The background of the slide is a grayscale, high-angle photograph of a large pile of various pills and capsules. The pills are of different shapes, sizes, and colors (though rendered in grayscale), and some have markings or text on them. They are scattered across the entire frame, creating a textured, busy background.

Opioid Analgesics: Responsible Prescribing in the Midst of an Epidemic

Lucas Buffaloe, MD

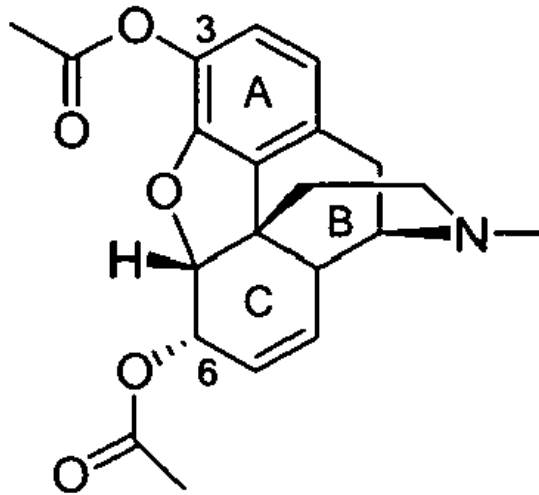
Associate Professor of Clinical Family and Community Medicine

University of Missouri Health Care

Goals for today

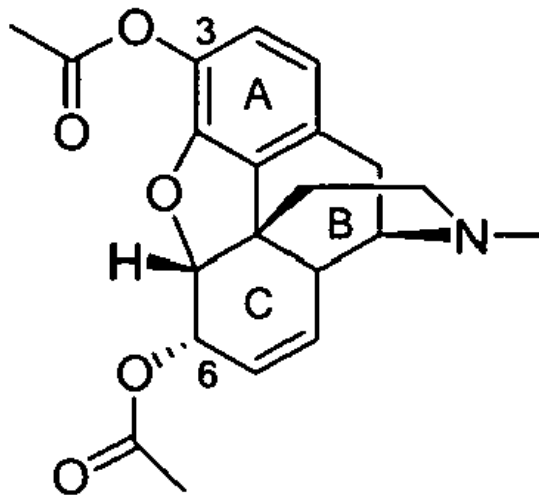
- Review opioid pharmacology
- Review the physiology of addiction
- Examine recent trends in opioid prescribing
- Discuss 2016 CDC guidelines on opioid prescribing

History



Diacetylmorphine

History



Diacetylmorphine
(heroin)

History



Felix Hoffmann

History



Am. J. Ph.] 7 [December, 1901

BAYER Pharmaceutical Products

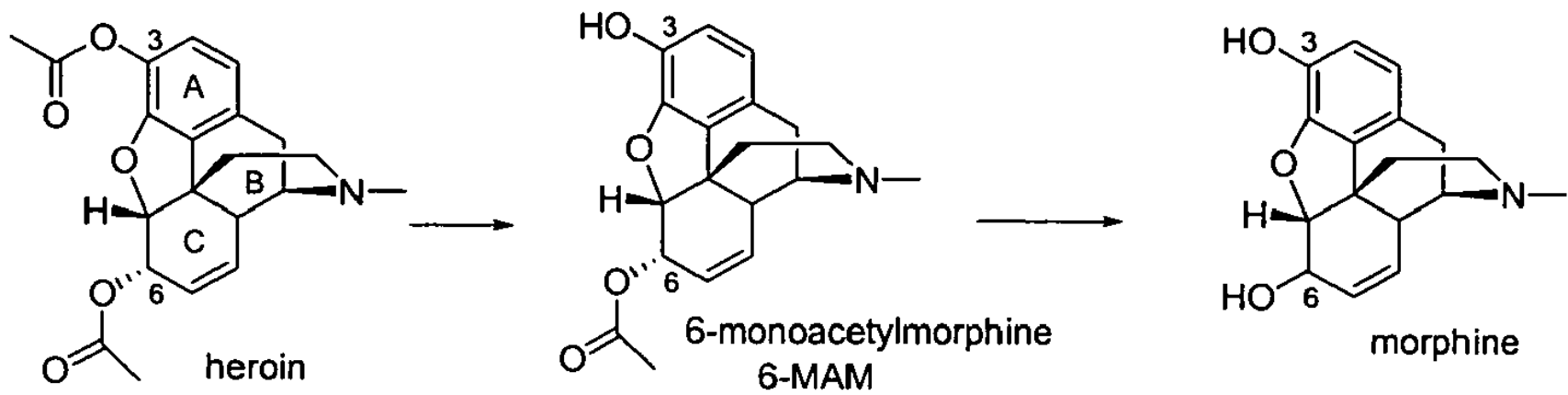
HEROIN—HYDROCHLORIDE

is pre-eminently adapted for the manufacture of cough elixirs, cough balsams, cough drops, cough lozenges, and cough medicines of any kind. Price in 1 oz. packages, \$4.85 per ounce; less in larger quantities. The efficient dose being very small (1-48 to 1-24 gr.), it is

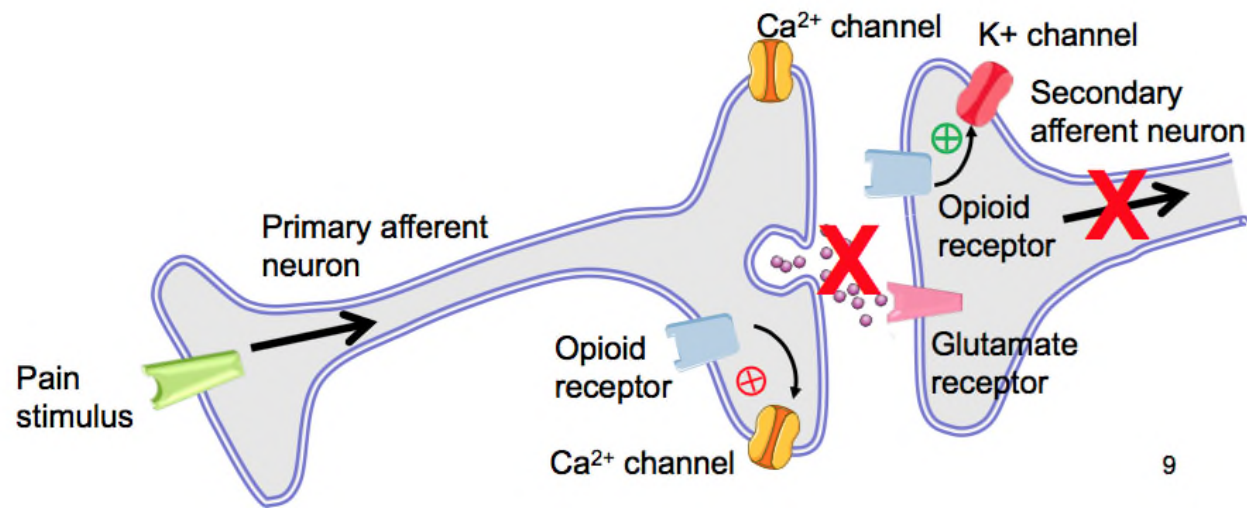
The Cheapest Specific for the Relief of Coughs
(In bronchitis, phthisis, whooping cough, etc., etc.)

WRITE FOR LITERATURE TO
FARBENFABRIKEN OF ELBERFELD COMPANY
SELLING AGENTS
P. O. Box 2160 40 Stone Street, NEW YORK

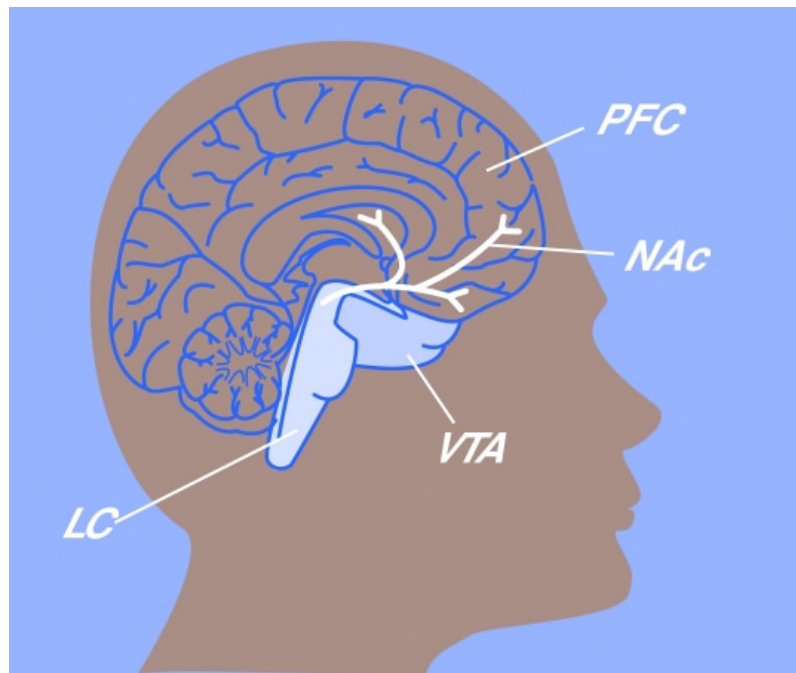
History



Opioid Pharmacology and Addiction Physiology

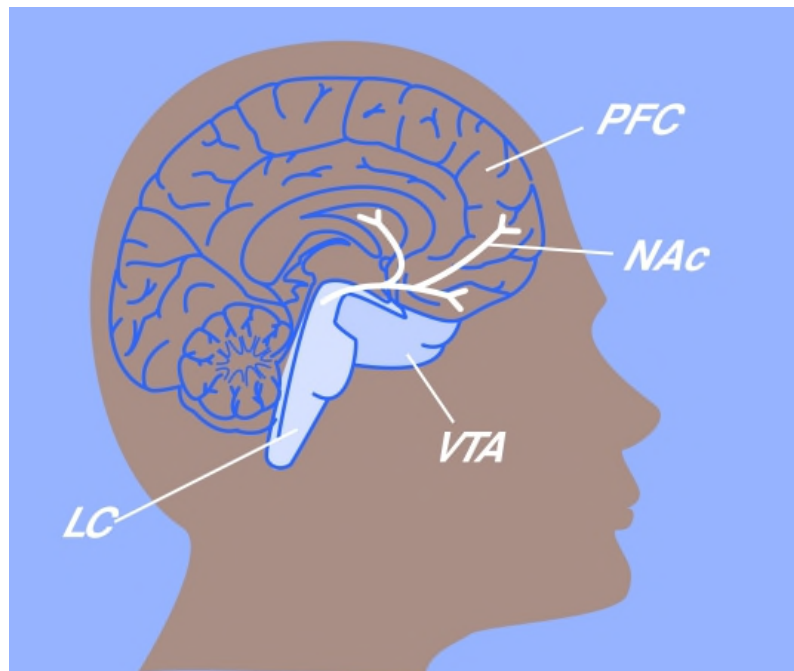


Opioid Pharmacology and Addiction Physiology



Opioids produce a sensation of pleasure by binding to *mu* receptors in the ventral tegmental area (VTA), stimulating the release of dopamine in the nucleus accumbens (NAc)

Opioid Pharmacology and Addiction Physiology



Opioids produce sedation and respiratory depression by binding to *mu* receptors in the locus ceruleus (LC), inhibiting the release of norepinephrine

Tolerance, dependence, and addiction

Tolerance, dependence, and addiction

“Compensatory changes that result in a diminished response to a drug, which occur in the chronic, continuous presence of a drug.”

Tolerance, dependence, and addiction

“A state of adaptation manifested by a withdrawal syndrome that can be produced by abrupt cessation or rapid dose reduction of a drug, and/or by administration of an antagonist.”

Tolerance, dependence, and addiction

“A neurobiologic disease characterized by impaired control over drug use, drug craving, and continued drug use despite harm.”

Opioid use disorder (DSM-5)

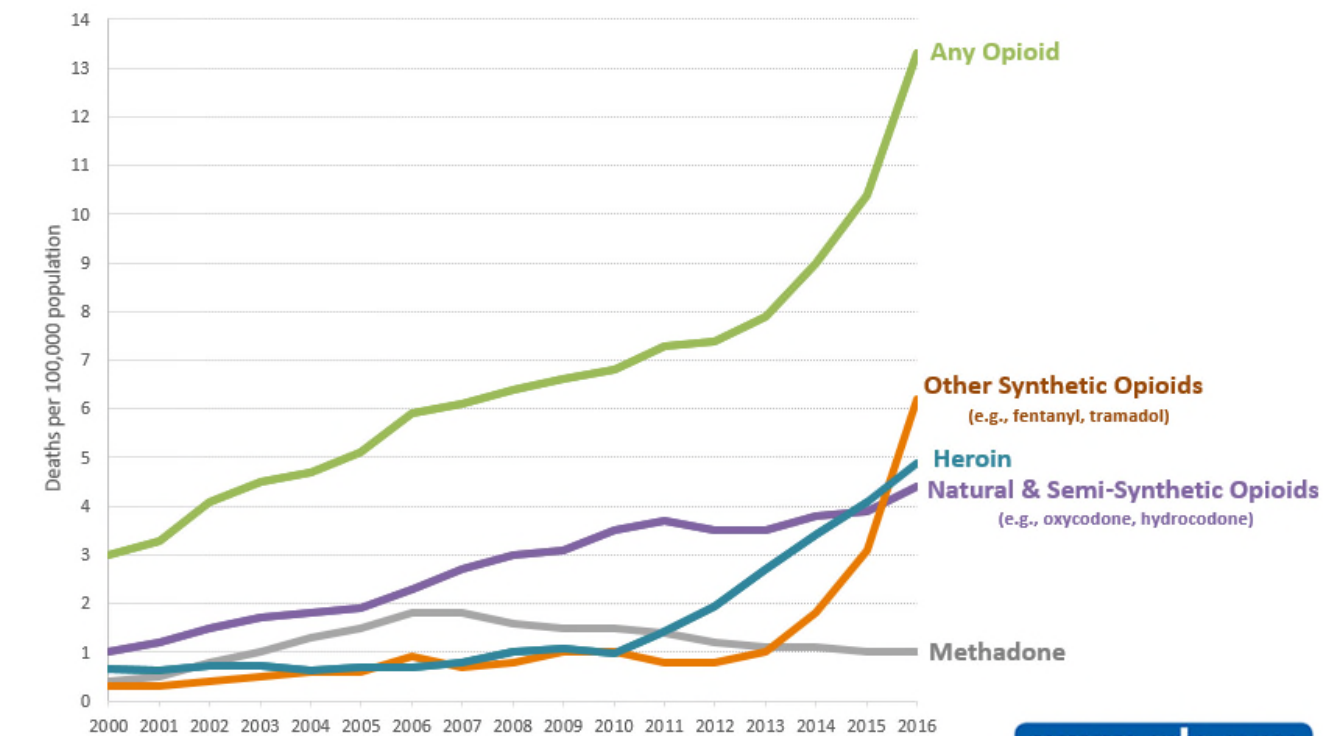
A problematic pattern of opioid use leading to clinically significant impairment and distress, as manifested by at least 2 of the following, occurring within a 12-month period:

- Opioids are often taken in larger amounts or over a longer period than was intended.
- There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
- A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
- Craving, or a strong desire or urge to use opioids.
- Recurrent opioid use resulting in a failure to fulfill major role obligations at work, school, or home.
- Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.
- Important social, occupational, or recreational activities are given up or reduced because of opioid use.
- Recurrent opioid use in situations in which it is physically hazardous.
- 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.
- Tolerance
- Withdrawal

The 3 C's of Addiction:

- 1. Control**
- 2. Craving**
- 3. Consequences**

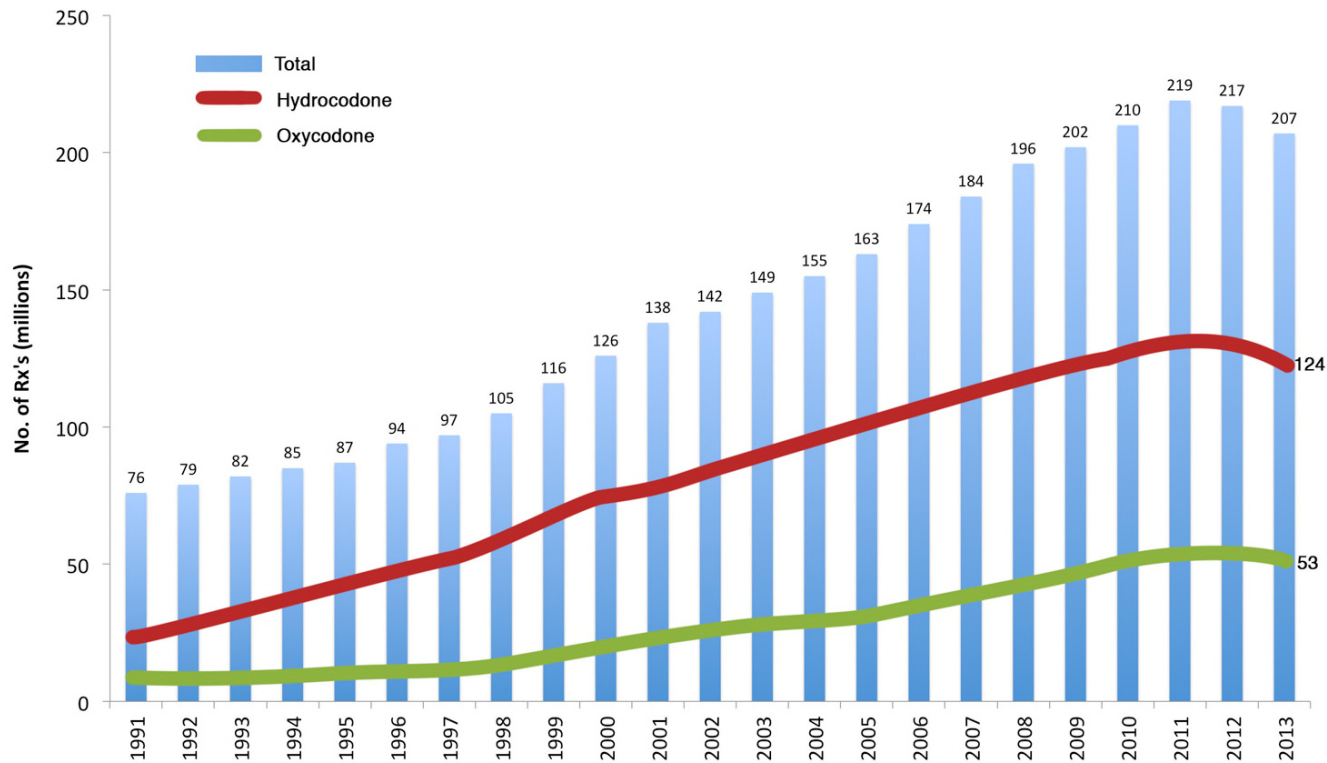
Overdose deaths involving opioids, by type of opioid, United States, 2000-2016



SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2017.
<https://wonder.cdc.gov/>.

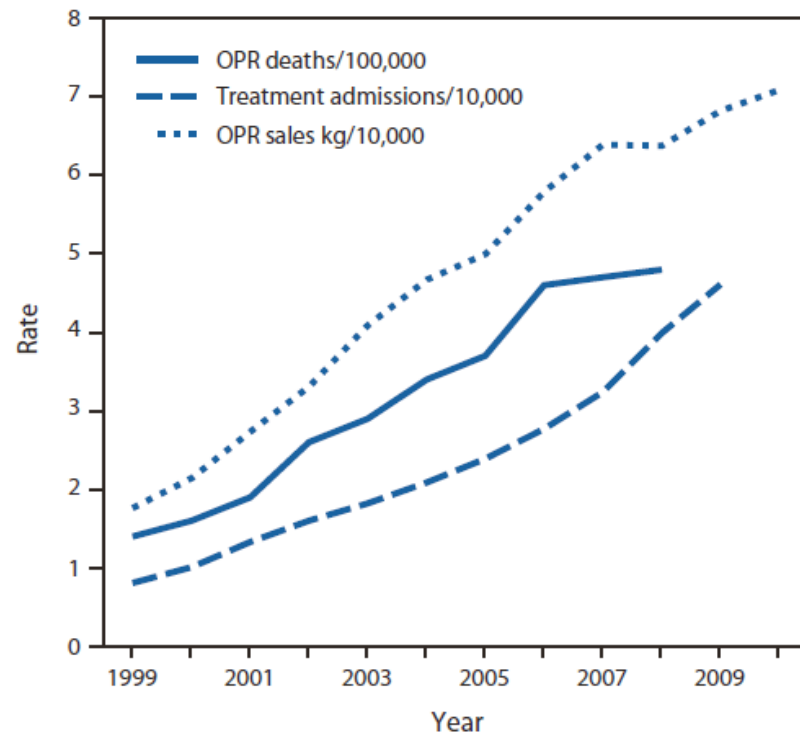
www.cdc.gov
Your Source for Credible Health Information

Opioid prescriptions filled by US pharmacies: 1991 – 2013



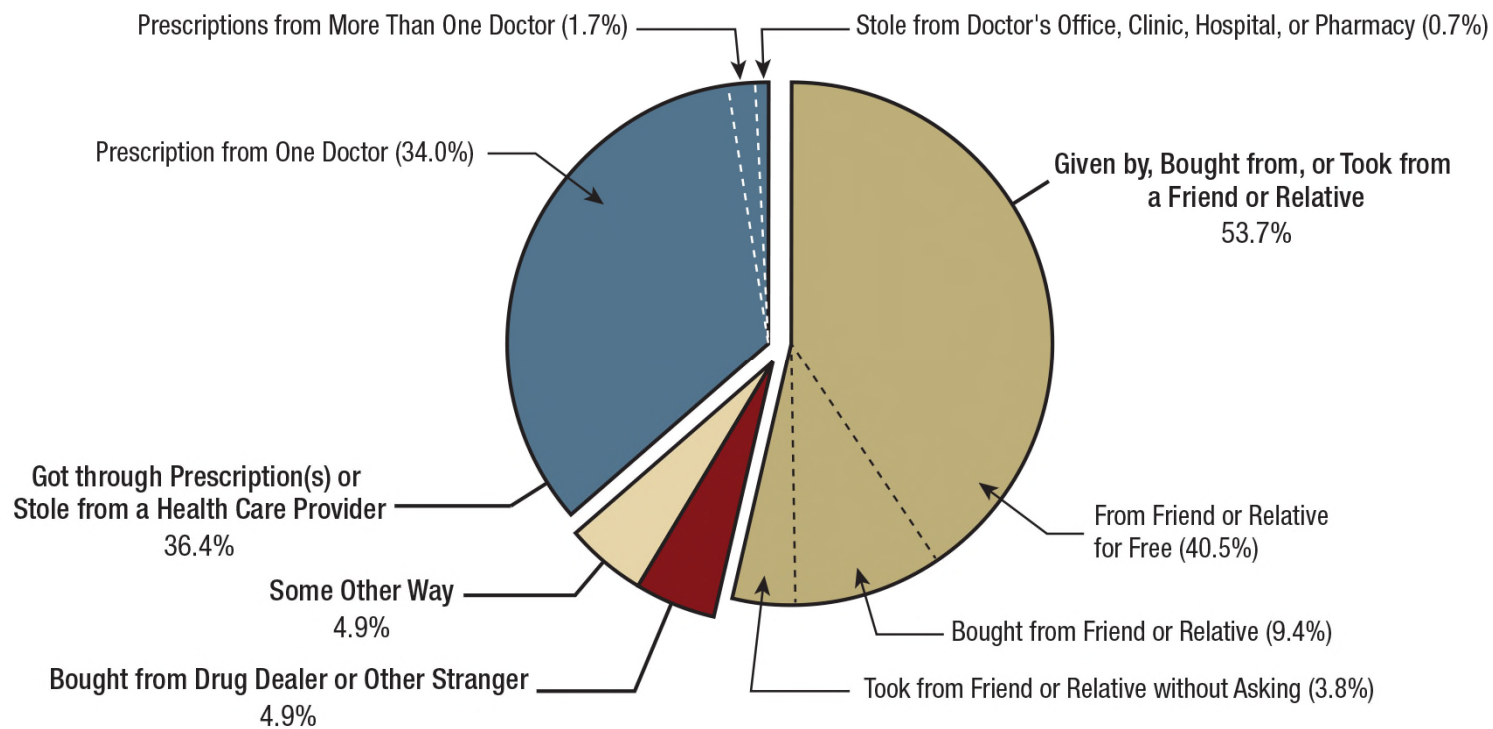
IMS's National Prescription Audit (NPA) & Vector One ®: National (VONA).

US opioid pain reliever overdose deaths, treatment admissions, and kilograms sold, 1999 - 2010



Paulozzi L, et al. Vital signs: overdoses of prescription opioid pain relievers – United States, 1999-2008. *Morbidity and Mortality Weekly Report* 2011;60(43): 1487-92.

When people misuse opioid pain relievers, how do they most often obtain them?



Hughes A, et al. Substance Abuse and Mental Health Services Administration. Prescription drug use and misuse in the United States: Results from the 2015 National Survey on Drug Use and Health. *NSDUH Data Review 2016*.

Why are we prescribing so many more opioids?

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- **American Pain Society, “Pain as the 5th vital sign”**

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- Joint Commission on Accreditation of Healthcare Organizations, pain management standards

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Why are we prescribing so many more opioids?

- American Pain Society, “Pain as the 5th vital sign”
- Joint Commission on Accreditation of Healthcare Organizations, pain management standards
- Pharmaceutical company marketing
- Patient satisfaction scores
- Changing expectations



**EMPOWERING PROVIDERS.
IMPROVING CARE.**
**GUIDELINE FOR PRESCRIBING
OPIOIDS FOR CHRONIC PAIN**



**Dowell D, et al. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016.
MMWR Recommendations and Reports 2016;65(RR-1):1-49.**

“This guideline provides recommendations that are based on the best available evidence that was interpreted and informed by expert opinion. The clinical scientific evidence informing the recommendations is low in quality.”

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

When prescribing opioids for acute pain

- **Do not use opioids first-line**
- **Prescribe lowest effective dose**
- **Prescribe only enough for the anticipated duration of severe pain**
- **Do not prescribe extended-release opioids**
- **Re-evaluate at frequent intervals**

When considering long-term opioid therapy

When considering long-term opioid therapy

- **Assess baseline pain and function**

PEG Score

Question 1: What number from 0-10 best describes your **pain** in the past week?

Question 2: What number from 0-10 describes how, during the past week, pain has interfered with your **enjoyment** in life?

Question 3: What number from 0-10 describes how, during the past week, pain has interfered with your **general activity**?

Average 3 individual scores; 30% improvement from baseline is considered clinically meaningful

When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**

Specific

Measurable

Achievable

Relevant

Time bound

When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**



When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**
- **Discuss risks and benefits of long-term opioid therapy**

Risks

Constipation

Tolerance

Dependence

Hyperalgesia

Sedation

Respiratory depression

Addiction

Death

Benefits

?

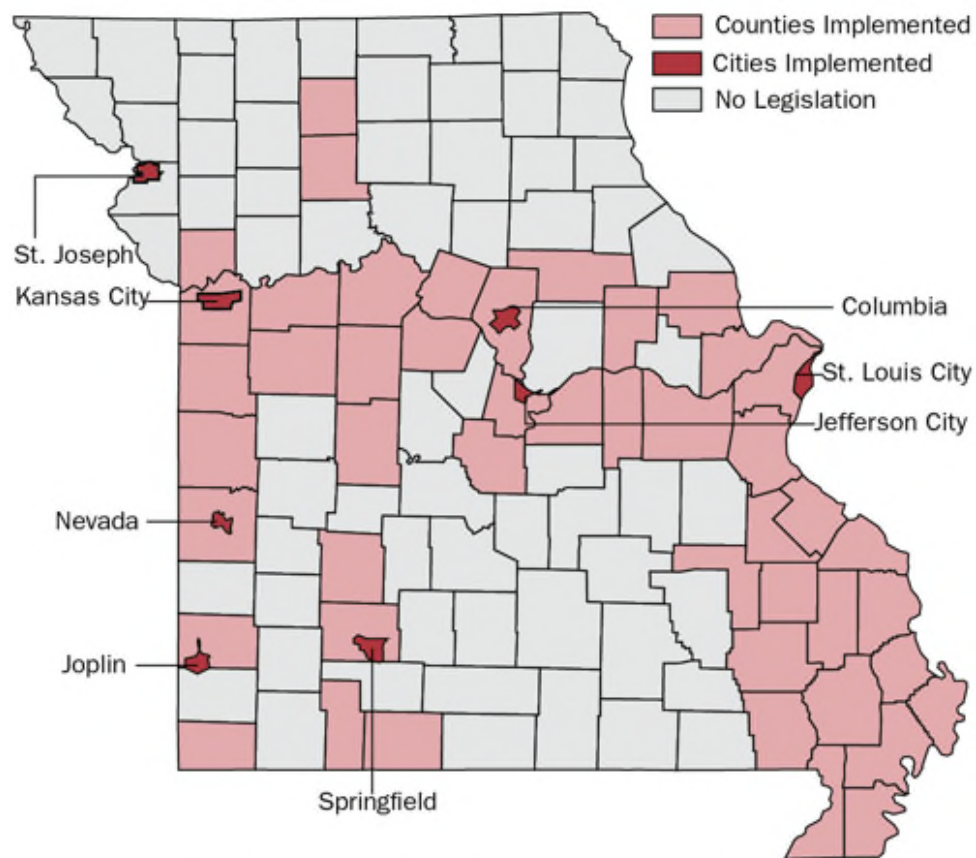
When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**
- **Discuss risks and benefits of long-term opioid therapy**
- **Evaluate risk of harm or misuse**

Opioid Risk Tool

	Female	Male	
1. Family history of substance abuse			
Alcohol	1	3	
Illegal drugs	2	3	
Prescription drugs	4	4	
2. Personal history of substance abuse			
Alcohol	3	3	
Illegal drugs	4	4	
Prescription drugs	5	5	
3. Age between 16 — 45 years	1	1	
4. History of preadolescent sexual abuse	3	0	<u>Total risk score</u>
5. Psychological disease			0-3 = Low
ADD, OCD, Bipolar, Schizophrenia	2	2	4-7 = Moderate
Depression	1	1	≥8 = High





Source: ST. LOUIS COUNTY PDMP

JING YANG/Missourian





When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**
- **Discuss risks and benefits of long-term opioid therapy**
- **Evaluate risk of harm or misuse**
- **Set criteria for continuing or stopping opioid therapy**

Controlled Substances Agreement

- Opioid pain medicines (Percocet, Vicodin, Dilaudid, OxyContin, morphine, others) are one way to help people who have severe pain.
- These medicines can be dangerous, especially if they are taken for a long time.
- We want you to know about the side effects of opioid pain medicines, so that you can help decide if they are the right medicines for you.
- We also want you to know about the goals of treatment, so that you know what these medicines can do for you.
- Since these medicines can be dangerous, we have some rules about taking opioid pain medicines. These rules are meant to keep you safe.

Side effects of opioid pain medicines

- Addiction
- Tolerance – needing larger doses to control pain
- Dependence – needing medicine to feel normal
- Withdrawal – unpleasant symptoms if you miss a dose of medicine
- Tiredness
- Constipation
- Nausea
- Itching
- Overdose
- Slowed breathing
- Death

Goals for opioid pain medicines

- Lower pain – they will not make pain go away completely
- Increase activity – let you do things that pain keeps you from doing
- Improve quality of life – help you enjoy life more

Rules for taking opioid pain medicines

- Take your medicine only the way your doctor tells you. Do not take extra doses of medicine.
- Your doctor is the only one who can prescribe your medicine. Do not get this medicine from other doctors.
- Do not give or sell your medicine to other people.
- Do not use illegal drugs or buy medicines on the street.
- Keep your medicine in a safe place. If it is lost or stolen it will not be replaced.
- Do not request early refills of your medicine. Your doctor will not refill your medicine early for any reason.
- Do not request refills at night, on holidays, or on weekends. Do not ask other doctors to refill your medicine.
- Keep all scheduled appointments with your doctor.
- You must give a urine sample for drug testing if asked to.

Agreement for taking opioid pain medicines

- I have read about the side effects of opioid pain medicines. I understand that if I have these side effects, then the medicine will be stopped.
- I have read about the goals for treatment. I understand that if opioid pain medicines do not help me reach these goals, then the medicine will be stopped.
- I have read about the rules for taking opioid pain medicines. I understand that if I do not follow these rules, then the medicine will be stopped.

Please let your doctor know what questions you have before signing

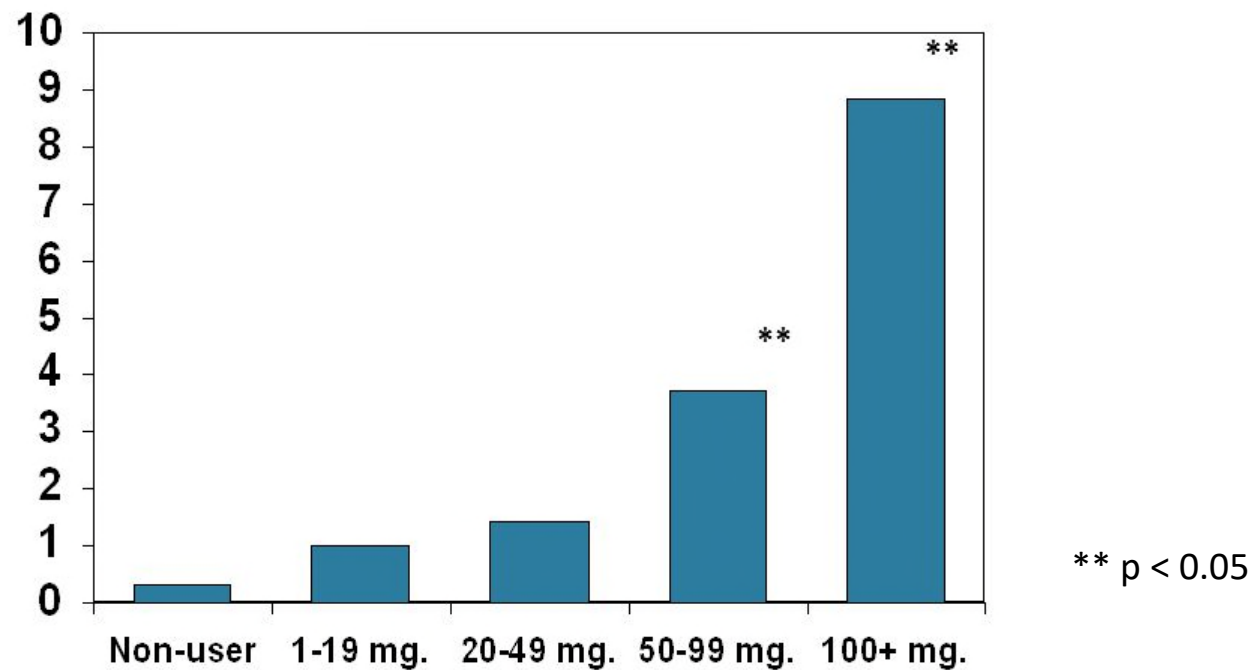
Patient's signature

Date

When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**
- **Discuss risks and benefits of long-term opioid therapy**
- **Evaluate risk of harm or misuse**
- **Set criteria for continuing or stopping opioid therapy**
- **Prescribe short-acting opioids using lowest dosage on product labeling**

Relative risk of opioid overdose by daily opioid dose in morphine milligram equivalents



Dunn KM, et al. Opioid prescriptions for chronic pain and overdose: a cohort study. *Annals of Internal Medicine* 2010;152(2):85-92.

When considering long-term opioid therapy

- **Assess baseline pain and function**
- **Set realistic goals for pain and function**
- **Check that non-opioid therapies have been tried and optimized**
- **Discuss risks and benefits of long-term opioid therapy**
- **Evaluate risk of harm or misuse**
- **Set criteria for continuing or stopping opioid therapy**
- **Prescribe short-acting opioids using lowest dosage on product labeling**
- **Schedule initial re-assessment within 1 to 4 weeks**

How do I address patients who are already prescribed long-term opioids?

How have the CDC guidelines affected policy?

Summary

- Opioid analgesics have the potential for misuse
- The number of prescriptions for opioid analgesics written each year has increased dramatically over the last 20 years
- Opioid addiction and overdose are now major health problems
- Guidance on responsible opioid prescribing is available

Summary

Opioids should be prescribed with caution, when other available therapies have not been effective, and when predicted benefits outweigh predicted harms for an individual patient.

Questions and Comments