



Understanding Links among Opioid Use, Overdose, and Suicide

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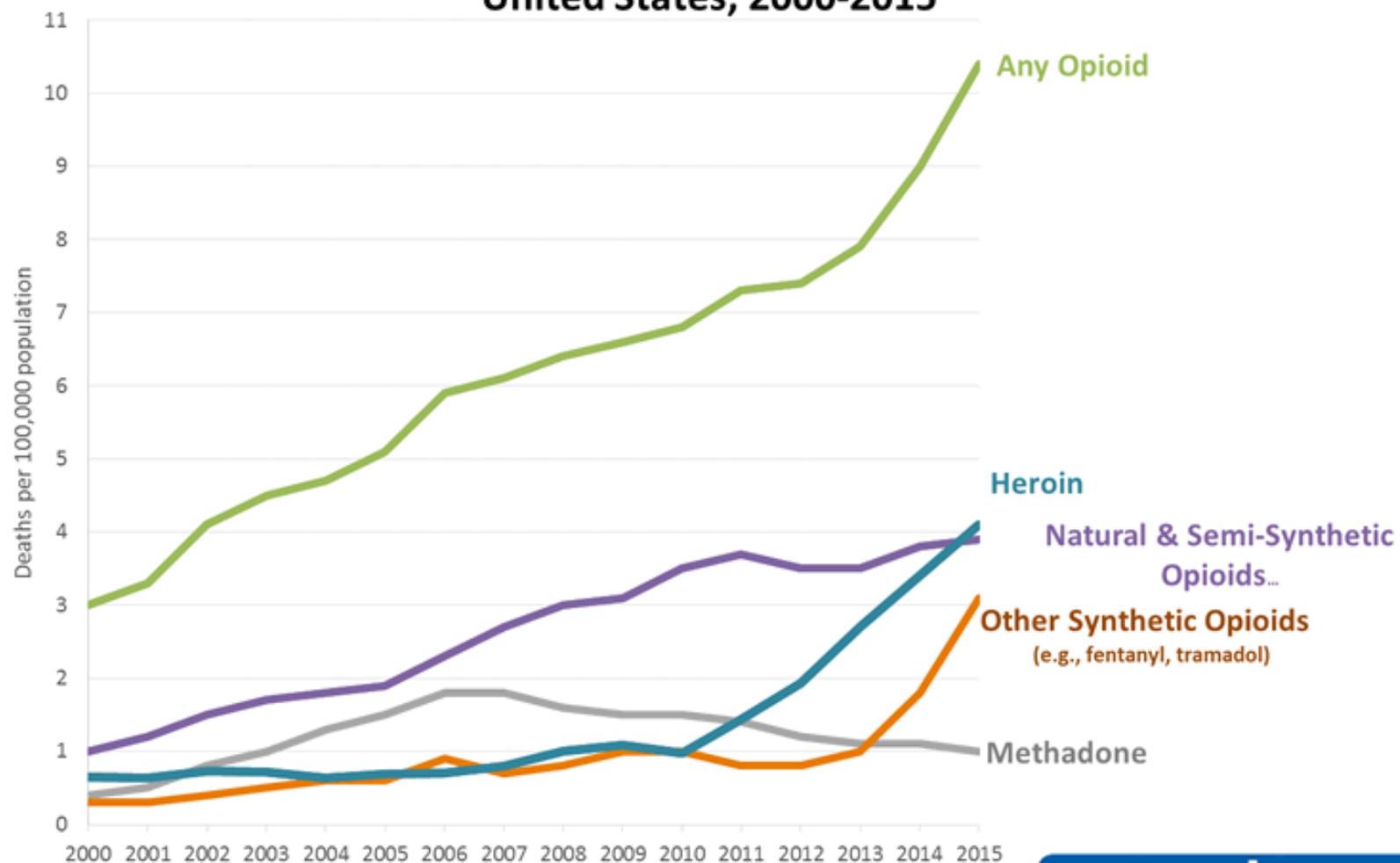
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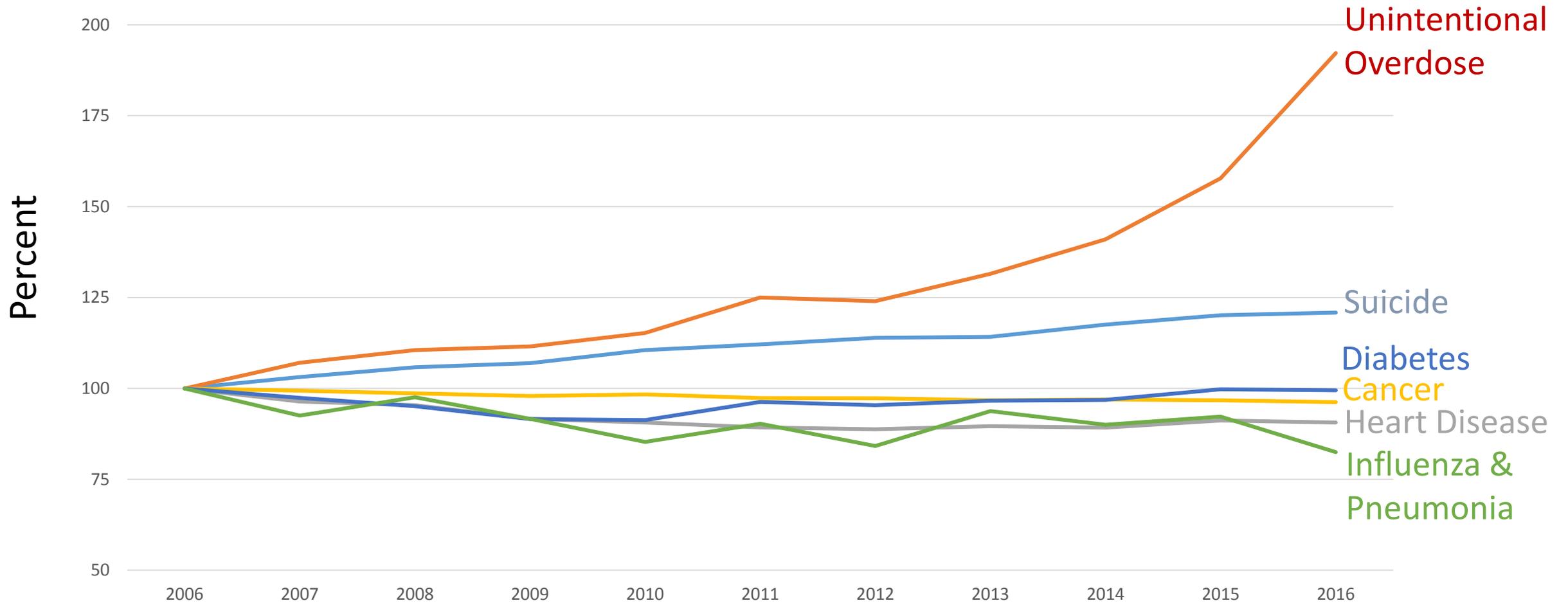
Overdose Deaths Involving Opioids, by Type of Opioid, United States, 2000-2015



SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA; US Department of Health and Human Services, CDC; 2016. <https://wonder.cdc.gov/>.

www.cdc.gov
Your Source for Credible Health Information

Relative Change in Common Causes of Death



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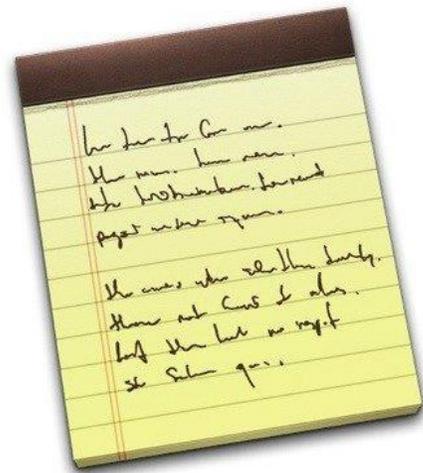
Table 1. Rates of Death from Suicide and Overdose in the United States, According to Year.*

Cause of Death	Age-Adjusted Rate per 100,000 Americans																	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Suicide	10.4	10.7	10.9	10.8	11.0	10.9	11.0	11.3	11.6	11.8	12.1	12.3	12.6	12.6	13.0	13.3	13.5	14.0
Intentional overdose	1.2	1.3	1.4	1.3	1.4	1.4	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5
Intentional overdose involving opioids	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Unintentional overdose	4.3	4.7	5.8	6.5	6.9	7.7	9.0	9.6	9.9	10.0	10.4	11.3	11.2	11.9	12.8	14.5	17.8	19.7
Involving opioids	2.2	2.4	3.1	3.4	3.6	4.0	4.8	5.0	5.3	5.5	5.7	6.3	6.4	6.9	7.9	9.3	11.9	13.5
Suicide and unintentional overdose combined	14.7	15.4	16.8	17.2	17.9	18.6	19.9	20.9	21.5	21.7	22.5	23.6	23.8	24.6	25.8	27.8	31.3	33.7
Involving opioids	2.5	2.7	3.5	3.7	4.0	4.5	5.2	5.5	5.9	6.0	6.3	6.8	6.9	7.4	8.5	9.8	12.5	14.1

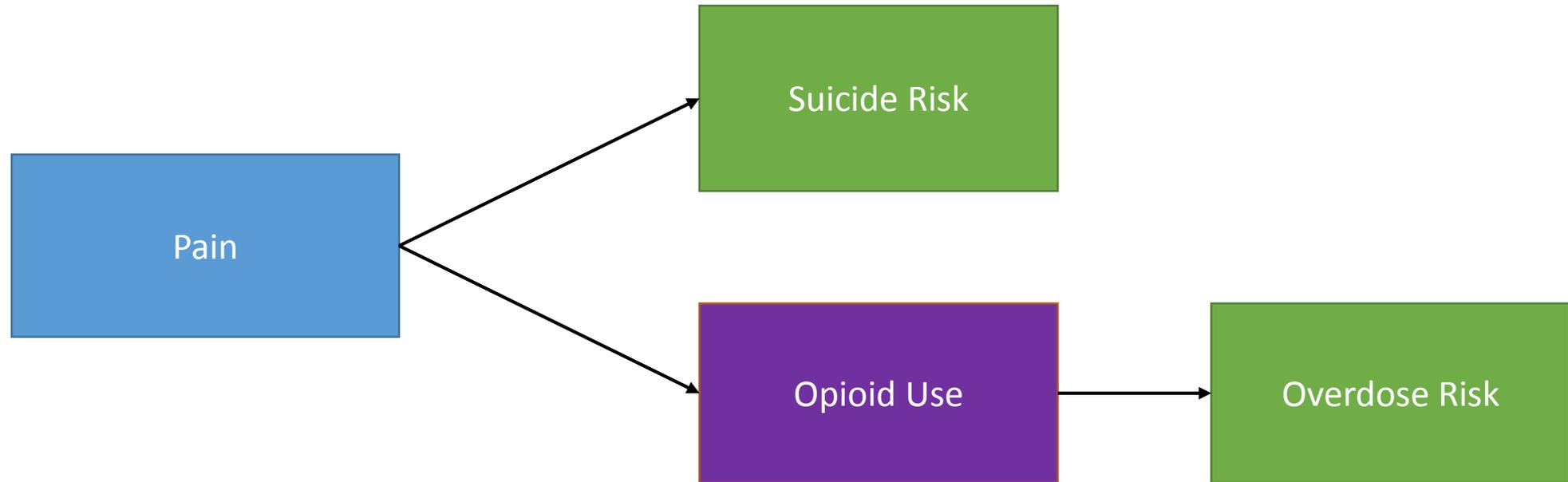
* Categories were determined on the basis of the codes of the *International Statistical Classification of Diseases and Related Health Problems, 10th Revision*, that were obtained from death records. Suicide deaths were those with an underlying cause of death coded as X60 through X84, Y87.0, or *U03. Unintentional overdose deaths were those with an underlying cause of death coded as X40 through X45. Deaths involving opioids were those with multiple cause of death codes recorded as T40.0 through T40.4 or T40.6. Data were obtained from the Centers for Disease Control and Prevention.²

Potential Causes of this Link

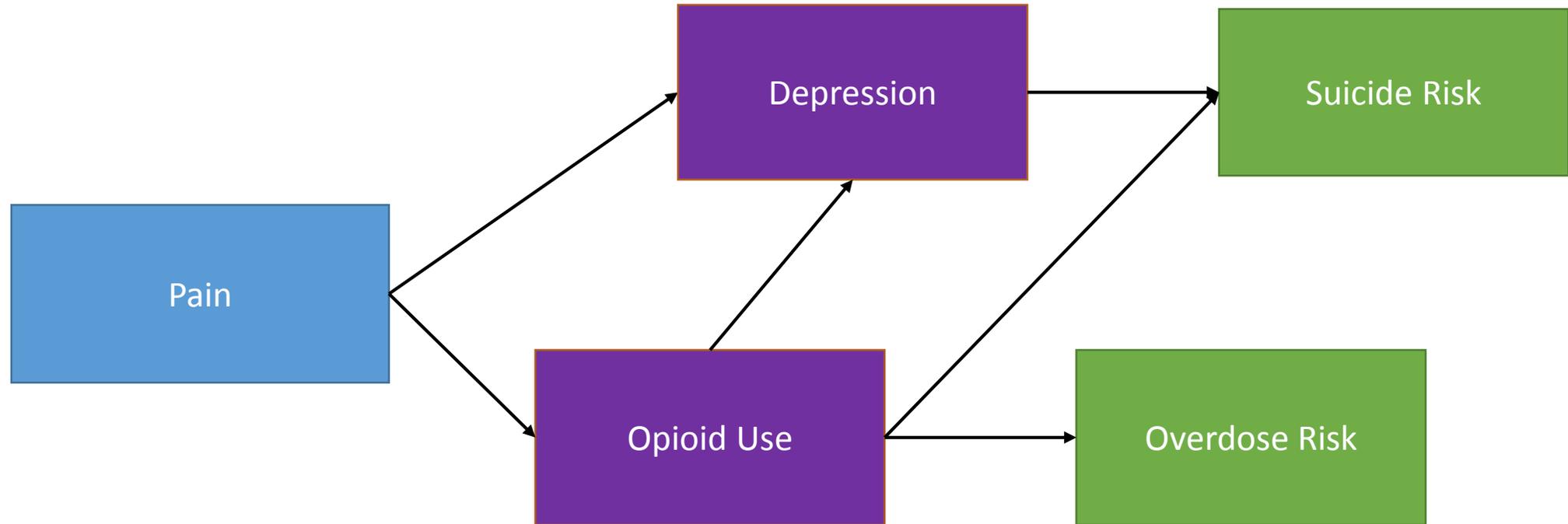
- Difficulties in classifying intent of overdose deaths



Potential Causes of this Link

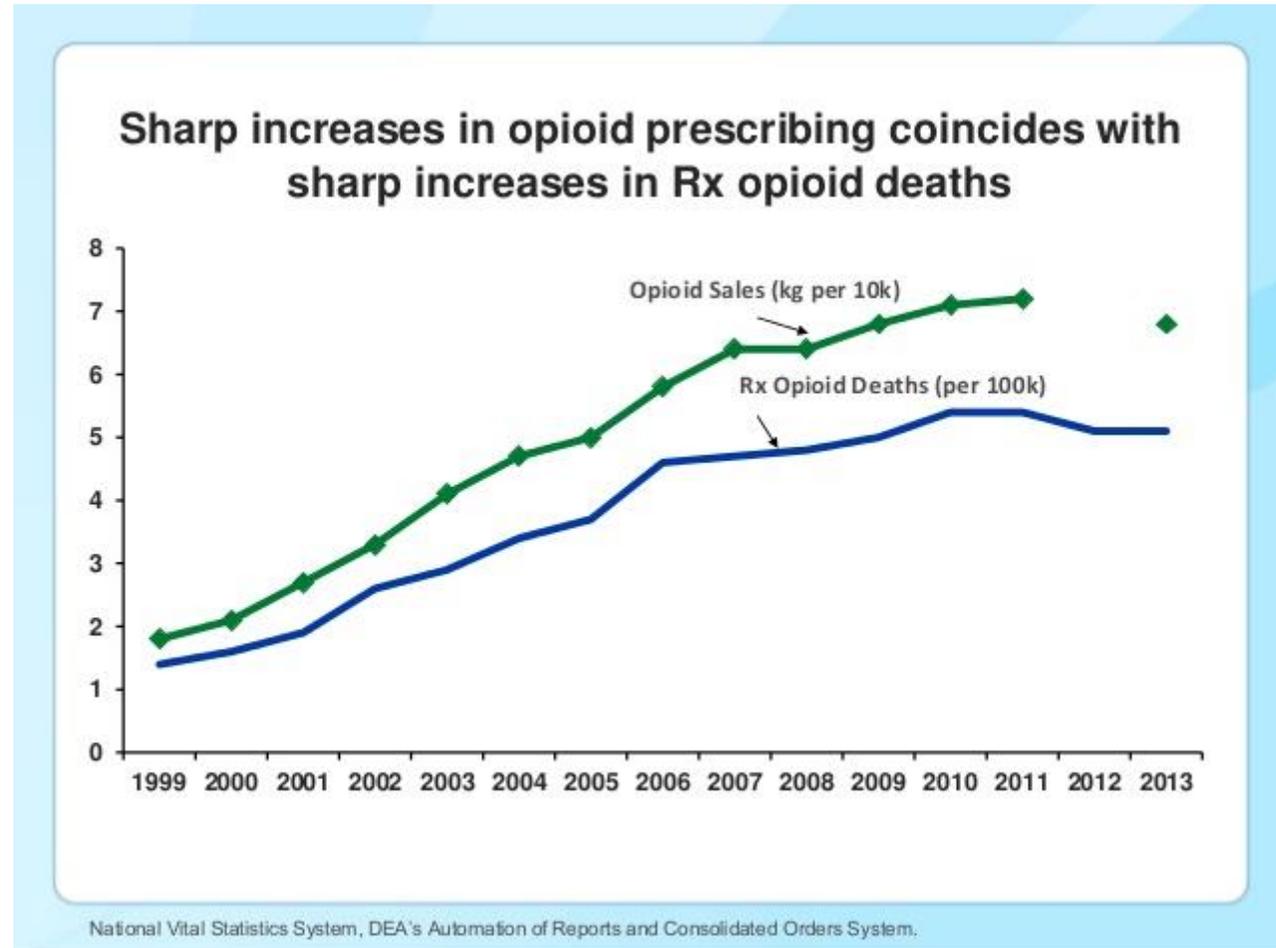


Potential Causes of this Link



Potential Causes of this Link

- Supply/Availability

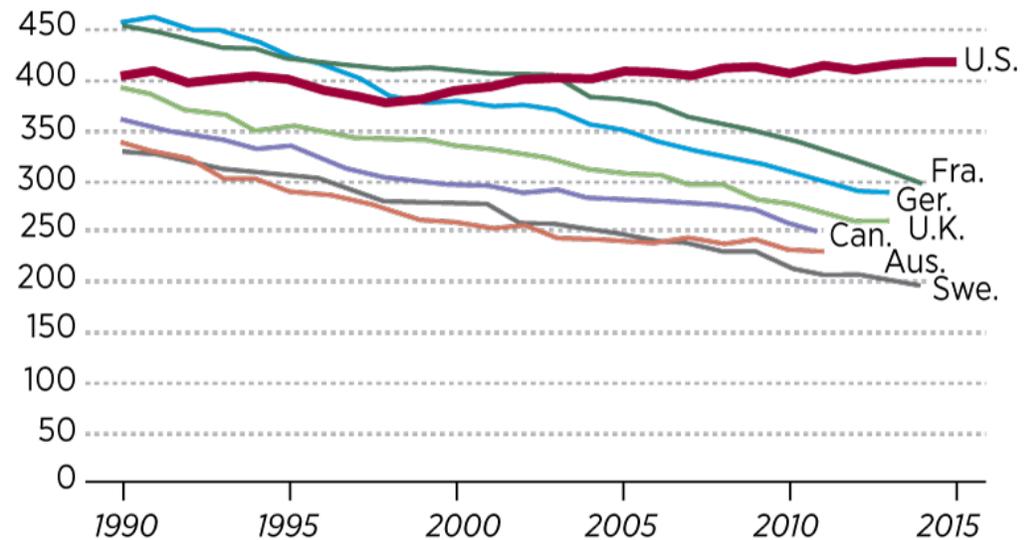


Potential Causes of this Link

- Economic factors

Mortality rate for whites ages 45-54 without a college degree, by country

(deaths per 100,000)



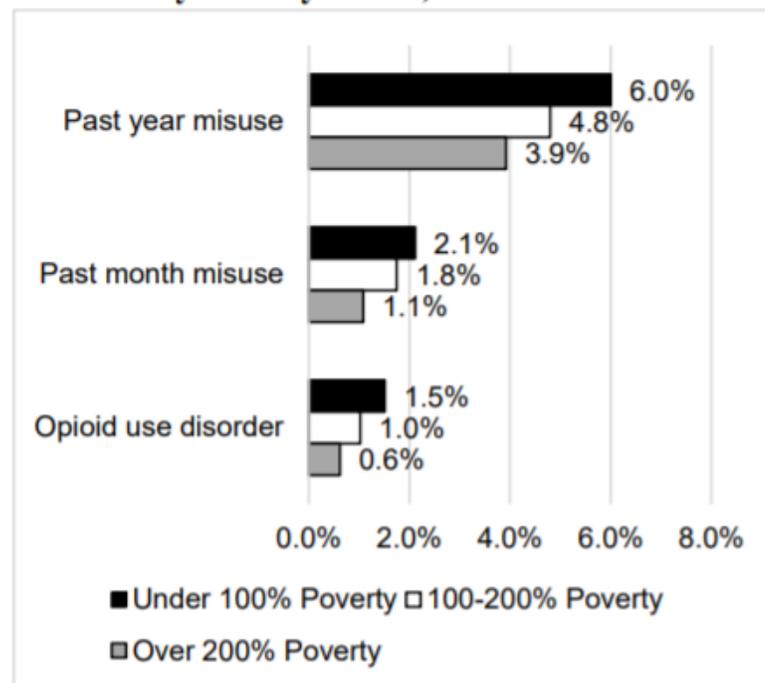
Source: Brookings Papers on Economic Activity "Mortality and Morbidity in the 21st century," Anne Case, Princeton University
Angus Deaton, Princeton University



THE OPIOID CRISIS AND ECONOMIC OPPORTUNITY: GEOGRAPHIC AND ECONOMIC TRENDS

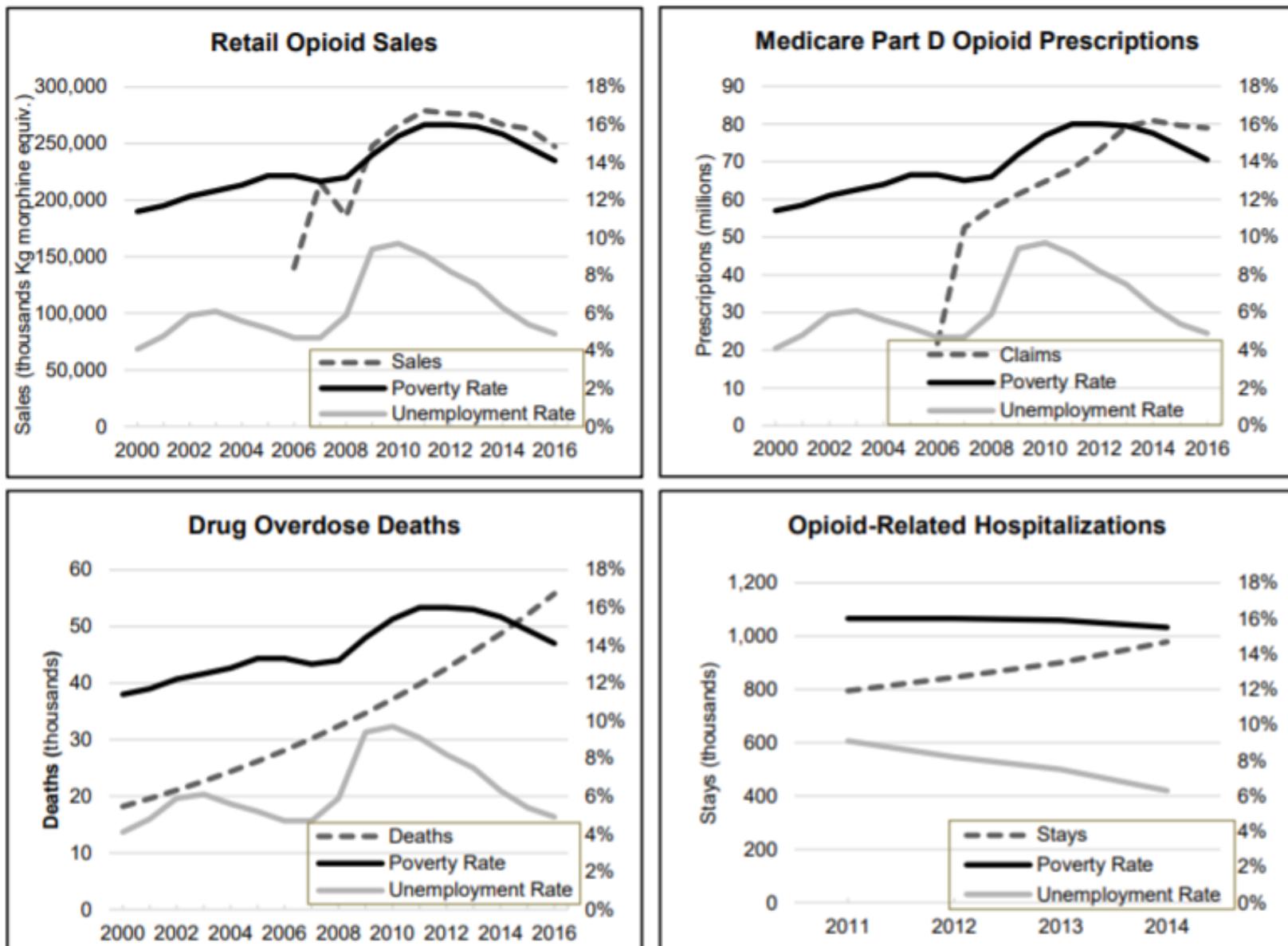
By Robin Ghertner and Lincoln Groves, Ph.D.

Figure 1. Past Year Opioid Misuse and Use Disorder by Poverty Status, 2016



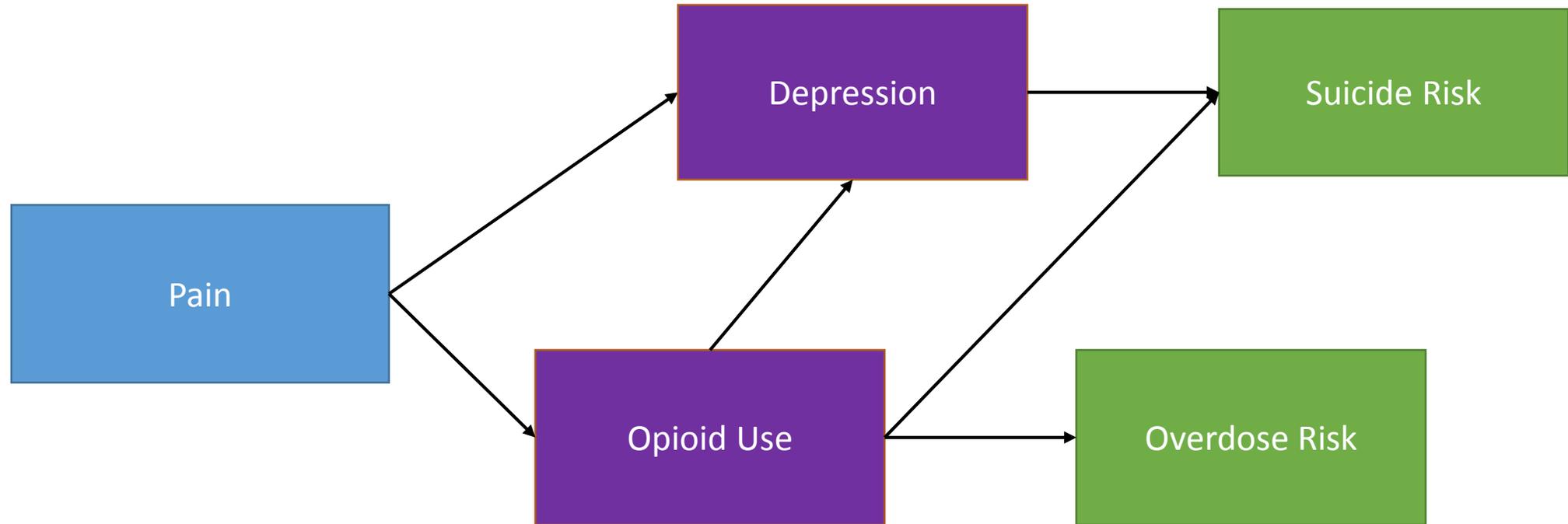
Source: 2016 National Survey on Drug Use and Health.

Figure 2. National Trends in Unemployment, Poverty, and Measures of Substance Use and Opioid Prevalence



The association between opioid dosage and
suicide risk in VHA patients

Potential Causes of this Link



Pain and suicide-related outcomes

- Several studies have documented:
 - The elevated prevalence of suicidal thoughts and behaviors in pain clinic patients (Fishbain, *Clin J Pain*, 1991)
 - The cross-sectional association between self-reported pain and suicidal ideation and non-fatal attempts (Breslau, *Neurology*, 1992; Ilgen et al., *Gen Hosp Psych*, 2008)
 - The longitudinal relationship between
 - Self-reported pain severity and suicide mortality (Ilgen et al., *SLTB*, 2010)
 - Pain conditions and suicide mortality (Ilgen et al., *JAMA Psychiatry*, 2013)

Treating pain with opioids: A “lifeline” that could help reduce risk of suicide



Pain Medicine 2014; 15: 345–346
Wiley Periodicals, Inc.

PRESIDENT’S MESSAGE

Pain and Suicide: The Other Side of the Opioid Story

A former patient whom I’ll call Jack came to me for help after three back operations. He was on disability because of his pain. I treated him for about four years, struggling all the while to get his insurance to cover his therapies. I tried to get him to see a psychologist, but his insurance would not pay for the service. He was on what most physicians today would term a high dose of opioids and other medications. I wasn’t convinced that the higher dose was any more effective than a lower dose. He was mostly inactive and reported little improvement in pain or function while on his medication.

A device was implanted in his abdomen to deliver medication directly to his spinal canal where it could be more effective, allowing me to reduce or eliminate his oral dose of opioids. I began to reduce his opioids per our agreed

was not widely recognized by anyone beyond his family and me. I was tormented by the thought that he might have died because I was unable to help him escape extreme pain.

There is enormous pressure to limit the prescribing of opioids in noncancer pain patients today. The Centers for Disease Control and Prevention (CDC) reports an epidemic of overdose deaths from prescription medications [MMWR 2011], and the White House Office of National Drug Control Policy has announced a commitment to reducing deaths from prescription drugs through more aggressive law enforcement efforts [ONDCP 2011]. At the same time, our society has little comprehension of the nightmare experienced by people who live every day with chronic pain. To make matters worse, the U.S. healthcare

LYNN R. WEBSTER, MD: President, American Academy of Pain Medicine

Opioid Access and Suicide Prevention

- **Limiting Access to Means of Suicide**

- Most studies looking at access to means—whether guns, pills, carbon monoxide, bridges, or other suicide methods—have found that making these methods less available reduces suicide rates.

www.afsp.org/preventing-suicide

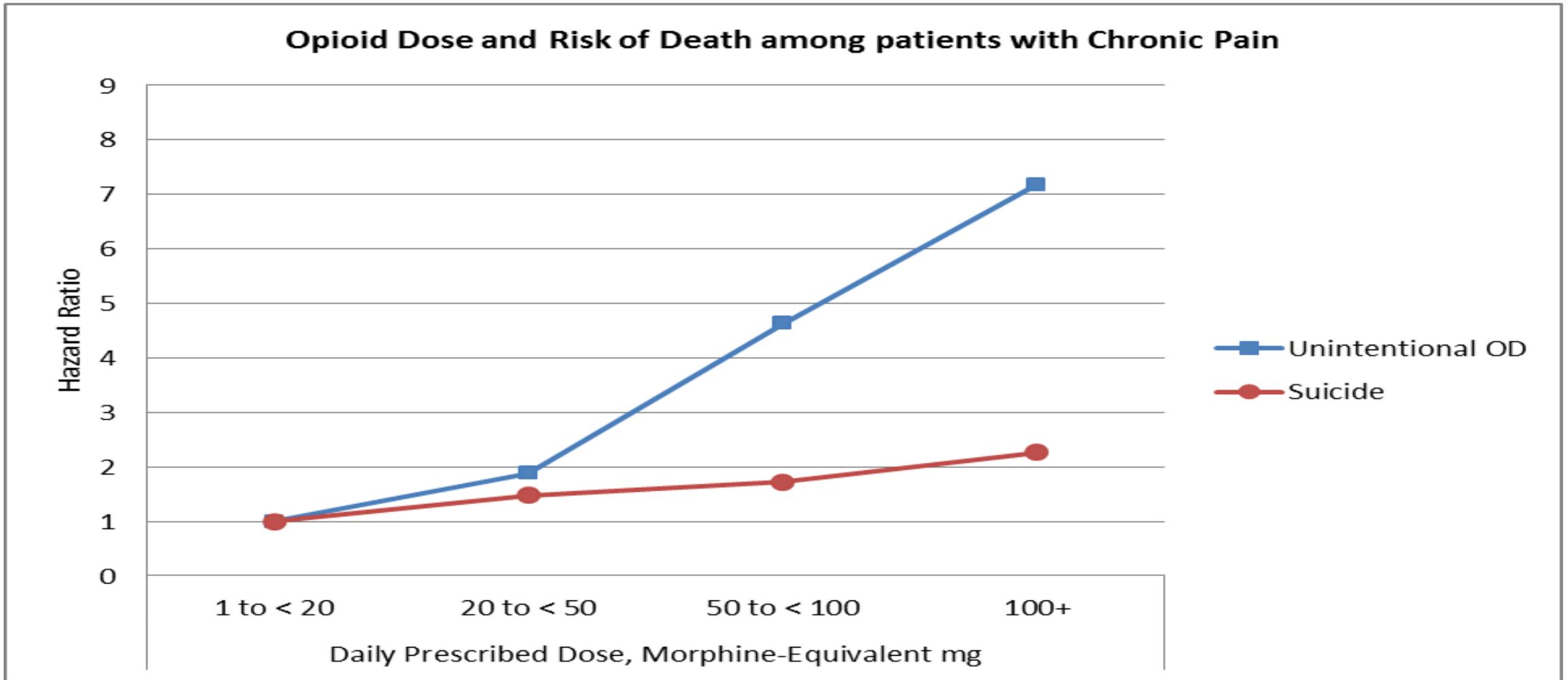
Methods

- Case-cohort design
- For each of the two study years, a 5% random sample of patients was drawn, irrespective of case status.
 - Cases were all FY04-FY05 VHA patients who died by suicide before the end of FY09.
 - Both cases and controls were further restricted to all individuals with a chronic pain condition who were treated with an opioid.
 - Individuals with indicators of palliative care consultations or hospice care in their VHA medical records were excluded (n=1926)
- The sample size was 123,946.

Results: Cox Proportional Hazards Models of Risk of Death by Suicide

	Suicide, Any Mechanism	Intentional Overdose
	HR (95% CI)	HR (95% CI)
Prescribed Daily Opioid Dose		
1 to < 20 mg/d	1.00	1.00
20 to < 50 mg/d	1.48 (1.25, 1.75)	1.59 (1.12, 2.27)
50 to < 100 mg/d	1.69 (1.33, 2.14)	1.74 (1.09, 2.76)
100+ mg/d	2.15 (1.64, 2.81)	2.09 (1.22, 3.56)

Adjusted for age, sex, race, Hispanic ethnicity, number of pain conditions, number of psychiatric conditions, Charlson comorbidity Index, and opioid schedule.



Compared to analyses of unintentional overdose from Bohnert, Valenstein, Bair, Ganoczy, McCarthy, Ilgen, Blow, *JAMA*. 2011.

Clarification

- These results reflect the association between daily dosage and suicide risk
- The findings may not be directly relevant to questions related to tapering
 - (and should not be used as justification for abrupt tapers)

Conclusion: Opioids and suicide

- Limitations: This is an observational study
 - Patient: Is opioid dose a proxy for increased pain?
 - Treatment: Is higher opioid dose a proxy for poor pain care?
- No signal for potential protective effect of opioids on risk of suicide
- Increases in opioid dose are associated with increased risk of suicide
 - This association is not limited to intentional overdose
- Chance that opioids impair judgment and could increase the likelihood of engaging in suicidal behaviors
- The magnitude of the observed association was much lower than what has been described for unintentional overdose.
- Full study: Ilgen MA, Bohnert AS, Ganoczy D, Bair MJ, McCarthy JF, Blow FC. Opioid Dose and Risk of Suicide. *Pain*. 2016;157(5):1079-1084

Shared prevention approaches

Table 2. Interventions to Address the Risk of Suicide and Overdose Related to Opioid Use.

Goal and Intervention	Population, Defined According to Level of Opioid Exposure and Misuse		
	Low-Risk Regimen of Prescription Opioids	High-Risk Regimen of Prescription Opioids or Opioid Misuse	Opioid Use Disorder or Illegal Opioid Use
Identifying who is at risk for suicide and overdose			
Determination of risk score on basis of medical record	+	+	
Assumption that high level of opioid exposure and misuse puts the patient at risk			+
Preventing suicide or overdose among those identified as being at risk			
Treatment for mental health conditions, when present	+	+	+
Cognitive behavioral therapy for suicide risk and motivational interviewing for overdose risk*		+	+
Patient-centered taper of opioid dosage†		+	
Overdose education and naloxone distribution*		+	+
Medication-assisted treatment‡			+

* Although these interventions would ideally be available to all persons identified as having any risk of suicide or unintentional overdose, resource constraints are likely to preclude this approach. Given that these approaches can address risks specifically related to opioid use, they should be prioritized for those with riskier levels of use.

† Patient-centered tapering is based on an evaluation of the risks and benefits for a specific patient, at a reasonably slow pace of dosage reduction and with the patient's engagement in the treatment decision making.

‡ Treatments include methadone, buprenorphine–naloxone, and naltrexone.

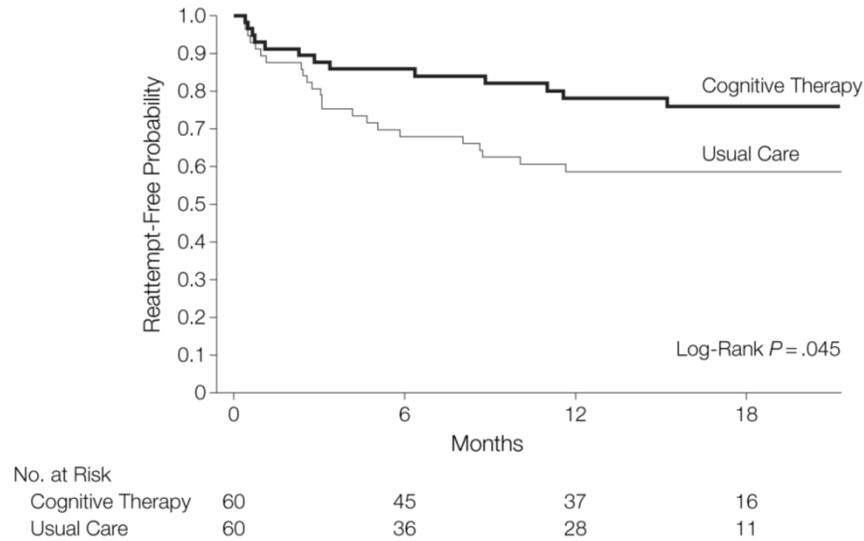
Table 3
Estimates of effect of the intervention on outcomes measured six months later.

Primary Outcomes

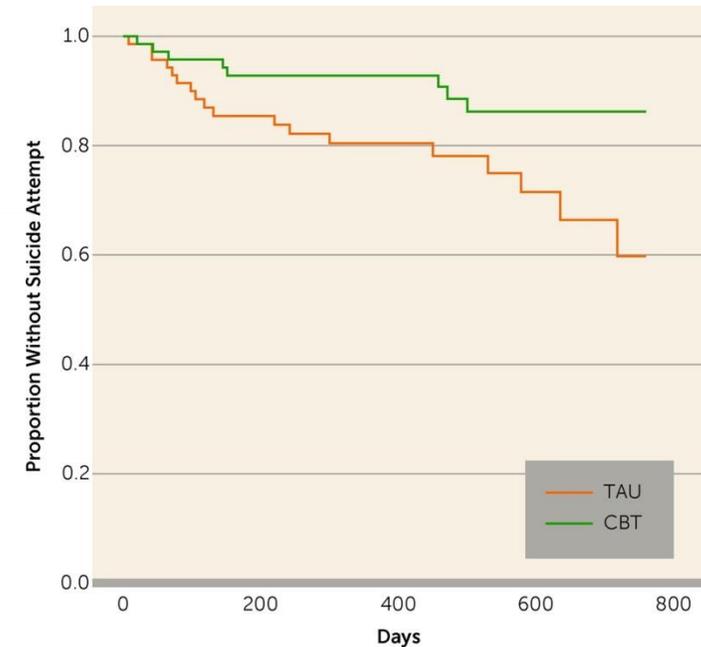
	Model 1: Overdose Risk Behaviors, n = 172		
	IRR	SE	95% CI
Intervention Group vs. EUC only	0.72	0.07	0.59, 0.87
Baseline Level of Overdose Risk Behaviors	1.07	0.01	1.06, 1.08

“The percent decrease in average overdose risk behavior frequency was 40.5% in intervention participants and 14.7% in EUC only participants among those participants with data at both timepoints.”

Bohnert et al. (2016) *Drug and Alcohol Dependence*



Brown et al. (2005) *JAMA*



Rudd, Bryan, et al. (2015) *AJP*

Controversies and Summary of Recommendations

- Controversies/Emerging areas of study:
 - The role of tapering
 - who, when, how to taper?
 - Understanding within person risk
 - When are individuals at the greatest risk?
 - Need for more granular data
 - The need to manage multiple comorbidities while managing risk
 - New risks on the horizon (e.g., fentanyl, benzodiazepines)
- Summary
 - The increases in overdose and suicide likely share similar pathways (involving poorly managed pain, disability and access to opioids)
 - Addressing overdose and suicide will require attending to and addressing multiple drivers of risk

Thank You!

Please feel free to contact us:

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