

# OPIOID ADDICTION

Snehal Bhatt, MD

Medical Director, Addiction and Substance Abuse Programs, UNM

Assistant Professor, Psychiatry, UNM

IHS Center for Tele-Behavioral Excellence

# Objectives

- Learn about the history of opiate use
- Learn the current epidemiology of opiate use, and appreciate the prescription opiate misuse epidemic
- Learn to recognize opioid tolerance, withdrawal, and overdose
- Learn the consequences of opiate misuse

# **Opioids: A Brief History**

- Opioids are opium and opium derived substances, as well as synthetic and semi synthetic compounds that activate the opioid receptors in the brain
- Opioid receptors: mu, kappa, delta
- In addiction, mu receptors are particularly important

# Opium

- Opium poppy: *Papaver somniferum*
- Sumerians called it Hul Gil, or “the flower of joy”
- vast majority of opium poppies are grown in a narrow, 4,500-mile stretch of mountains extending across southern Asia from Turkey through Pakistan and Laos.
- Crude opium is the sap inside the seed pod
- Opium is extracted, then processed into morphine by boiling it with lime
- Morphine then combined with acetic anhydride to form heroin



# Historical Perspective

- Opium poppy cultivated in mesopotamia in 3400 BC
- Civil War: Introduction of hypodermic needles and the use of morphine for analgesia
- High rates of morphine use leading to dependence among women of high SES. Most introduced to opioids by their physicians for menstrual pain and menopausal symptoms
- Diacetylmorphine [heroin] first synthesized by an English chemist in 1874
- Marketed by Bayer from 1898 to 1910 for cough suppression, and a cure for morphine addiction!
- Unfortunately, heroin is actually quicker acting than morphine!
- 20<sup>th</sup> century: US criminalizes addictions
- Harrison Act [1914]: Prohibits prescription of opioids to people with addictions
  - Physicians prosecuted for prescribing opioids, leading to fear of prescribing
  - Increased drug trafficking



**BAYER  
PHARMACEUTICAL  
PRODUCTS.**

**Send for  
samples and  
Literature to**



**FARBENFABRIKEN OF  
ELBERFELD CO.**

**40 STONE ST  
NEW YORK.**

# Historical Perspective

- 1974: 1<sup>st</sup> methadone clinics open
- Late 1970s: Expansion of methadone programs to treat returning Vietnam veterans
- Late 1980s: Methadone seen as an important tool in fight against AIDS
- 2000: DATA: Office based treatment of opioid dependence, opening door for buprenorphine

# Epidemiology

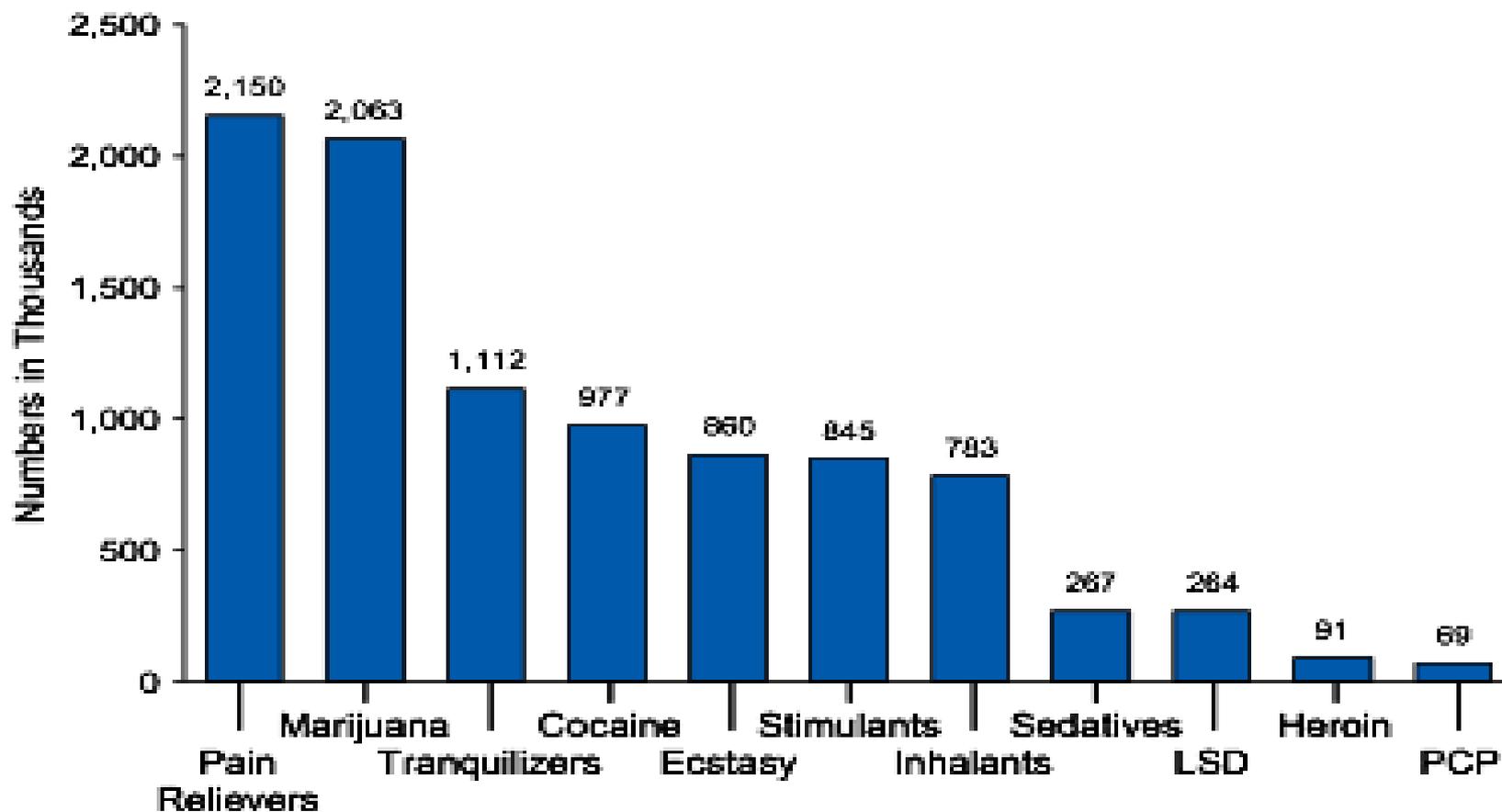
# Epidemiology

- 48 million people [20% of US population] have used prescription medications non-medically in their lifetimes [NIDA, 2005]
- Between 1994-2002, ED visits related to hydrocodone increased by 170%, and those related to oxycodone increased by 450% [SAMHSA, 2003]
- Between 2004-2009, a further 101% increase overall, with doubling in the rates of fentanyl, hydrocodone, hydromorphone, morphine, and oxycodone [SAMHSA, 2011]
- Total of over 1 million ED visits related to non-medical use of prescription medications in 2009 [SAMHSA, 2011]
- Drugs used in suicide attempts in 2009: pain relievers 38.1% [hydrocodone, oxycodone], benzos 28.7% [clonazepam, alprazolam, zolpidem]

# Epidemiology

- Abuse of these substances most prevalent in younger age groups [18-25, followed by 12-17]
- Between ages 12-17, vicodin second only to marijuana [not counting tobacco and alcohol] in past year illicit use rate
- Between ages 12-13, higher percentage reported past month use of prescription medications than marijuana [1.8 vs 1.0%] [NSDUH, 2006]
- Prescription drug misuse correlated with higher rates of cigarette smoking, alcohol use, marijuana use, other illicit drug use, and problem behaviors [McCabe, 2005]

# Past Year Initiates, 12 and older, 2006 [NSDUH, 2006]



# Prevalence of heroin

- 2009: 180,000 new users
- 900,000 addicted [NSDUH, 2010]
- 0.7-0.9% [125,000] 8<sup>th</sup>, 10<sup>th</sup>, 12<sup>th</sup> graders endorse trying heroin at least once in the year prior to interview (2005-2009) [Monitoring the Future, 2010]

# Prevalence of prescription opioids

- 2009 Non-medical use of prescription pain medications:
  - Previous month misuse 5.2 million over age 12
  - 4.8% of those aged 18-25
  - 1.9 million prescription narcotic users meet diagnostic criteria for opioid abuse or dependence (second only to marijuana (4.3 million))
  - In 2006, deaths involving opioid analgesics surpassed those for other illicit drugs:
    - 1.63 times number cocaine-associated deaths
    - 5.88 times the number heroin-related deaths
- [Source: NSDUH, 2006, 2010]

# ED visits

- **DAWN 2009**

- Heroin 213,118 visits
- Narcotic Pain Relievers: 397,160 visits
- Oxycodone/combinations – 175,949 visits
- Hydrocodone/combinations – 104,490 visits
- Fentanyl/combinations – 22,143 visits
- Buprenorphine/combinations – 12,544
- Alcohol involvement: 32% of visits

*Source: Drug Abuse Warning Network, National Estimate, 2009*

# Reasons for High Prevalence

# Where do the medications come from- From us!

- 47.3% obtain from friends for free
- 10.2% took from friend/relative without asking
- 10% bought from friend/relative
- 6.3% some other way
- 4.5% bought from dealer/stranger
- 2.6% from more than one doctor
- 0.1% internet
- 0.1% fake script
- 0.5% stole from doctor
- 18.3% from one doctor
- 1/3 ages 12-17 get them from own homes
- *Prescriptions for opioids increased from 45 million to 180 million between 1991-2009*

## Misperceptions of safety

- 40% think prescription medications are safer than illicit drugs, even when not prescribed by a doctor
- 1/3 of teens think there is “nothing wrong” with using prescriptions non-medically once in a while
- 29% of teens do not think prescription opioids are addictive [Office of National Drug Control Policy, 2007]
- In fact, prescription drugs can be just as dangerous as illicit drugs

# Opioids: Tolerance, Withdrawal, and Overdose

# Tolerance

- Tolerance:
  - Need more for same effect
  - Less effect with same amount
  - Tolerance can lead to gradual escalations to high doses that would otherwise be fatal

# Withdrawal

- Upon cessation or dose reduction of opioid
- Dysphoria, nausea/vomiting, muscle aches, lacrimation, goose bumps, rhinorrhea, insomnia, diarrhea, hypertension, tachycardia
- Measured by COWS
- Short acting opiates: Begins after 6-12 hours; peaks after 36-72 hours; Lasts about 5 days [protracted withdrawal can persist even longer]
- Long acting opiates: Begins after 36-72 hours; lasts for many days

# Overdose

- Respiratory depression the usual cause of death
- Coma, hypotension, pinpoint pupils [May dilate with
  - hypoxia]
- Noncardiogenic pulmonary edema
- Meperidine can lead to seizures
- Antidote: naloxone [may not work as well for long
  - acting opioids]

# Co-Morbidity

# Co-Morbidity

- Addictive disorders show a strong co-morbidity with other psychiatric disorders
- Among mood disorders, Bipolar I disorder most strongly associated with prescription drug use disorders
- Among anxiety disorders: panic disorder with agoraphobia, PTSD
- Among Axis II: Antisocial Personality Disorder

# Co-Morbidity

- Abuse or dependence on one prescription drug associated with abuse/dependence of another prescription drug, illicit drug, or alcohol
- One in three prescription drug abusers have an alcohol use disorder [McCabe, 2006]
- Sullivan, 2006: A person with a mental illness in 1998 [MDD, dysthymia, GAD, panic disorder] more likely to abuse opioid dependence in 2001 than those without an illness [OR 1.96]
- Thus, patient with mental illness may be particularly vulnerable to the development of prescription drug abuse

# Differences between heroin and prescription opioid users

- **Prescription opioid users**
- More likely to have concurrent benzodiazepine use
- More likely to have concurrent depression
- More likely to have chronic pain
- Less likely to use other illicit drugs
- Less likely to use IV drugs [12% vs 63%]
- Less likely to have family and social problems
- Less likely to have illegal sources of income

# Consequences of Opioid Dependence

# Medical risks

- Abscesses
- Sepsis
- Osteomyelitis
- Thrombophlebitis
- Endocarditis

# Natural Course:

- Medical risks:
  - HCV
    - 70% IV users
    - 65% after 1 yr needle use; ~85% at 5 yrs
  - HIV
    - IV users ~75% of new HIV infections
    - HIV ~20%

# Epidemiology

- Injection AND non-injection drug use associated with increased risk for contracting HIV and hepC
- Roughly 25% of patients with HIV/AIDS exposed through IVDU [CDC, 2006]
- HIV/AIDS through IVDU more prevalent in ethnic and racial minorities and in women
- IVDU is the most common cause of HepC infection
- Of drug users who have injected for five years, 60-80% infected with hepC and 30% with HIV
- Co-infection higher in IVDU acquired HIV patients [50-90% vs 30%] = more likely to develop end stage liver disease

## Natural Course:

- Death
  - Overdose 1.5%/yr
  - 24 yr study – 28% sample deceased
  - 30 yr. study in California: 49% sample deceased
- Major causes of death
  - Drug overdose, suicide, violence, accidents, infection, chronic diseases

# Natural Course: Summary

- Medical risks
- High mortality
- Low employment
- Crime
- High cost to society

# Conclusions

- Prescription opioid dependence is a growing public health concern
- This growing concern may in part be fueled by misperceptions of safety
- When untreated, opioid addiction can lead to a number of adverse consequences