# Pain, Pills & Pregnancy

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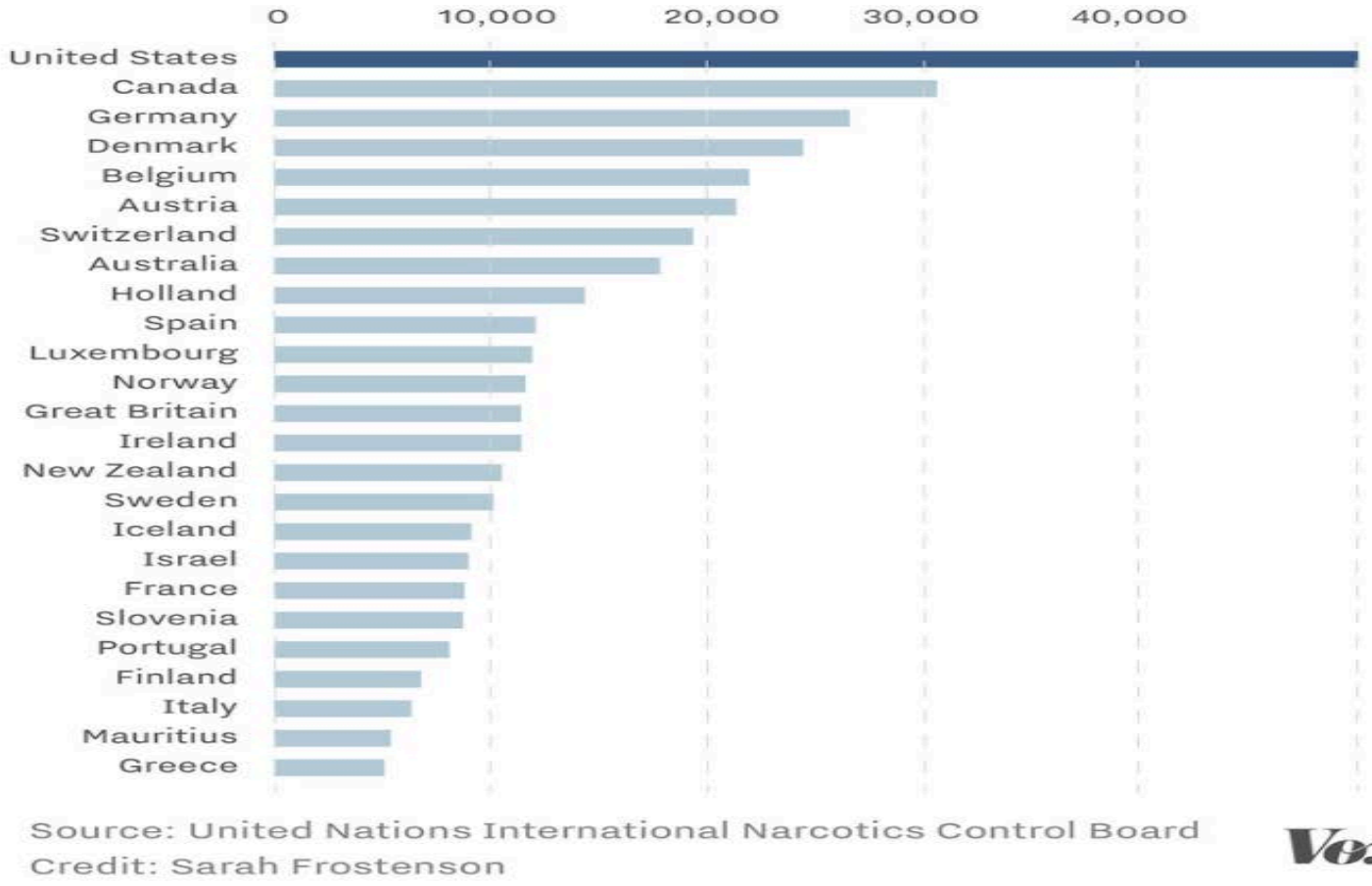
# Overview

Pain Management in Pregnancy

- Opioid Use in Women
- Opioid Use in Pregnancy
- Pain Management
  - Pregnancy
  - Labor & Delivery
  - Postpartum

# Americans consume more opioids than any other country




Source: United Nations International Narcotics Control Board

Credit: Sarah Frostenson

Vox

# Opioid Use in US

- 2nd Most Common Substance of Abuse in US
- Opioid Overdose Deaths is a National Emergency

**Prescription Opioid Misuse: 11.2 Million**
**Opioid Use Disorder- Prescription Opioids: 1.8 Million**
**Opioid Use Disorder- Heroin: 0.6 Million**

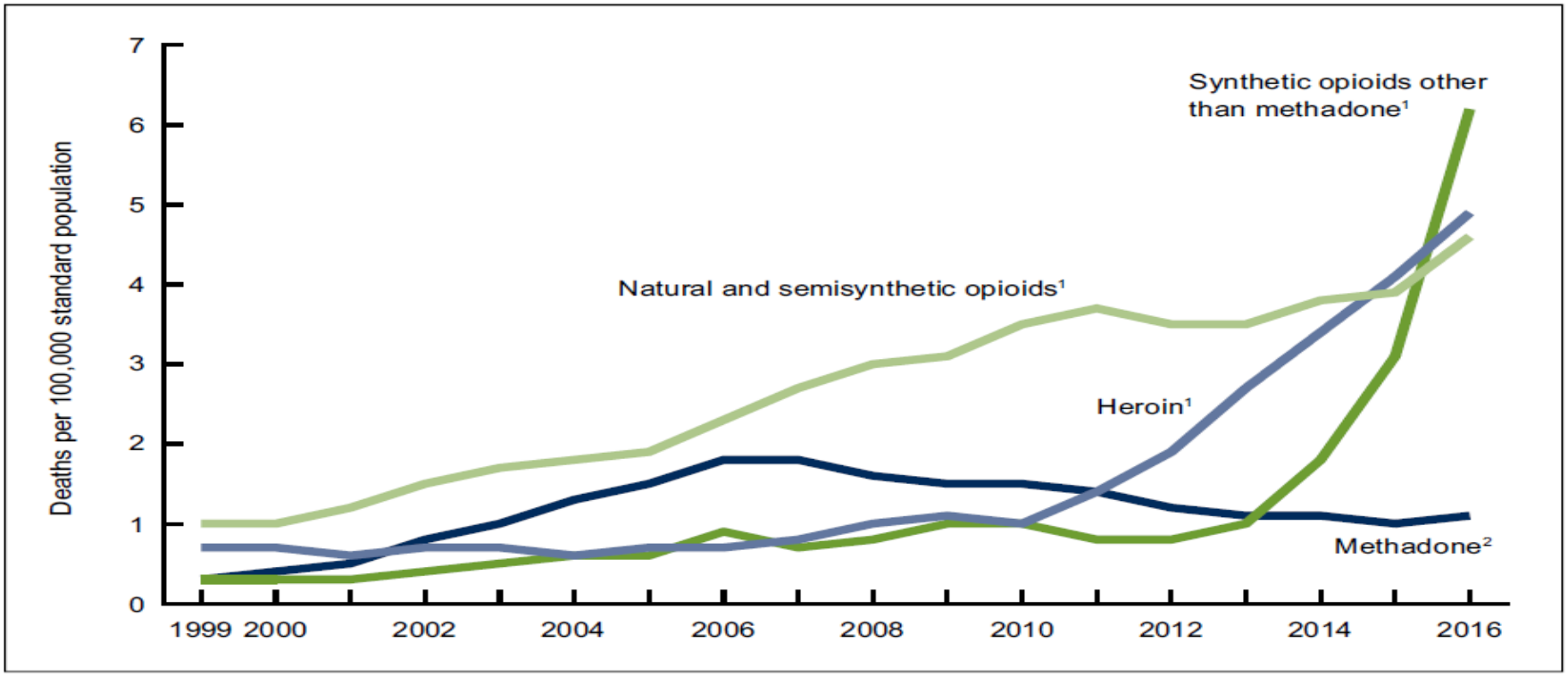
***SAMHSA, 2017: 2016 National Survey on Drug Use and Health***

# Opioid Epidemic:
# Public Health Emergency

## 2016

64,000 Total Opioid-Related Deaths

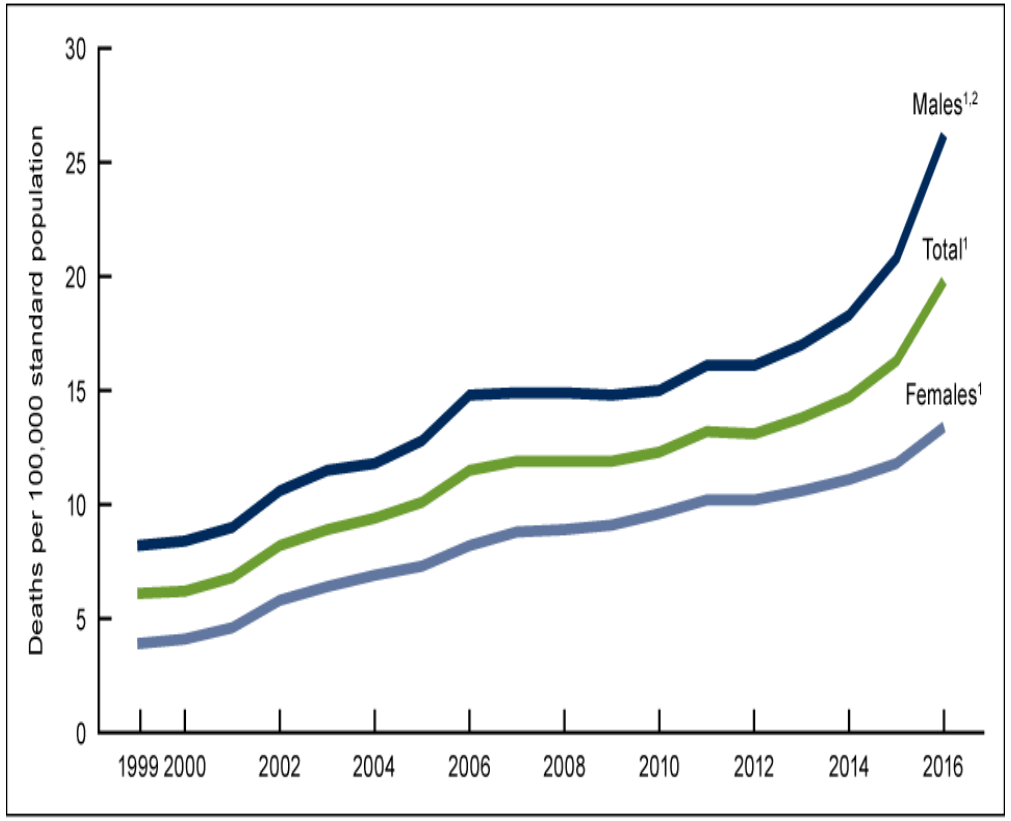
Figure 4. Age-adjusted drug overdose death rates, by opioid category: United States, 1999–2016




[1]Significant increasing trend from 1999 to 2016 with different rates of change over time, $p < 0.05$.
[2]Significant increasing trend from 1999 to 2006, then decreasing trend from 2006 to 2016, $p < 0.05$.
NOTES: Deaths are classified using the *International Classification of Diseases, Tenth Revision*. Drug-poisoning (overdose) deaths are identified using underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Drug overdose deaths involving selected drug categories are identified by specific multiple-cause-of-death codes: heroin, T40.1; natural and semisynthetic opioids, T40.2; methadone, T40.3; and synthetic opioids other than methadone, T40.4. Deaths involving more than one opioid category (e.g., a death involving both methadone and a natural or semisynthetic opioid) are counted in both categories. The percentage of drug overdose deaths that identified the specific drugs involved varied by year, with ranges of 75%–79% from 1999 to 2013, and 81%–85% from 2014 to 2016. Access data table for Figure 4 at: https://www.cdc.gov/nchs/data/databriefs/db294_table.pdf#4.
SOURCE: NCHS, National Vital Statistics System, Mortality.

# Opioid Overdose Deaths

Figure 1. Age-adjusted drug overdose death rates: United States, 1999–2016




[1]Significant increasing trend from 1999 to 2016 with different rates of change over time, $p < 0.001$.
[2]2016 rate for males was significantly higher than for females, $p < 0.001$.
NOTES: Deaths are classified using the *International Classification of Diseases, Tenth Revision*. Drug-poisoning (overdose) deaths are identified using underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. The number of drug overdose deaths in 2016 was 63,632. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db294_table.pdf#1.
SOURCE: NCHS, National Vital Statistics System, Mortality.

**1999-2015**

Prescription Opioid-Related Deaths

- Increased 471% in women [218% in men]

Synthetic Opioid-Related Deaths

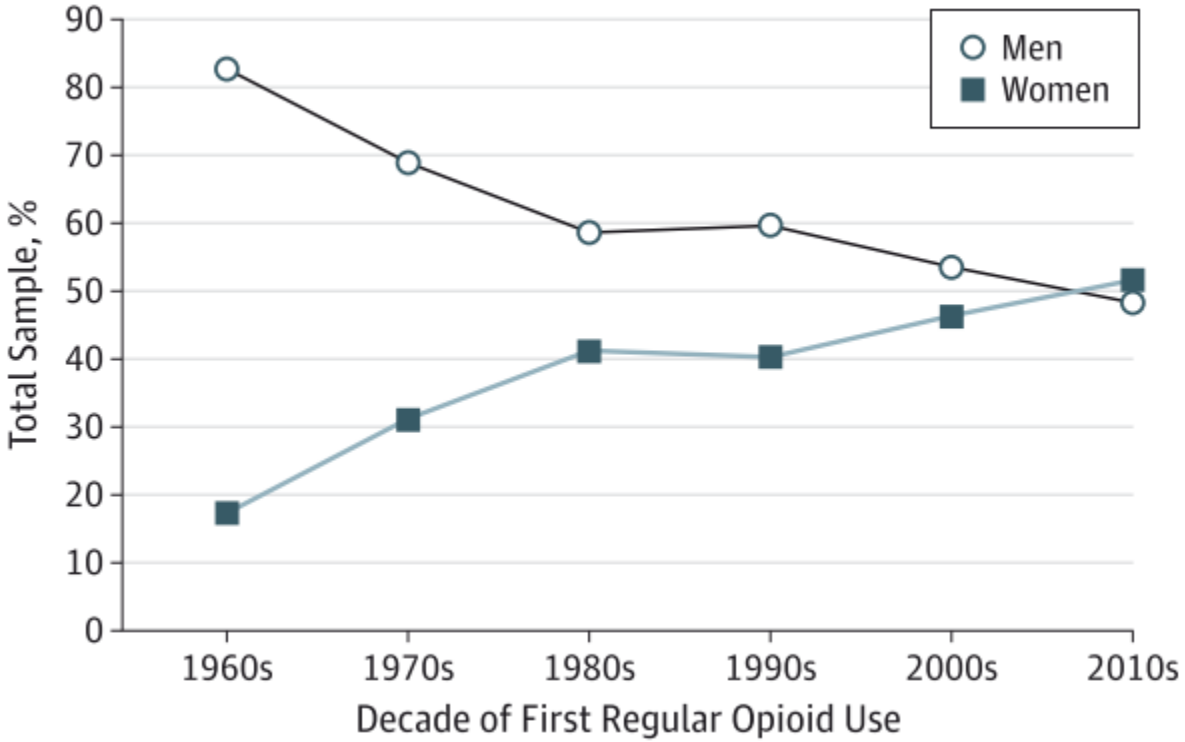
- Increased 850% in women

**2002-2013**

Heroin Use

- Increased 100% in women, [50% in men]

# Gender Differences in Heroin Use




**Significant increase in heroin use among women over past 4 decades. Women are now using heroin at similar rates to men**

Cicero, JAMA Psychiatry, 2014

# Sex and Gender Differences in Pain

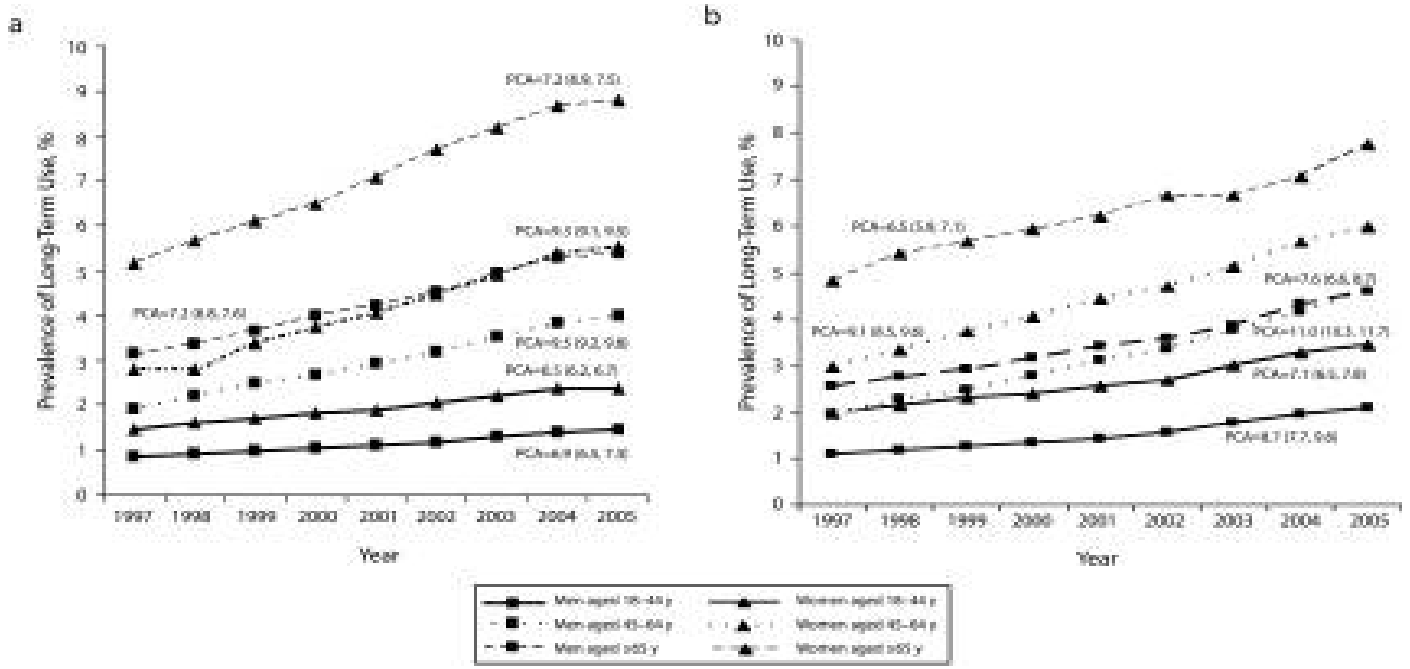
## Epidemiological Studies

- Women, compared to men, have higher prevalence
  - Pain conditions
  - Past month pain
  - Pain sensitivity
  - Chronic pain
    - Fibromyalgia, migraine, chronic tension-type headache, IBS, TMJ, interstitial cystitis

Bartley EJ, Fillingim RB. Sex differences in pain: a brief review of clinical and experimental findings. Colvin L, Rowbotham DJ, eds. *BJA: British Journal of Anaesthesia*. 2013;111(1):52-58.

Fillingim RB, King CD, Ribeiro-Dasilva MC, Rahim-Williams B, Riley JL. Sex, Gender, and Pain: A Review of Recent Clinical and Experimental Findings. *The journal of pain : official journal of the American Pain Society*. 2009;10(5):447-485.

# Age and Gender Trends in Long-Term Opioid Use Non-Cancer Pain




**Compared to men, women are more likely to be prescribed opioids, and use them for a longer period of time**

Campbell CI, Weisner C, LeResche L, et al. Age and Gender Trends in Long-Term Opioid Analgesic Use for Noncancer Pain. *American journal of public health*. 2010;100(12):2541-2547.

# Gender Differences in Opioid Use

- Women, compared to men,
  - Become dependent on substances more rapidly:

"**Telescoping**"

  - Less time between start of substance to time of problems & significant physiological consequences
  - Less time between problems and entering treatment

McHugh et al, Clini Psych Review, 2018
Back et al, Addict Behav, 2010

# Gender Differences in Opioid Use

- Women, compared to men,
  - More likely to have OUD w/ comorbid psychiatric illness, trauma, functional impairment, chronic pain
  - More likely to use opioids in response to mood/stress
  - More likely to receive opioids from family & friends
    - Access
    - Acceptability

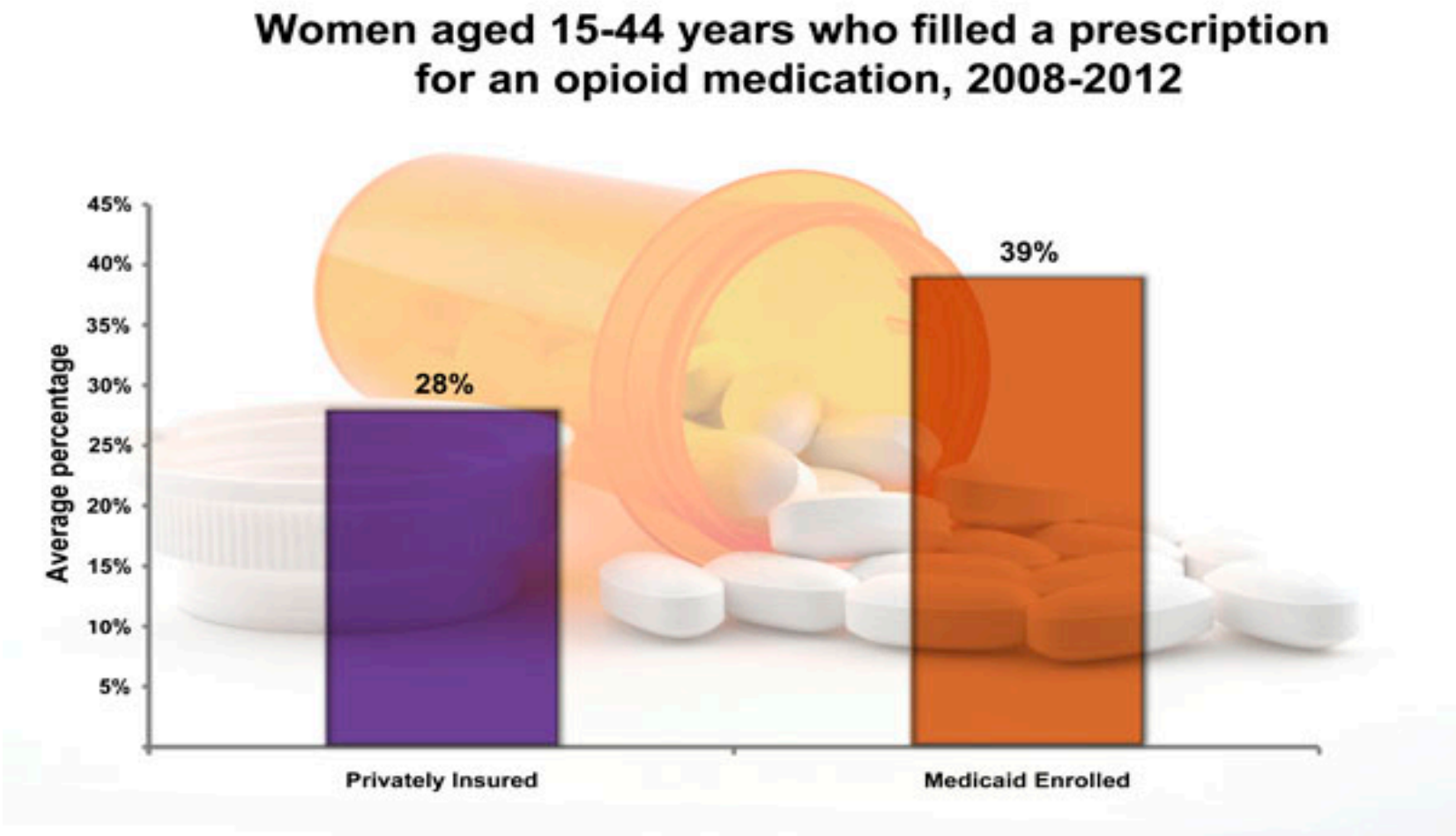
McHugh et al, Clini Psych Review, 2018

# Gender Differences in Opioid Use

- Women, compared to men,
  - Less likely to receive treatment
  - Gender-specific barriers to treatment including:
    - Co-occurring disorders
    - Trauma
    - Financial vulnerability
    - Partner who is using
    - Less social support
    - Pregnant and parenting
    - Stigma/discrimination

McHugh et al, Clini Psych Review, 2018

# Women and Prescription Opioid Use




(CDC, 2015)

# Opioid Use in Pregnancy

- Prescription Opioid [PO] use during pregnancy
  - 14-23% fill a PO medication
  - 3-5% fill 2 or more PO medications
    - 4-fold increase in past decade

(Patrick et al., 2012; Bateman et al., 2014; Desai et al., 2014; Maeda, 2014)

# Treatment of Pain

- Non-Pharmacological Treatments
- Non-Opioid Pharmacological Treatments
- Opioids
  - Counseling on risks
  - Low dose (<50 MED)
  - Avoid other CNS depressants
  - Risk Mitigation Strategies
  - Determine efficacy
  - If not effective, discontinue

(Dowell, 2016)

# Treatment of Chronic Pain

**No Studies Evaluating Chronic Use of PO and Long-Term Outcomes Related to Pain, Function, or QOL.**

**Tapering PO in chronic pain conditions demonstrate pain is no worse and may even improve once POs are discontinued**

(Dowell, 2016)

# Treatment of Chronic Pain

- Risk vs. Risk/Benefit Discussion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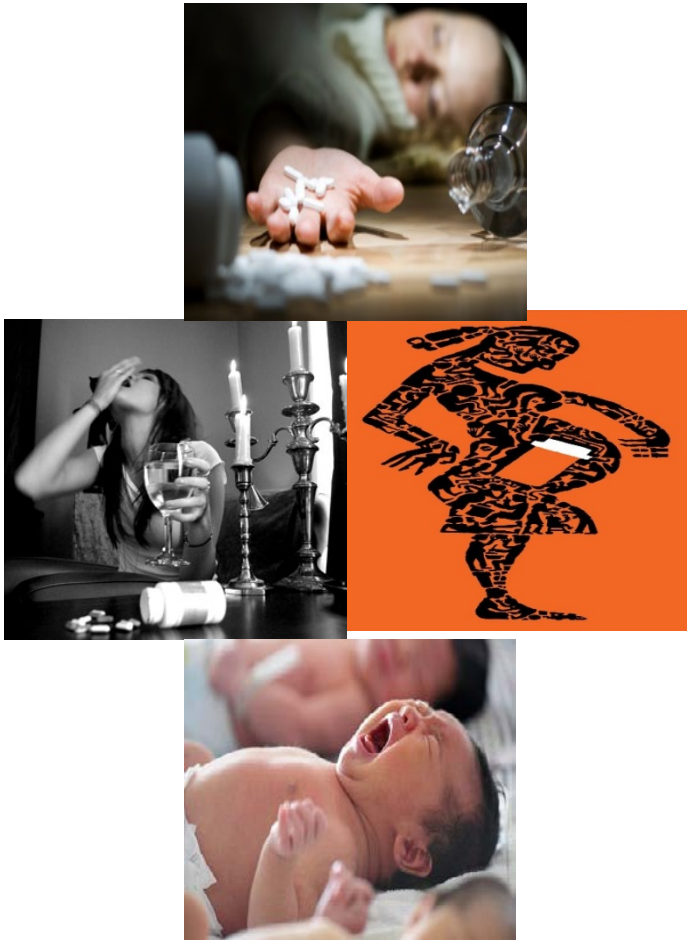


**Chronic PO Use for Pain**

# Tapering POs In Pregnancy

# Tapering POs In Pregnancy

# ‘Open Label’ Pilot: Aims

# ‘Open Label’ Pilot: Aims

# Cognitive Behavioral Therapy for Chronic Pain

**Table 1: Cognitive Behavioral Therapy for Chronic Pain Session Content**

A. Introduction to the manual
B. General considerations in treating chronic pain
C. Therapy Sessions 1-11
   - Session 1: Education on chronic pain
   - Session 2: Theories of pain and diaphragmatic breathing
   - Session 3: Progressive muscle relaxation and visual imagery
   - Session 4: Automatic thoughts and pain
   - Session 5: Cognitive restructuring
   - Session 6: Stress management
   - Session 7: Time-based pacing
   - Session 8: Pleasant activity scheduling
   - Session 9: Anger management
   - Session 10: Sleep Hygiene
   - Session 11: Relapse prevention and flare-up planning
D. Handouts and Homework Checklists

Otis, 2007

# Medication Management

- Education/ Risks and Benefits
- Motivational Interviewing
- Risk Mitigation Strategies
- Medication Taper
  - Shared Decision Making
    - Increase PO Dose
    - No PO Dose Change
    - Decrease PO Dose  (≤20% of original dose per week)

# Study Design

Enrollment
(<31 Wks. Gestation)

Inclusion
Daily Use of PO
PO Misuse
Consider Reduction in PO

Exclusion
Substance Use Disorder

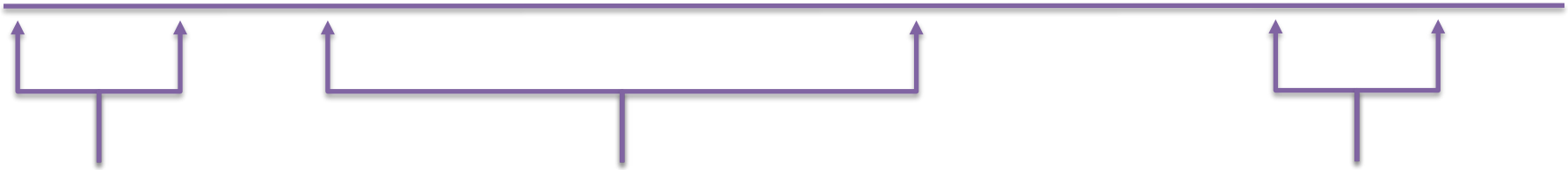
# Study Design

Enrollment
(<31 Wks. Gestation)

Treatment
(Weekly; 6-8 Wks.)

Delivery

Postpartum Follow-Up
(at 6-8 Wks.)



**Baseline Assessments**
Demographic
History of PO/Pain
Brief Pain Inventory (BPI)
Current Opioid Misuse Measure (COMM)

**Weekly Assessments**
Ob/Psych Safety Measures
BPI
COMM
PO Dose/Use

**Follow-Up Assessment**
Psych Safety Measures
BPI
COMM
PO Dose/Use

# Study Design

Enrollment
(<31 Wks. Gestation)

Treatment
(Weekly; 6-8 Wks.)

Delivery

Postpartum Follow-Up
(at 6-8 Wks.)

Screening Women
with PO use
16.2% (22/136)

Participation
90.9% (20/22)

# Demographics

| Baseline Characteristics | Mean (SD) (N=20) |
|---|---|
| Age (years) | 30.1 (SD±3.28) |
| Weeks Gestation | 19 (SD±2.98) |
| Gravida | 3 (range 1-9) |
| Number of children | 1 (range 0-9) |
| Years PO Use | 6.2 (SD±3.20) |

# Demographics

| Baseline Characteristics | % (N) (N=20) |
|---|---|
| Caucasian | 86.4% [17/20] |
| Insured by Medicaid | 63.6% [12/20] |
| In a relationship | 77.3% [15/20] |
| Completed High School | 68.2% [13/20] |
| Annual Income (≤25K) | 81.8% [16/20] |
| Low Back Pain | 77.3% [15/20] |
| History of Mood or Anxiety Disorder | 86.4% [17/20] |

# Study Design

Enrollment
(<31 Wks. Gestation)

Treatment
(Weekly; 6-8 Wks.)

Delivery

Postpartum Follow-Up
(at 6-8 Wks.)

Screening Women
with PO use
16.2% (22/136)

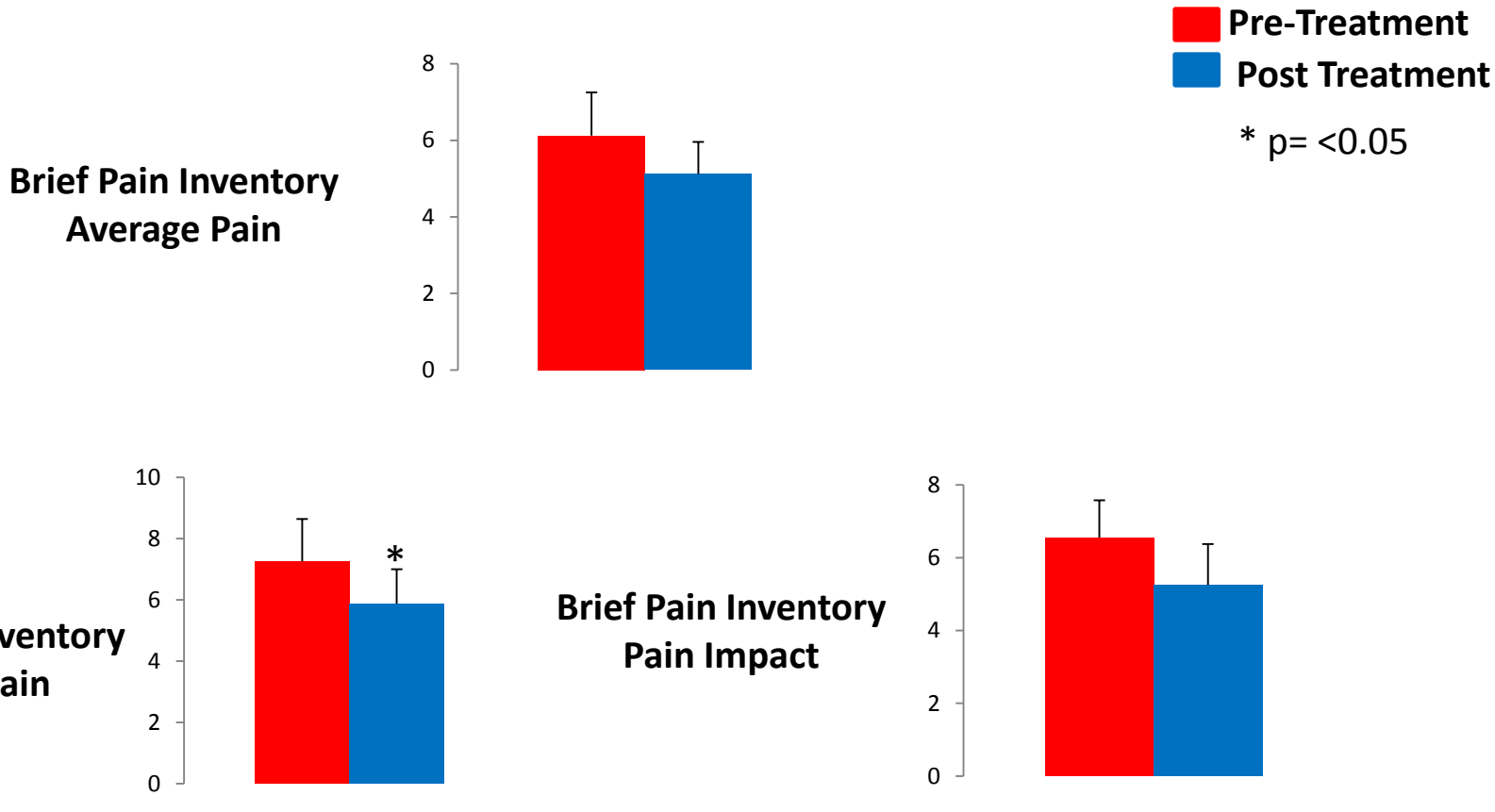
Participation
90.9% (20/22)

Completed 6.3 (SD 1.5)
weekly sessions

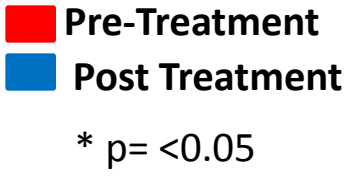
MED Start: M 73.06 (SD 41.6)
Completed Taper: 70% (14/20)

NAS: 30% (6/20)
Treated NAS: 33% (2/6)

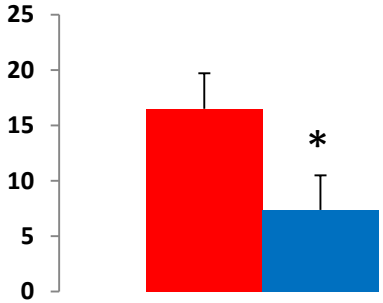
# Patient Report
# Pre-Post Treatment



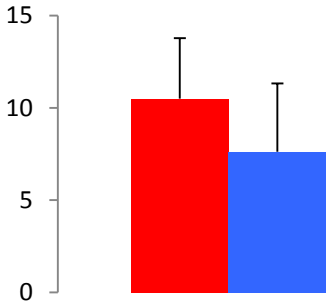
# Patient Report
# Pre-Post Treatment



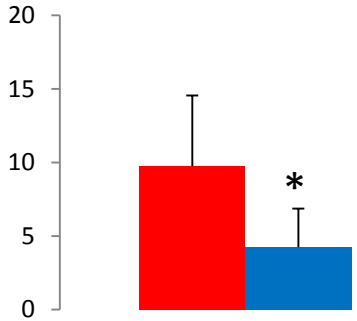

**Current Opioid Misuse Measure (COMM)**




**Patient Health Questionnaire (PHQ-9)**



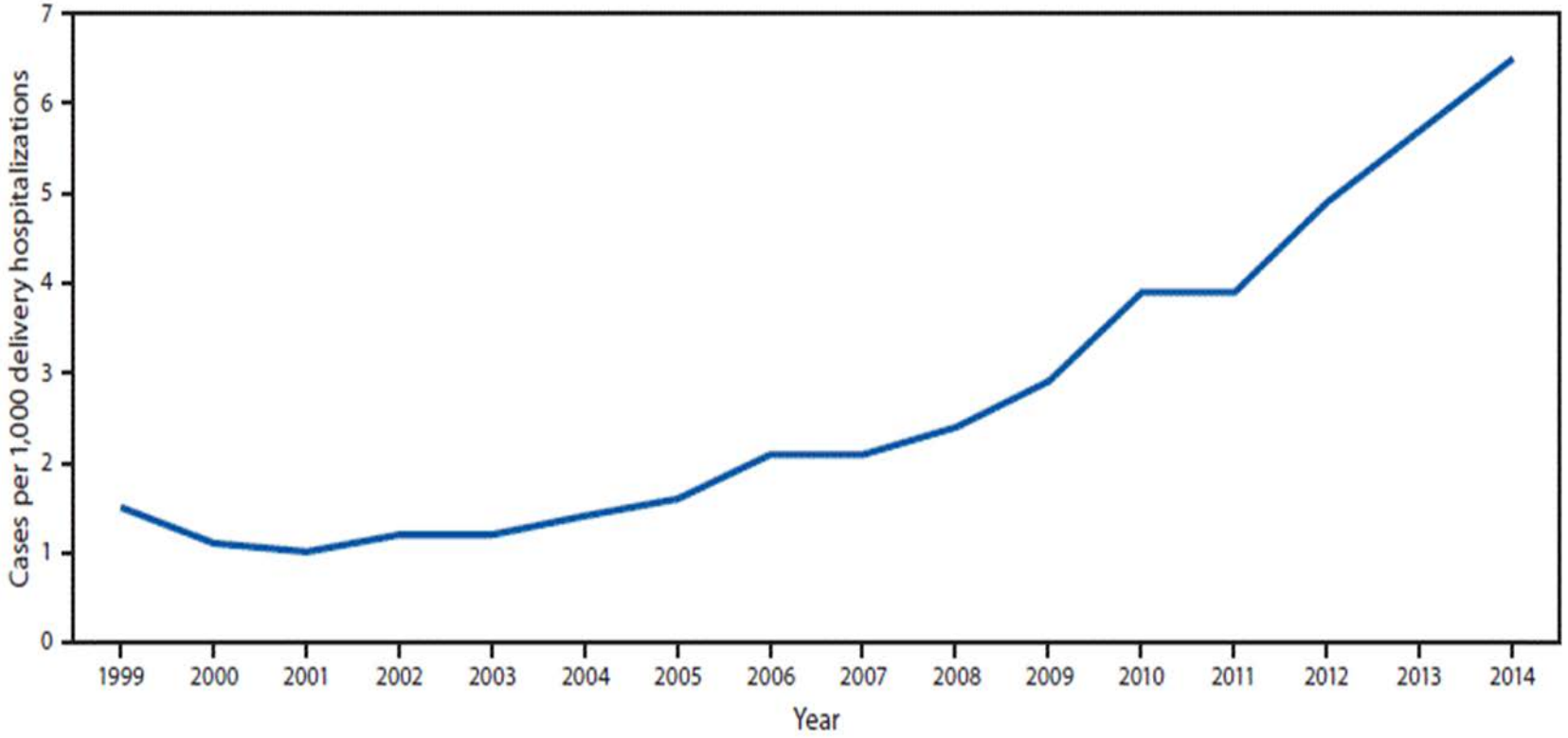

**Generalized Anxiety Disorder (GAD-7)**



# Prevalence of OUD

National Inpatient Sample- ICD-9 Codes Delivery Hospitalization Discharge

Per 1,000 Delivery Hospitalizations in US 1999-2014




Haight SC, Ko JY, Tong VT, Bohm MK, Callaghan WM. Opioid Use Disorder Documented at Delivery Hospitalization — United States, 1999–2014. MMWR Morb Mortal Wkly Rep 2018;67:845–849.

# Perinatal Treatment of Opioid Use Disorder

ACOG Committee Opinion No. 524 and 711:

Opioid Abuse, Dependence, and Addiction in Pregnancy (2012)

Opioid Use and Opioid use Disorder in Pregnancy (2017)

**Gold Standard of Treatment:**

Methadone

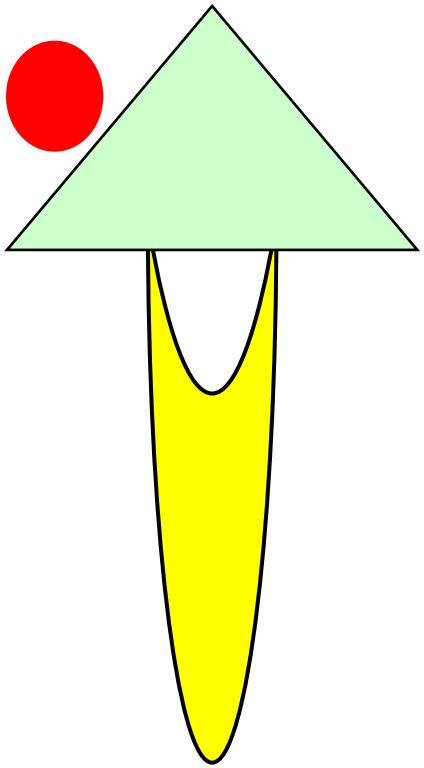
Buprenorphine

Substance Abuse and Mental Health Services Administration (SAMHSA), American Society for Addiction Medicine (ASAM), World Health Organization (WHO) and United Nations (UN)

# Medication Assisted Therapy (MAT)

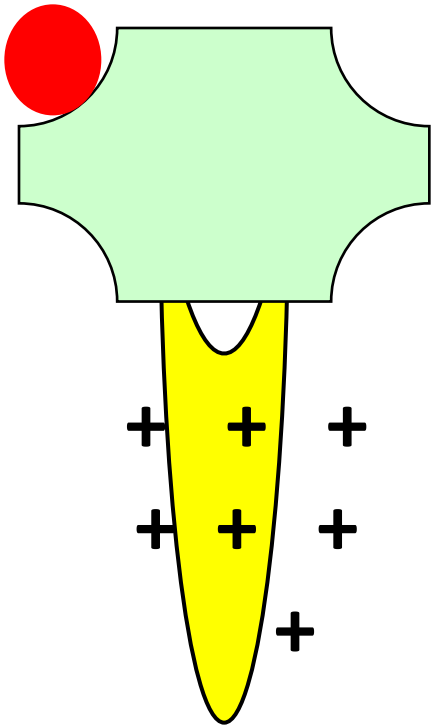
**Naltrexone**

Antagonist



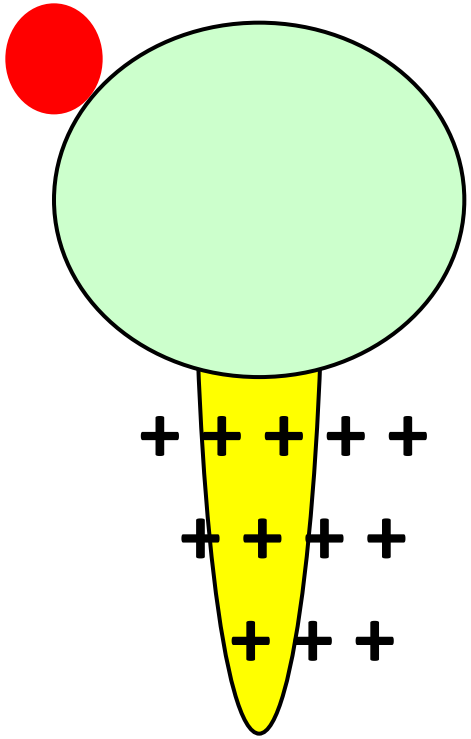
**Buprenorphine**

Partial Agonist



**Methadone**

Agonist



# Accepted Manuscript


Substance Use Disorders in Pregnancy: Clinical, Ethical, and Research Imperatives of the Opioid Epidemic

Jeffrey Ecker, MD, Alfred Abuhamad, MD, Washington Hill, MD, Jennifer Bailit, MD, Brian T. Bateman, MD, Vincenzo Berghella, MD, Tiffany Blake-Lamb, MD, Constance Guille, MD, Ruth Landau, MD, Howard Minkoff, MD, Malavika Prabhu, MD, Emily Rosenthal, MD, Mishka Terplan, MD, Tricia E. Wright, MD, Kimberly A. Yonkers, MD

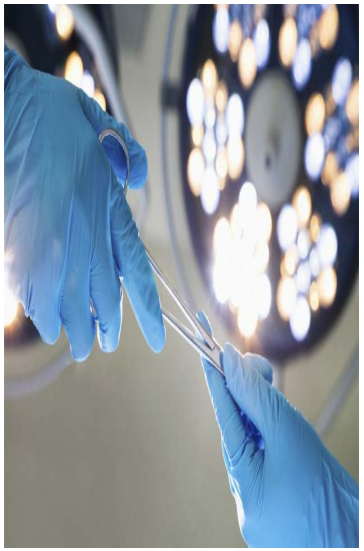
- Joint Workshop Report
  - Society for Maternal-Fetal Medicine,
  - American College of Obstetricians and Gynecologists
  - American Society of Addiction Medicine

# Pain Management for L&D

- Opioid-Naïve Woman
  - –Vaginal delivery
  - –Cesarean delivery
- Opioid-Dependent Women
  - –Vaginal delivery
  - –Cesarean delivery

# Persistent Opioid Use Following C-Section

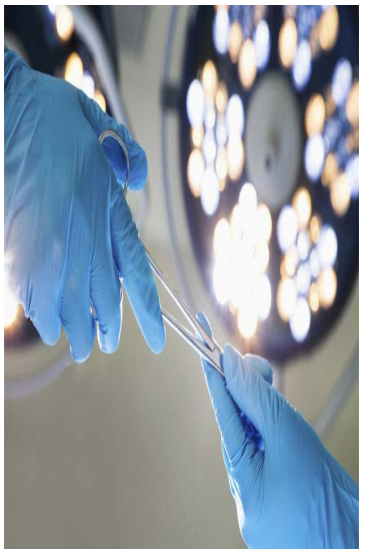
- Opioid-naïve, undergoing c/s (N=392,492)
- Followed 1 year postpartum
- Prevalence of persistent opioid use:
  - 1 in 300
- Risk factors for persistent opioid use
  - Pre-existing psychiatric illness
  - Pain conditions (back pain)
  - Substance use disorder



(Bateman, 2016)

# Leftover Opioids Use Following C-Section

- Opioid-naïve, use of opioids following c/s
  - Median # of dispensed opioid: 40
  - Median # of consumed opioids: 20
  - 95% of women did not dispose of the leftover medications



Osmundson, 2017; Bartels, 2016

# Cesarean Delivery Opioid-Naïve

- Discharge
  - If not taking opioid in hospital
    - Don't prescribe at the time of discharge
  - If taking opioids in the hospital
    - Shared decision-making process select the # of opioids tablets to be prescribed
    - Opioid Naïve: Oxycodone 5mg, 20 tablets

Prabhu, 2018; Osmundson, 2017; Bartels, 2016

# Pain Management for L&D
## Opioid-Dependent Women

- Women with OUD
- >80% will have a history of trauma
  - –Childhood, interpersonal violence
- Child welfare agency/custody
- Newborn withdrawal
- Risk of relapse

# Women with OUD
# Vaginal or Cesarean Delivery

- Remain on MAT throughout L&D
- Divide dose 2-3 per day
- Encourage epidural/spinal-epidural
- Avoid nitrous oxide
- Avoid nalbuphine [Nubain] or butorphanol [Stadol]

Hoflich, 2012; Meyer, 2019

# Women with OUD
# Vaginal Delivery

Opioid-sparing multimodal approach

- Ice pack, heating pad, hydrocortisone, and local anesthetic
- Scheduled:
  - Acetaminophen 975mg q8h PO, or

    Acetaminophen 650mg q6h PO; and
  - Ibuprofen 600mg q6h PO

# Women with OUD
# Vaginal Delivery

Opioid-sparing multimodal approach

- Ketorolac 15mg/30mg IV/IM q6h x 48h
- Laceration/repair: Epidural morphine or hydromorphone prior to catheter removal

Opioids used as-needed, but not first line

# Pain Assessment

- Functional Pain Score
- Is pain interfering with?
  - Mobility
  - Self Care
  - Newborn Care
  - Breastfeeding
  - Coping

# Women with OUD
# Vaginal Delivery

- Opioid-sparing multimodal approach
- Opioids used as-needed based on functional impairment, but not first line
  - At the very least, prescribe what you prescribe for opioid-naïve women with vaginal delivery
    - Short course of oxycodone 5mg (reassess!)
    - Consider: Full opioid agonist with strong affinity for the mu receptor (e.g. fentanyl, hydromorphone).

Hoflich, 2012; Meyer, 2019

# Women with OUD
# Cesarean Delivery

- Pre-operatively
  - Pain consultation
  - Plan for handling prescribed opioids
- Inter-operatively
  - Epidural, spinal or general
  - Acetaminophen, either IV or PO
  - Ketorolac 10mg

Hoflich, 2012; Meyer, 2019

# Women with OUD Cesarean Delivery

- Post-operatively
  - Opioid-sparing multimodal approach
  - Acetaminophen 975mg PO q8hrs standing
  - Ketorolac 30mg IV q6 hours standing for 24 hours, followed by ibuprofen 600mg PO q6 hours
  - Opioid…

# Women with OUD
# Unplanned C/S

- Post-operatively
  - At the very least, prescribe what you prescribe for opioid-naïve women w c/s
    - Oxycodone: Max daily dose of 30mg – or 6 tablets of 5mg as needed, if pain is poorly controlled based on functional score
    - Consider: Full opioid agonist with strong affinity for the mu receptor (e.g. fentanyl or hydromorphone)

Hoflich, 2012; Meyer, 2019

# Acknowledgements


**Mentors & Collaborators**

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National Institutes of Health
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*Putting science to work for the health of women*

National Institute on Drug Abuse
*The Science of Drug Abuse & Addiction*

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