

## LEARNING SERIES



# From Pills to Fentanyl: Understanding the Opioid Crisis

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Rutgers New Jersey Medical School



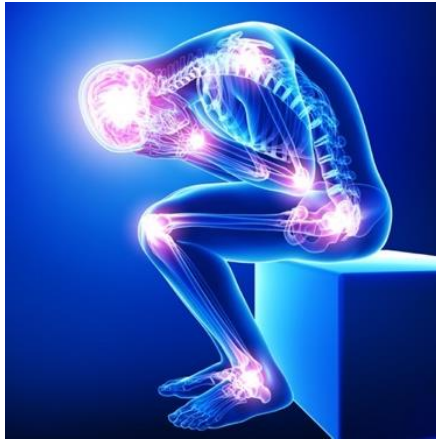
# RUTGERS

New Jersey Medical School  
DEPARTMENT OF EMERGENCY MEDICINE

I have no disclosures.



# Three Inextricable, Overlapping, Concurrent Crises of Opioid Consequences



Chronic pain

Patients: >90M  
Cost: \$635B  
(n.b.CV disease \$309 billion)




Prescription drug  
use/misuse

Deaths: ~15,000/yr  
Cost: \$500B

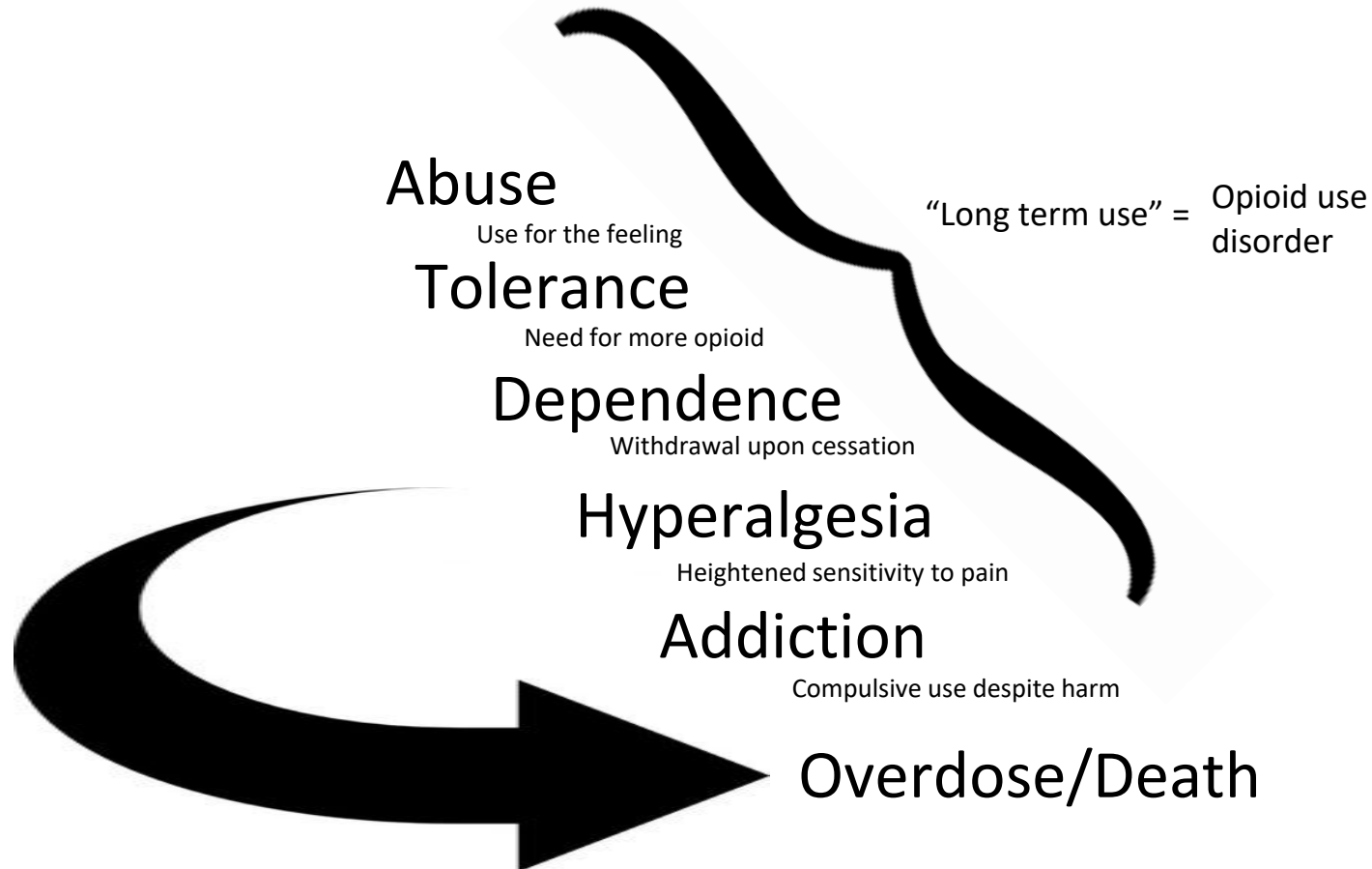


Illicit opioid use

Death: >75,000/yr  
Cost: unknown

  
\$1.02T

# Consequences of opioid use



**TABLE 36–3** Criteria for Opioid Use Disorder<sup>3</sup>

A problematic pattern of opioid use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. Opioids are often taken in larger amounts or over a longer period than was intended.
  2. There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
  3. A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
  4. Craving, or a strong desire or urge to use opioids.
  5. Recurrent opioid use resulting in a failure to fulfill major role obligations at work, school, or home.
  6. Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.
  7. Important social, occupational, or recreational activities are given up or reduced because of opioid use.
  8. Recurrent opioid use in situations in which it is physically hazardous.
  9. Continued opioid use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
  10. Tolerance, as defined by either of the following:
    - A need for markedly increased amounts of opioids to achieve intoxication or desired effect
    - A markedly diminished effect with continued use of the same amount of an opioid
- Note:** This criterion is not considered to be met for those taking opioids solely under appropriate medical supervision.
11. Withdrawal, as manifested by either of the following:
    - The characteristic opioid withdrawal syndrome (refer to Criteria A and B of the criteria set for opioid withdrawal).
    - Opioids (or a closely related substance) are taken to relieve or avoid withdrawal symptoms.

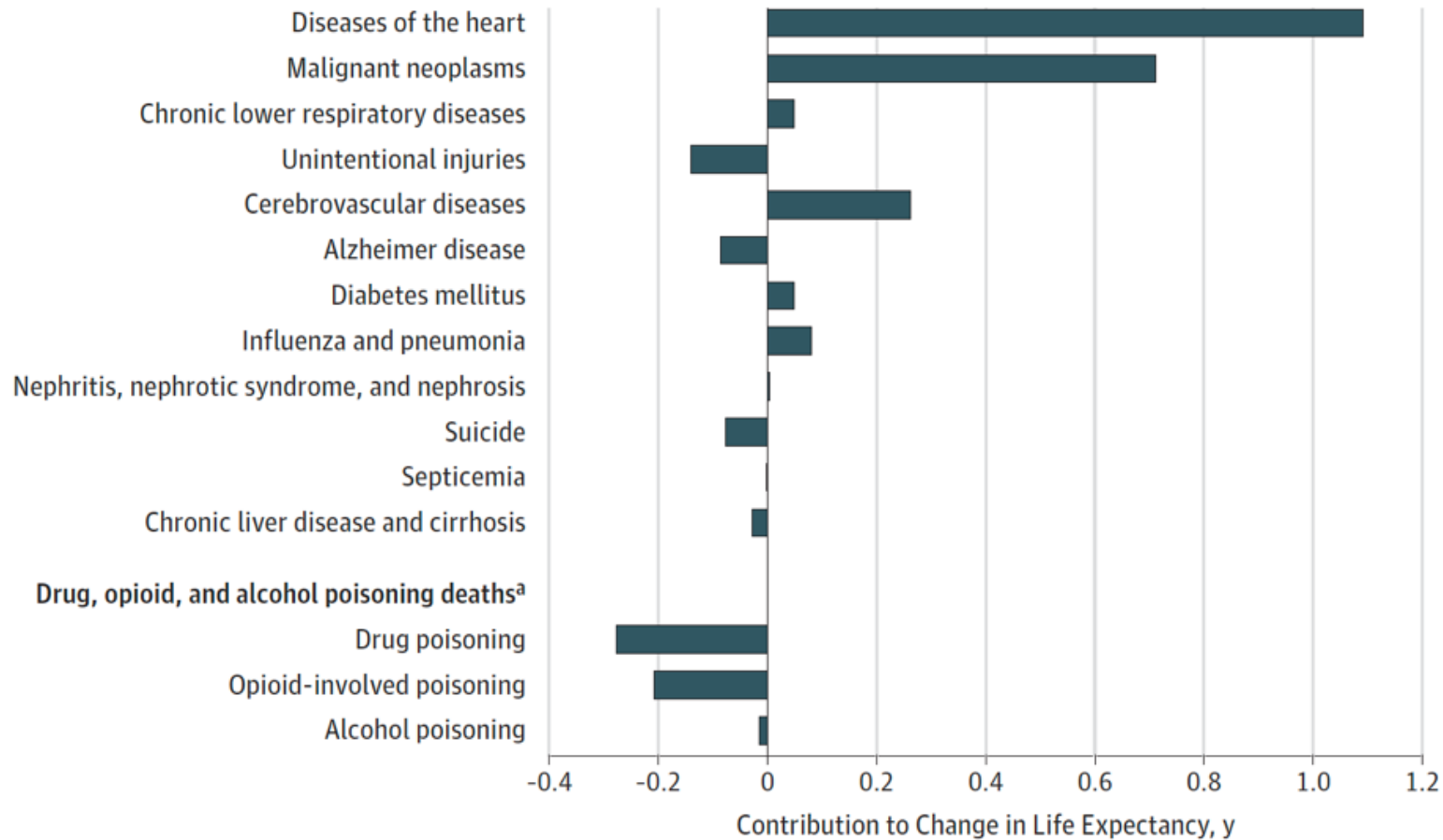


Kanin

*"You should just feel a tiny prick, and then a  
lifetime of morphine addiction."*

Figure. Contributions of Selected Causes of Death to the Change in Life Expectancy in the United States, 2000-2015

12 Leading causes of death (ranked highest to lowest according to No. of deaths in year 2015)



<sup>a</sup> In ranked cause-of-death classification, drug, opioid, and alcohol poisoning are not considered to be unique cause-of-death categories. Instead, poisoning deaths are classified as either accidental poisonings (which contribute to unintentional injuries), suicides, or homicides (ranked 16th in leading causes of death). Contributions from drug, opioid, and alcohol poisoning deaths overlap with both unintentional injury deaths and suicides and cannot be summed with these leading ranked causes of death.

Death



1

In Treatment 10

ED visits 25

EMS activations 40

People who are opioid dependent 100

Nonmedical opioid users 625

In 2017, opioid overdose deaths and opioid use disorder cost the U.S. **\$1.02 trillion**.

Here is what is included in the total cost.

[www.cdc.gov](http://www.cdc.gov)

\$480.7B Value of lives lost from opioid overdose deaths

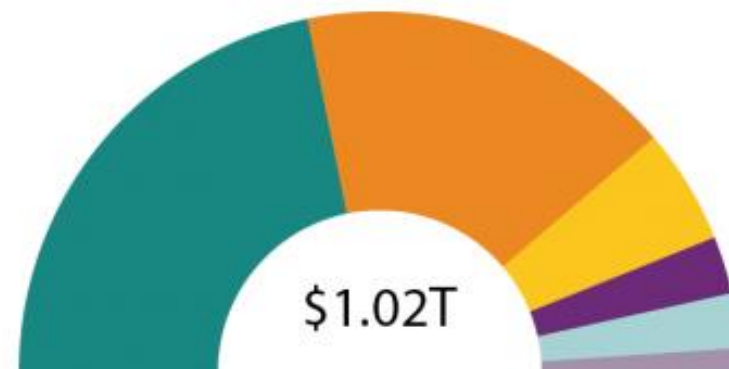
\$34.8B Healthcare spending and opioid use disorder treatment

\$390B Reduced quality of life from opioid use disorder

\$31.3B Lost productivity from opioid use disorder

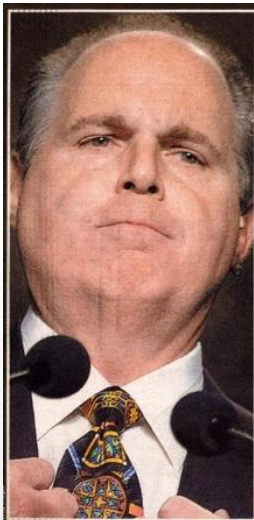
\$68.7B Lost productivity from opioid overdose deaths

\$14.8B Criminal justice



Treatment admissions are for primary use of opioids from Treatment Exposure Data set  
Emergency department (ED) visits are from DAWN, Drug Abuse Warning Network, <https://dawninfo.samhsa.gov/default.asp>  
Abuse/dependence and nonmedical use in the past month are from the National Survey on Drug Use and Health





# I'M A PILL ADDICT

**Rush in rehab  
for painkillers**

Conservative radio talk-show host Rush Limbaugh told his shocked radio audience yesterday "I am addicted to prescription pain medication," and said he would immediately check himself into a clinic. The top-rated star said he started taking the medication after spinal surgery.

FULL STORY: PAGE 5



© Barcroft Media

## Bad tooth, dental visit, addict

Legal script changes life

Jul. 27, 2013 | Comments

log

Pin it



Purchase Image

Contractor Scott Clement works on a fence at a home in Byram. Clement, who was hooked on the painkiller oxycodone after being prescribed the medication because of a dental issue, is now able to cope with the issue with nonaddictive medication. / Rick Guy/The Clarion-Ledger



Written by  
Jerry Mitchell

Somehow, Scott Clement survived.

### FILED UNDER

News  
Metro-State

On Labor Day weekend in 1997, the 35-year-old insurance agent throbbed with pain from an abscessed tooth and called a dentist for medicine.

Days later, struggling to sleep, he took a couple of the oxycodone painkillers and found himself overwhelmed by "a ridiculous sense of well-being," he said.

It began his descent into addiction.

Going through the rest of the oxycodone, Clement returned to the dentist, who refused to prescribe more. He went online instead, ordering as many as he could.

UPS made regular deliveries to his insurance agency, and he was gulping 40 pills a day.

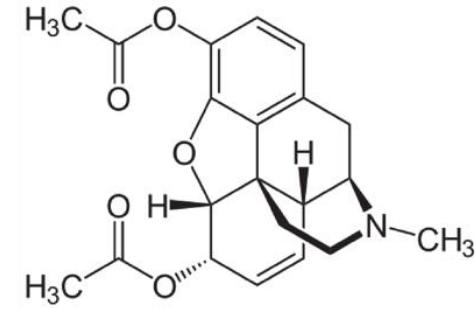


## All opioids (e.g., oxycodone, fentanyl, hydromorphone, and morphine) bind the mu-1 and mu-2 opioid receptors

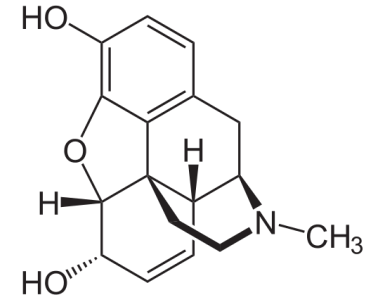
- ◆ Pain relief
- ◆ Euphoria
- ◆ Respiratory depression

## Opioid clinical effects are determined by:

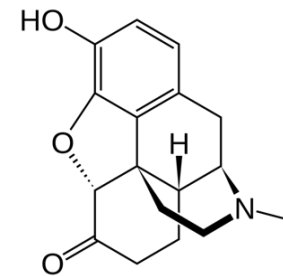
- ◆ Lipid solubility
- ◆ Receptor specificity
- ◆ Binding affinity
- ◆ Dose (potency)
- ◆ Dose rate



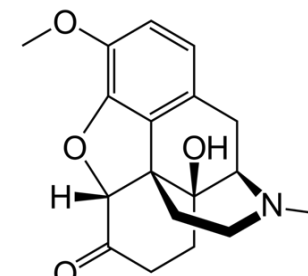
**Heroin**  
(diacetyl morphine)



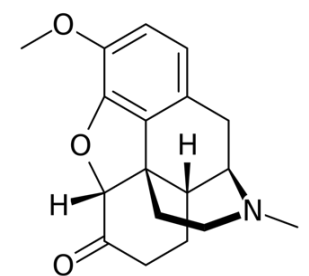
**Morphine**



**Hydromorphone**  
(Dilaudid)



**Oxycodone**  
(Percocet,  
Roxycodone)



**Hydrocodone**  
(Vicodin, Norco)



Would you give  
your child  
**HEROIN**  
for a sports injury?

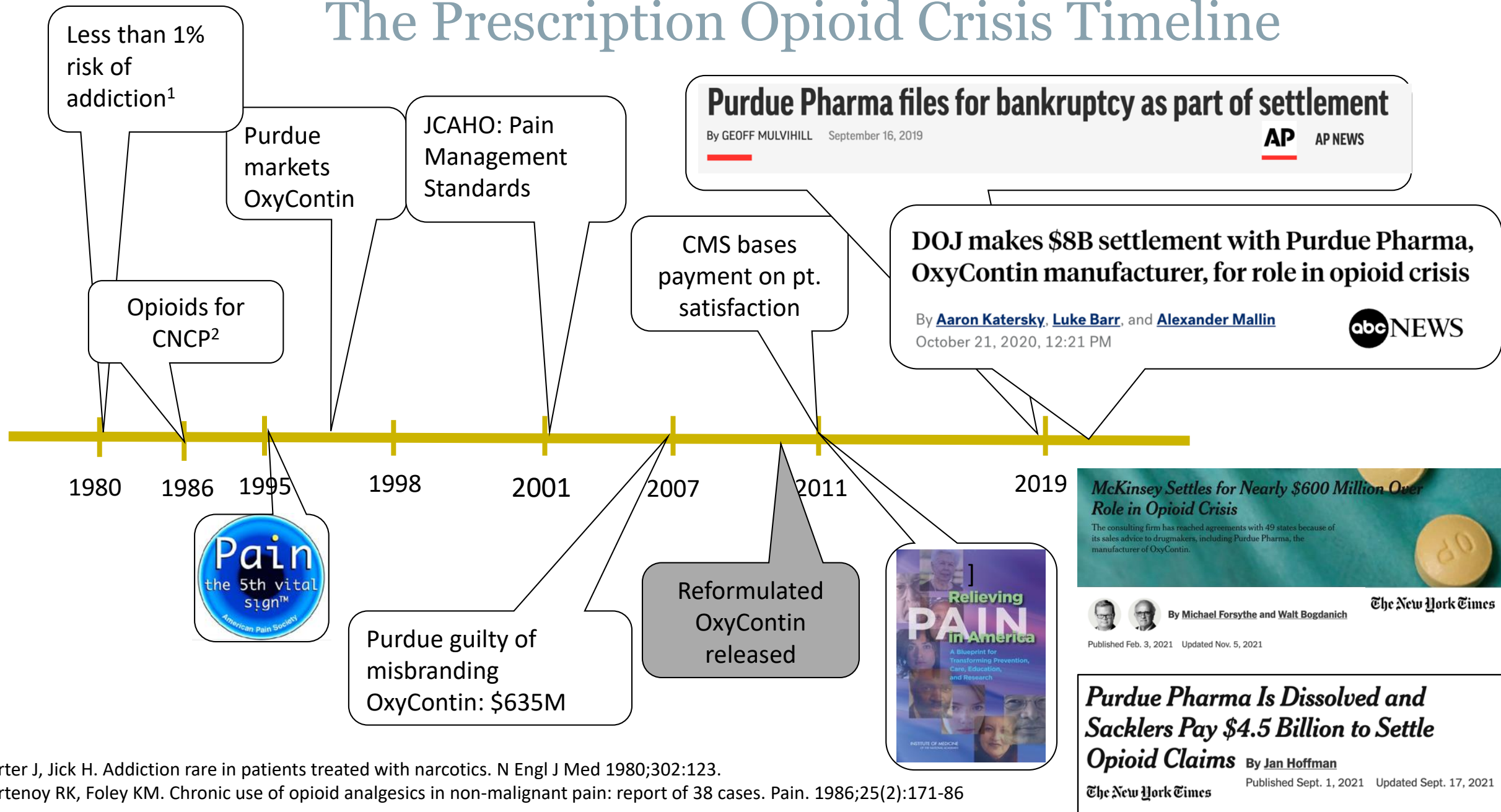
**Ask Your Doctor How Prescription Drugs  
Can Lead to Heroin Abuse.**

**BEFORE THEY PRESCRIBE - YOU DECIDE.**

**Why isn't heroin legal?**

**Isn't oxy just legal heroin?**

# The Prescription Opioid Crisis Timeline

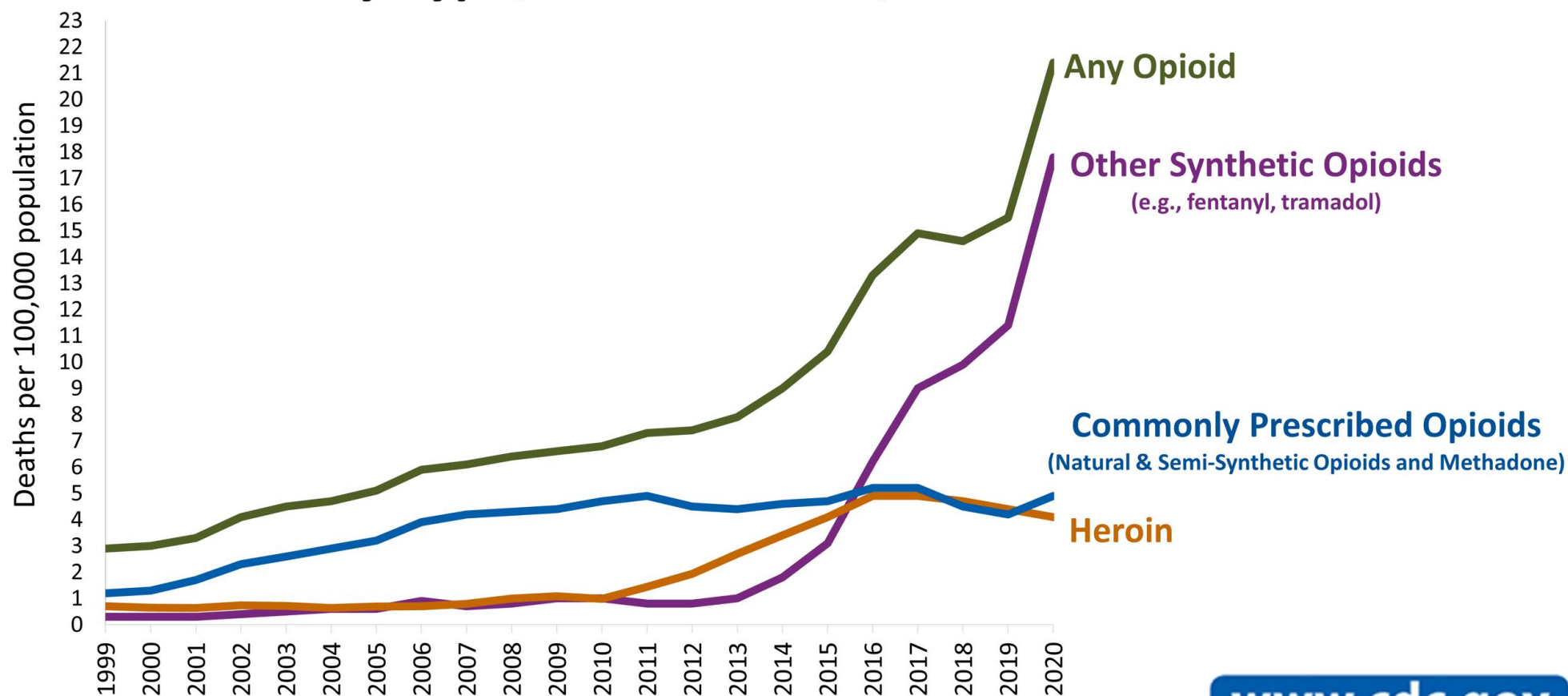


<sup>1</sup>Porter J, Jick H. Addiction rare in patients treated with narcotics. N Engl J Med 1980;302:123.

<sup>2</sup>Portenoy RK, Foley KM. Chronic use of opioid analgesics in non-malignant pain: report of 38 cases. Pain. 1986;25(2):171-86



# Overdose Death Rates Involving Opioids, by Type, United States, 1999-2020

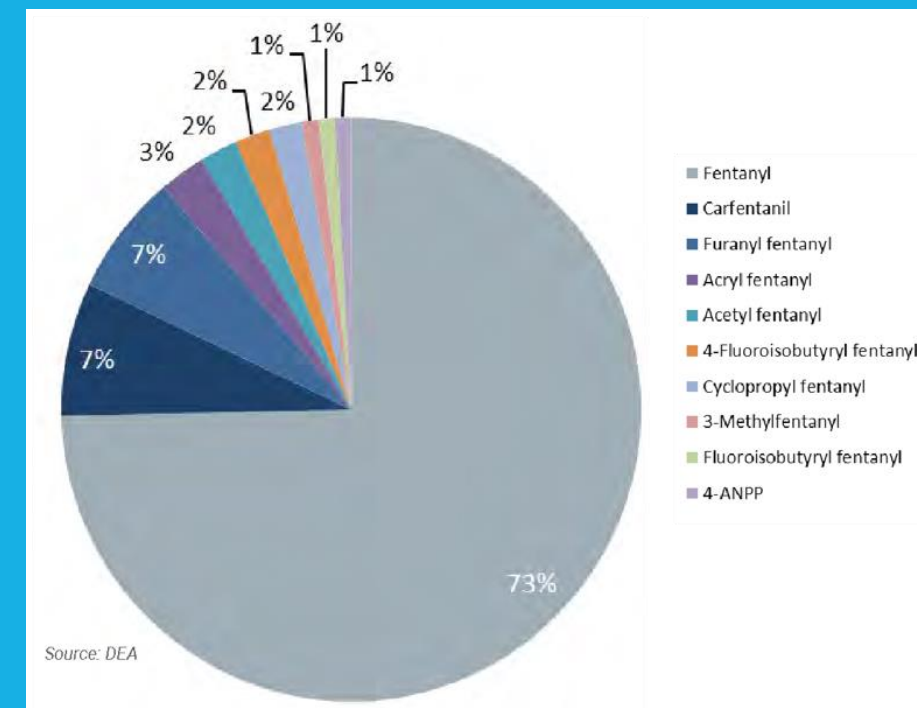


SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2020. <https://wonder.cdc.gov/>.

# Fentanyl(s) (and Nitazenes)

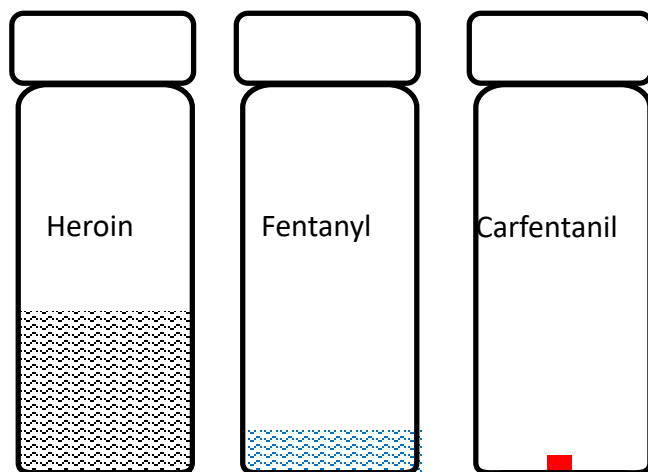
- ▶ Mu opioid receptor full agonist(s)
- ▶ Highly lipophilic
  - ▶ Rapid onset when IV
  - ▶ Generally rapid offset with short term use
    - ▶ Accumulates in adipose tissue
      - ▶ Slow redistribution and long elimination time
- ▶ Apnea
  - ▶ At high doses
- ▶ Rigidity
  - ▶ At high infusion rates

Fentanyl/4-ANPP/Tramadol	Black	Spider & Spider (Image)	Camden Co PD	12/22/21	CAM
Fentanyl/4-ANPP/Fluorofentanyl/ Xylazine	Black	Caution (Blue Fold)	Camden Co PD	12/23/21	CAM
Fentanyl/4-ANPP/Phenethyl 4-ANPP	Red	Money Bag & Money Bag (Image)	Camden Co PD	12/31/21	CAM
Fent/Fluorofent/4-ANPP/ Phenethyl 4-ANPP	Black	Hard Knock Life (Blue Folds)	Camden Co PD	1/2/22	CAM
Fent/Fluorofent/4-ANPP/ Phenethyl 4-ANPP/ Xylazine	Multi	Sky Zone & Skull w/Helmet (Image)	Camden Co PD	1/2/22	CAM
Fent/4-ANPP/Xylazine/ Phenethyl 4-ANPP	Black	Black Ice	Camden Co PD	1/4/22	CAM
Fentanyl/4-ANPP/Phenethyl 4-ANPP	Black	Hardknock Life & Illegible (Image) (Blue Folds)	NJSP AC Expwy	1/9/22	CAM
Heroin/Fentanyl/4-ANPP	Red	Power	NJSP Woodbine	12/9/21	CAP
Fentanyl/4-ANPP	Red	Mexico	NJ Transit PD	11/18/21	ESS
Fentanyl/Heroin/4-ANPP/Phenethyl 4-ANPP	Red	12:30	Irvington	12/2/21	ESS
Heroin/Fentanyl/4-ANPP/Phenethyl 4-ANPP	Multi	Pimp & Person w/Hat & Cane (Image)	Irvington	12/2/21	ESS
Fentanyl/4-ANPP/Phenethyl 4-ANPP	Blue	Goldfinger & Woman (Image)	NJSP Crime North	12/13/21	ESS
Fentanyl/4-ANPP/Phenethyl 4-ANPP	Blue	Tango & Cash & \$ (Image)	NJSP Crime North	12/13/21	ESS
Fentanyl/4-ANPP	Blue	The North Face	NJSP Crime North	12/13/21	ESS
Heroin/Fentanyl/Fluorofentanyl/4-ANPP/ Clonidine (sedative)/Tramadol/Xylazine	Red	*Yeezy & Sneaker (Image)	Bloomfield	12/25/21	ESS
Heroin/Parafluorofentanyl/Fentanyl	Multi	Sky Zone & Skull w/Aviation Hat (Image)	Hoboken	9/21/21	HUD
Xylazine/Heroin/Parafluorofentanyl/Fentanyl	Blue	Dirty Diana & Face (Image)	Jersey City	9/21/21	HUD
Xylazine/4-ANPP/Heroin/Fentanyl	Blue	Dirty Diana & Face (Image)	Jersey City	10/4/21	HUD
4-ANPP/Heroin/Parafluorofentanyl/ Fentanyl	Orange	Givenchy & Orange (Image)	Jersey City	10/4/21	HUD
Fentanyl	Red	Section 8 & Building (Image)	Jersey City	10/22/21	HUD
Fentanyl	Black	Octopus & Octopus (Image)	Jersey City	10/28/21	HUD
Fentanyl	Red	King Kong & Gorilla (Image)	Jersey City	10/30/21	HUD
Xylazine/Heroin/Fentanyl	Blue	Best Buy & BB Logo (Image)	Jersey City	11/7/21	HUD
Heroin/Fentanyl	Blue	Lemon Pepper	Jersey City	11/10/21	HUD
Heroin/Fentanyl	Red	ALPO	Jersey City	11/19/21	HUD
Xylazine/Heroin/Parafluorofentanyl	Blue	Power & Fist (Image)	Jersey City	11/30/21	HUD
Fentanyl/4-ANPP/Xylazine	Purple	**Keys to the Streets	NJSP Perryville	10/12/21	HUN
Fentanyl/4-ANPP/Xylazine	Red	Jawbone	NJSP Crime Cent	10/22/21	MER
Heroin/Fentanyl/4-ANPP/Phenethyl 4-ANPP/ Tramadol/Xylazine	Black	Louis Vuitton	Perth Amboy	10/15/21	MID
4-ANPP/Heroin/Fentanyl/Tramadol	Black	School Zone	Sayreville	11/6/21	MID

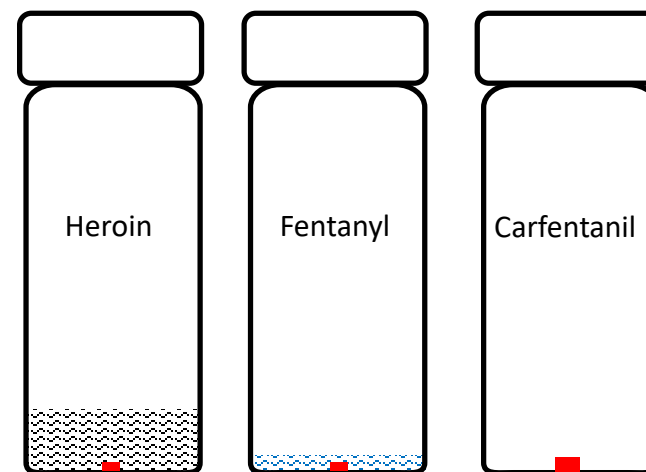




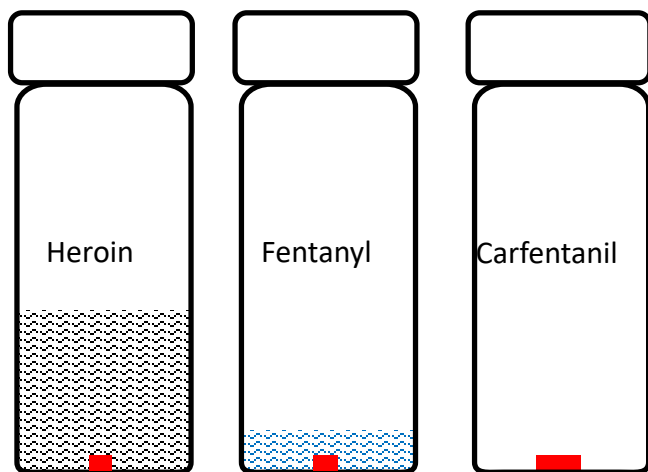




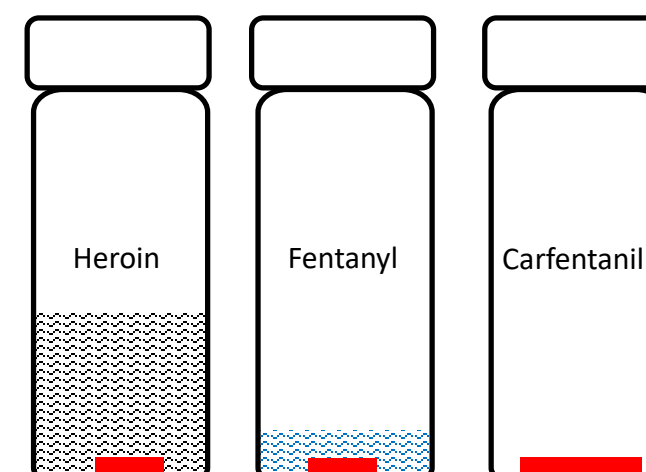
Equi-effective "safe" doses



Equi-effective "safe" doses



Dangerous doses



Deadly doses

The New York Times

ARTS



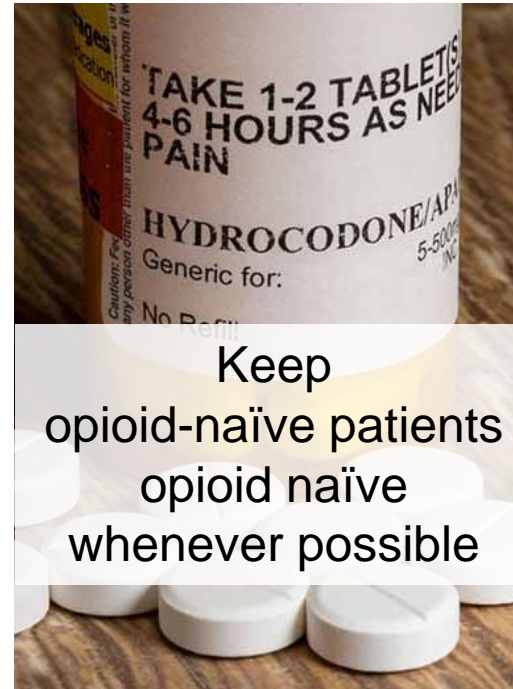
# Prince's Addiction and an Intervention Too Late



# What did we do about it?



- Limit opioid initiation
  - Pain management guidelines
    - Multi-modal analgesia
- Safe opioid use
  - Default prescribing EHR
    - Regulatory limits
    - Order sets
  - Nudge prescribers
  - Patient education
- Prescription Monitoring Program



Keep  
opioid-naïve patients  
opioid naïve  
whenever possible

UNIVERSITY HOSPITAL  
Newark, New Jersey

## University Hospital Adult Emergency Medicine Treatment of Acute Pain Guideline

- Alternative therapies should be considered if there are contraindications to first line recommendations
- Consider next line therapies in a stepwise manner if pain persists 30 minutes after an IV dose OR 60 minutes after a PO dose
- Other than in the treatment of severe acute pain, the oral route is the preferred route of administration of most analgesic drugs

### Abdominal Pain

First Line	Second Line	Third Line	Adjunctive Therapy	Discharge
<b>Undifferentiated abdominal pain</b> Acetaminophen 975 mg PO <b>AND/OR</b> Ibuprofen 400 – 600 mg PO (If patient cannot tolerate PO, ketorolac 15 mg IV)	<b>Undifferentiated abdominal pain</b> Ketamine 0.3 mg/kg IV over 15 minutes  <b>Gastroparesis</b> Haloperidol 5 mg IV <b>OR</b> Haloperidol 5 mg IM	Opioid rescue*	<b>Anti-emetics</b> Ondansetron 4 mg IV <b>OR</b> Ondansetron ODT 4 mg PO <b>OR</b> Metoclopramide 10 mg IV  <b>Antacids</b> Mag hydroxide/aluminum hydroxide/simethicone 1200 mg/1200 mg/120 mg PO <b>AND/OR</b> Famotidine 20 mg IV	<b>Undifferentiated abdominal pain</b> Acetaminophen 975 mg PO q6H PRN <b>AND/OR</b> Ibuprofen 400 mg PO q6H PRN  <b>Spasmodic pain</b> Dicyclomine 20 mg PO q6H PRN  <b>Gastroparesis</b> Metoclopramide 10 mg PO q6H PRN
<b>Spasmodic pain</b> Dicyclomine 20 mg PO (If patient cannot tolerate PO, dicyclomine 10 mg IV)  <b>Gastroparesis</b> Metoclopramide 10 mg IV				

#### Clinical Pearls:

- Consider underlying etiology of abdominal pain before selecting treatment option (e.g. anticholinergics and opioids counterintuitive in gastroparesis)
- Ketamine: avoid use in patients with severe hypertension or history of psychosis
- NSAIDs: avoid use in third trimester of pregnancy, peptic ulcer disease, history of GI bleed, or active major bleeding
- Provide patient education regarding type of pain, medication choices, and what to expect
- Consider distractions such as music, talking to patient

### Dental Pain

First Line	Second Line	Third Line	Adjunctive Therapy	Discharge
Acetaminophen 975 mg PO <b>AND/OR</b> Ibuprofen 400 – 600 mg PO (If patient cannot tolerate PO, ketorolac 15 mg IV)	Lidocaine 2% viscous solution – swish and spit	Lidocaine 1% dental block	Apply ice pack to painful area	Acetaminophen 975 mg PO q6H PRN <b>AND/OR</b> Ibuprofen 400 – 600 mg PO q6H PRN <b>AND/OR</b> Lidocaine 2% viscous solution – swish and spit q3 hours PRN

#### Clinical Pearls:

- Provide patient education regarding type of pain, medication choices, and what to expect
- Analgesia is a temporizing measure for more definitive treatment
- NSAIDs: avoid use in third trimester of pregnancy, peptic ulcer disease, history of GI bleed, or active major bleeding

Guidelines are intended to be flexible. They serve as reference points or recommendations, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, setting, circumstances or factors, guidelines can and should be tailored to fit individual needs.



## NJ Prescription Monitoring Program

For Too Many New Jerseyans, Addiction Begins in the Medicine Cabinet

The New Jersey Prescription Monitoring Program (NJMPMP) is an important component of the New Jersey Division of Consumer Affairs' initiative to halt the abuse and diversion of prescription drugs.

Established pursuant to N.J.S.A. 45:1-45 et. seq., the NJMPMP is a statewide database that collects prescription data on Controlled Dangerous Substances (CDS) and Human Growth Hormone (HGH) dispensed in outpatient settings in New Jersey, and by out-of-State pharmacies dispensing into New Jersey.

Pharmacies are required to report information to the NJMPMP on a daily basis to the PMP Clearinghouse using the ASAP 4.2 format. Prescriptions must be reported to the database no more than one (1) business day after the date the prescription was dispensed.

The Division of Consumer Affairs and the NJMPMP Administrator keep patient information strictly confidential, in compliance with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and Family Privacy Act.

Email  
NJ Prescription Monitoring Program

Call  
(973) 273-8010

Inquiries about the NJMPMP may be forwarded to  
Jeffrey D. Laszczyk, Jr., PharmD  
NJMPMP Administrator  
P.O. Box 47014  
Newark, New Jersey 07101  
Directions

What are doing  
about it?



**KEEP**

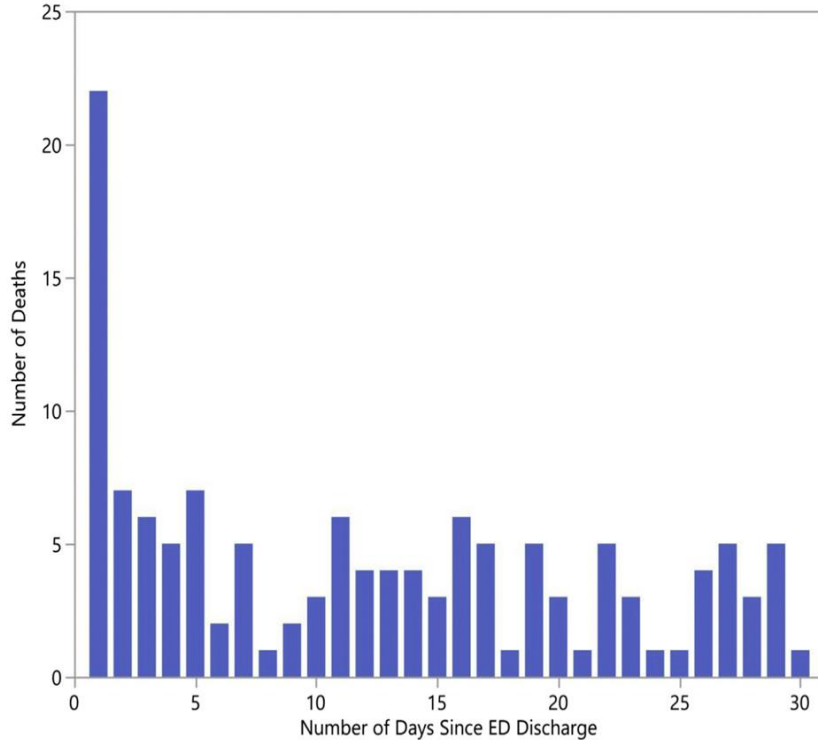
Naloxone availability without engagement  
into addiction treatment doesn't save lives...  
it only postpones death.

**CARRY  
NALOXONE**

## One-Year Mortality of Patients After Emergency Department Treatment for Nonfatal Opioid Overdose

Scott G. Weiner, MD, MPH\*; Olesya Baker, PhD; Dana Bernson, MPH; Jeremiah D. Schuur, MD, MHS

\*Corresponding Author. E-mail: [sweiner@bwh.harvard.edu](mailto:sweiner@bwh.harvard.edu), Twitter: [@scottweinermd](https://twitter.com/scottweinermd).



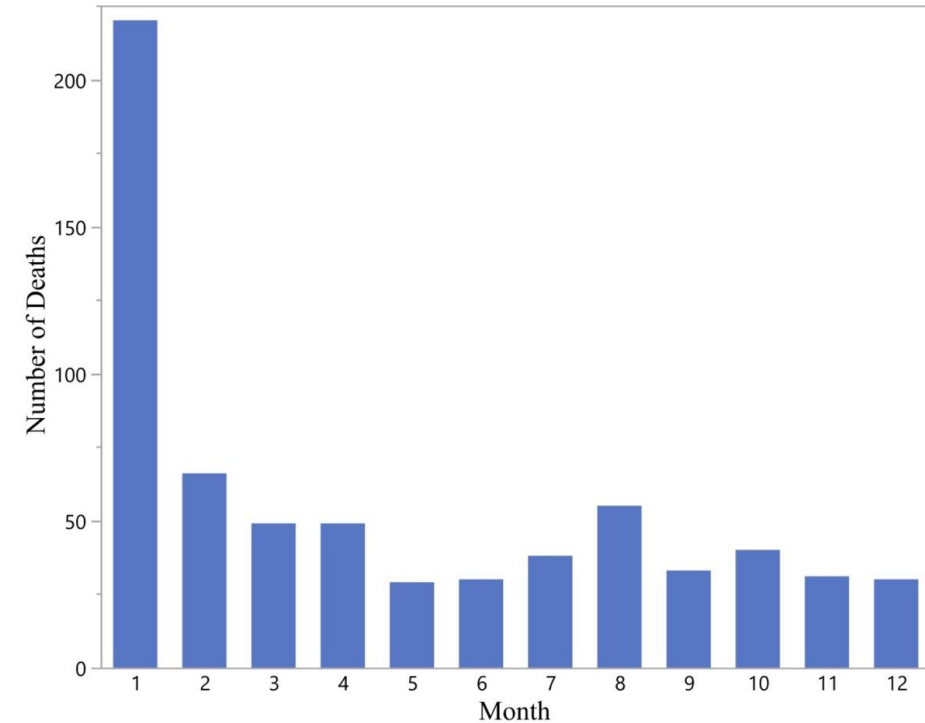
Death (rate) of 17,241 ED discharged OOD patients:

- 635 (5.5%) within 1 year
- 130 (1.1%) within 1 month
- 29 (0.36%) within 2 days
- $\frac{2}{3}$  died from opioid overdose

## One Year Mortality of Patients Treated with Naloxone for Opioid Overdose by Emergency Medical Services

Scott G. Weiner, Olesya Baker, Dana Bernson, Jeremiah D. Schuur

Subst Abus. 2022 ; 43(1): 99–103.



Death (rate) of 9734 EMS discharged OOD patients:

- 1465 (15.2%) 1 year
- 807 (8.3%) with 3 days
- $\frac{2}{3}$  died from opioid overdose



# What are doing about it?



- ▶ Harm reduction
  - ▶ Naloxone distribution/prescribing
  - ▶ Fentanyl testing strips
  - ▶ Safe consumption sites
  
- ▶ Addiction management
  - ▶ Screening
  - ▶ Reducing barriers
    - ▶ Telehealth
    - ▶ Recovery coaches
  - ▶ Medication for opioid use disorder
    - ▶ Buprenorphine
    - ▶ Methadone



CRIME & DRUGS

## There's no good antidote for super heroin laced with elephant tranquilizer

By Rachel Browne  
October 3, 2016 | 3:10 pm

## 'I'm not going to let you die': Deputy collapses after handling suspected fentanyl



Handout-San Diego County Sheriff's Department.

**For the record:**  
**2:16 p.m. Aug. 10, 2021:** This story misstates what was known about the medical condition of the deputy shown in the Sheriff's Department's video. The conclusion that his collapse was caused by contact with fentanyl was supplied by the Sheriff's Department rather than by qualified medical experts, who have since cautioned that the risks from incidental contact are often overstated. A follow-up story can be found [here](#).

The San Diego Union-Tribune

The Sheriff's Department releases video showing the July 3 overdose. Sheriff Bill Gore calls fentanyl one of the 'greatest threats' facing region

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## Officers find enough fentanyl to kill 4 million people in drug bust, officials say



The Louisville Metro Police Department reports officers found nearly 30,000 suspected fentanyl pills and at least 8.5 kilograms of fentanyl in a storage unit. (Louisville Metro Police Department)

By Shellie Sylvestri and Jordan Gartner

18, 2022 at 4:02 PM EDT



NATIONAL

## Is 'rainbow fentanyl' a threat to your kids this Halloween? Experts say no

October 11, 2022 · 5:00 AM ET



In August 2022, the Drug Enforcement Administration and law enforcement partners seized brightly colored rainbow fentanyl pills in 18 states.

Drug Enforcement Administration



# Summary

- ▶ The opioid crisis remains iatrogenic in part but mostly now related to fentanyl(s)
- ▶ An opioid is an opioid is an opioid (unless it is buprenorphine)
  - ▶ There are subtle but important pharmacological differences
- ▶ Naloxone can reverse opioid overdose (and sometimes prevent death)
  - ▶ Need to engage in treatment and recovery
- ▶ 'Be careful about reading health books. You may die of a misprint.' — Mark Twain



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