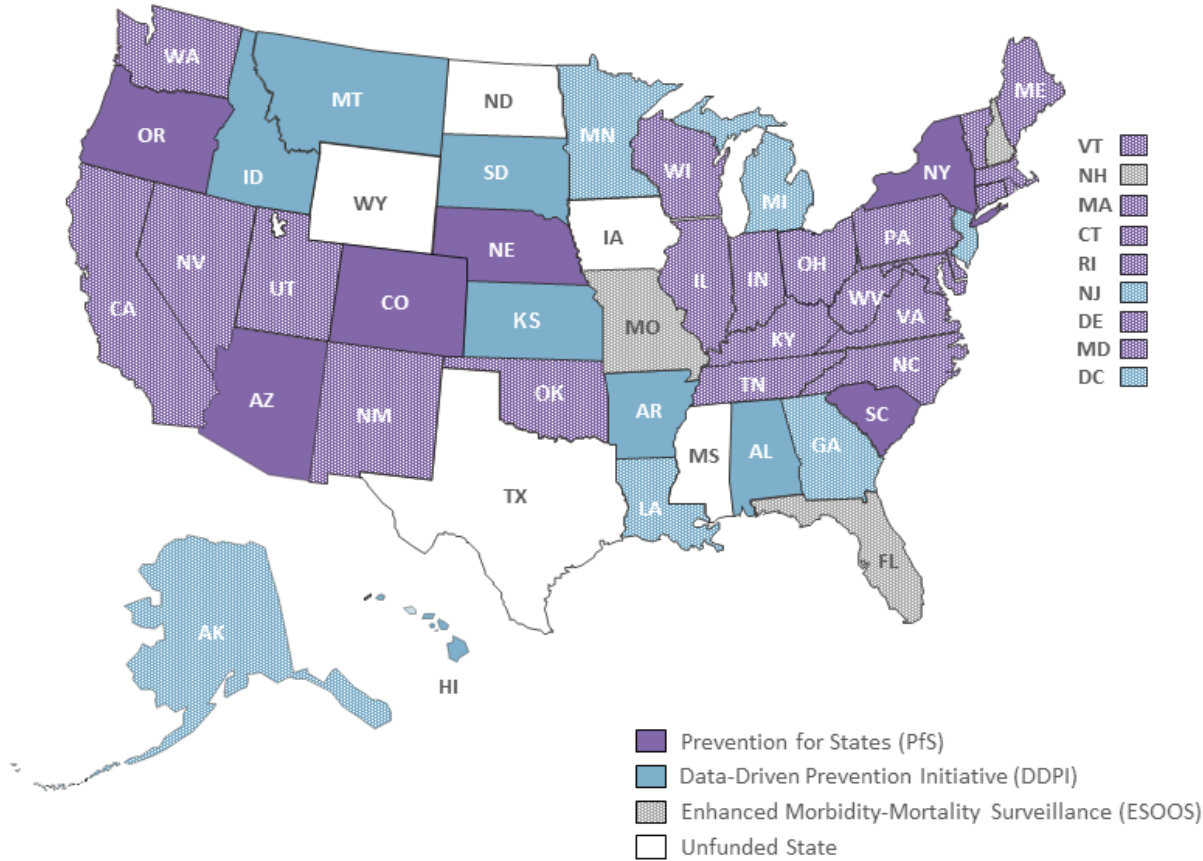
Detecting recent trends in opioid overdose ED visits provides opportunities for action in this fast-moving epidemic.



SOURCE: CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 16 states reporting percent changes from July 2016 through September 2017.

Build state, local, and tribal capacity

Overdose Prevention in States Initiative



PDMPs



System-Level



Evaluate Policy



Surveillance



Rapid Response

Support providers, health systems, and payers

Please note: An erratum has been published for this issue. To view the erratum, please click here.

Centers for Disease Control and Prevention
MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports / Vol. 65 / No. 1

March 18, 2016

CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016



Continuing Education Examination available at <http://www.cdc.gov/mmwr/cme/conted.html>.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Checklist for prescribing opioids for chronic pain

For primary care providers treating adults (18+) with chronic pain ≥ 3 months, excluding cancer, palliative, and end-of-life care

CHECKLIST

When CONSIDERING long-term opioid therapy

- Set realistic goals for pain and function based on diagnosis (eg, walk around the block).
- Check that non-opioid therapies tried and optimized.
- Discuss benefits and risks (eg, addiction, overdose) with patient.
- Evaluate risk of harm or misuse.
 - Discuss risk factors with patient.
 - Check prescription drug monitoring program (PDMP) data.
 - Check urine drug screen.
- Set criteria for stopping or continuing opioids.
- Assess baseline pain and function (eg, PEG scale).
- Schedule initial reassessment within 1–4 weeks.
- Prescribe short-acting opioids using lowest dosage on product labeling; match duration to scheduled reassessment.

If RENEWING without patient visit

- Check that return visit is scheduled ≤ 3 months from last visit.

REFERENCE

EVIDENCE ABOUT OPIOID THERAPY

- Benefits of long-term opioid therapy for chronic pain not well supported by evidence.
- Short-term benefits small to moderate for pain; inconsistent for function.
- Insufficient evidence for long-term benefits in low back pain, headache, and fibromyalgia.

NON-OPIOID THERAPIES

Use alone or combined with opioids, as indicated:

- Non-opioid medications (eg, NSAIDs, TCAs, SNRIs, anti-convulsants).
- Physical treatments (eg, exercise therapy, weight loss).
- Behavioral treatment (eg, CBT).
- Procedures (eg, intra-articular corticosteroids).

EVALUATING RISK OF HARM OR MISUSE

Known risk factors include:

- Illegal drug use; prescription drug use for nonmedical reasons.
- History of substance use disorder or overdose.
- Mental health conditions (eg, depression, anxiety).

Provider & Patient Materials Developed



Support providers, health systems, and payers

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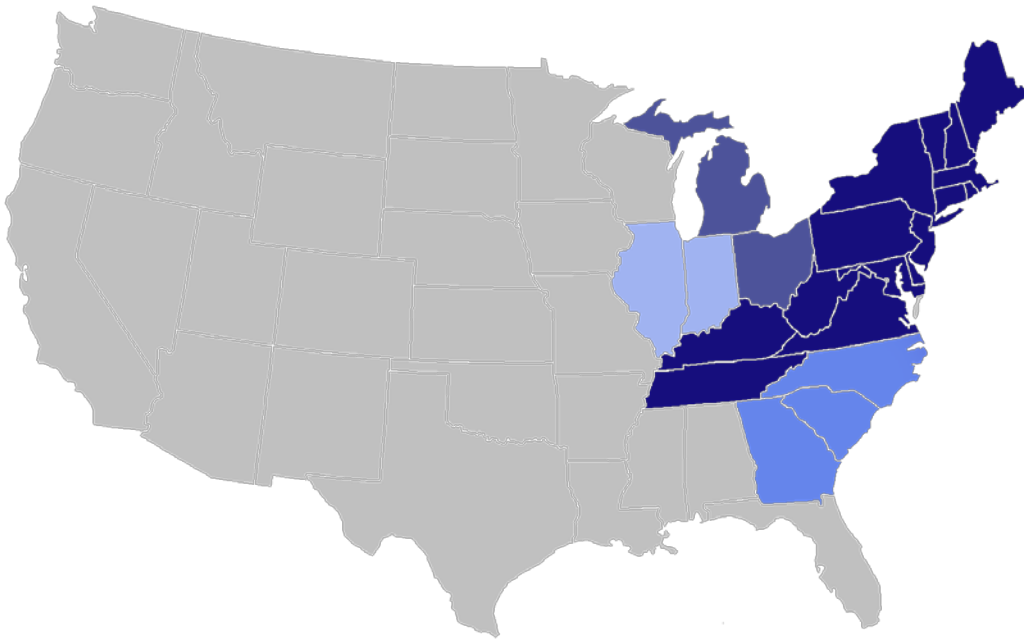
- Illegal drug use; prescription drug use for nonmedical reasons.
- History of substance use disorder or overdose.
- Mental health conditions (eg, depression, anxiety).

Provider & Patient Materials Developed



Partner with public safety

- Heroin Response Strategy within High Intensity Drug Trafficking Areas (HIDTAs)
- Public health-public safety connections
- Community projects to evaluate innovative local responses to overdose spikes



Empower consumers to make safe choices

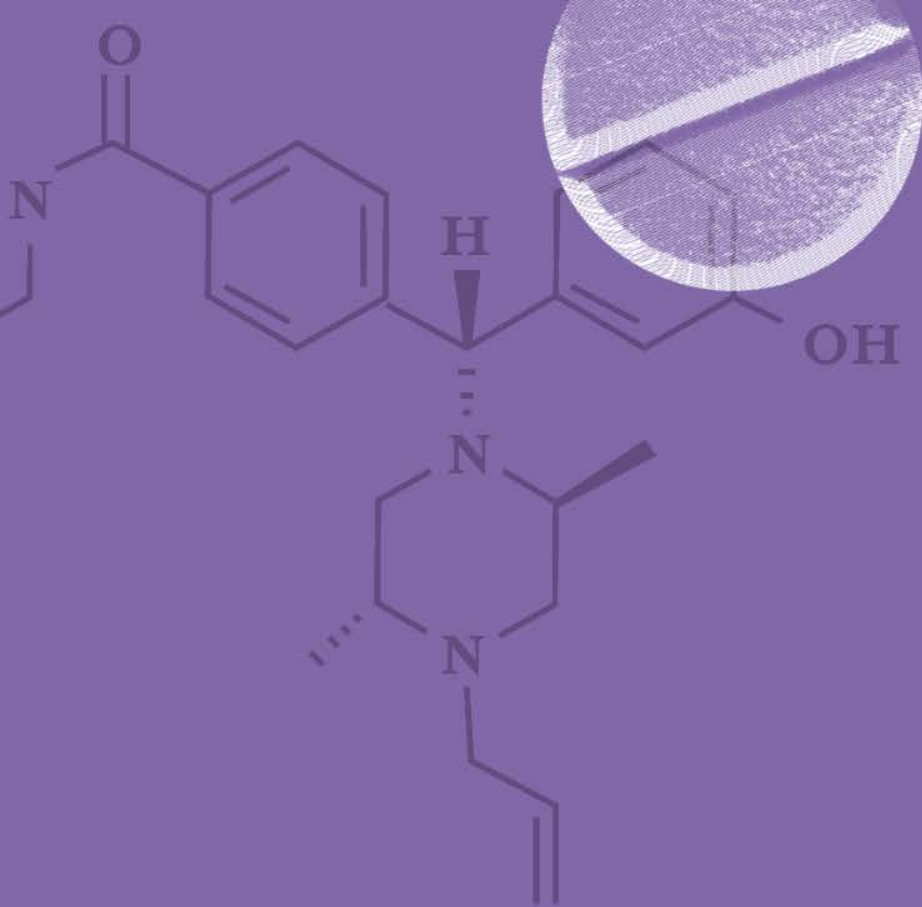
Prescription opioids can be **addictive** and **dangerous**.

It only takes a little to lose a lot.

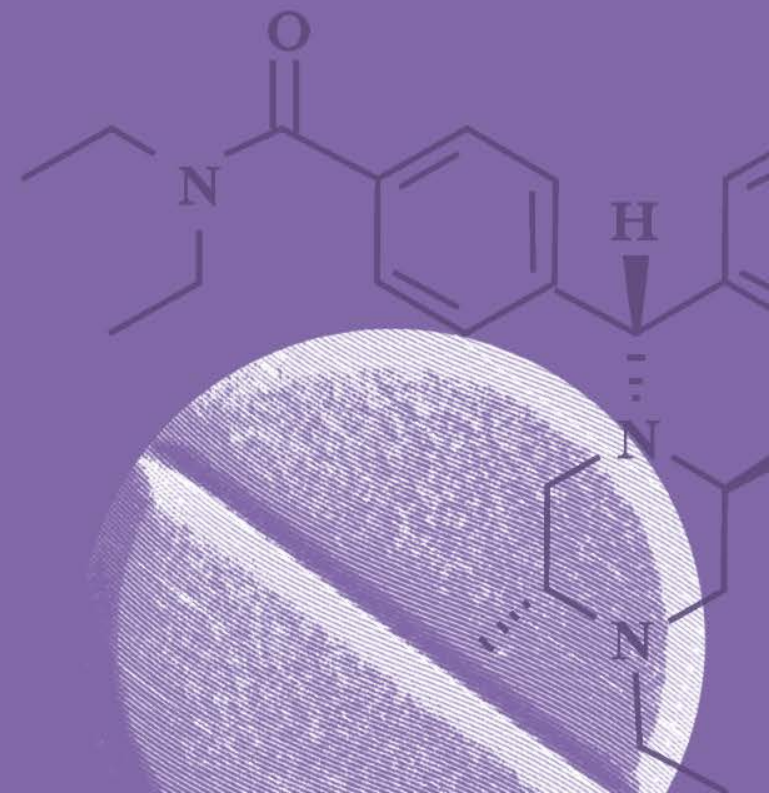


cdc.gov/RxAwareness





NCIPC Opioid Research Priorities



NCIPC Research Priorities

Four priority areas to identify factors that increase risk for opioid mortality, generate prevention strategies that work, and inform ways to enhance implementation.



1



Evaluate Insurance Mechanisms (FORMULARY MANAGEMENT)

Evaluate the impact of insurer mechanisms and pharmacy benefit manager strategies to change prescribing behavior, inappropriate use of controlled substances, and patient outcomes.

2



Evaluate State Policies and Strategies (PDMP/POLICY)

Evaluate the impact of state policies and strategies that facilitate PDMP use, improve prescribing practices, educate patients, and encourage treatment overdose and response.

3



Identify Risk and Protective Factors (RX TO ILLICIT)

Identify factors that increase risk for prescription drug-related mortality, and identify risk and protective factors related to the co-use of prescription opioid pain relievers and heroin.

4



Identify Dissemination and Implementation Methods (CLINICAL CARE)

Evaluate the adoption, implementation, and impact of clinical practice guidelines, clinical decision supports, and coordinated care plans within primary care practices in health systems.

Evaluate insurance mechanisms (FORMULARY MANAGEMENT)

- Which insurance and pharmacy benefit manager interventions change prescribing behaviors most effectively (e.g., drug utilization review, patient review and restriction, prior authorization)?
- Which of these interventions are most cost-effective?
- What are the effective ways that state public health departments can engage insurers and pharmacy benefit managers to foster adoption of these interventions?



Evaluate state policies and strategies (PDMP/POLICY)



- What are the impacts of innovative, untested policies and strategies at the state level on prescribing rates and prescription or illicit drug misuse, abuse, and overdose?
- What are the potential unintended consequences (e.g., encouraging transition from prescription opioid misuse to illicit drug misuse)?
- What are the impacts of harm-reduction strategies on drug overdose?
- Which PDMP strategies (e.g., mandatory registration) enhance use and produce the greatest impacts on prescribing and health outcomes?
- What are the cost implications and cost savings of identified policy changes?
- How can communication campaigns influence physician opioid prescribing and patient opioid use?

Identify risk and protective factors (RX TO ILLICIT)

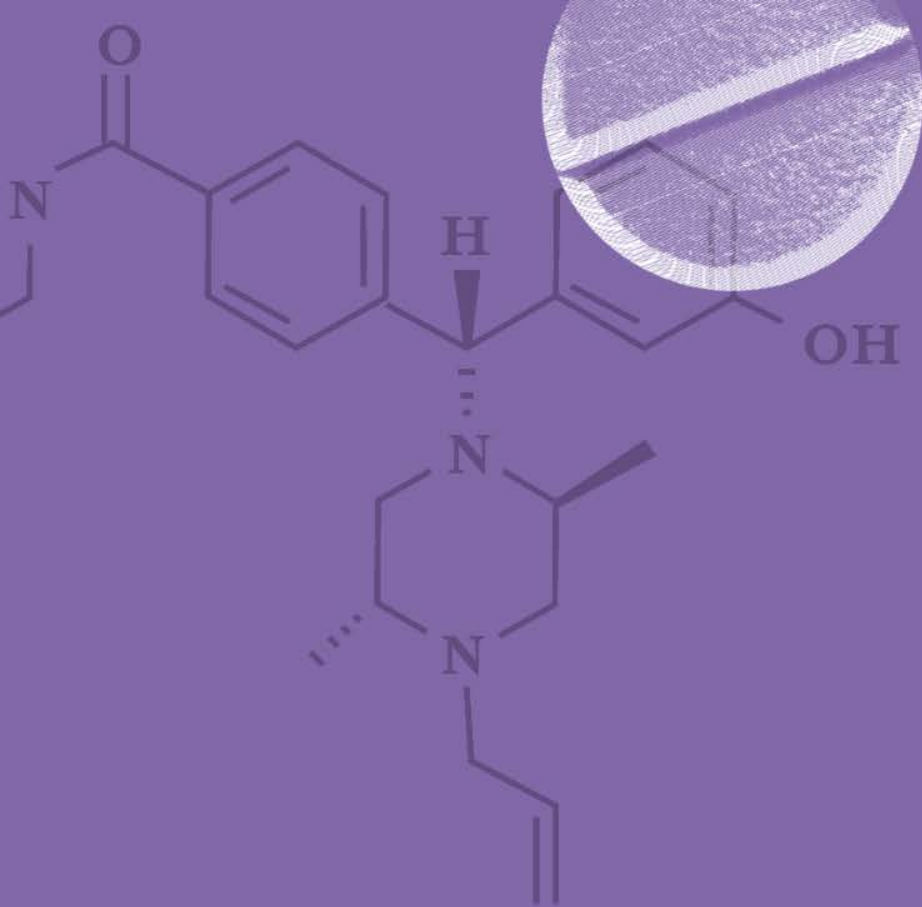
- How can PDMP, coroner, medical examiner, and law enforcement data be used to identify risk and protective factors for drug overdose?
- What are the patterns of co-use of prescription opioids and heroin, injection of opioids, and overdose?
- Does controlled substance prescribing, including opioid pain reliever prescribing, increase risk for heroin overdose?



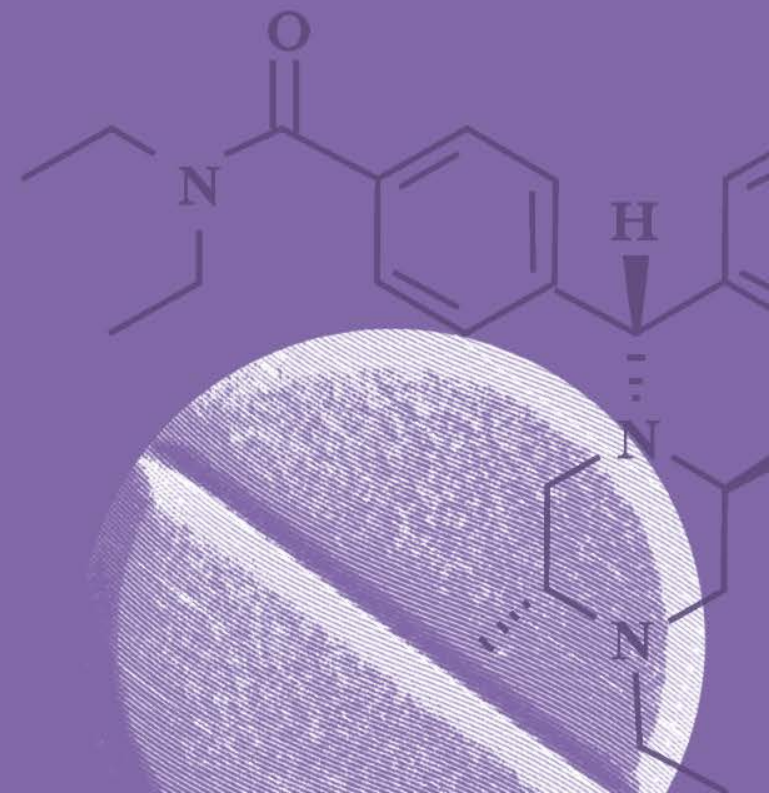
Identify dissemination and implementation methods (CLINICAL CARE)

- What are the clinical decision support needs, barriers, and effective approaches to promoting guideline adherence in primary care?
- What factors facilitate adoption of coordinated care plans in health systems?
- What are the patient and health system impacts of guideline, clinical decision support, and coordinated care plan implementation?





Review of Activities and Summary of Progress



Extramural Funding Opportunities 2012-2019

Research to Prevent Prescription Drug Overdoses

(2012, 2014)

Research on Integration of Injury Prevention in Health Systems

(2014)

Research on Rx Opioid Use, Rx Prescribing, and Heroin Risk

(2016)

Research to Evaluate Medication Management to Reduce Falls

(2018)

Research for the Primary/Secondary Prevention of Opioid Overdose

(2018)

Injury Control Research Centers

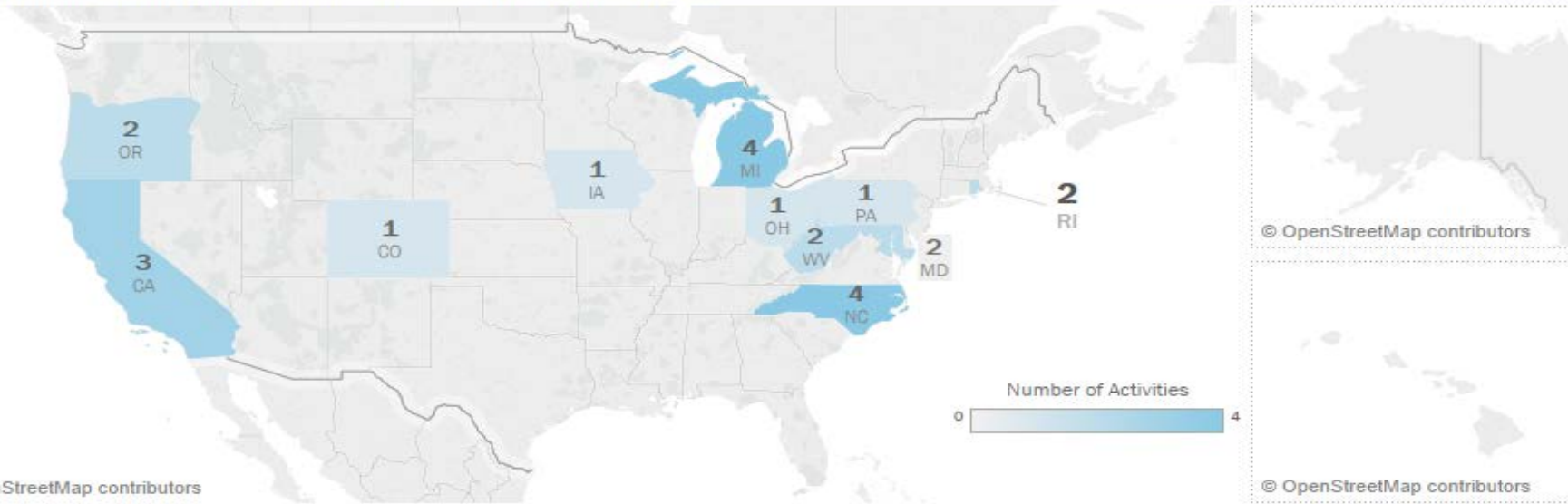
(2014, 2019)

Funded extramural opioid research: Distribution of ICRC and cooperative agreement activities across states, 2012-2018 (N=23)

Opioid Overdose: Total Funding across ICRC's and Research Cooperative Agreements FY12-Present



Opioid Overdose: Distribution of Research Activities across ICRC's and and Research Cooperative Agreements by Location FY12-Present. Total Opioid Overdose Research Activities (N=23).



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Funded extramural opioid research: Distribution of ICRC and cooperative agreement activities across priorities, 2012-2018 (N=23)

Opioid Overdose: Distribution of Research Priorities across ICRC's and Research Cooperative Agreements FY12-Present*



*Each research activity may address multiple research priorities

Data last updated 6/6/2018 9:52:17 AM

Funded Projects: Evaluate insurance mechanisms (FORMULARY MANAGEMENT)

- 3 NOFOs, 4 projects funded
 - Medicaid lock-in, North Carolina (PI: Skinner)
 - Worker's compensation/SSDI-eligible disabled Medicare cost sharing and closed formulary,, Texas and California (PI: Mulcahy)
 - Medicaid prior authorization programs in 3 states (PI: Hartung)
 - Medicaid prior authorization, Pennsylvania (PI: Cochran)

Funded Projects: Evaluate state policies and strategies (PDMP/POLICY)

- 3 NOFOs, 3 projects funded
 - PDMP use in 7 states, impact on prescribing and health outcomes (PI: Green)
 - PDMP implementation within multi-component community strategy (Project Lazarus), impact on fatal and nonfatal overdose (PI: Ringwalt)
 - PDMP and pain clinic legislation, impact on prescribing behavior and use in 2 states (PI: Alexander)

Funded Projects: Identify risk and protective factors (RX TO ILLICIT)

- 2 NOFOs, 5 projects funded
 - Qualitative investigation of transitions from rx opioids to heroin (PI: Davidson)
 - Evaluation of changes in prescribing in safety net clinics and association with heroin initiation and overdose (PI: Coffin)
 - Evaluation of performance improvement in coordinated care organizations and impact on prescribing, opioid use, and Rx/illicit overdose (PI: Hartung)
 - Evaluation of associations between dose reduction/discontinuation, heroin use, and overdose (PI: Bohnert)
 - Evaluation of opioid reduction policies (e.g., quantity limits, MME) association with heroin use and overdose (PI: Binswanger)

Funded Projects: Identify dissemination/implementation methods (CLINICAL CARE)

- 5 NOFOs, 6 projects funded
 - Evaluation of clinical guidelines within Project Lazarus, examining impact on fatal and nonfatal overdose (PI: Ringwalt)
 - Evaluation of electronic health record alerts with feedback to providers on prescribing behaviors (PI: Seymour)
 - Evaluation of a safe opioid prescribing protocol in a trauma center on prescribing behavior and naloxone use (PI: Baird)
 - Evaluation of performance improvement efforts in coordinated care organizations on prescribing and initiation of heroin use (PI: Hartung)
 - Evaluation of implementation of dose reduction/discontinuation recommendations and associations with heroin use and overdose (PI: Bohnert)

Sample of Extramural Research Findings

In an evaluation of **Oregon Medicaid's prior authorization policy** for high dose opioids, the probability of an opioid fill over 120 MME declined, fills of non-opioid medications to treat neuropathic pain increased, and the probability of multiple pharmacy used declined significantly.¹

In an evaluation of **Florida's prescription monitoring program and pill mill law**, high risk patients experienced relative reductions in MME, total opioid volume, and number of dispensed opioid prescriptions, while low-risk patients generally did not experience significant relative reductions.²

In an evaluation of Project Lazarus, a state-wide initiative to prevent opioid overdose, provider education and policies to limit emergency department opioid dispensing were associated with lower overdose mortality.³

1. Hartung et al. Effect of a high dosage opioid prior authorization policy on prescription opioid use, misuse, and overdose outcomes. Substance Abuse 2017; <https://doi.org/10.1080/08897077.2017.1389798>.

2. Chang et al. Impact of Florida's prescription drug monitoring program and pill mill law on high-risk patients: A comparative interrupted time series analysis. Pharmacoepidemiology and Drug Safety 2018; <https://doi.org/10.1002/pds.4404>.

3. Alexandridis et al. A statewide evaluation of seven strategies to reduce opioid overdose in North Carolina. Injury Prevention 2018;24:48-54.

Injury Control Research Centers

- 6 ICRCs, 9 projects, Opioid Thematic Network
 - Evaluate mobile tools to educate ED patients about opioids
 - Evaluate state medical board policy to identify excessive prescribing using PDMP
 - Analyze poison control data to assess overdose among adolescents
 - Examine diagnoses and prescribing associated with OUD and overdose
 - Assess availability of county and regional interventions to address misuse
 - Translate opioid overdose prevention strategies
 - Evaluate prescription drug coverage policy on falls and overdose in older adults
 - Evaluate a brief intervention in EDs for at-risk individuals
 - Evaluate a home visitation program after overdose
 - Expand mindfulness-based relapse prevention in an outpatient setting for OUD

Sample of Intramural Research

Formulary Management

- Declines in opioid prescribing after BCBS policy change in Massachusetts
- Associations among Medicaid preferred drug lists, methadone prescribing, and overdose
- Impact of prior authorization policies on opioid prescribing

PDMP/Policy

- Impact of mandatory PDMP and pill mill legislation on prescribing and overdose
- Systematic review of the impact of state policy and and systems-level strategies on opioid overdose
- Impact of proactive reporting on prescriber behavior

Prescription to Illicit

- Increase in and characteristics of drug overdose deaths involving fentanyl*
- Demographic and substance use trends among heroin users*
- Trends in deaths involving heroin and synthetic opioids and law enforcement drug product reports*

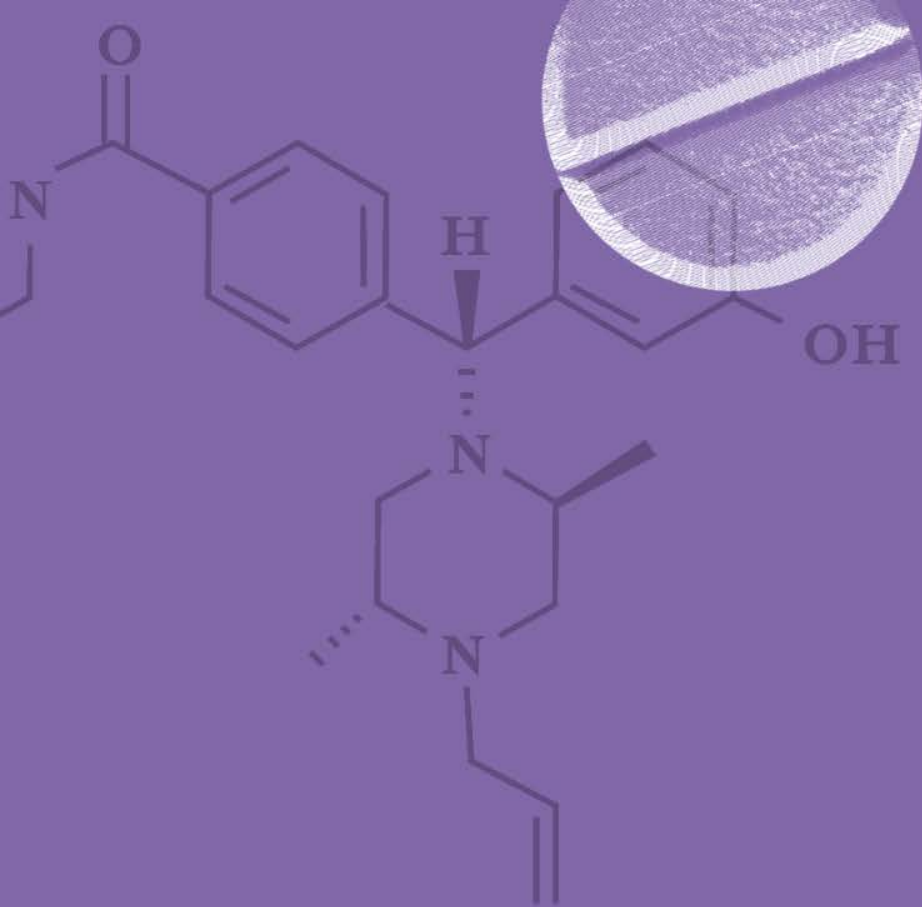
Clinical Care

- Changes in opioid prescribing in the US, before and after CDC prescribing Guideline
- Advancing safer and more appropriate prescribing in Kaiser Permanente
- Evaluation of quality improvement and coordinated care plans on opioid prescribing and patient outcomes

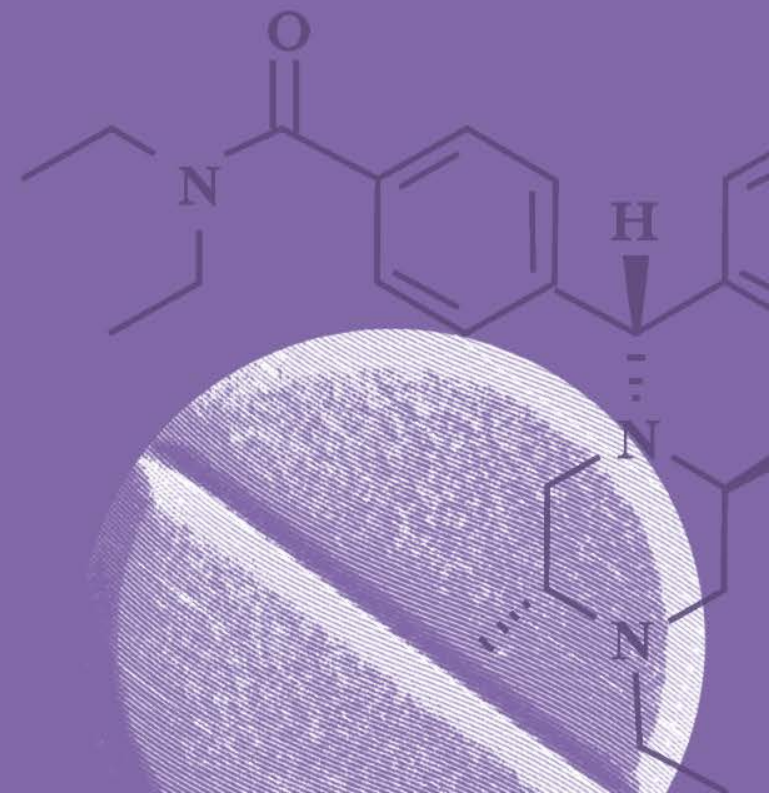
Intramural research includes:

- Intramural secondary data analysis
- Contract data collection
- Partnership efforts

* Surveillance activities supporting research



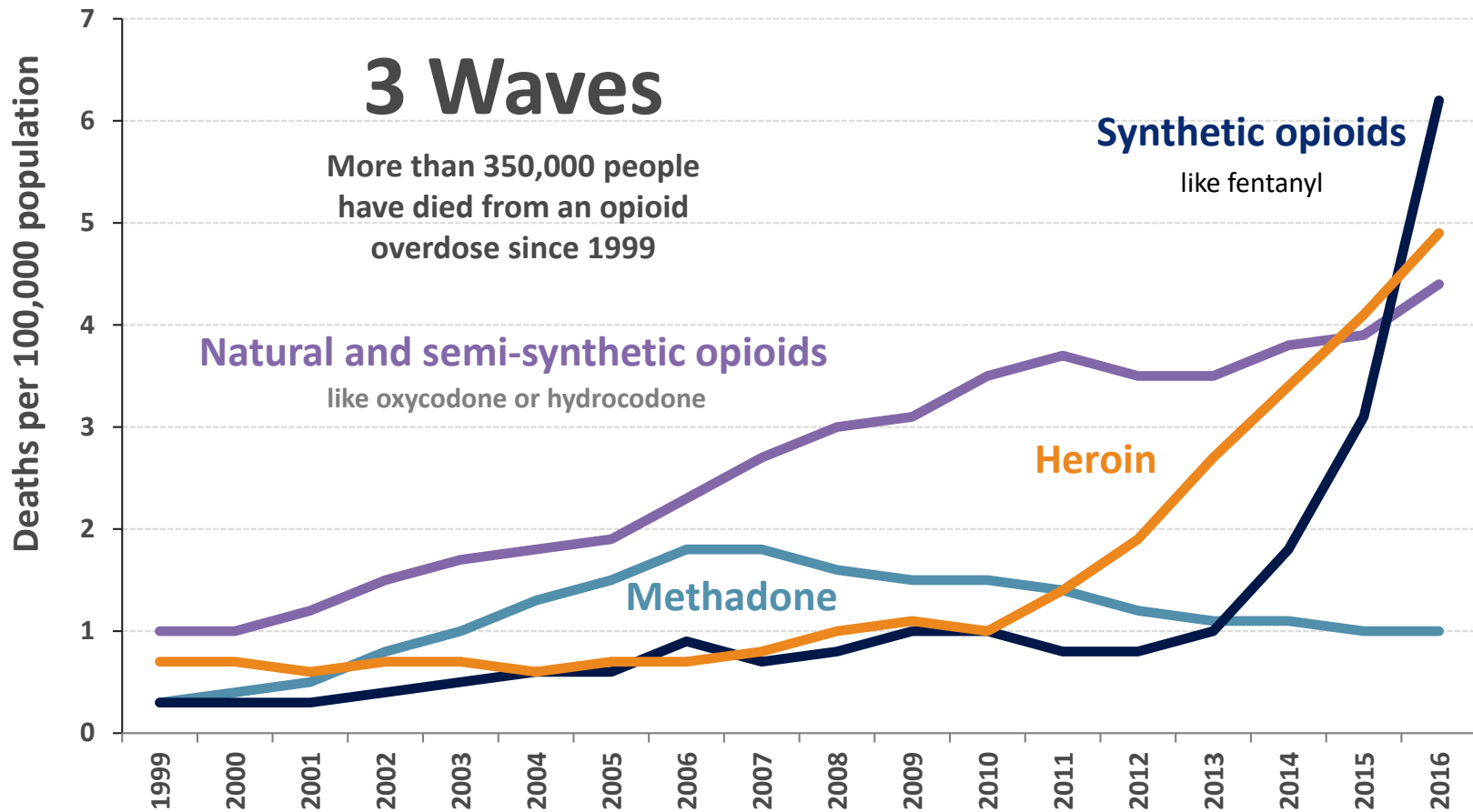
An Evolving Epidemic



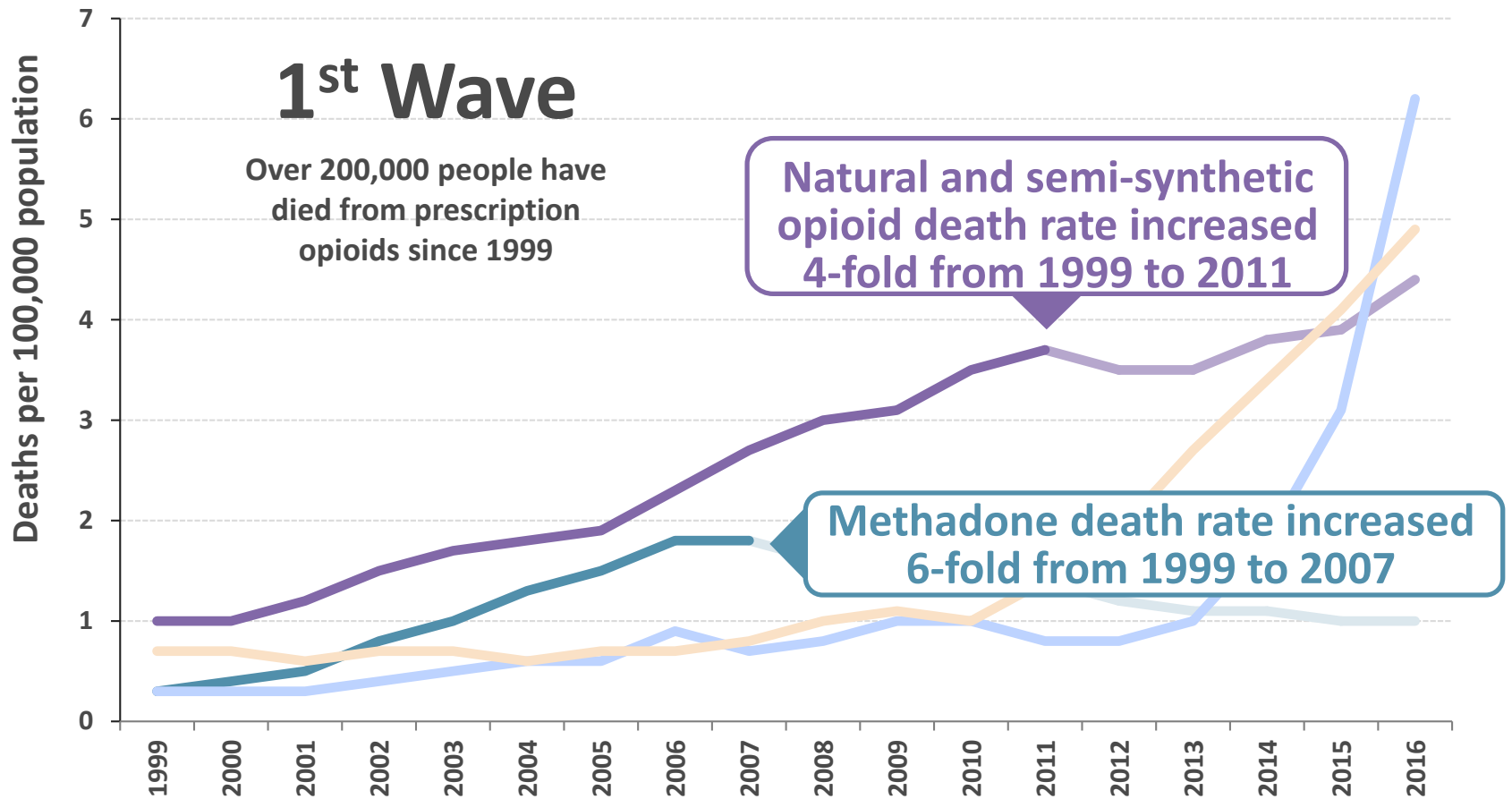
RISE IN OPIOID DEATHS

An Evolving Epidemic

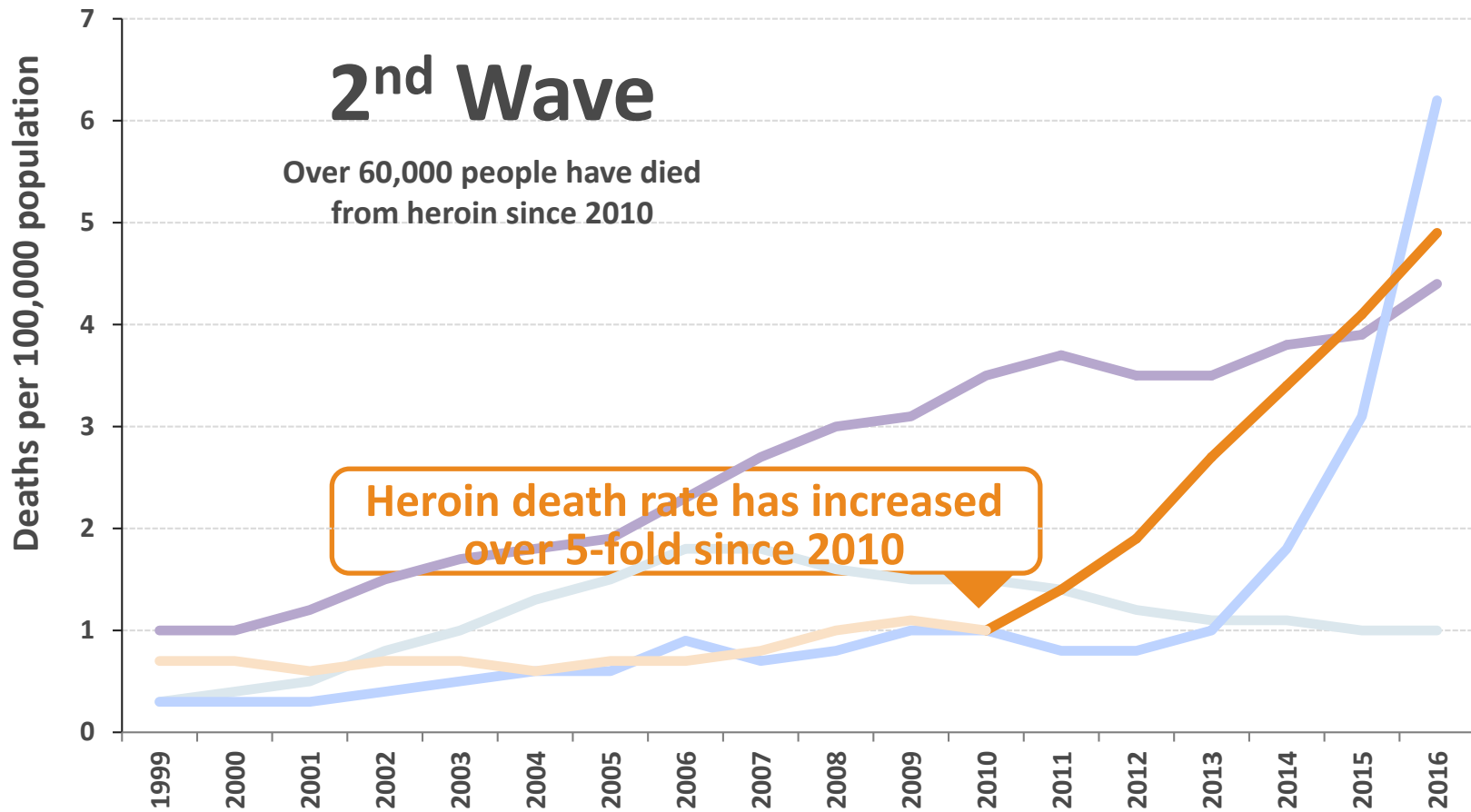
Overdose deaths involving opioids by type of opioid, United States, 1999-2016



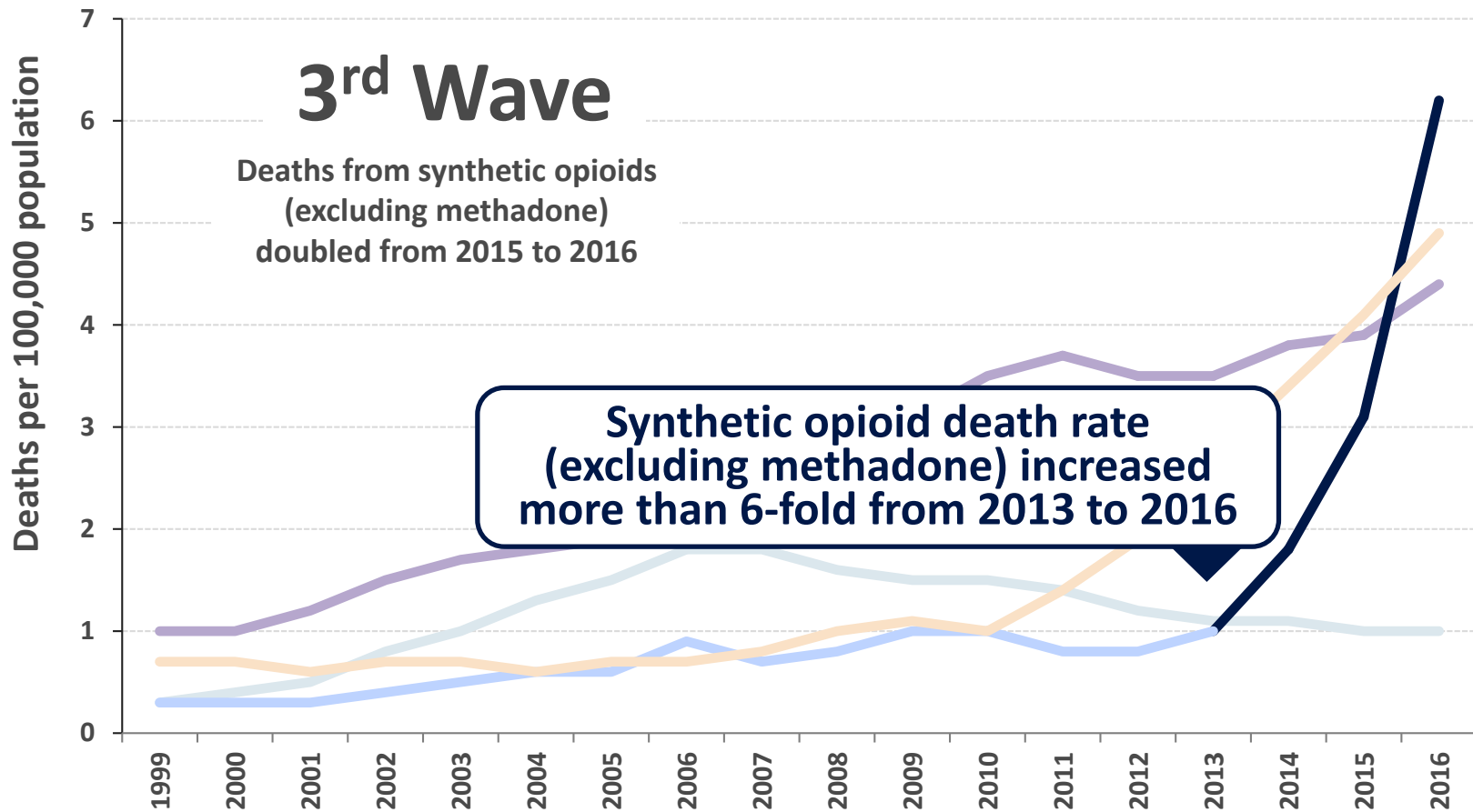
Rise in Prescription Opioid Deaths



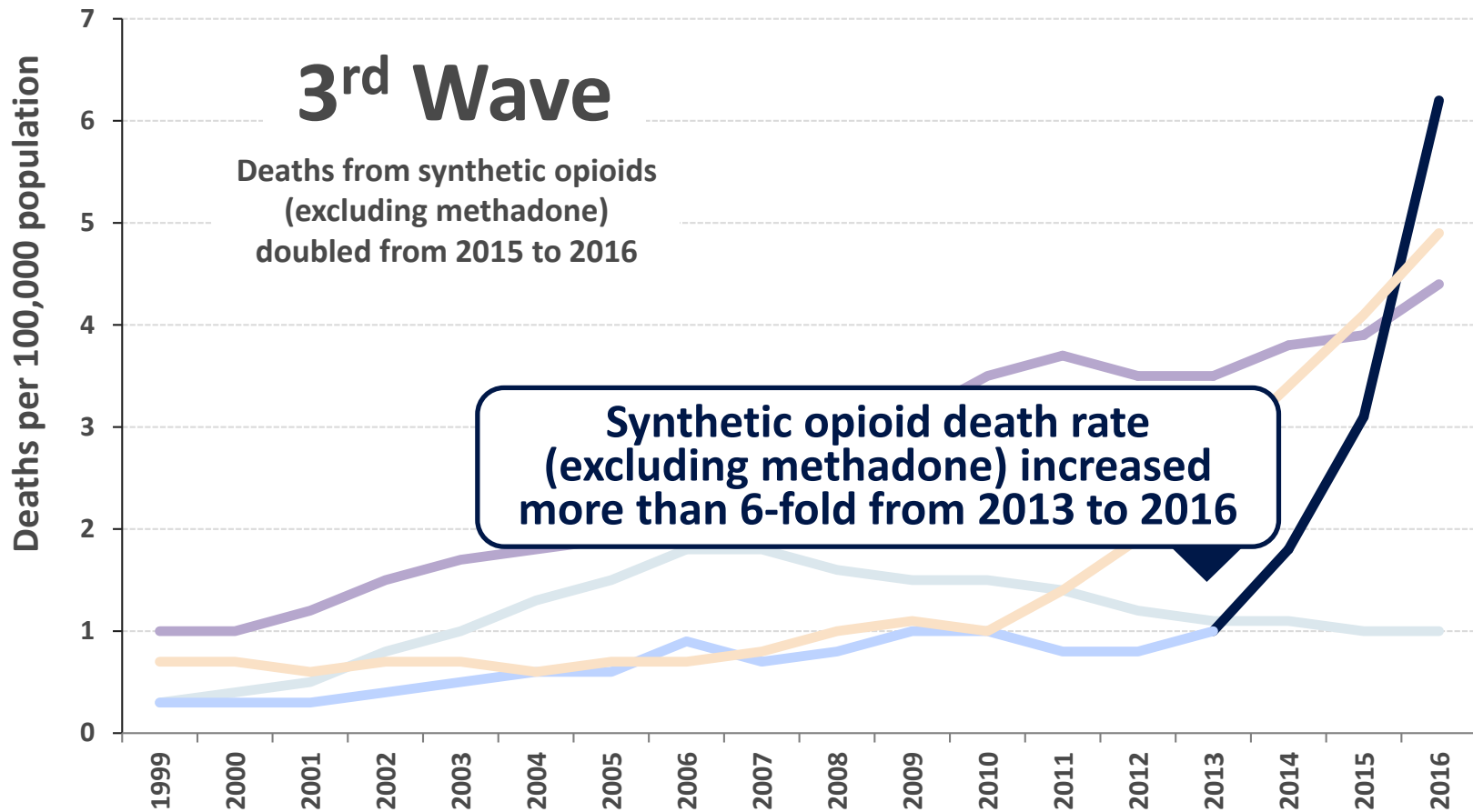
Rise in Heroin Deaths



Rise in Synthetic Opioid Deaths – Likely Illicit Fentanyl



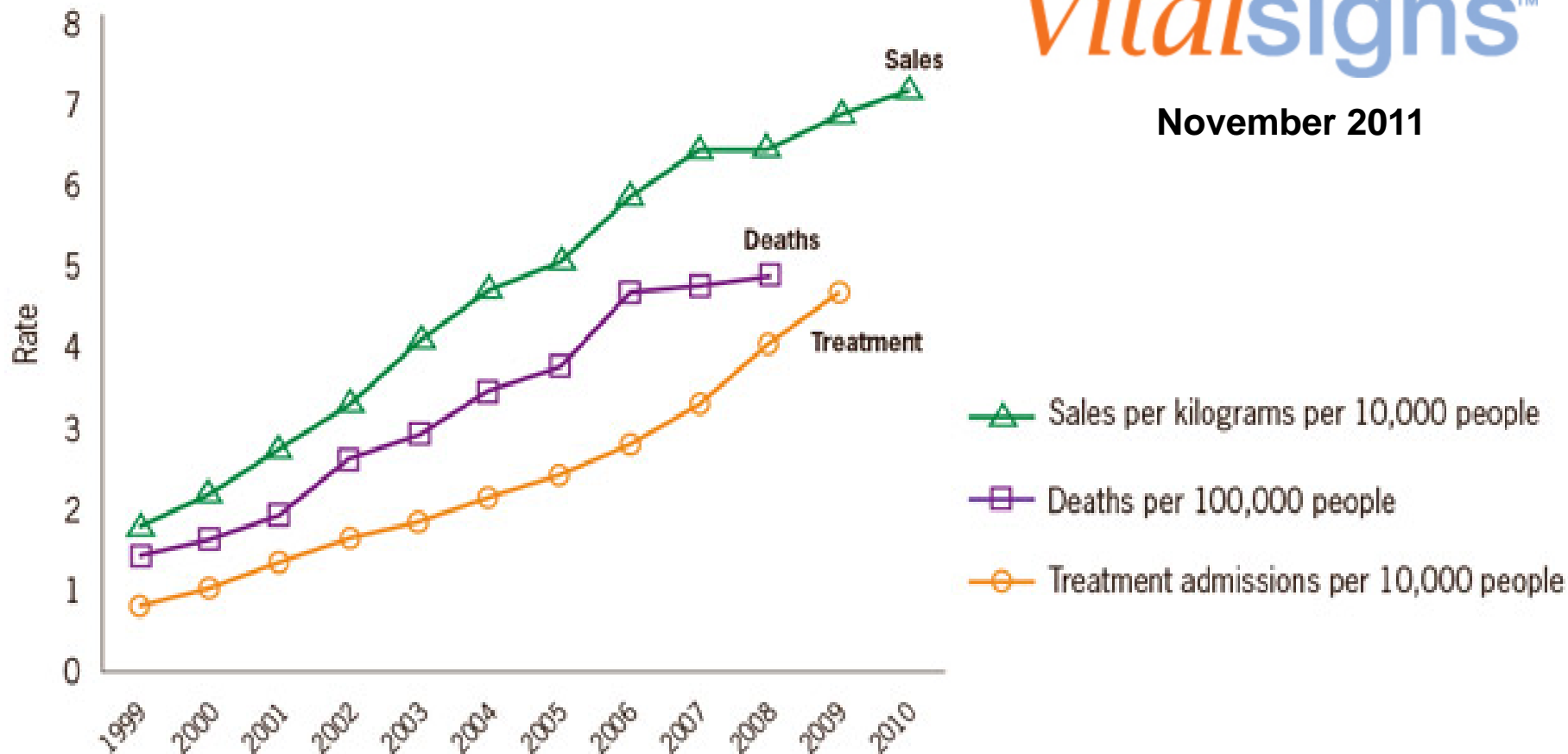
Rise in Synthetic Opioid Deaths – Likely Illicit Fentanyl



Rates of Rx opioid sales, deaths, and substance abuse treatment admissions, 1999-2010

Vital^{CDC}signs™

November 2011



SOURCES: National Vital Statistics System, 1999-2008; Automation of Reports and Consolidated Orders System (ARCOS) of the Drug Enforcement Administration (DEA), 1999-2010; Treatment Episode Data Set, 1999-2009

JULY 2015

CDC
*Vital*signs™

Today's Heroin Epidemic



Heroin Use Has INCREASED Among Most Demographic Groups

	2002-2004*	2011-2013*	% CHANGE
SEX			
Male	2.4	3.6	50%
Female	0.8	1.6	100%
AGE, YEARS			
12-17	1.8	1.6	--
18-25	3.5	7.3	109%
26 or older	1.2	1.9	58%
RACE/ETHNICITY			
Non-Hispanic white	1.4	3	114%
Other	2	1.7	--
ANNUAL HOUSEHOLD INCOME			
Less than \$20,000	3.4	5.5	62%
\$20,000-\$49,999	1.3	2.3	77%
\$50,000 or more	1	1.6	60%
HEALTH INSURANCE COVERAGE			
None	4.2	6.7	60%
Medicaid	4.3	4.7	--
Private or other	0.8	1.3	63%

Heroin use is part of a larger substance abuse problem.

Nearly all people who used heroin also used at least 1 other drug.

Most used at least **3** other drugs.

Heroin is a highly addictive opioid drug with a high risk of overdose and **death** for users.

People who are addicted to...



ALCOHOL

are

2x



MARIJUANA

are

3x



COCAINE

are

15x



Rx OPIOID PAINKILLERS

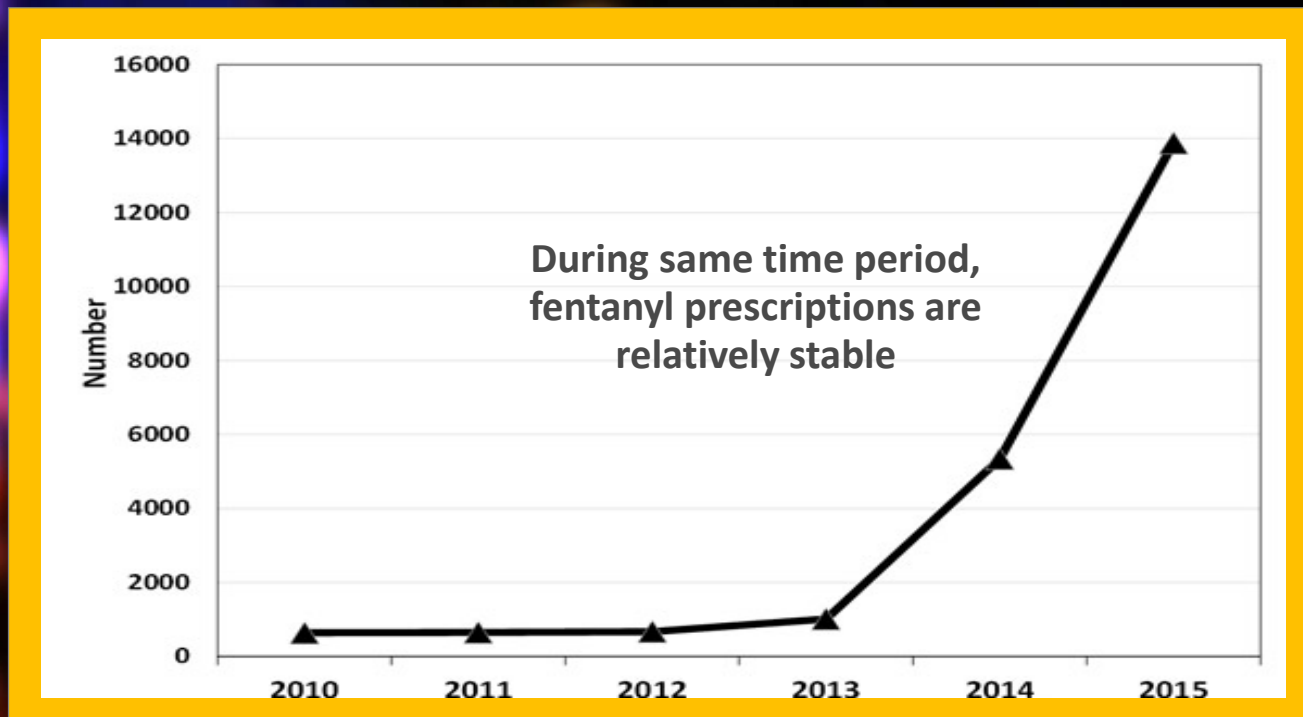
are

40x

...more likely to be addicted to heroin.

SOURCE: National Survey on Drug Use and Health (NSDUH), 2011-2013.

Number of law enforcement encounters testing positive for fentanyl is rising dramatically

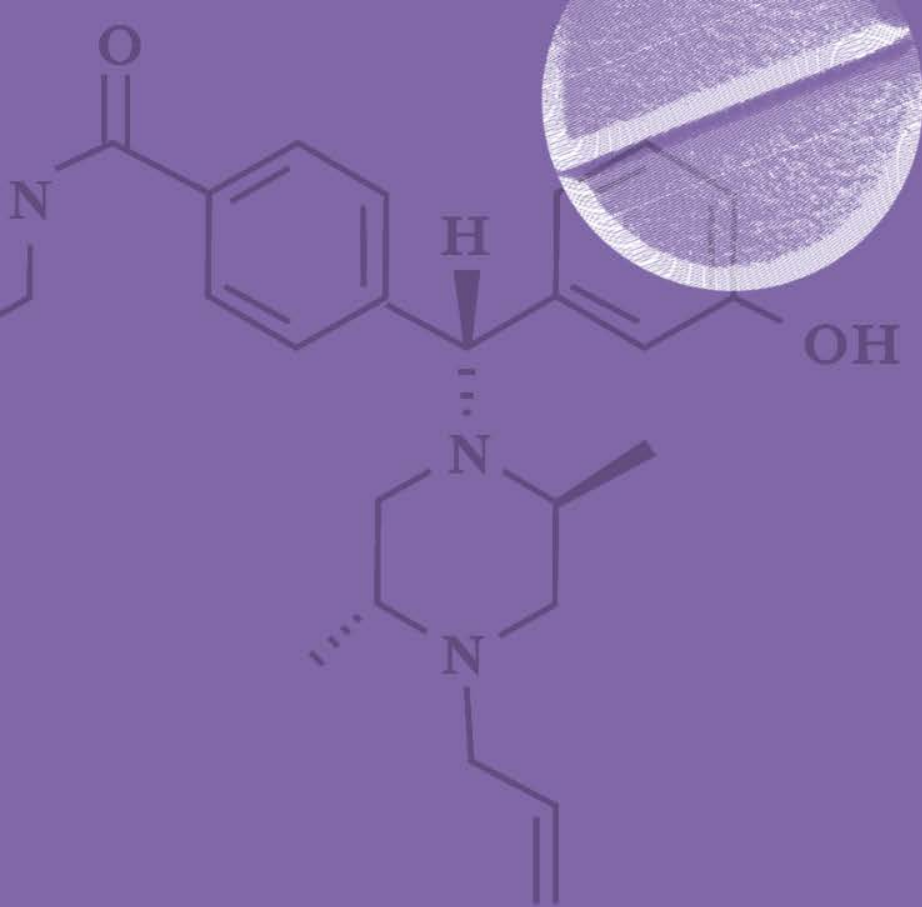


POLICE LINE DO NOT CROSS

March 2018

Opioid overdoses treated in emergency departments





Integration with Other NCIPC Priorities

Integration with Other Injury Center Priorities

Adverse Childhood Experiences

ACES can have lasting effects on....



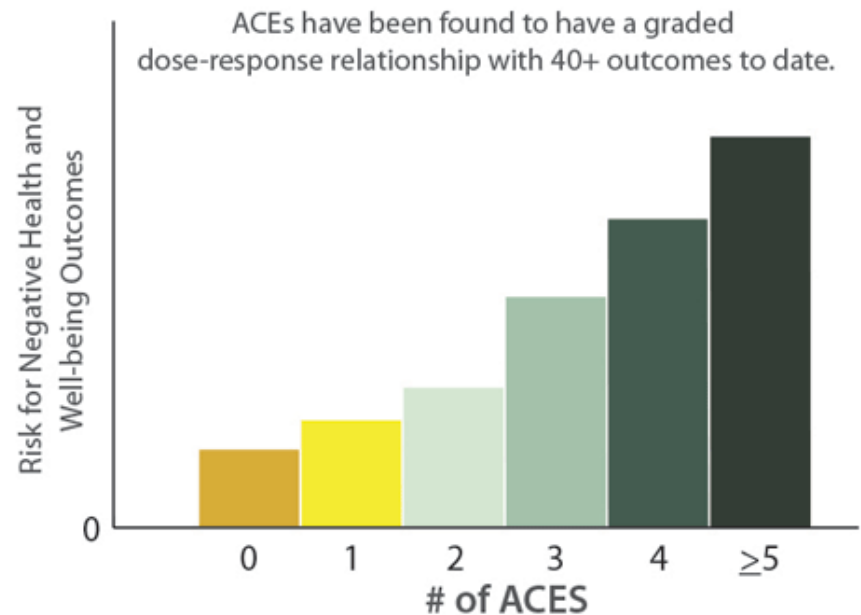
Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)



Behaviors (smoking, alcoholism, drug use)



Life Potential (graduation rates, academic achievement, lost time from work)



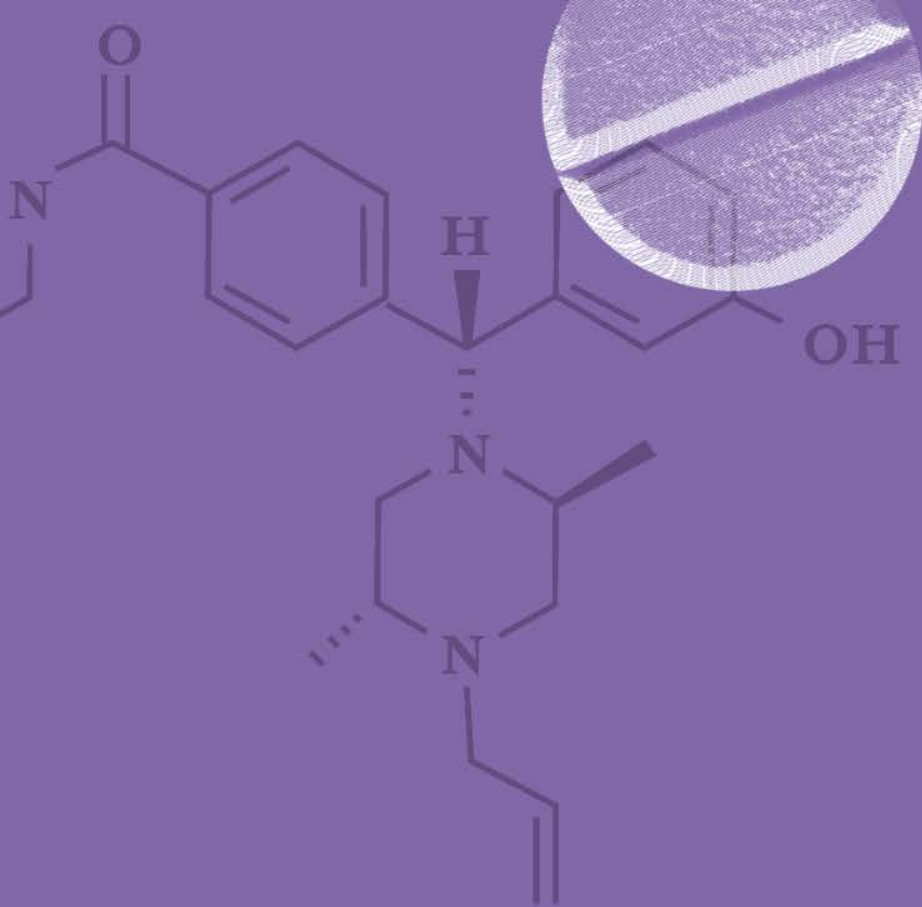
*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

Integration with Other Injury Center Priorities

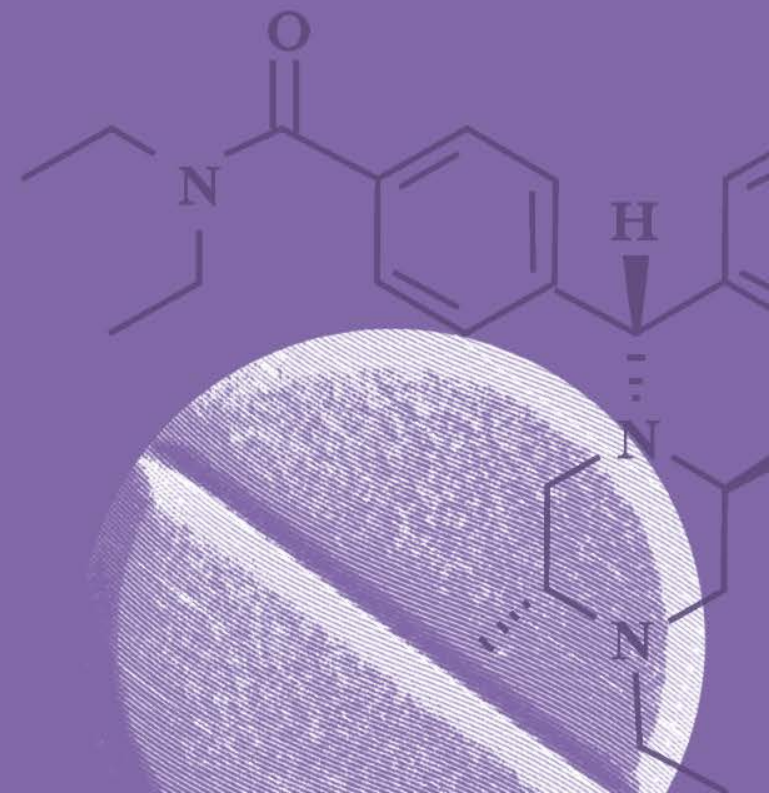
Suicide Prevention

Preventing Suicide: A Technical Package of Policy, Programs, and Practices





Integration with Agency Priorities: Opioid Research Coordinating Unit



Opioid Research Coordinating Unit

Opioid Overdoses and Other Opioid-Related Harms: A CDC Roadmap for Prevention

FOCUS AREAS	OUTCOMES	
	MEDIUM-TERM	LONG-TERM
1. Conduct Surveillance and Research	<ul style="list-style-type: none"> • Decrease unsafe prescribing • Increase use of non-opioid therapies for pain 	<ul style="list-style-type: none"> • Reduce opioid overdose deaths*
2. Build State, Local, and Tribal Capacity	<ul style="list-style-type: none"> • Decrease non-medical use of prescription opioids, use of illicit opioids, and use of illicitly-manufactured fentanyl 	<ul style="list-style-type: none"> • Reduce opioid-related morbidity and mortality,* including
3. Support Providers, Health Systems, and Payers	<ul style="list-style-type: none"> • Decrease opioid injection and unsafe injection practices • Increase use of effective opioid use disorder treatment including medication-assisted therapy 	<ul style="list-style-type: none"> ○ Opioid use disorder** ○ Non-fatal overdose ○ New hepatitis B, hepatitis C, and HIV infections
4. Partner with Public Safety	<ul style="list-style-type: none"> • Increase use of comprehensive prevention services by populations at risk, including testing and treatment of infections related to opioid use and effective treatment for pregnant and postpartum women using opioids 	<ul style="list-style-type: none"> ○ Maternal and neonatal morbidity including neonatal abstinence syndrome **
5. Empower the Public to Make Safe Choices	<ul style="list-style-type: none"> • Increase use of opioid reversing drugs 	

ORCU Research Gap Analysis - Overdose

- Conduct demonstration projects to identify cost-effective methods to reach people using opioids non-medically in hidden populations and engage them in medication-assisted treatment, provision of naloxone and overdose prevention training, prevention, testing, and treatment for infectious and noninfectious sequelae of opioid use.

ORCU Survey of Other CDC Center Research Priorities

Birth Defects and Developmental Disabilities

- Understand the prevalence of and reasons for opioid use during pregnancy, including the specific opioids and medication combinations used
- Evaluate the link between prenatal opioid exposure and structural birth defects, including the potential role of co-factors such as infections or other medications
- Investigate the safety and risk for medications used to treat opioid use disorder for pregnant women and their infants to inform guidelines for treatment

Reproductive Health

- Identify the barriers for Ob-Gyns and Pediatricians to implementing maternal screening for opioid use
- Identify the factors that influence post-partum relapse for women who enter opioid use disorder treatment during pregnancy
- Evaluate models of care to improve post-partum counseling and supports for women with a history of opioid use disorder

Other CDC Center Research Priorities Cont. . .

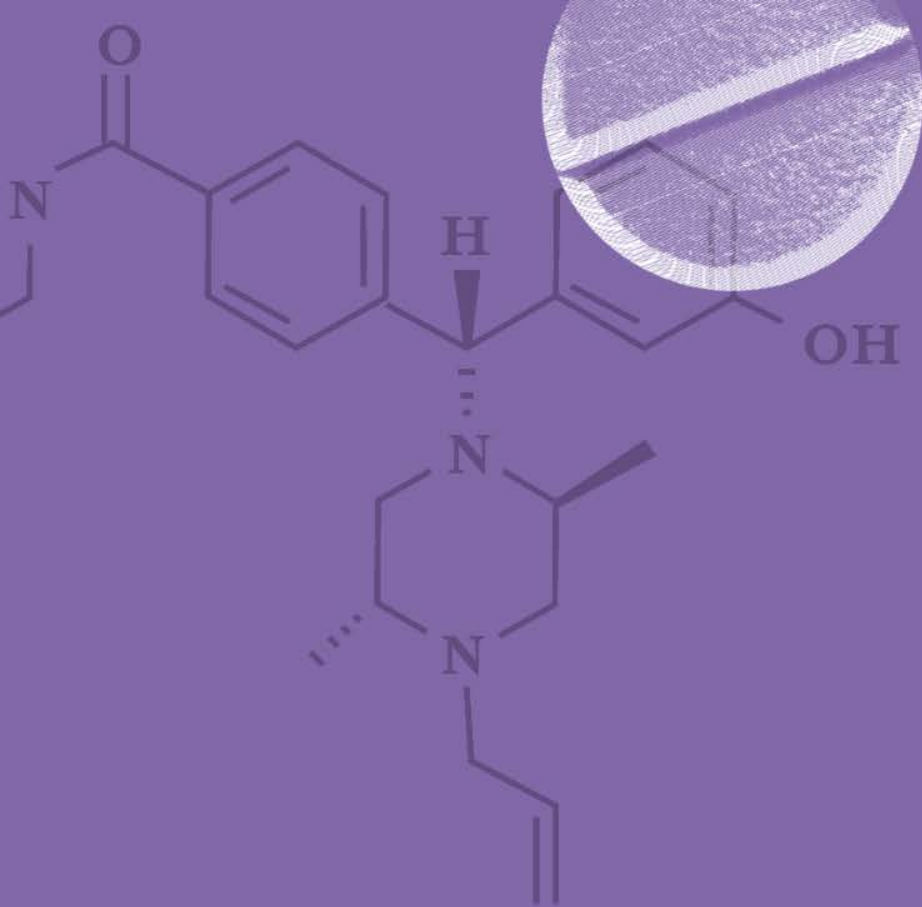
HIV/HBV/HCV/STD

- Develop comprehensive community-based approaches to prevent and treat consequences of opioid injection, including substance use disorder, overdose, HIV, hepatitis B and C, and sexually transmitted diseases among key populations including people who inject opioids and other drugs, and young people
- Identify best strategies and develop models for implementing comprehensive community based programs to prevent injection related harms including blood borne pathogens in non-urban settings
- Identify cost-effective methods to reach people using opioids non-medically in hidden populations and engage them in prevention, testing, treatment for the infectious and noninfectious sequelae of opioid use, including early identification of youth at risk for opioid use and ensuring continuity of care and treatment for people after release from the criminal justice system

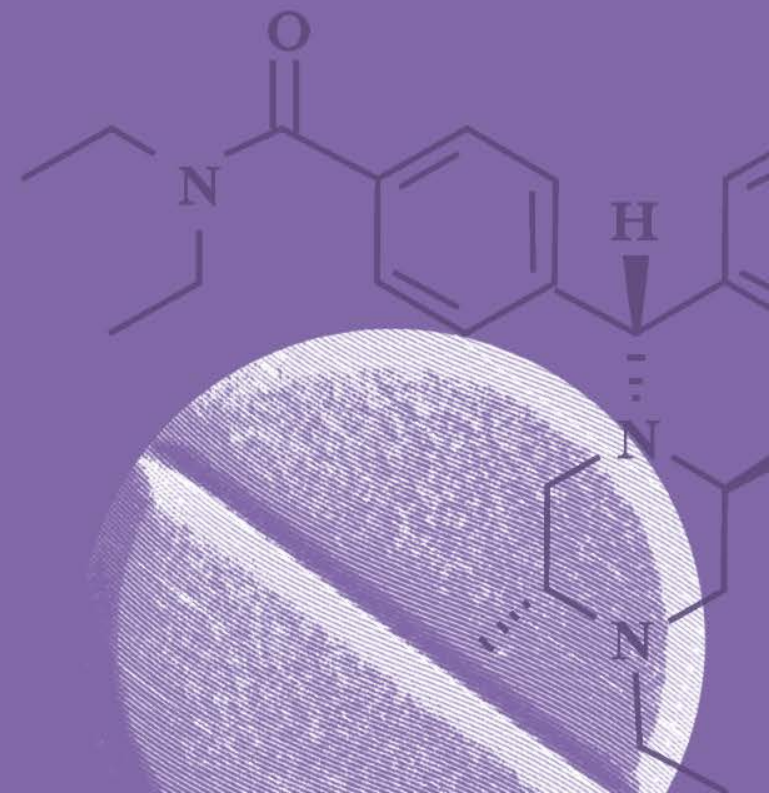
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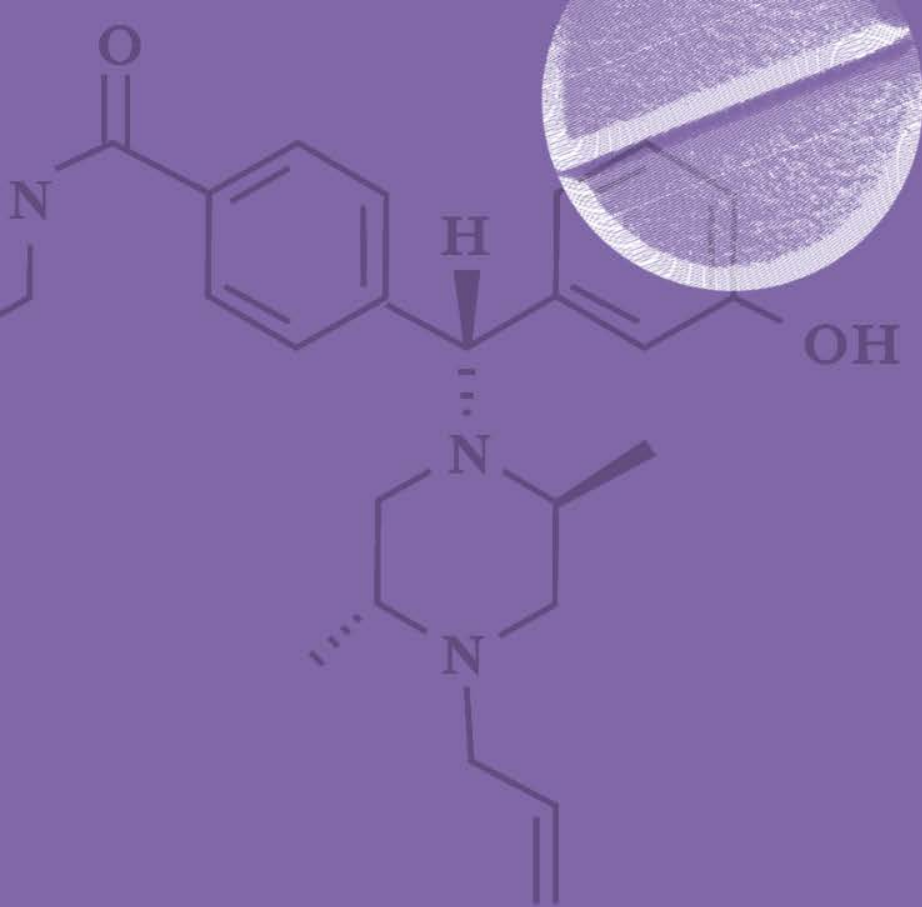
Occupational Safety and Health

- Identify antecedents to opioid use. For example, how do work and work-related injuries relate to the use of opioids? What kind of prescribing guidelines (e.g., worker's compensation prescribing guidelines) can provide a path to improved health outcomes?
- Understand opioid use at work. For example, how does the use of opioids at work impact worker safety and health? Is employer drug testing an effective strategy for reducing opioid-related work injuries? Do supportive workplace programs improve likelihood of recovery from an opioid drug dependence?
- Address the impacts of misuse and overdose in the workplace. For example, how does opioid misuse and overdose impact first responders? What is the effectiveness of personal protective equipment in protecting first responders? How effective are portable detection devices used by law enforcement to field-test for illicit opioids? What are the psychosocial and mental health impacts of potential exposure to opioids on emergency responders?

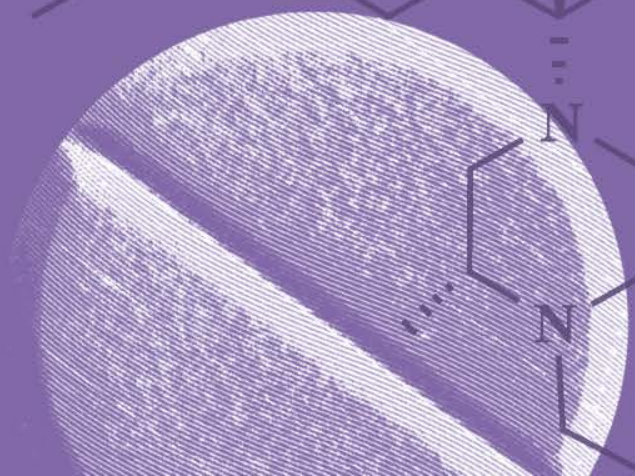
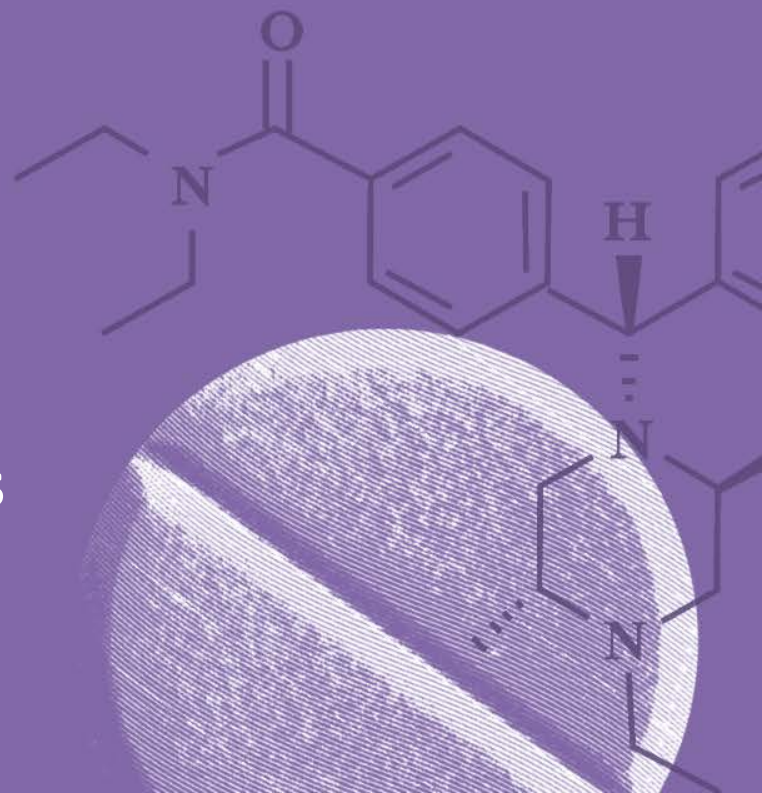


Presentation of NIH Priorities and BSC Discussion of Research Gaps





Request for BSC Recommendations



Key Questions for the BSC

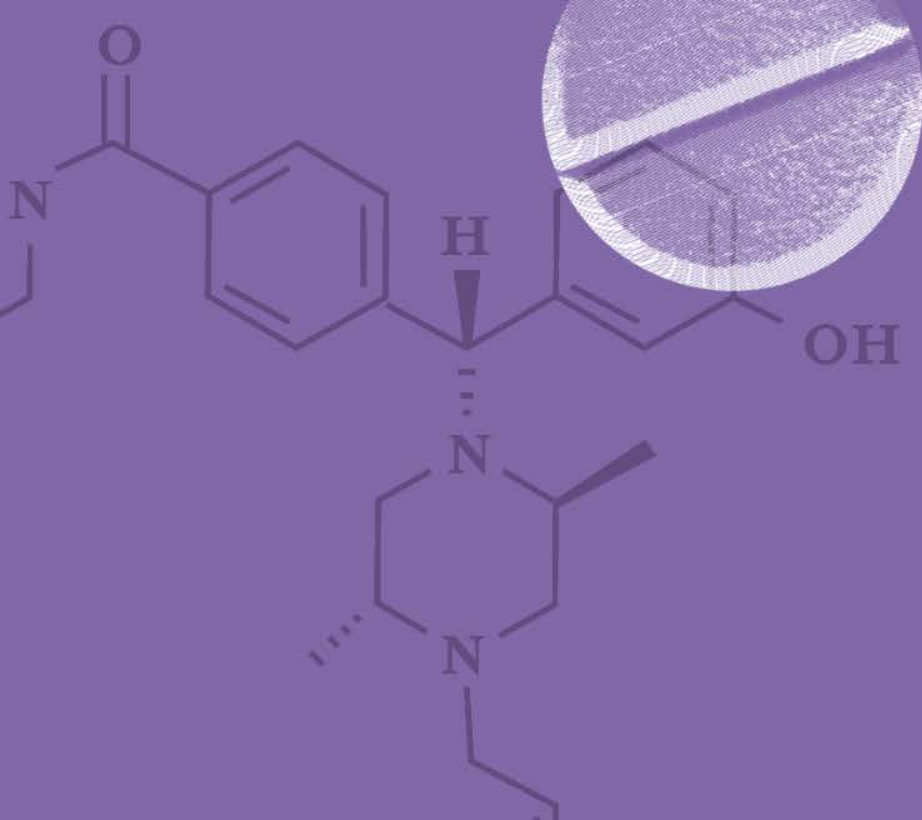
- To what degree have the Center's intramural and extramural research projects addressed the established opioid research priorities?
- Are the research priorities currently comprehensive enough to address the ongoing and changing epidemic?
- Is there a need to update the priorities due to the changing epidemic and need for Center and Agency coordination?
 - ✓ What research gaps need to be addressed?
 - ✓ What is the correct balance of maintaining "old" priorities and establishing "new" priorities?

Food for thought – Initial brainstorming

- **Basic epidemiology and etiologic research**
 - Identify ways to improve death investigations and reporting (e.g., protocols, tox testing, intent, circumstances)
 - Identify how risk and protective factors may differ for Rx and illicit opioids
 - Identify populations most at risk and how strategies may need to be tailored (e.g., unemployed, adults with suicidal ideation or history of adverse childhood experiences)
- **Effectiveness research**
 - Evaluate strategies that support public health/public safety partnerships, implement harm reduction approaches, and enhance linkage to treatment for OUD
 - Evaluate unintended consequences of strategies (e.g., clinical policies, public safety), such as transition to illicit use, suicidal behavior, and child protection removal as a result of parent help-seeking

Food for thought – Initial brainstorming (2)

- **Dissemination and implementation research**
 - Evaluate models of provider training and education
 - Identify approaches used internationally and adapt for the US context
- **Communications research**
 - Identify the most effective messages, messengers, tools, and delivery models for preventing Rx and illicit opioid misuse
 - Identify methods for addressing stigma surrounding OUD, overdose, disclosure, help-seeking, and naloxone among the public, healthcare providers, public safety professionals, and EMS providers



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

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