



**Updates on Opiate/
Heroin Use in DuPage
County
November 10, 2014**

**Presented to: Elmhurst Youth
Commission**



**Richard A. Jorgensen, MD, FACS
DuPage County Coroner**

H E R O I N



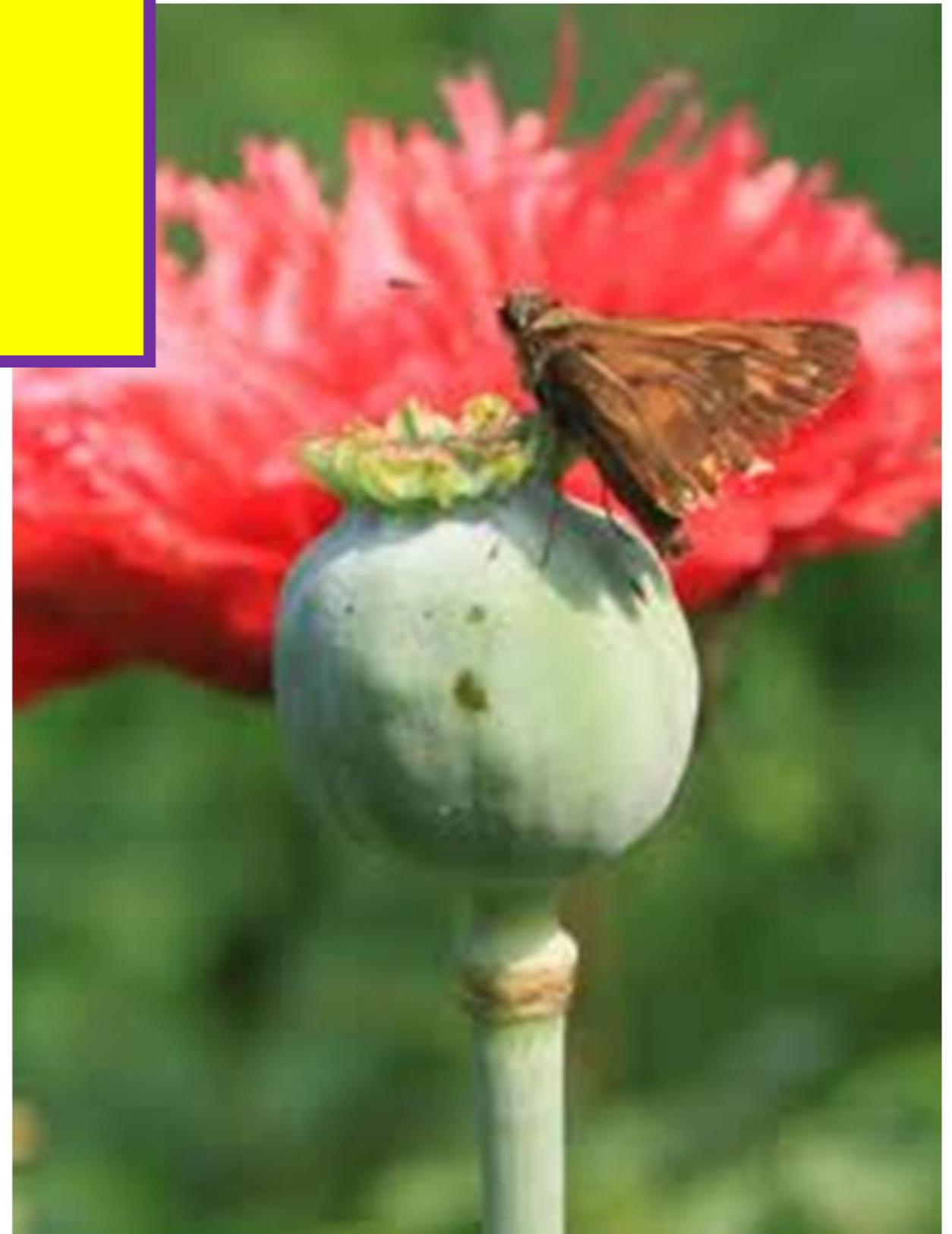
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IT ALL STARTS WITH
THE POPPY PLANT



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poppy flowers and pods



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- **Opioids:**
 - ~~Starts with poppy plant~~
 - Cut pod and juice seeps out
 - High content of morphine (12%)
 - Morphine is the golden goose!



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OPIUM HARVEST



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black tar



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refined heroin



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Good use.....bad use

MORPHINE **PAINLESS — PERMANENT**
EASY HOME CURE

We will send anyone addicted to OPIUM, MORPHINE, LAUDANUM, or other drug habit, a Trial Treatment, Free of Charge, of the most remarkable remedy ever discovered. Contains Great Vital Principle heretofore unknown. Refractory Cases solicited. Confidential correspondence invited from all, especially Physicians. ST. JAMES SOCIETY, 1181 BROADWAY, NEW YORK.



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MEDICINAL ORIGINS

- BAYER
ORIGINAL
HEROIN
TRADEMARK



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BAYER
PHARMACEUTICAL
PRODUCTS.

Send for
 samples and
 Literature to

ASPIRIN
The substitute for the salicylates

HERDIN
The sedative for coughs

LYCETOL
The uric acid solvent

SALOPHEN
The antirheumatic and antineuralgic

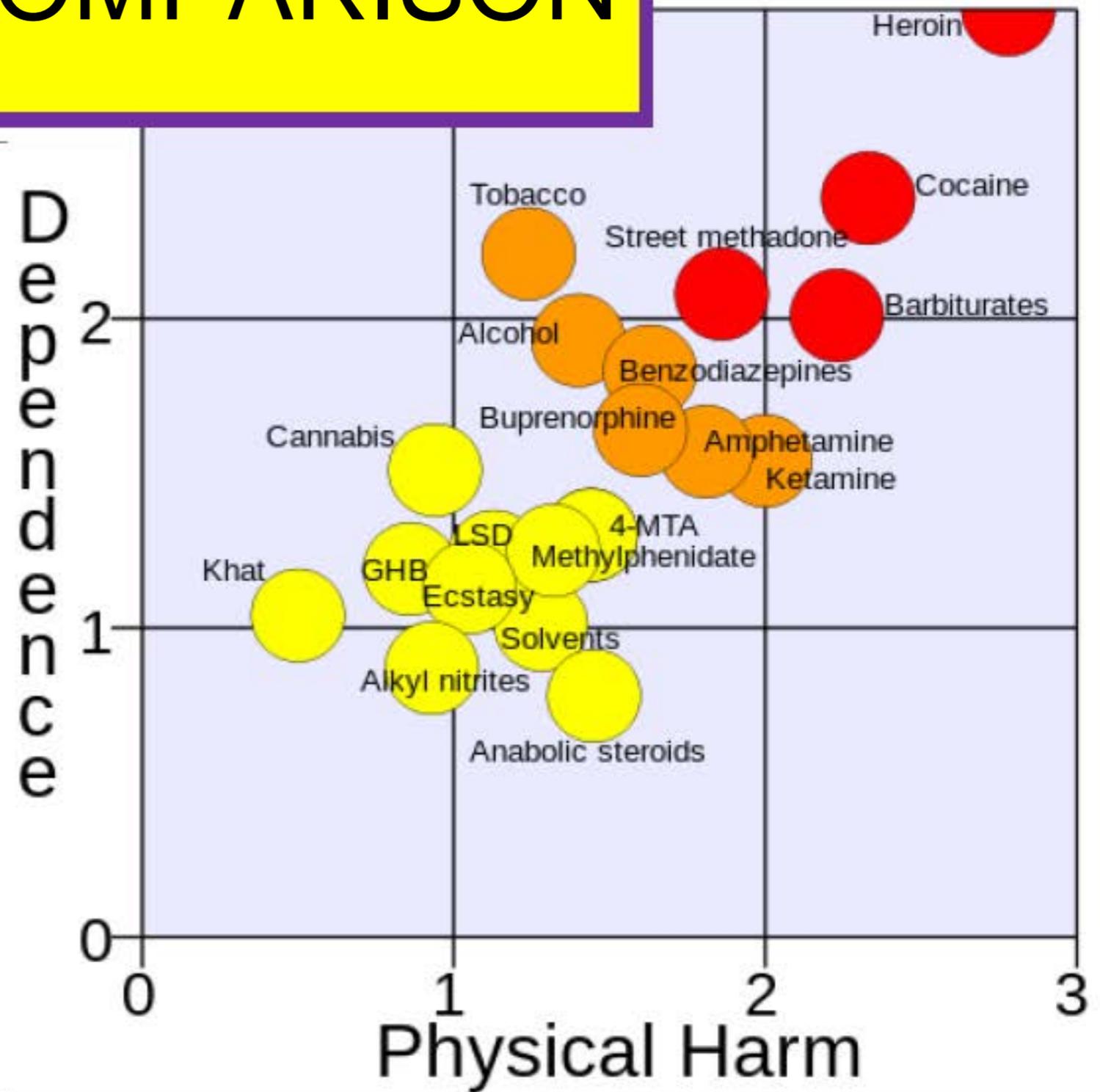
FARBENFABRIKEN OF ELBERFELD CO.

40 STONE ST NEW YORK.



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ADDICTION COMPARISON



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MECHANISM OF ACTION

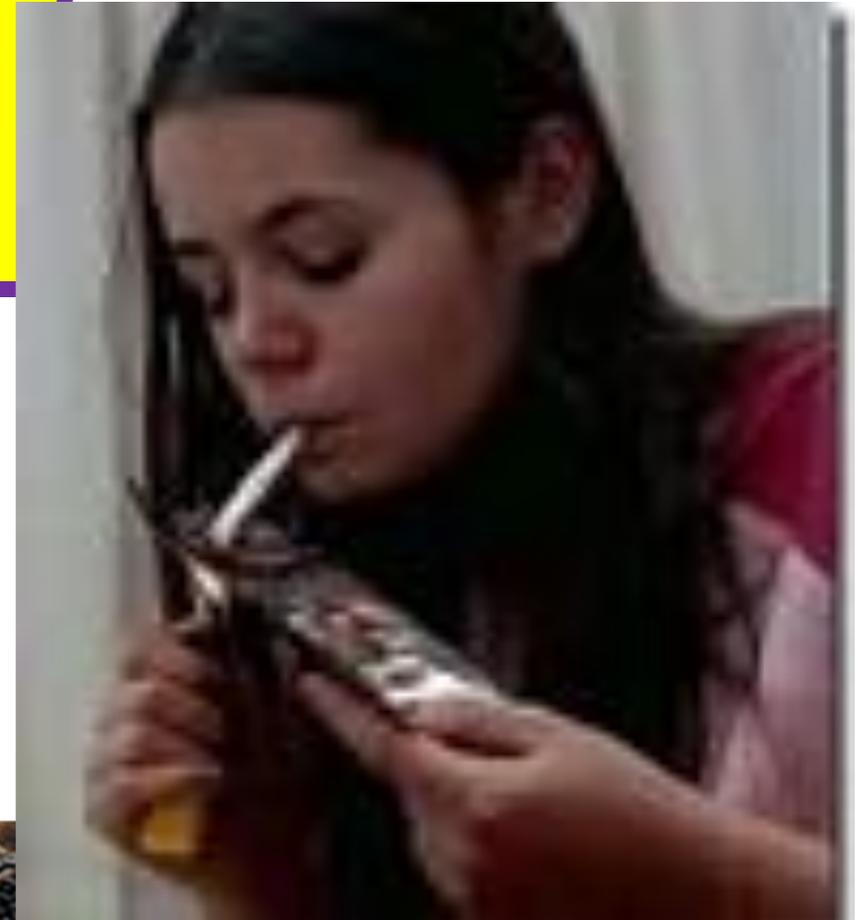
- **INTO THE BODY**
 - SMOKED, INJECTED
- **GETTING IN THE DOOR**
 - BLOOD-BRAIN BARRIER
- **THE GOLDEN GOOSE**
 - BREAKS DOWN TO MORPHINE
- **GETTING A GOOD RECEPTION**
 - ATTACH TO OPIATE RECEPTORS



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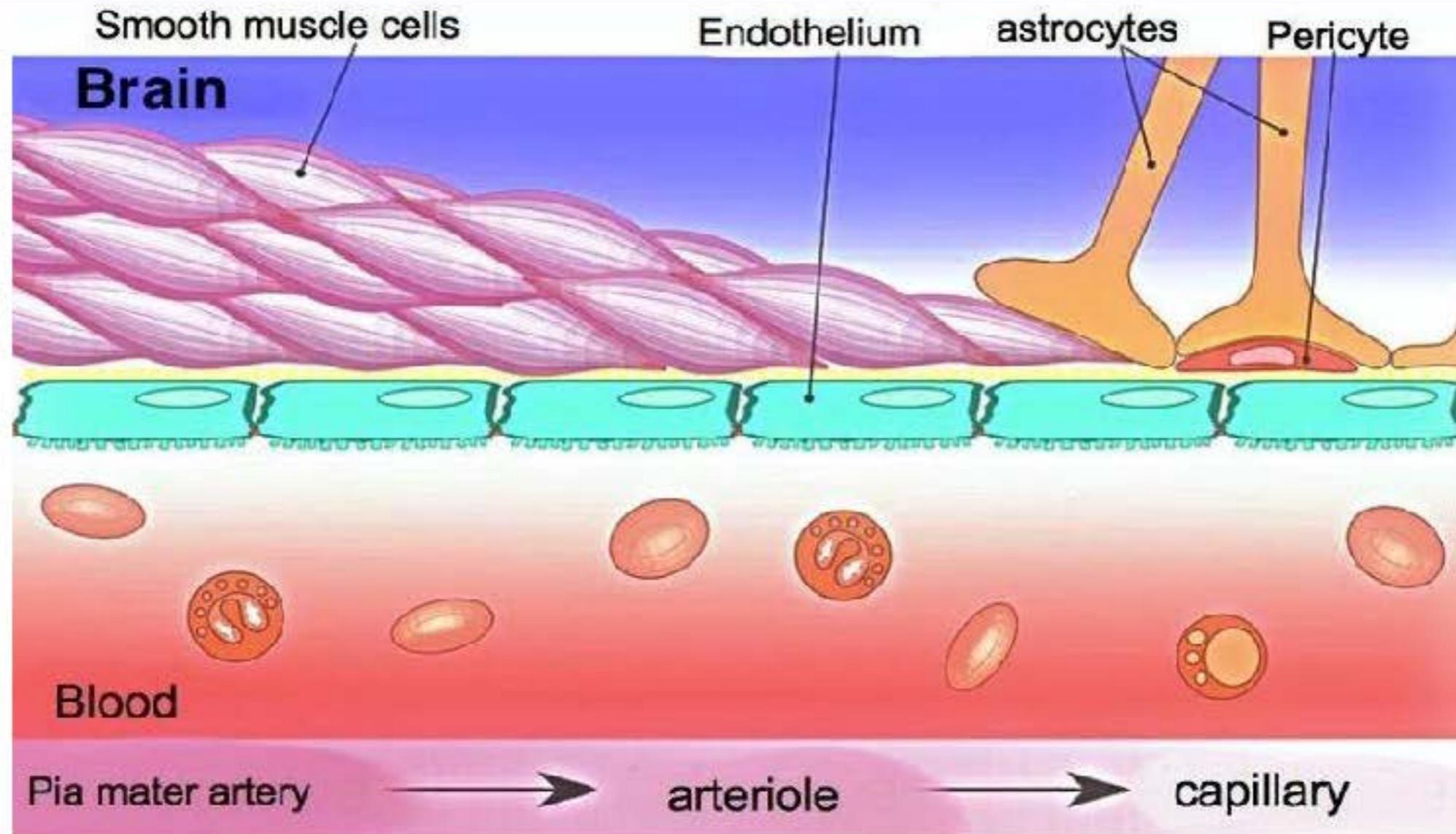
INTO THE BODY

- SMOKED
- SNORTED
- INJECTED
- LOTS WORST



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GETTING IN THE DOOR: BLOOD-BRAIN BARRIER



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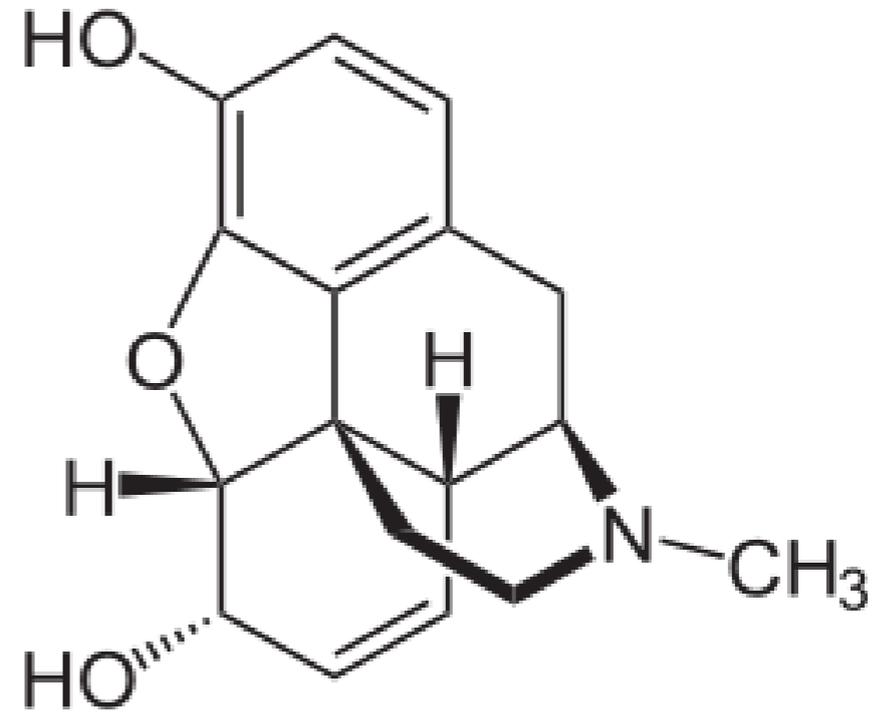
BLOOD BRAIN BARRIER

- HEROIN IS ABLE TO PASS THROUGH BLOOD BRAIN - BARRIER MUCH FASTER THAN MORPHINE
- THEREFORE QUICKER DELIVERY TO BRAIN!
- HEROIN MUCH LESS POTENT THOUGH

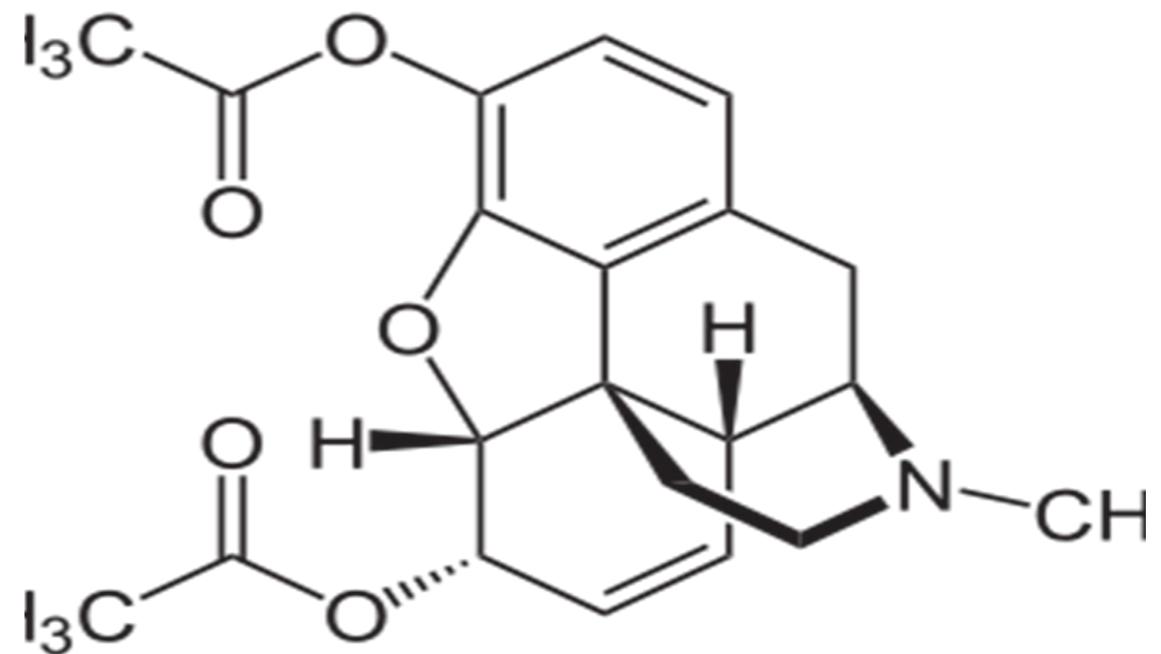


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MORPHINE MOLECULE

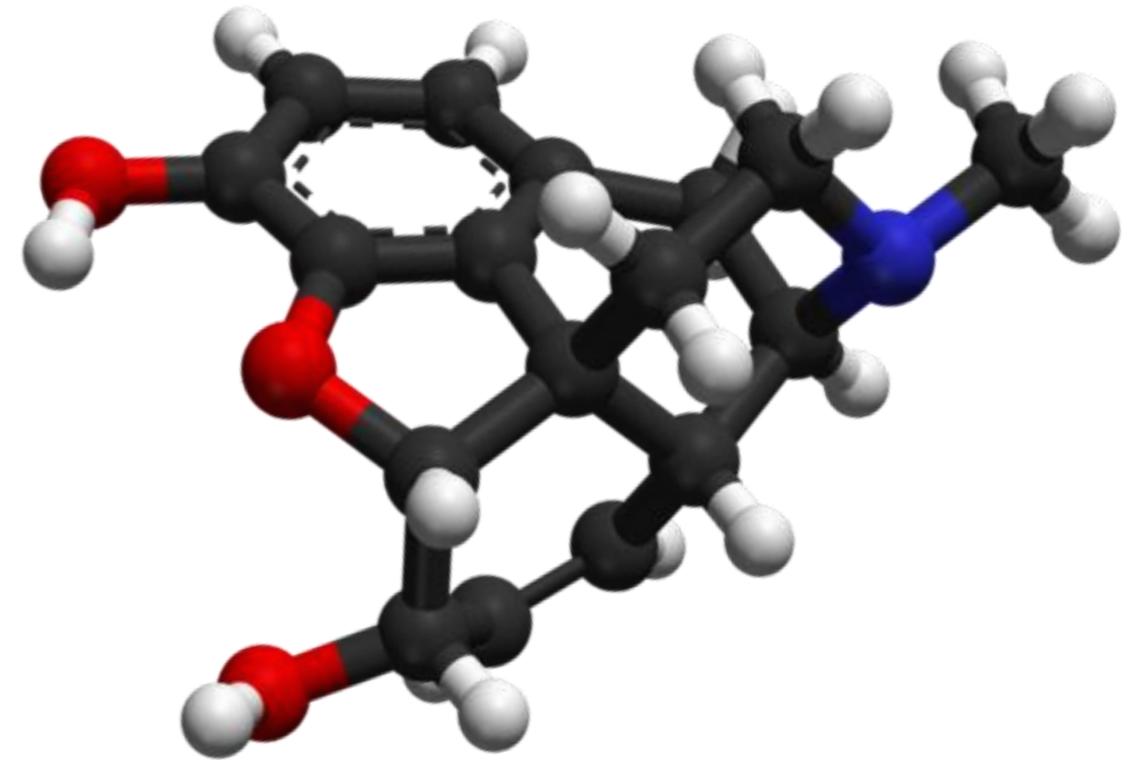


HEROIN MOLECULE

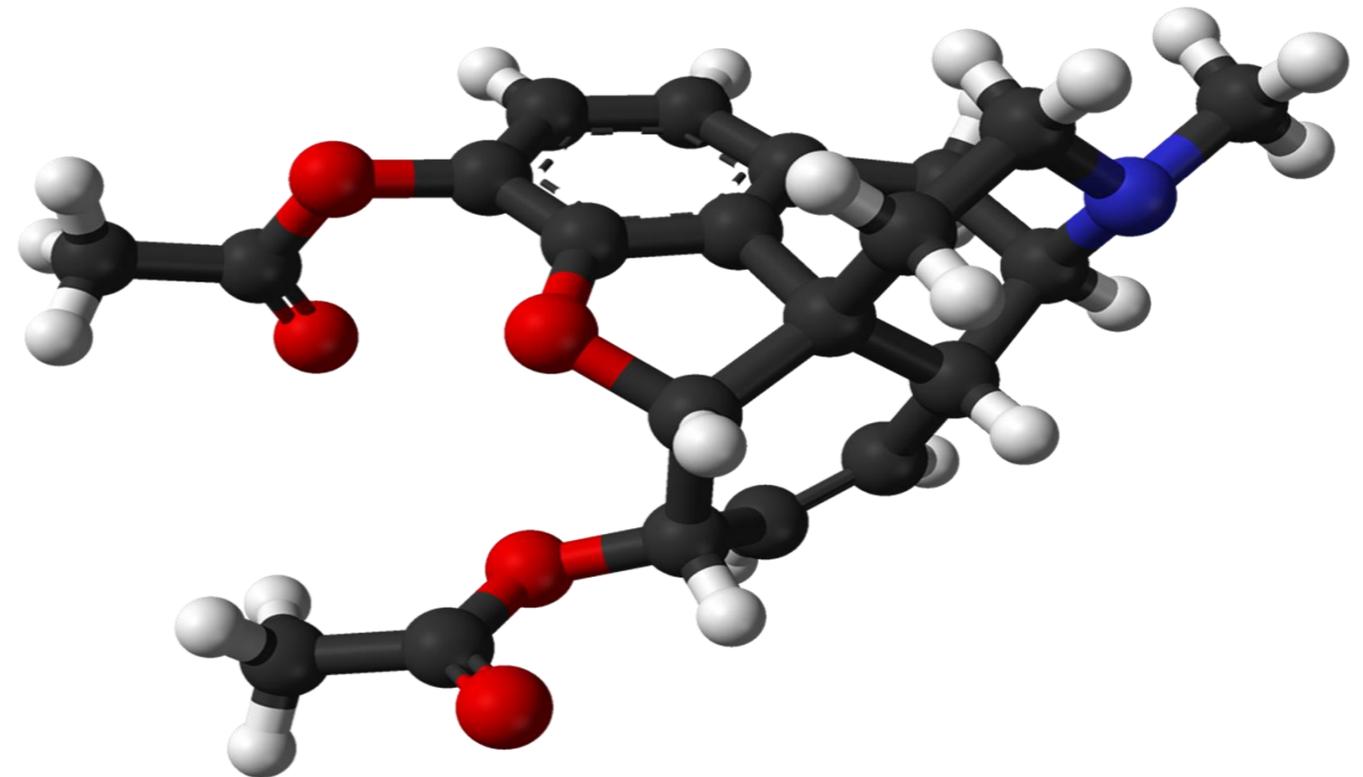


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3-D MORPHINE MOLECULE



3-D HEROIN MOLECULE



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GETTING A GOOD RECEPTION

THE EFFECT OF DRUG IS CREATED WHEN
DRUG DOCKS WITH RECEPTOR

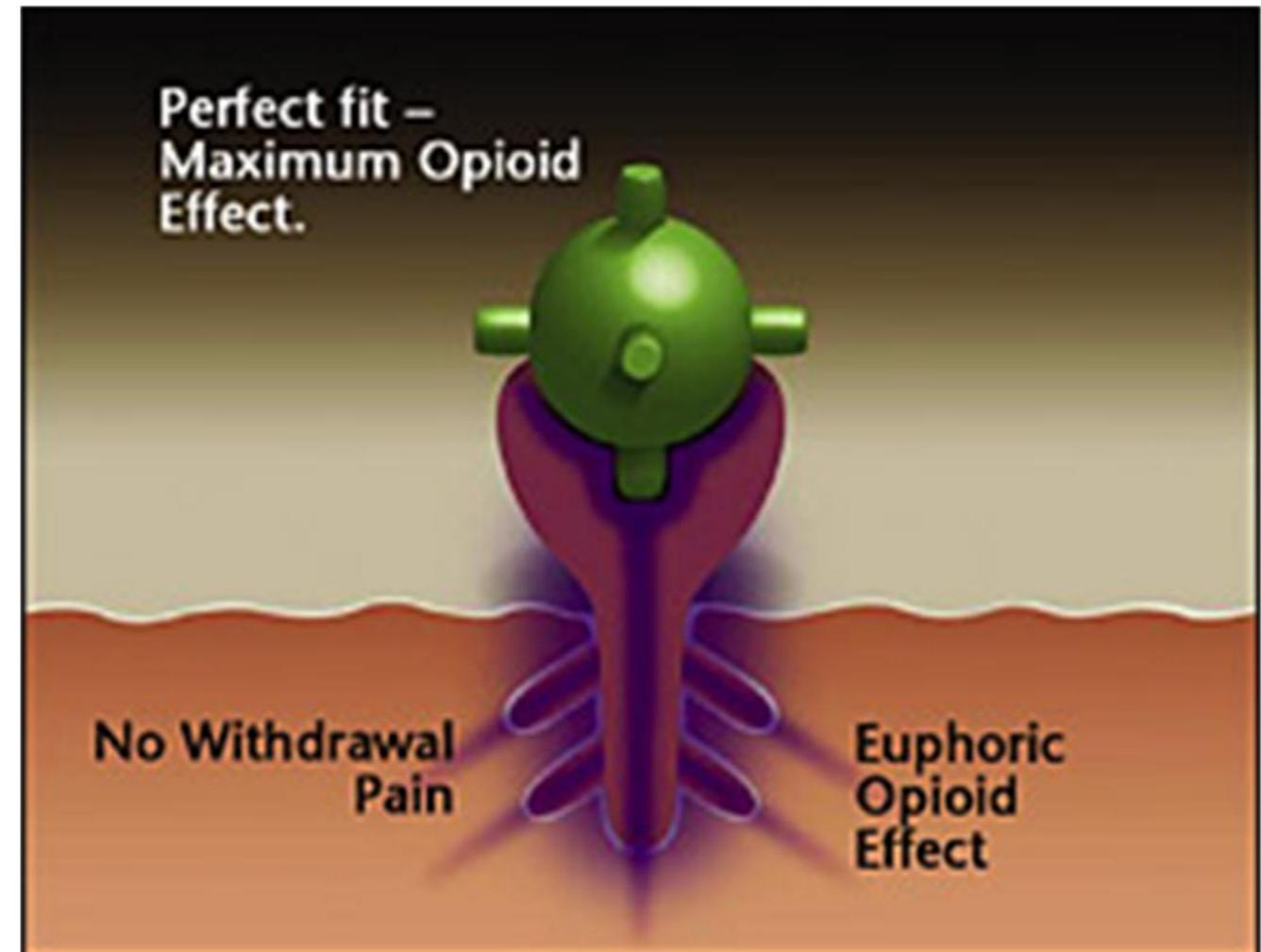
- ATTACH TO U-OPIOID RECEPTORS CAUSING ANALGESIA AND EUPHORIA
- CAR ENTERS GARAGE (HUMMER VS VW BUG)
- PUSHES PLUNGER TURNING ON SWITCH



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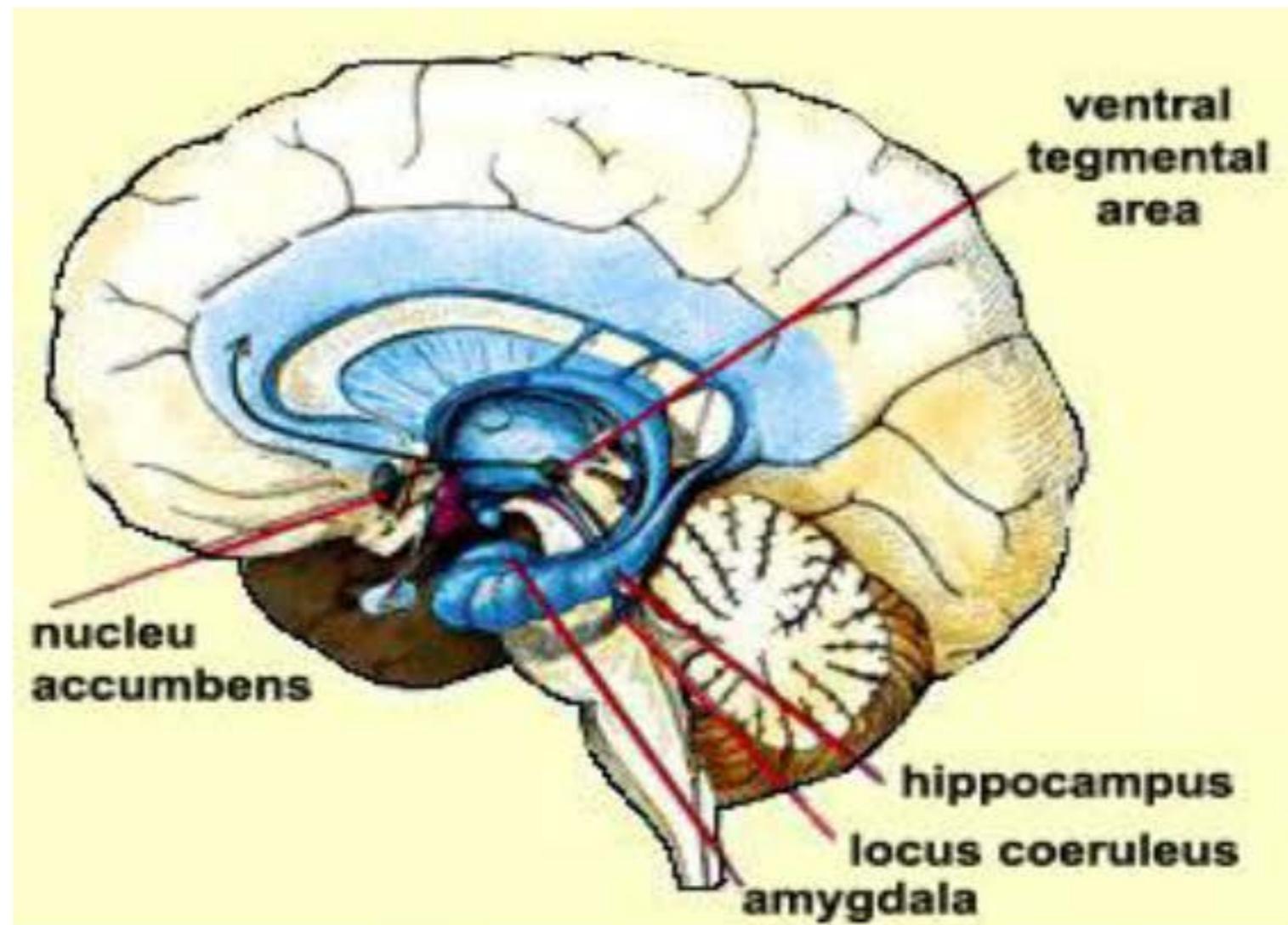
GETTING A GOOD RECEPTION-

- TURNING ON THE SWITCH



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HEROIN IN THE BRAIN HOW DOES IT WORK?



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BRAIN - NORMAL SATISFACTION AND REWARD MECHANISMS

- The human body naturally produces its own opiate-like substances and uses them as neurotransmitters. (**endorphins, enkephalins, and dynorphin-known as endogenous opioids**)
- Modulate our reactions to painful stimuli, hunger and thirst and mood control.



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BRAIN - NORMAL SATISFACTION AND REWARD MECHANISMS

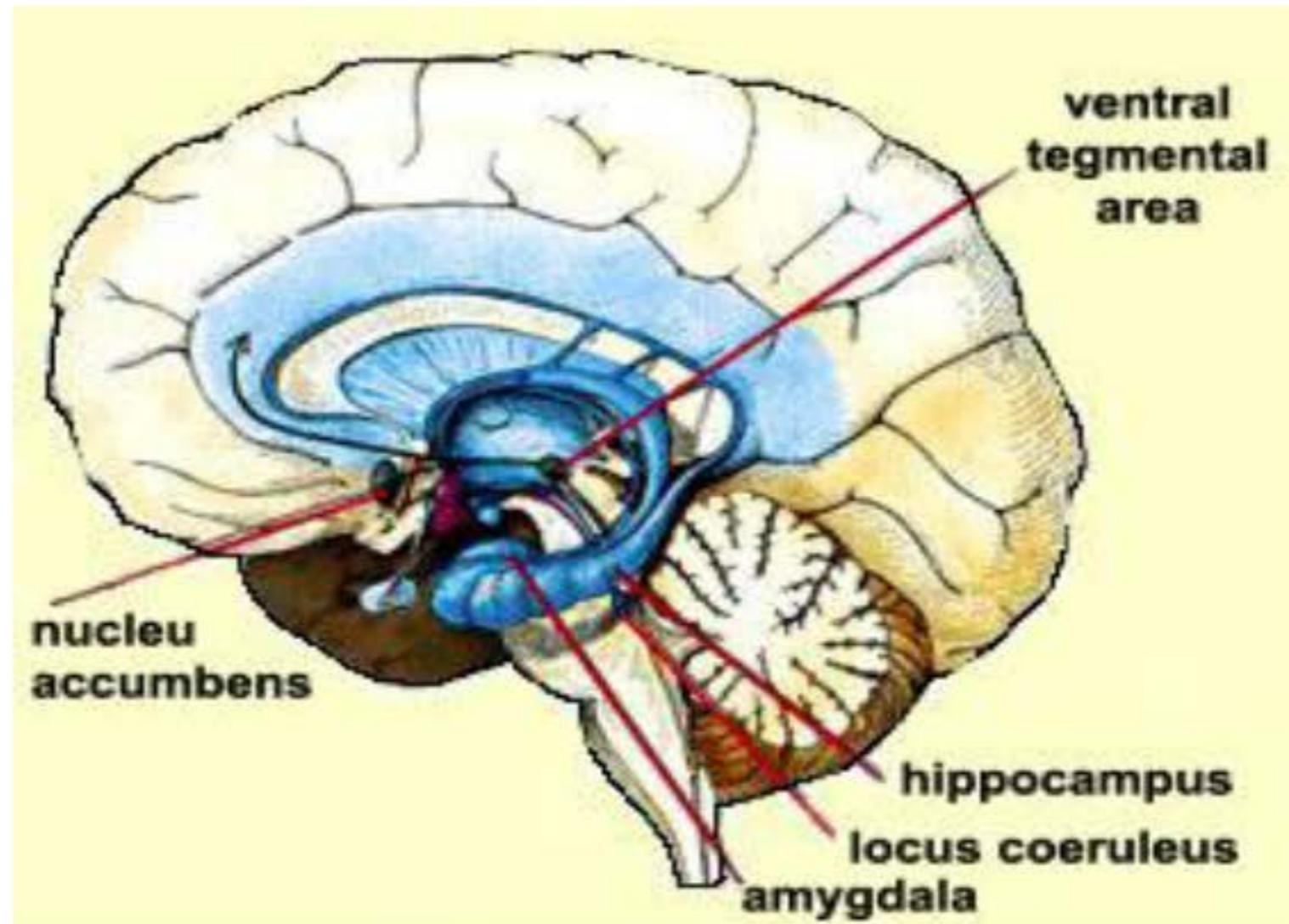
The reason that opiates such as heroin and morphine affect us so powerfully is that these exogenous substances bind to the same receptors as our endogenous opioids.

-There are -three kinds of receptors: mu, delta, and kappa



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BRAIN – VENTRAL TEGMENTAL AREA



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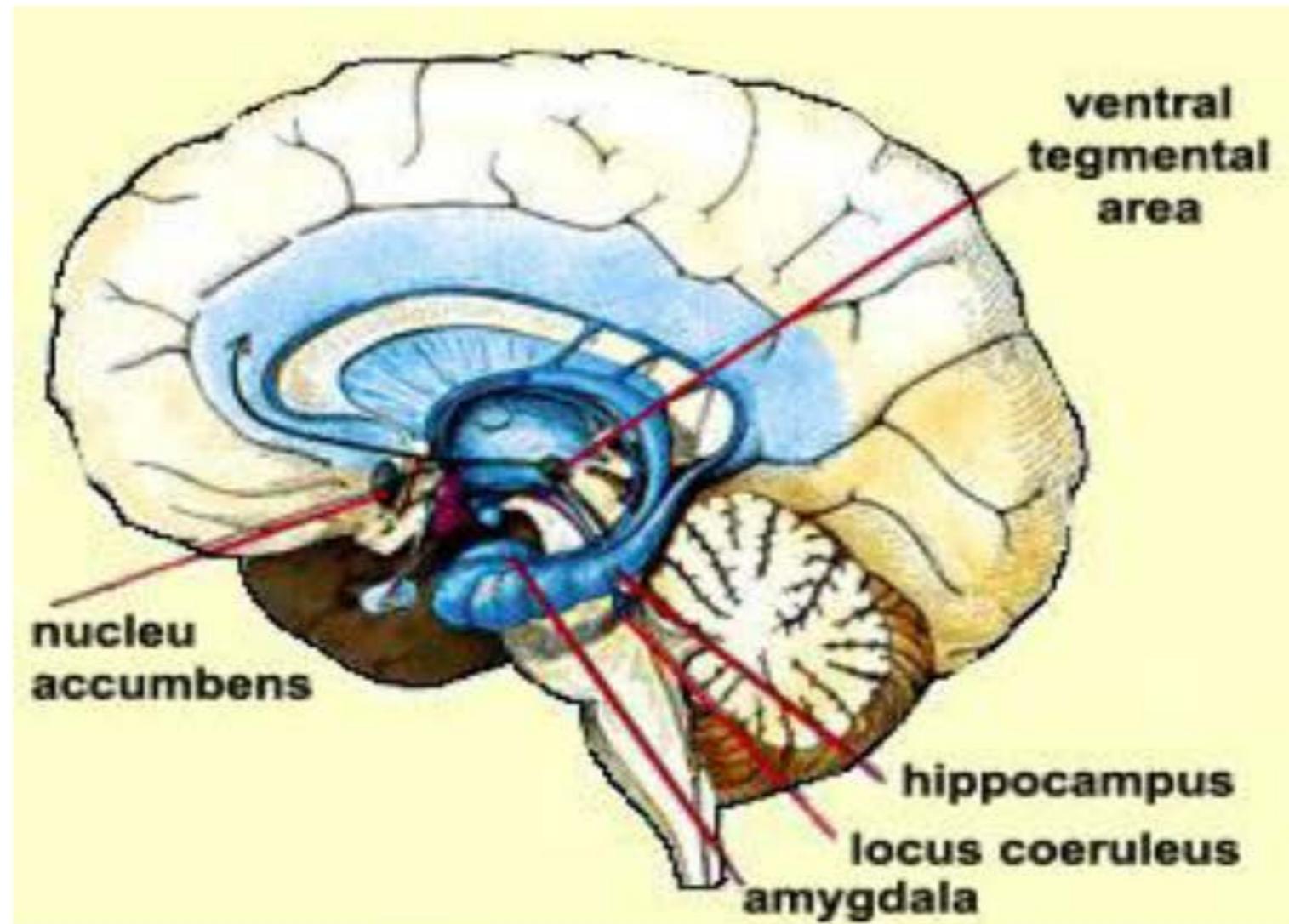
BRAIN – VENTRAL TEGMENTAL AREA

- top of the brainstem
- one of the most primitive parts of the brain
- neurons of the VTA that synthesize dopamine
- axons then send to the nucleus accumbens
- influenced by endorphins whose receptors are targeted by opiate drugs such as heroin and morphine.



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BRAIN - NUCLEUS ACCUMBENS



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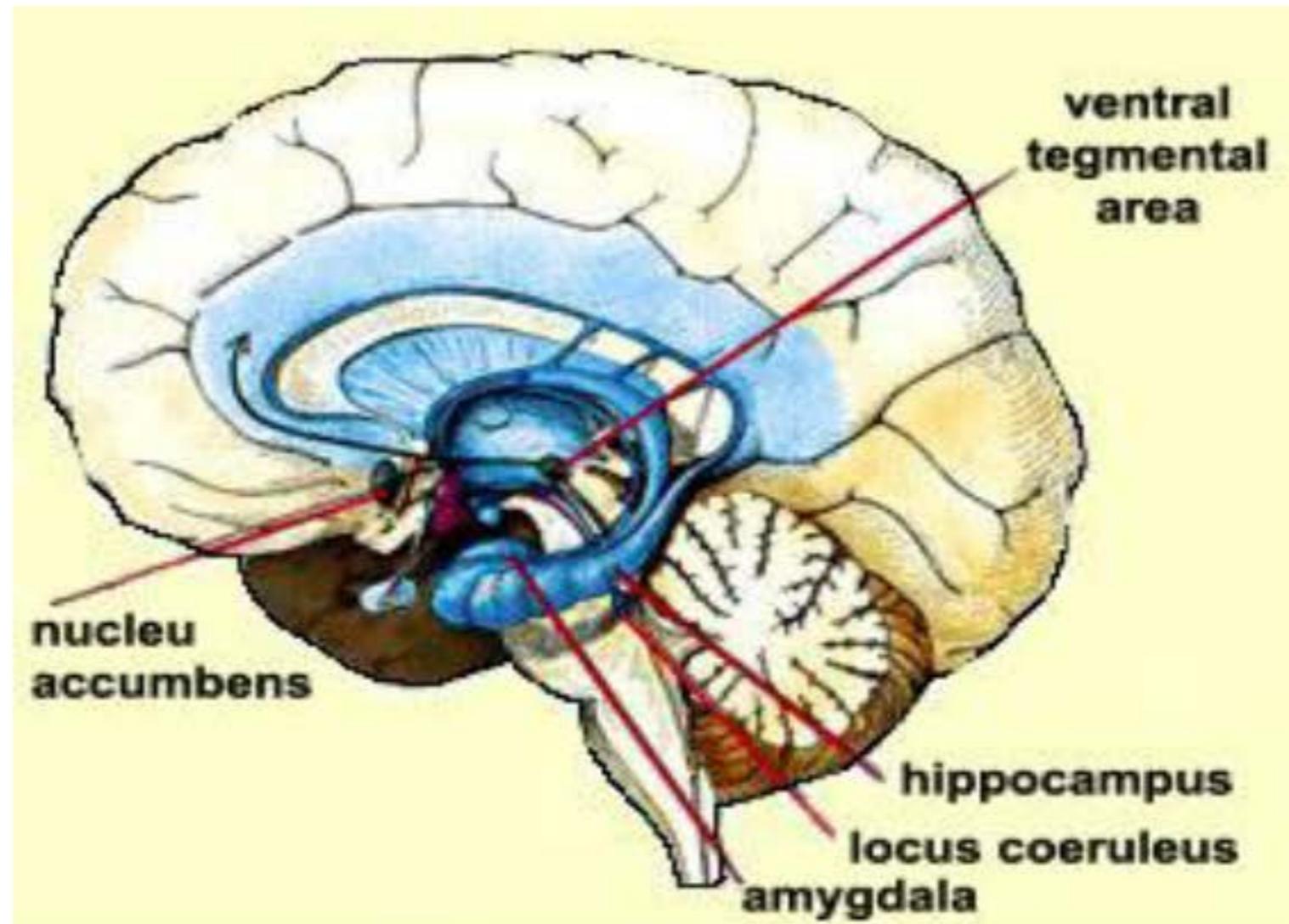
BRAIN - NUCLEU ACCUMBENS

- central role in the reward circuit
- two essential neurotransmitters
- dopamine, which promotes desire
- serotonin, whose effects include satiety and inhibition
- all drugs increase the production of dopamine in the nucleus accumbens, while reducing that of serotonin.



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BRAIN – PRE FRONTAL CORTEX



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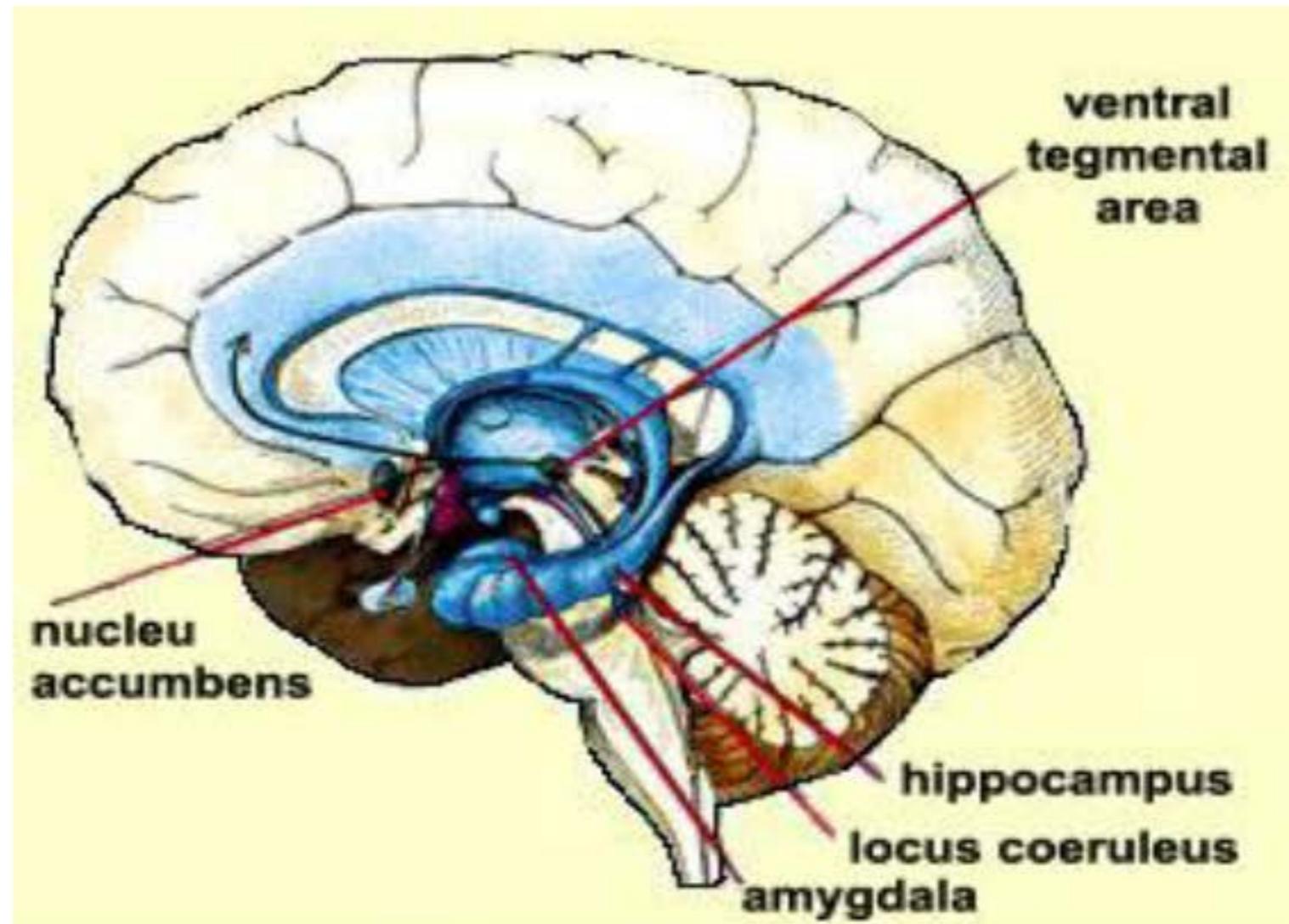
BRAIN – PREFRONTAL CORTEX

- role in planning and motivating
- The prefrontal cortex is a significant relay in the reward circuit and also is modulated by dopamine.



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BRAIN – LOCUS COERULEUS



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BRAIN – LOCUS COERULEUS

- Alarm center of the brain and packed with norepinephrine
- When stimulated by a lack of the drug in question, the locus coeruleus drives the addict to do anything necessary to obtain a fix.

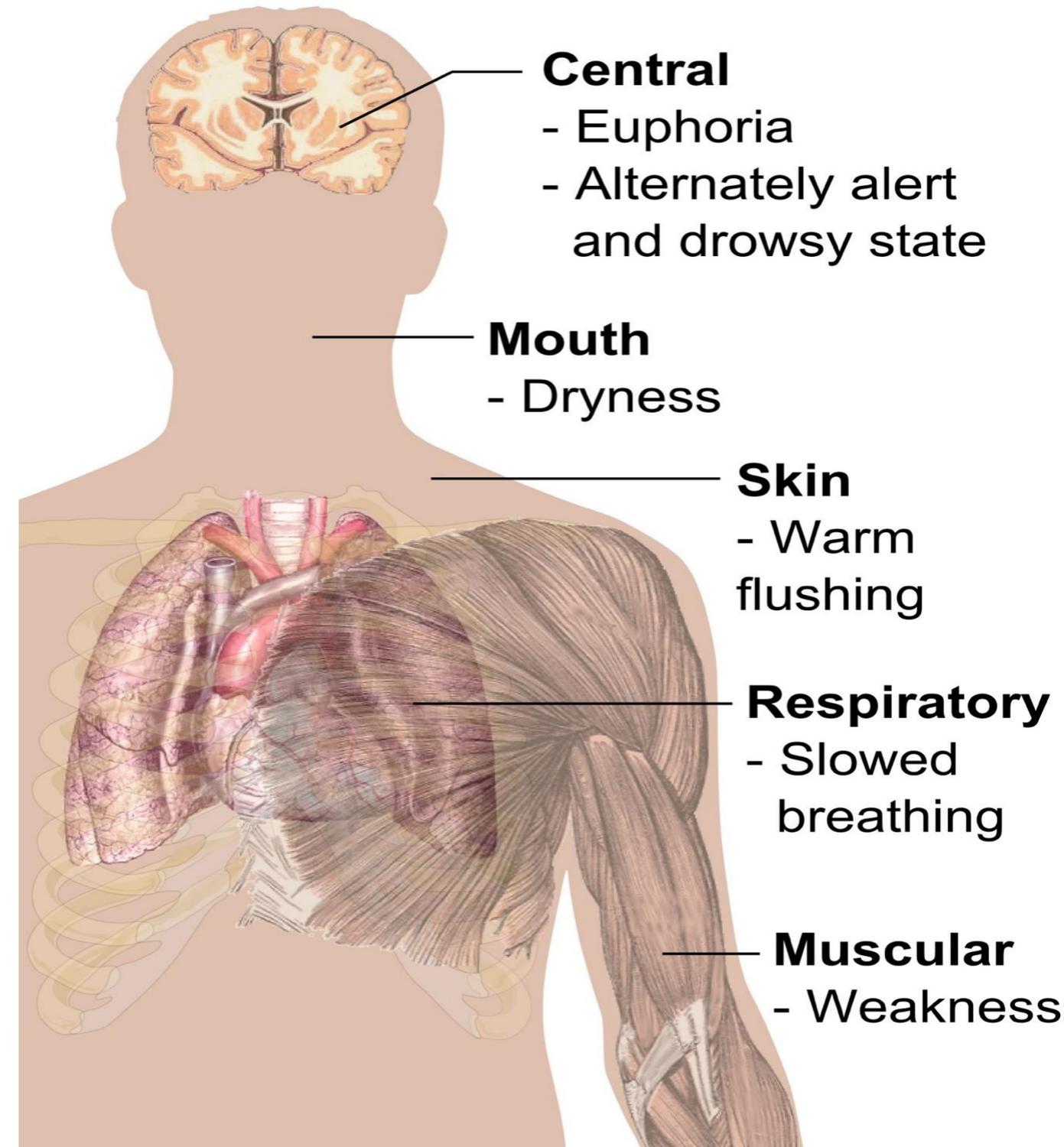


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SHORT TERM AFFECTS

- Sleepy
- Euphoria

Short-term effects of Heroin



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LONG TERM AFFECTS

- ADDICTION
- ADDICTION
- ADDICTION

Long-term effects of Heroin

Central

- Addiction
- Tolerance
- Dependence

Respiratory

- Pneumonia

Heart

- Infection of heart lining and valves

Circulatory

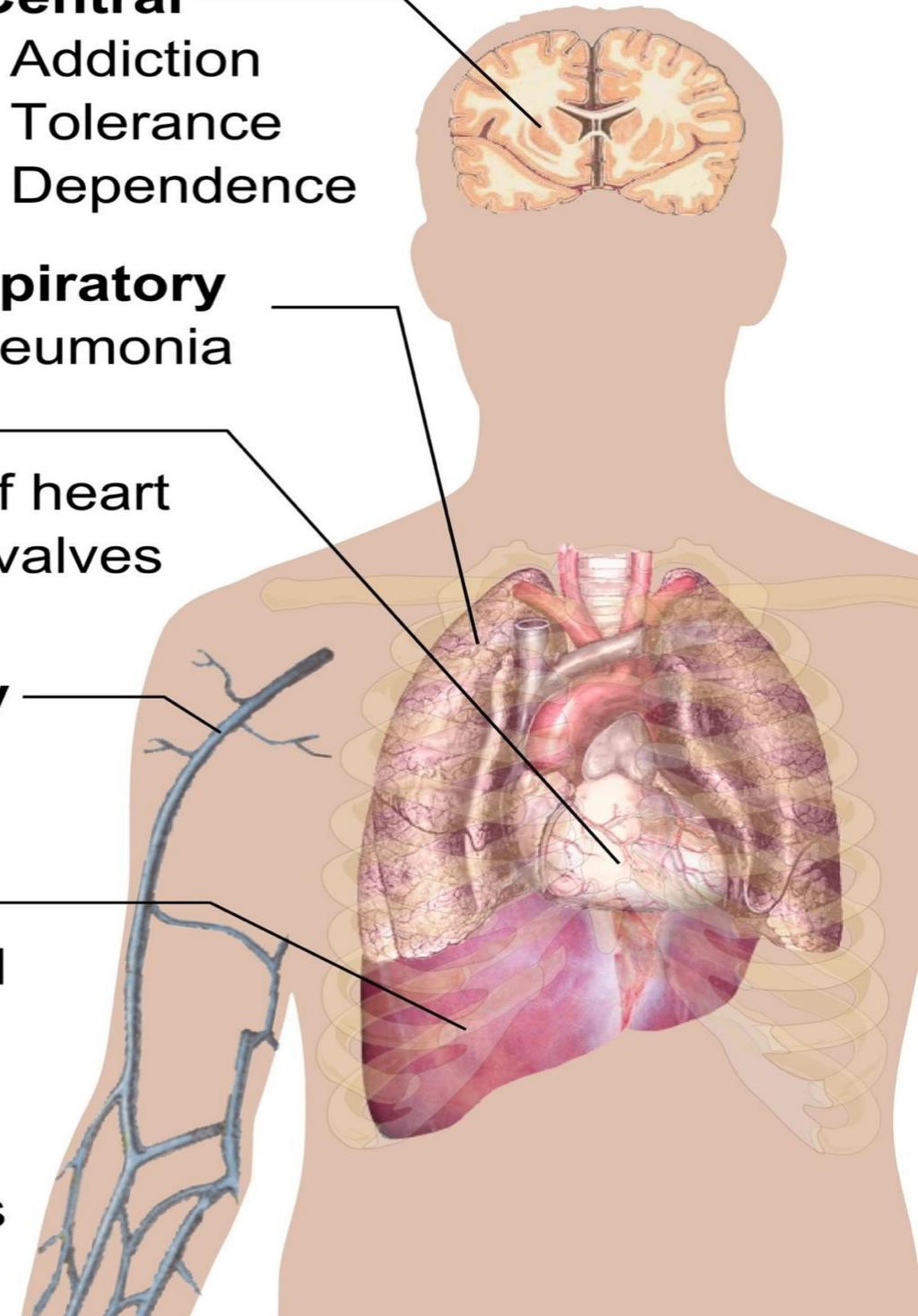
- Collapsed veins

Liver

- Decreased function

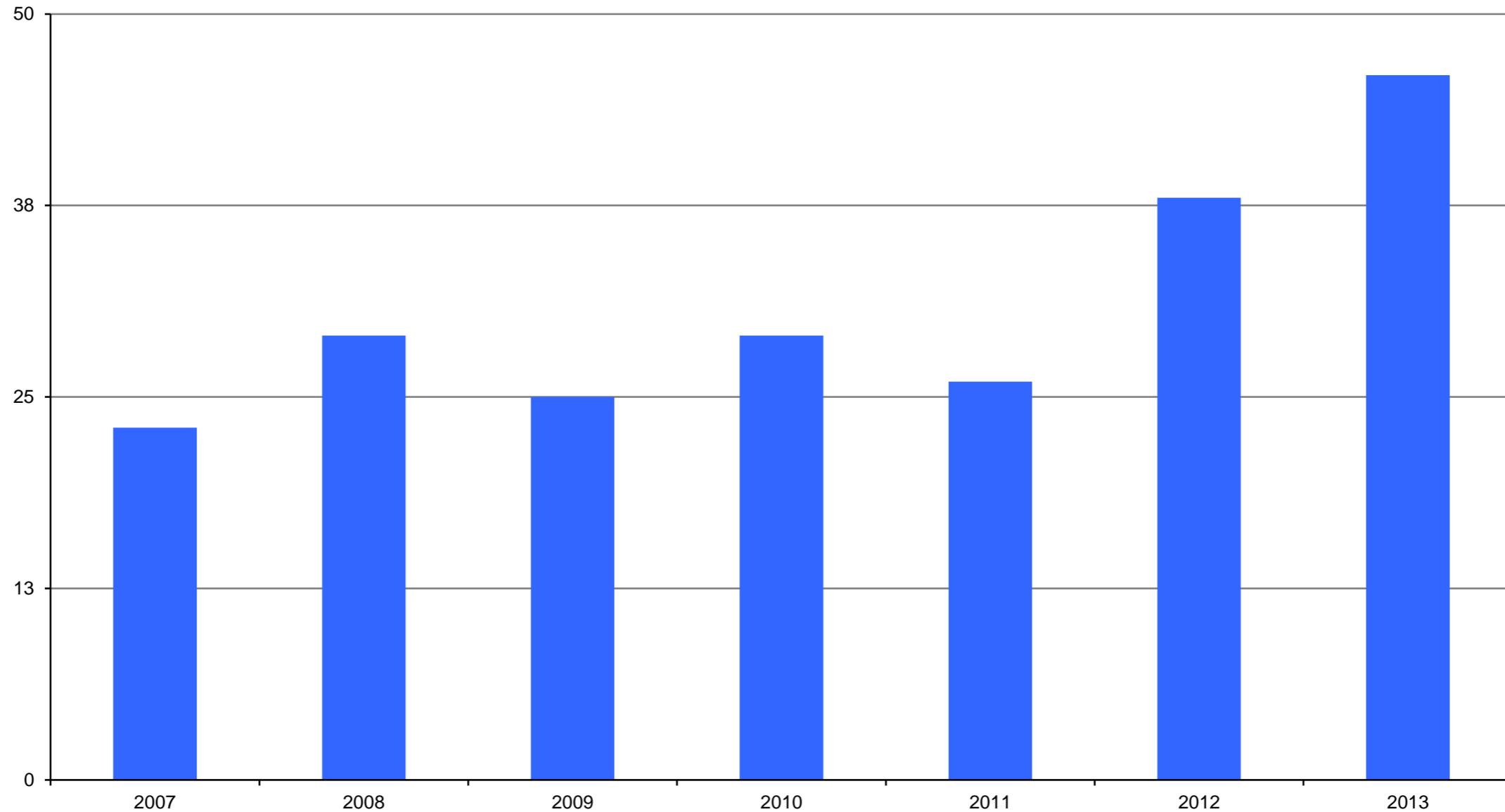
Systemic

- Abscesses



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HEROIN DEATHS 2007-2013



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DEMOGRAPHICS - 2012

- 38 DEATHS RELATED TO HEROIN 2012
- MALES: 30
- FEMALES: 8
- AGE RANGE: 19-56
- 10-19: 1
- 20-29: 15
- 30-39: 10
- 40-49: 8
- 50-59: 4



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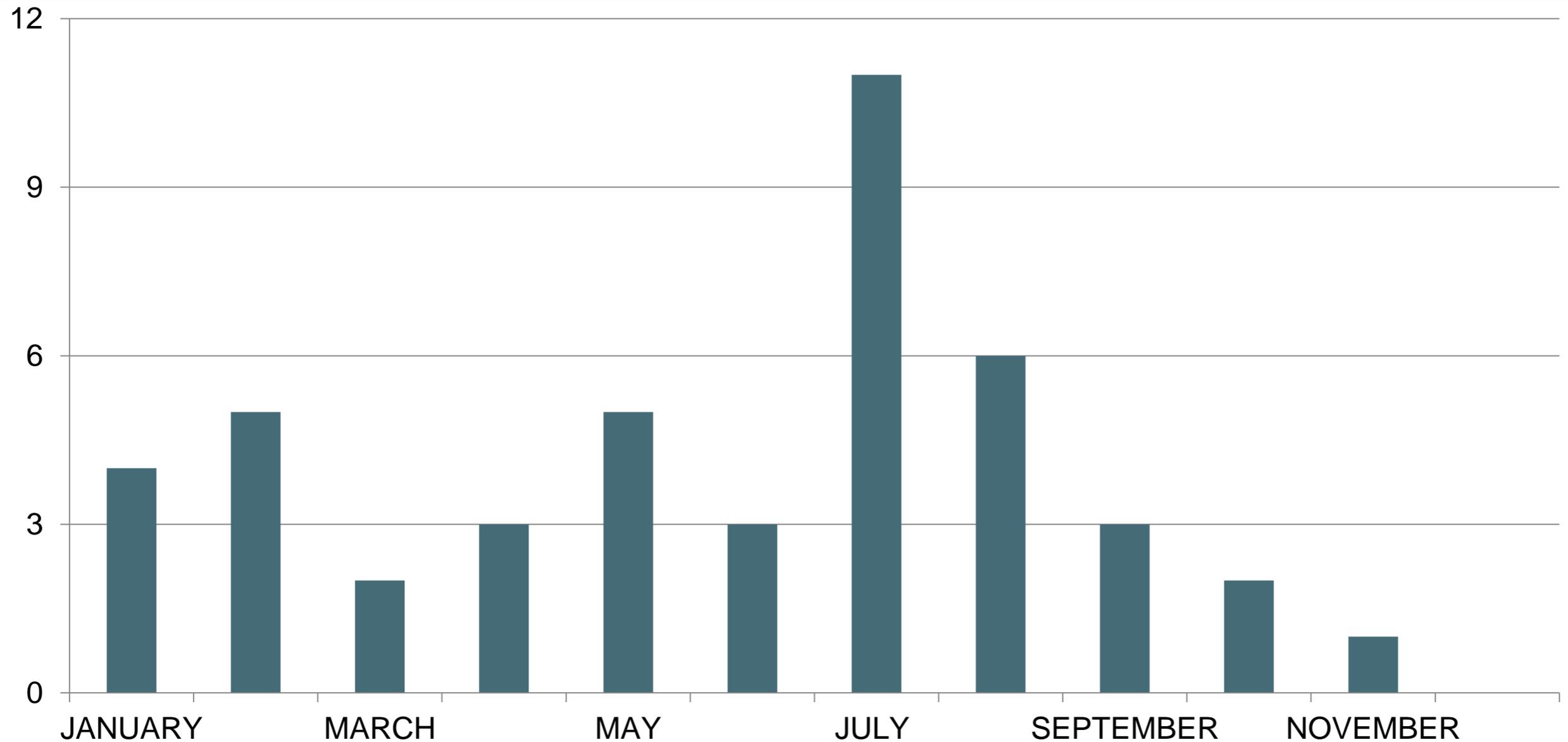
CITY WHERE THEY LIVED 2012

- LOMBARD - 6
- DOWNERS GROVE - 5
- WEST CHICAGO - 3
- VILLA PARK - 3
- BLOOMINGDALE - 2
- WOODRIDGE - 2
- WHEATON - 2
- BARTLETT - 2
- DARIEN - 2
- ELMHURST - 1
- HINSDALE - 1
- WARRENVILLE - 1
- ADDISON - 1
- AURORA - 1
- HANOVER PARK - 1
- NAPERVILLE - 1
- ITASCA - 1
- LISLE - 1
- MEDINAH - 1
- WILLOWBROOK - 1



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HEROIN DEATHS 2013



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DEMOGRAPHICS - 2013

- 46 DEATHS RELATED TO HEROIN 2013
- MALES: 39
- FEMALES: 7
- AGE RANGE: 15-64
- 15-19: 5
- 20-29: 21
- 30-39: 9
- 40-49: 4
- 50-59: 5
- 60-64: 2



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CITY WHERE THEY LIVED 2013

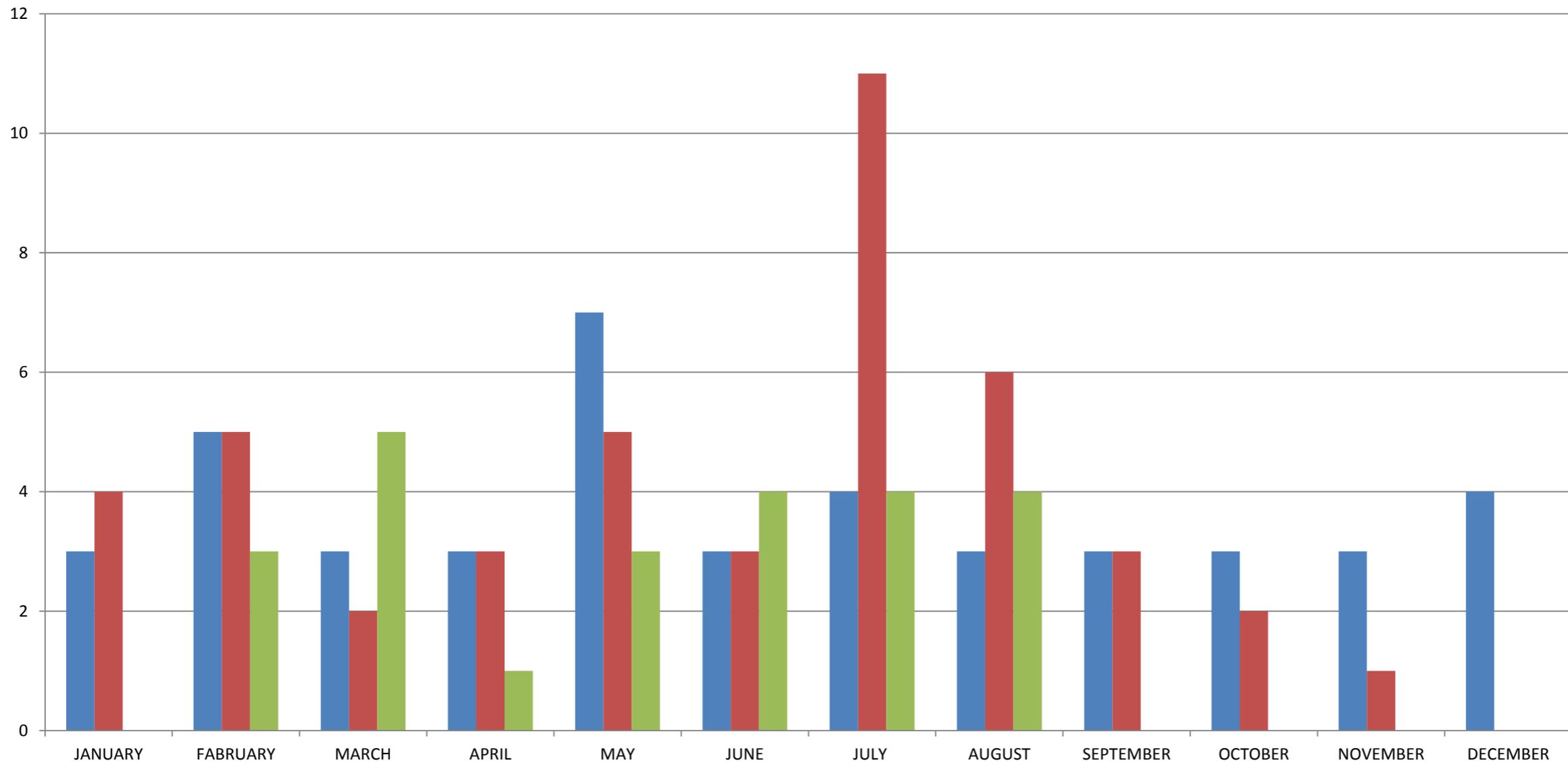
- ADDISON-6 (1)
- CAROL STREAM-4 (0)
- CLARENDON HILLS-1 (0)
- WHEATON-4 (2)
- DOWNERS GROVE-3 (5)
- LOMBARD-3 (6)
- ROSELLE-3 (0)
- WESTMONT-3 (0)
- NAPERVILLE-3 (1)
- ELMHURST-2 (1)
- HANOVER PARK-2 (1)
- WOODRIDGE-2 (2)
- BARTLETT-2 (2)
- BLOOMINGDALE-2 (2)

- GLEN ELLYN-1 (0)
- GLENDALE HTS-1 (0)
- OAK BROOK-1 (0)
- VILLA PARK-1 (3)
- WINFIELD-1 (0)
- AURORA (1)
- DARIEN (2)
- ITASCA (1)
- HINSDALE (1)
- WEST CHICAGO (3)
- LISLE (1)
- MEDINAH (1)
- WARRENVILLE (1)
- WILLOWBROOK(1)



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HEROIN DEATHS 2012/13/14



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DRUGS PRESENT- opiates

- HEROIN
- 6-MAM
- MORPHINE
- CODEINE



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DRUGS PRESENT -2012

- ANTIDEPRESSANTS: 11
- AMPHETAMINES: 4
- BENZODIAZEPENES: 17
- CANNABINOIDS: 7
- COCAINE: 4
- DIPHENHYDRAMINE: ALL
- ETOH: 11
 - 4 NOT INTOXICATED
 - 7 INTOXICATED



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MULTIPLE DRUG USE

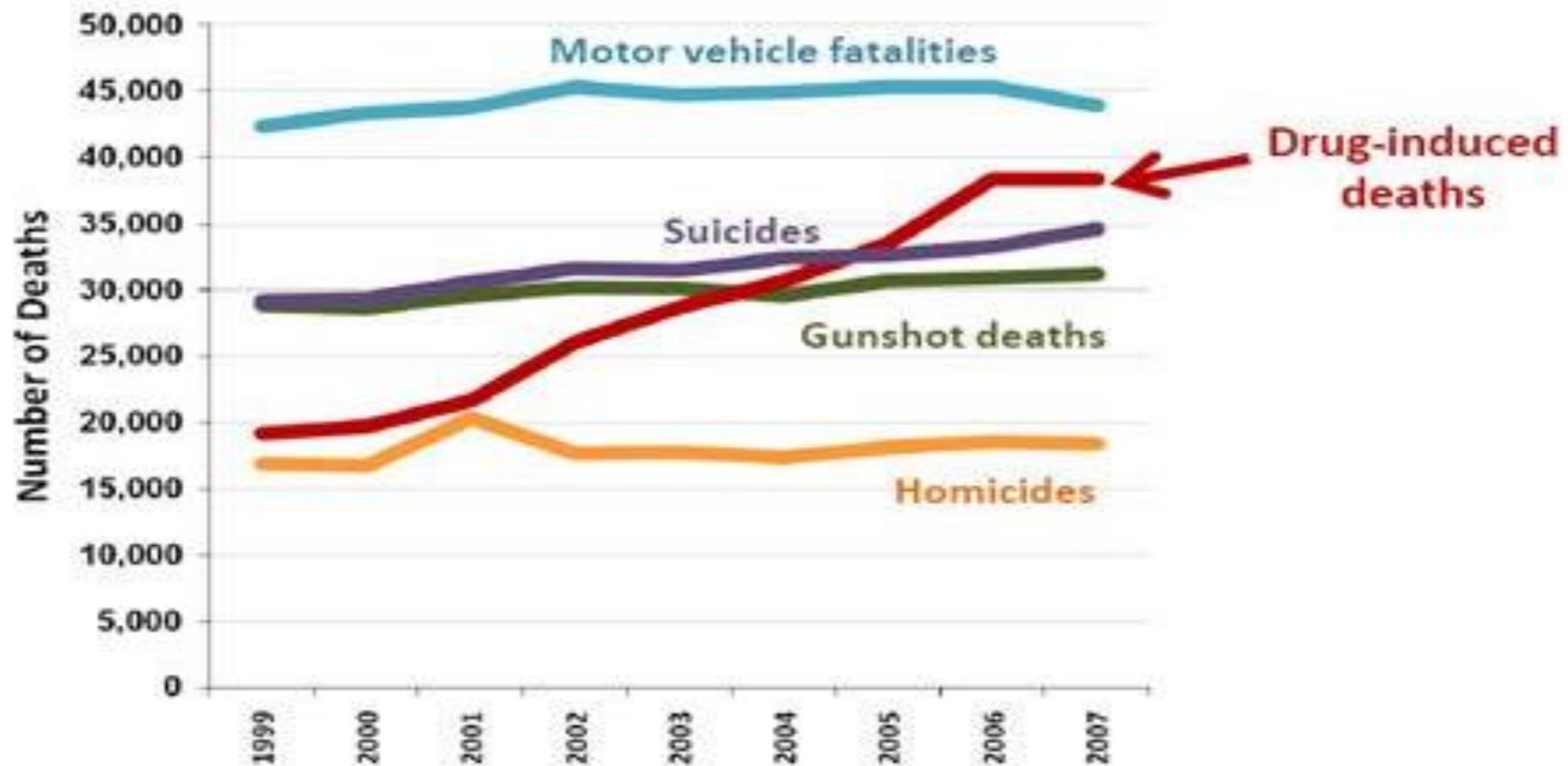
- THERE WERE NO DEATHS WHERE ONLY ONE DRUG WAS FOUND



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Opiate Prescription Drug Abuse Development of an Epidemic

Fatalities, 1999–2007

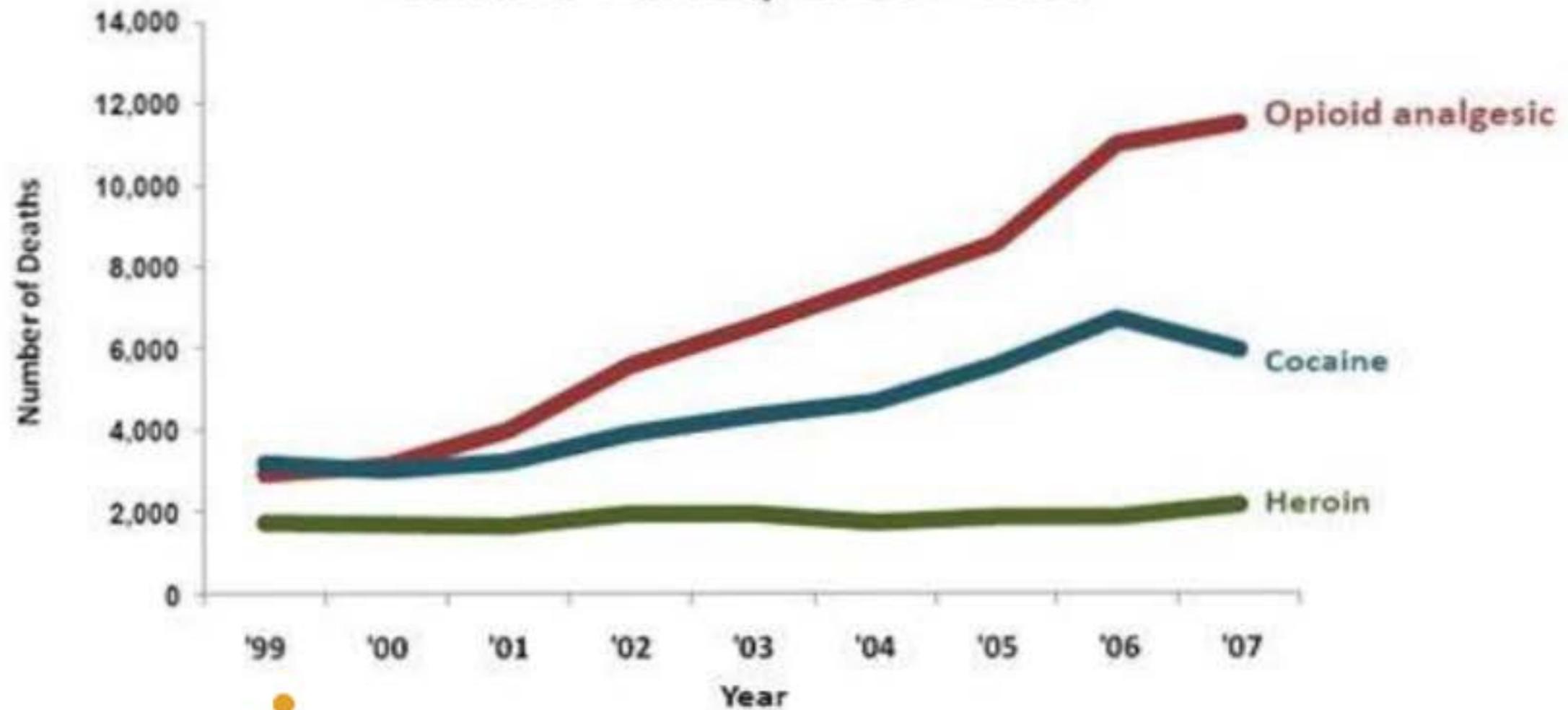


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Opiate Prescription Drug Abuse

Development of an Epidemic

Analgesics, Cocaine and Heroin
United States, 1999–2007



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Johns Hopkins Center for Drug Safety and Effectiveness.

“There is an epidemic of prescription opioid addiction and abuse in the United States,”

G. Caleb Alexander, co-director of the Johns Hopkins Center for Drug Safety and Effectiveness.



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Johns Hopkins Center for Drug Safety and Effectiveness.

DOCTOR VISITS FROM 2000 TO 2010:

- About half of all pain visits were treated with some sort of pain medication
 - 164 million office visits for pain
- Non-opioid painkiller prescription
 - stayed stable- 26-29%
- Opioid prescriptions almost doubled
 - from 11% to 20% over these 10 years



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Johns Hopkins Center for Drug Safety and Effectiveness.

Opiates are dangerous in part because they are so highly addictive, and the mortality rate from their use is rising. “By 2008,” wrote the Hopkins team, “the annual number of fatal drug poisonings surpassed those of motor vehicle deaths and overdose deaths attributable to prescription drugs exceeded those of cocaine and heroin combined.”



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Johns Hopkins Center for Drug Safety and Effectiveness.

The irony is that the treatment of pain hasn't improved much.

- acetaminophen and ibuprofen:
- use is flat or even dropping slightly
- due to an over-reliance on prescription opioids that have caused incredible morbidity and mortality



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The Centers for Disease Control and Prevention

- Has classified prescription drug abuse as an epidemic that is worsening
- While there is a decrease in the use of some illegal drugs like cocaine



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National Survey on Drug Use and Health (NSDUH)

Nearly one third of people aged 12 and over who used drugs for the first time in 2009 began by using a prescription drug non-medically.



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Overdose: Limited Immunity from Prosecution

The drug overdose immunity legislation was first filed February 2011 by West Chicago State Sen. John Millner and had numerous co-sponsors.

Emergency Medical Services Access Law or
“Good Samaritan law”

Effective June 1st, 2012



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Overdose:

Limited Immunity from Prosecution, continued

Illinois was the fifth state in the nation (with New Mexico, Washington, Connecticut and New York) to grant limited immunity to drug users who are overdosing and to those who reach out on behalf of a drug user who is overdosing.



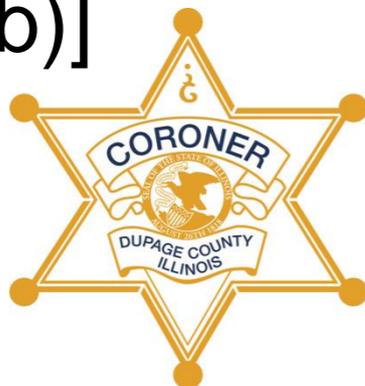
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Overdose:

Limited Immunity from Prosecution, continued

720 ILCS 570/414 -- The Illinois Controlled Substances Act

A person who, in good faith, seeks or obtains emergency medical assistance for someone experiencing an overdose shall not be charged or prosecuted for Class 4 felony possession of a controlled, counterfeit, or look-alike substance or a controlled substance analog if evidence for the Class 4 felony possession charge was acquired as a result of the person seeking or obtaining emergency medical assistance and providing the amount of substance recovered is within the amount identified in subsection (d) of this Section. [720 ILCS 570/414(b)]



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Overdose:

Limited Immunity from Prosecution, continued

A person who is experiencing an overdose shall not be charged or prosecuted for Class 4 felony possession of a controlled, counterfeit, or look-alike substance or a controlled substance analog if evidence for the Class 4 felony possession charge was acquired as a result of the person seeking or obtaining emergency medical assistance and providing the amount of substance recovered is within the amount identified in subsection (d) of this Section. [720 ILCS 570/414(c)]



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Overdose:

Limited Immunity from Prosecution, continued

Definition of “overdose”

1) Webster’s dictionary

- an amount of a drug or medicine that is too much and usually dangerous
- an amount of something that is too much
- too great a dose (as of a therapeutic agent)
- a lethal or toxic amount (as of a drug)
- an excessive quantity or amount

2) 720 ILCS 570/414(a)

“a controlled substance-induced physiological event that results in a life-threatening emergency to the individual who ingested, inhaled, injected or otherwise bodily absorbed a controlled, counterfeit, or look-alike substance or a controlled substance analog.”



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Overdose:

Limited Immunity from Prosecution, continued

Limited immunity shall only apply to person possessing the following amounts [720 ILCS 570/414(d)] and 646/515(b) and (c):

- (1) **Less than 1 gram of methamphetamine;**
- (2) **Less than 3 grams of a substance containing heroin, cocaine, morphine, LSD, or analog thereof;**
- (3) Less than 6 grams of a substance containing pentazocine or any of the salts, isomers and salts of isomers of pentazocine, or an analog thereof, methaqualone or any of the salts, isomers and salts of isomers of methaqualone, phencyclidine or any of the salts, isomers and salts of isomers of phencyclidine (PCP);
- (4) Less than 40 grams of a substance containing peyote, a derivative of barbituric acid or any of the salts of a derivative of barbituric acid, amphetamine or any salt of an optical isomer of amphetamine, or a substance classified as a narcotic drug in Schedules I or II, or an analog thereof, which is not otherwise included in this subsection.



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Overdose:

Limited Immunity from Prosecution, continued

Exception

The **limited immunity** described in subsections (b) [person who, in good faith, seeks emergency medical assistance for someone experiencing an overdose] and (c) [person who is experiencing an overdose] of this Section **shall not be extended if law enforcement has reasonable suspicion or probable cause to detain, arrest, or search the person described in subsection (b) or (c) of this Section for criminal activity and the reasonable suspicion or probable cause is based on information obtained prior to or independent of the individual described in subsection (b) or (c) taking action to seek or obtain emergency medical assistance and not obtained as a direct result of the action of seeking or obtaining emergency medical assistance.** Nothing in this Section is intended to interfere with or prevent the investigation, arrest, or prosecution of any person for the delivery or distribution of cannabis, methamphetamine or other controlled substances, drug-induced homicide, or any other crime.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

Sec. 5-23. Drug Overdose Prevention Program.

(a) Reports of drug overdose.

(b) Programs; drug overdose prevention.

(1) The Director may establish or authorize programs for prescribing, dispensing, or distributing naloxone... for the treatment of drug overdose.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

(A) Policies and projects to encourage persons, including drug users, to call 911 when they witness a potentially fatal drug overdose.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

(A) Policies and projects to encourage persons, including drug users, to call 911 when they witness a potentially fatal drug overdose.

(B) Drug overdose prevention, recognition, and response education projects

(C) Drug overdose recognition and response training



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

(E) Prescription and distribution of naloxone hydrochloride

(F) The institution of education and training projects on drug overdose response and treatment for emergency services and law enforcement personnel.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

(d) Health care professional prescription of drug overdose treatment medication.

(1) A health care professional who, acting in good faith..., prescribes or dispenses an opioid antidote to a patient who, in the judgment of the health care professional, is capable of administering the drug in an emergency, shall not, as a result of his or her acts or omissions, be subject to disciplinary or other adverse action under the Medical Practice Act of 1987.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

(2) A person who is not otherwise licensed to administer an opioid antidote may in an emergency administer without fee an opioid antidote if the person has received the patient information...believes in good faith that another person is experiencing a drug overdose. The person shall not, as a result of his or her acts or omissions, be liable for any violation of the Medical Practice Act of 1987 or subject to any criminal prosecution arising from or related to the unauthorized practice of medicine or the possession of an opioid antidote.



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HB0497 Section 5. The Alcoholism and Other Drug Abuse and Dependency Act

This Act took effect January 1, 2010.



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DRUG INDUCED HOMICIDE

720 ILCS 5/9-3.3

A person who violates Section 401 of the Illinois Controlled Substances Act or Section 55 of the Methamphetamine Control and Community Protection Act by unlawfully delivering a controlled substance to another, and any person's death is caused by the injection, inhalation, absorption, or ingestion of any amount of that controlled substance, commits the offense of drug-induced homicide.

Elements

- 1) Knowingly delivery of a controlled substance by defendant and
- 2) Death was proximately caused as a result of injecting, inhaling, or ingesting that controlled substances

(a) Sentence. Drug-induced homicide is a Class X felony.



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DRUG INDUCED HOMICIDE

Sentence – class X

- If less than 1 gram: 6-30 years
- If more than 1 gram: 15-30 years or 30-60 years

A person who commits drug-induced homicide by violating subsection or subsection (c) of Section 401 of the Illinois Controlled Substances Act or Section 55 of the Methamphetamine Control and Community Protection Act commits a Class X felony for which the defendant shall in addition to a sentence authorized by law, be sentenced to a term of imprisonment of not less than 15 years and not more than 30 years or an extended term of not less than 30 years and not more than 60 years.



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AFFORDABLE CARE ACT

Doctors' Concerns Over Patient Ratings May Play Role in Opioid Prescriptions

By [Join Together Staff](#) | [October 25, 2012](#) | [Leave a comment](#) | Filed in [Healthcare & Prescription Drugs](#)



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DUPAGE COUNTY

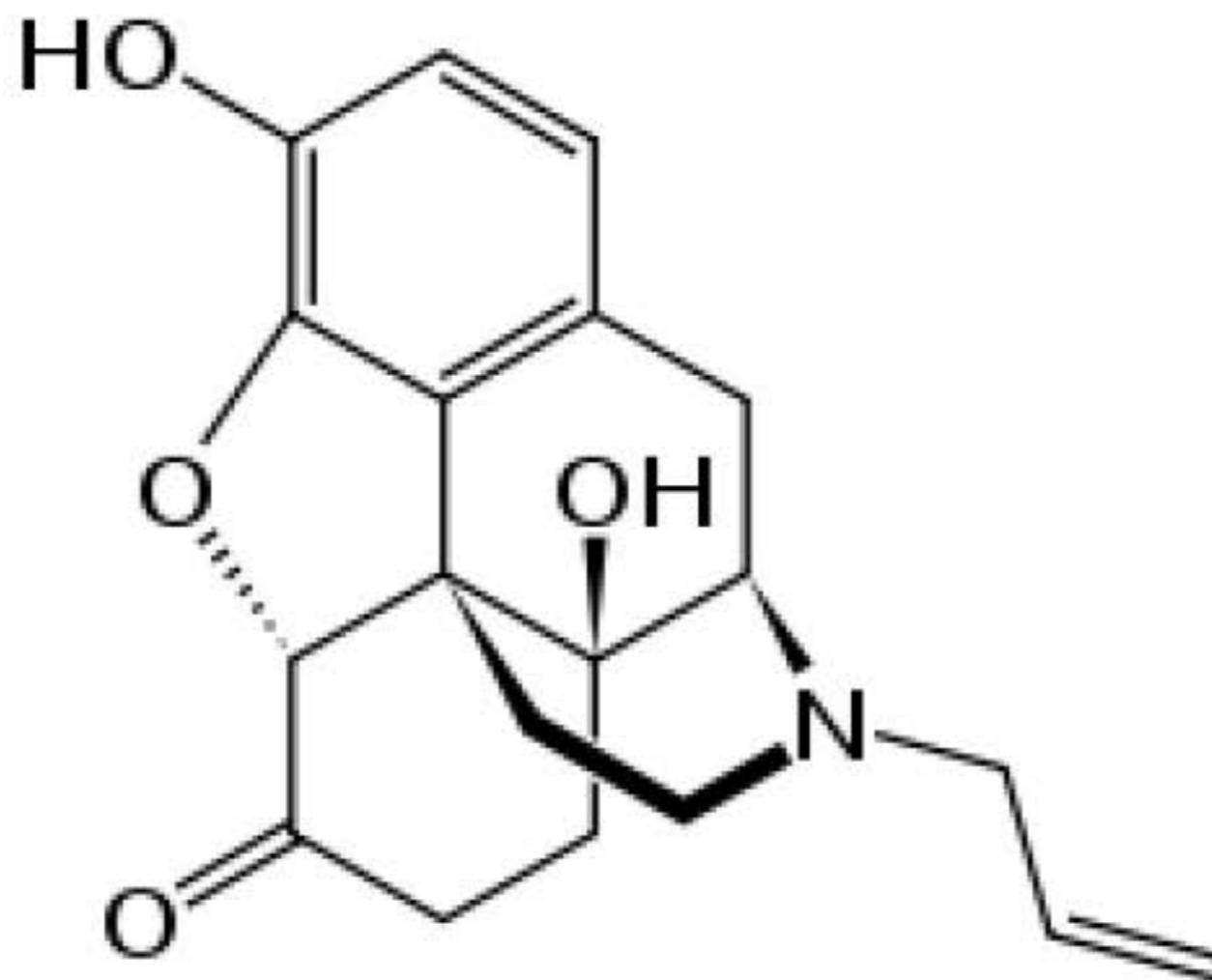
WHAT ARE WE DOING?

- Raise awareness to the public and the press
- Address school education issues
- Strong Law Enforcement
- Strong Prosecution
- DuPage Narcan Program



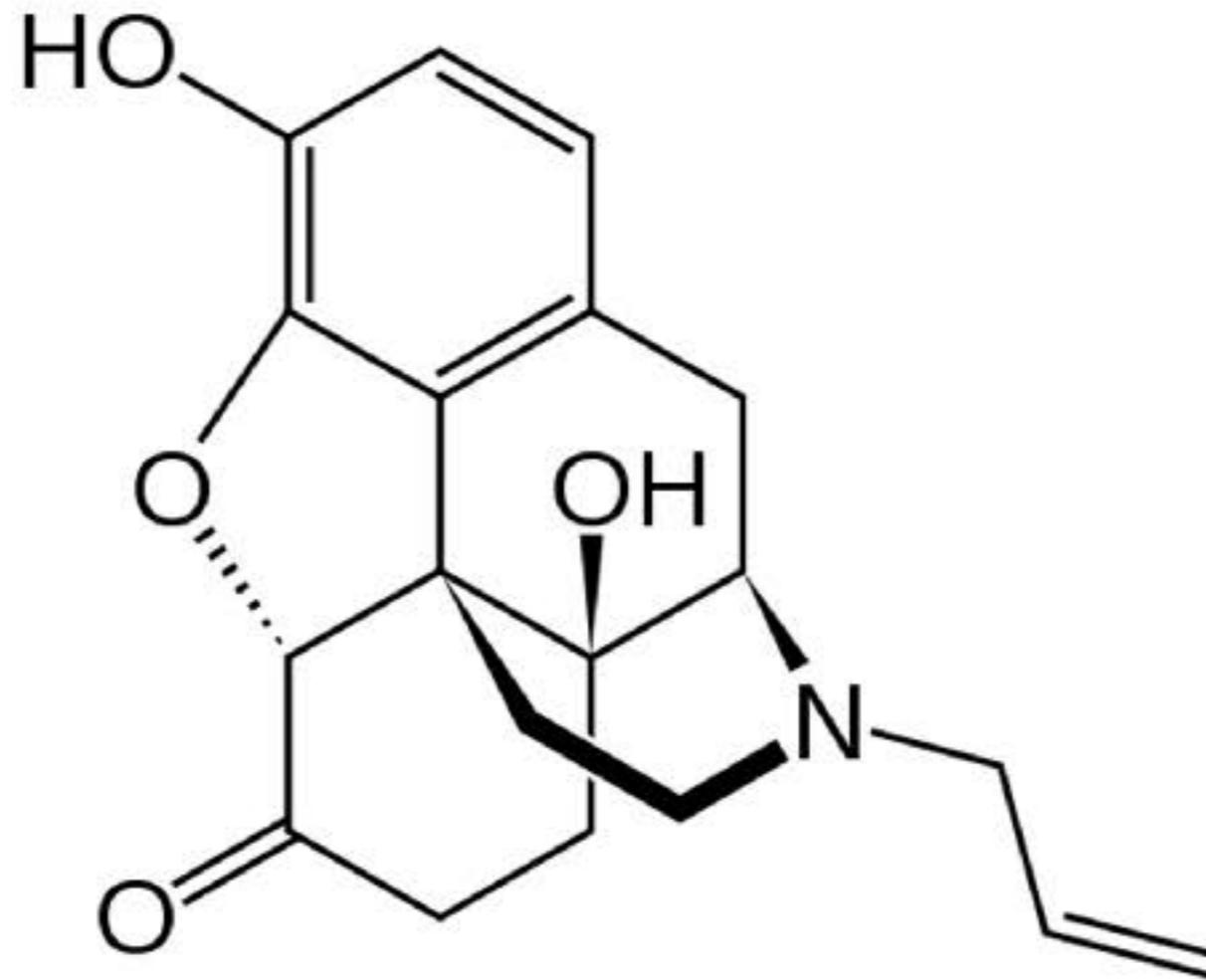
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NALOXONE (NARCAN)



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NALOXONE (NARCAN)



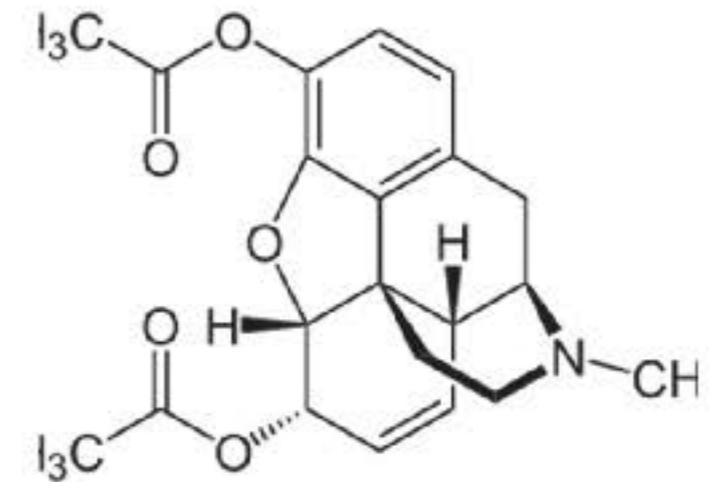
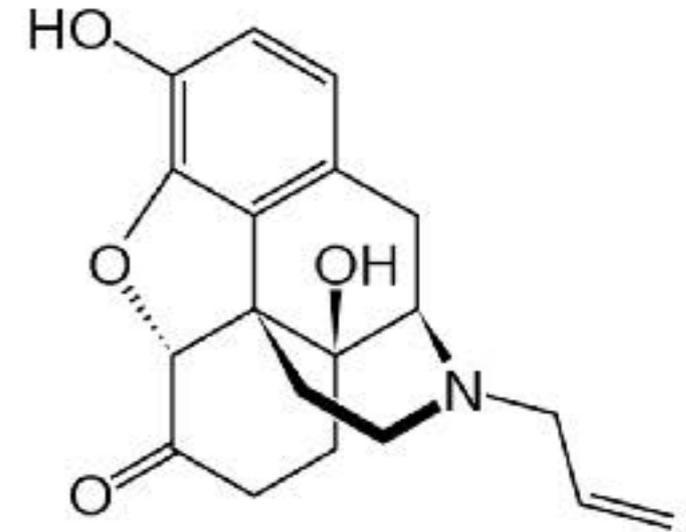
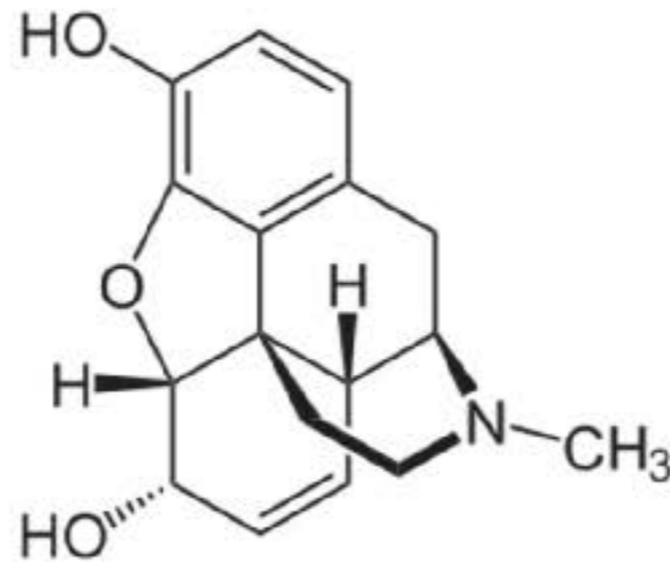
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COMPARISON

NALOXONE (NARCAN)

MORPHINE
MOLECULE

HEROIN
MOLECULE



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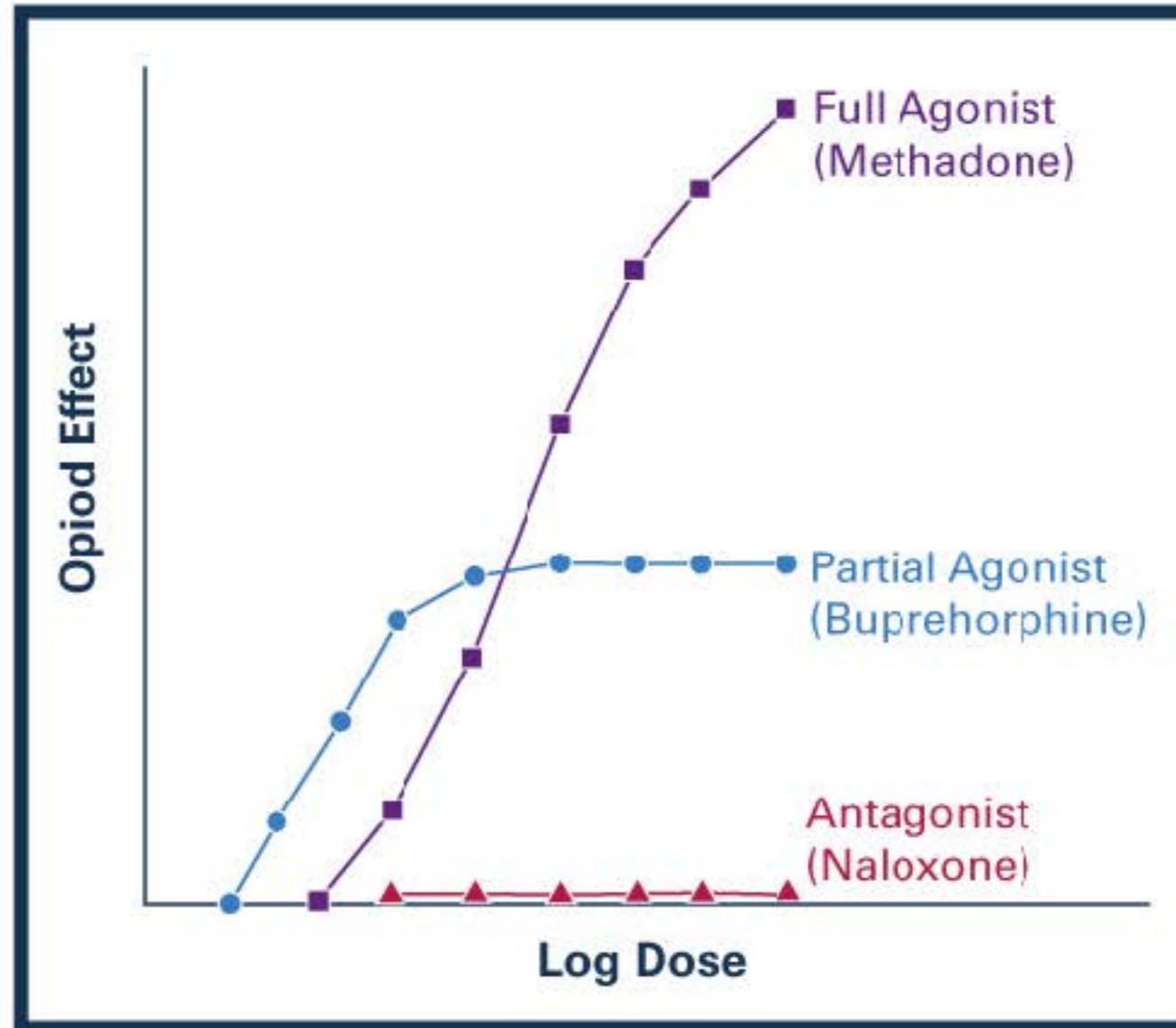
PHARMACODYNAMICS

- Naloxone has an extremely high affinity for μ -opioid receptors in the central nervous system, and its rapid blockade of those receptors can produce rapid onset of withdrawal symptoms.
- **Unlike other opioid receptor antagonists naloxone is essentially a pure antagonist with no agonist properties.**
- If administered in the absence of concomitant opioid usage there will be functionally no pharmacologic activity.



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AGONIST vs. ANTAGONIST



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NALOXONE (NARCAN)

PHARMACODYNAMICS

When administered parenterally, as is most common, naloxone has a rapid distribution throughout the body. The mean serum half life has been shown to range from 30 to 81 minutes, shorter than the average half life of some opiates necessitating repeat dosing if you must stop opioid receptors from triggering for an extended period, unnecessary in an emergency clinical sense. Naloxone is primarily metabolized by the liver.



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NALOXONE (NARCAN) SIDE-EFFECTS

Possible side effects include: change in mood, increased sweating, nausea, nervousness, restlessness, trembling, vomiting, allergic reactions such as rash or swelling, dizziness, fainting, fast or irregular pulse, flushing, headache, heart rhythm changes, seizures, sudden chest pain, and pulmonary edema.



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NALOXONE (NARCAN) ADMINISTRATION

Naloxone is most commonly injected intravenously for fastest action, which usually causes the drug to act within a minute, and last up to 45 minutes. It can also be administered via intramuscular or subcutaneous injection. Finally, a wedge device (nasal atomizer) attached to a syringe may be used to create a mist which delivers the drug to the nasal mucosa,[38] although this solution is more common outside of clinical facilities.



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NALOXONE (NARCAN) ADMINISTRATION

The individual is closely monitored for signs of improvement in respiratory function and mental status. If minimal or no response is observed within 2–3 minutes, dosing may be repeated every 2 minutes until the maximum dose of 10 mg has been reached. If there is no response at this time, alternative diagnosis and treatment should be pursued. If patients do show a response, they should remain under **close** monitoring as the effects of naloxone may wear off before those of the opioids and they may require repeat dosing at a later time.



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NALOXONE (NARCAN) ADMINISTRATION

In March/April 2014, the US Food and Drug Administration (FDA) approved a hand-held automatic injector naloxone product that, when activated, assists the user with spoken instructions by Eric Stoltz and is pocket-sized. The approval process was fast-tracked as one initiative to reduce the death toll caused by opiate overdoses in the US.



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DuPage Narcan Project

- Program did first training of pilot departments late October and went live in November 2013
- Program then expanded to other interested police and other departments including the public



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DuPage Narcan Program

As of 9/8/14:

1742 Trained Participants

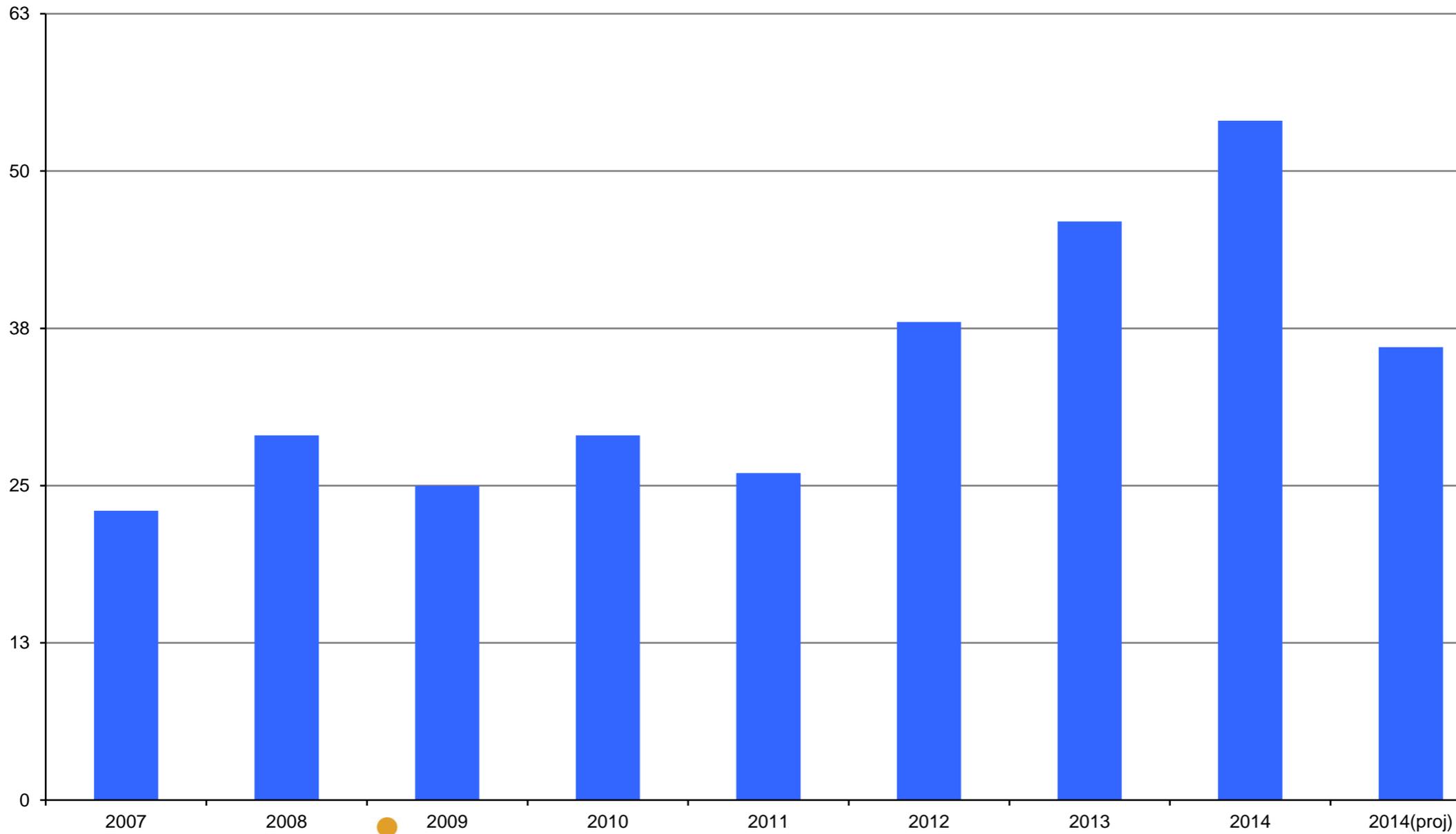
22 Lives Saved

23 Uses Recorded



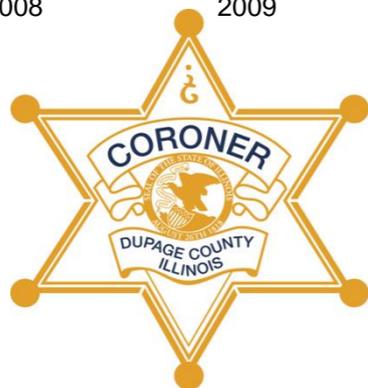
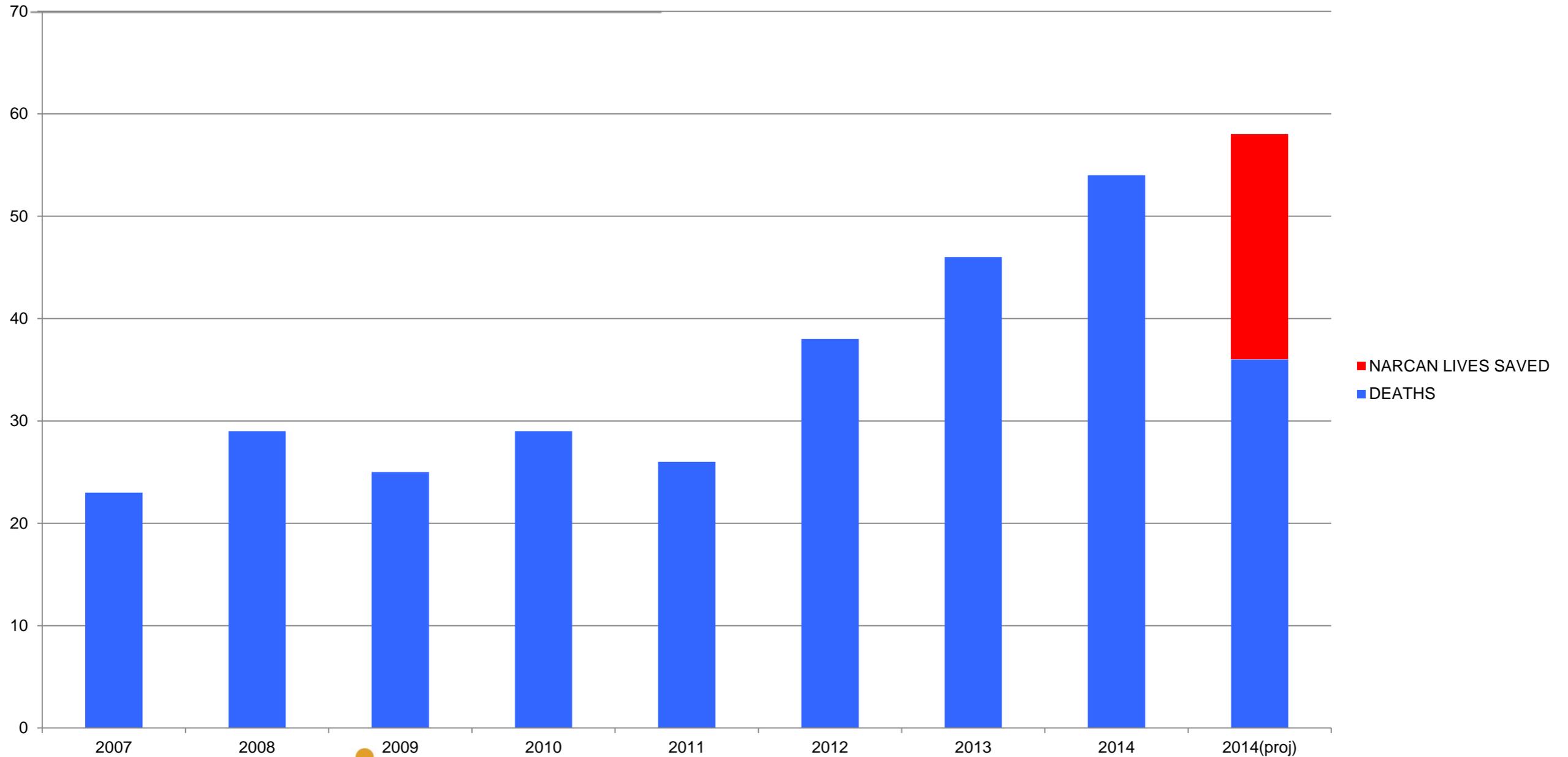
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HEROIN DEATHS 2007-2013



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