

Gender in Opioid Research: Basic, Clinical and Translational Implications

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Director

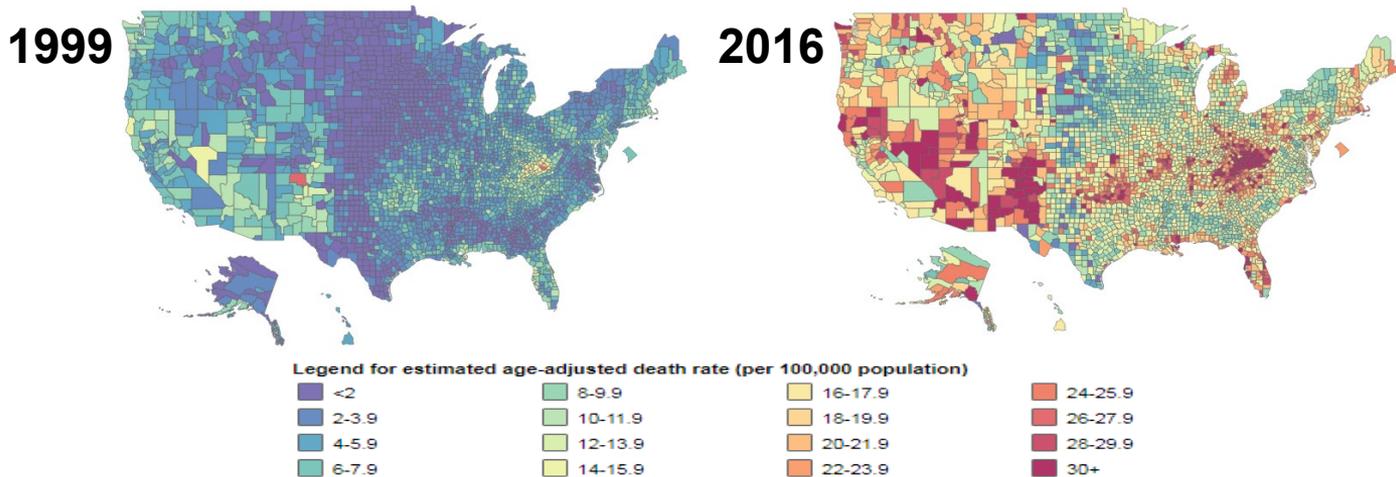


National Institute
on Drug Abuse

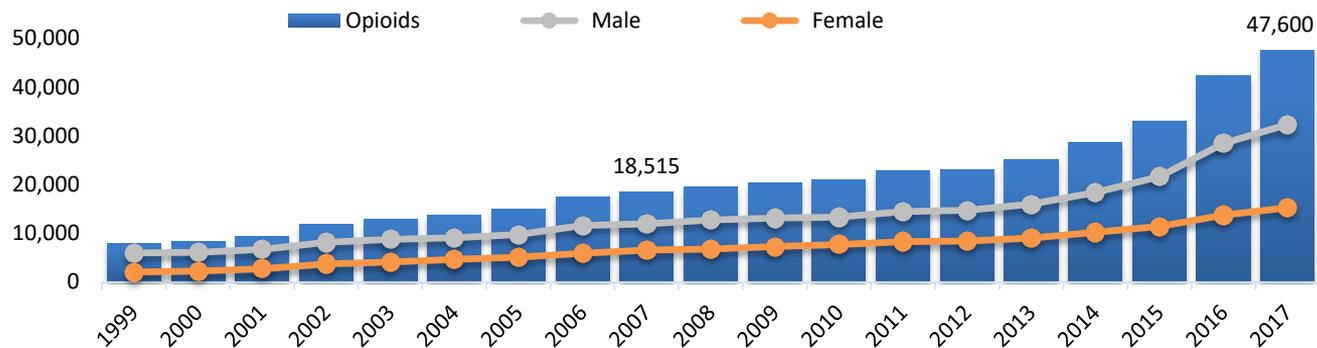
@NIDAnews



Overdose Death Rates

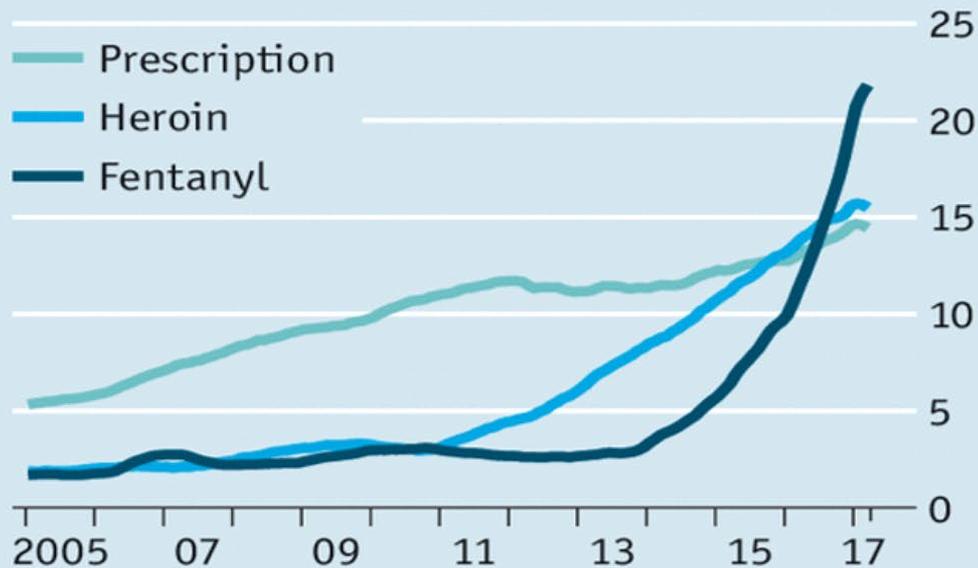


National Drug Opioid Overdose Deaths by Gender



<https://www.cdc.gov/nchs/data-visualization/drug-poisoning-mortality/index.htm>

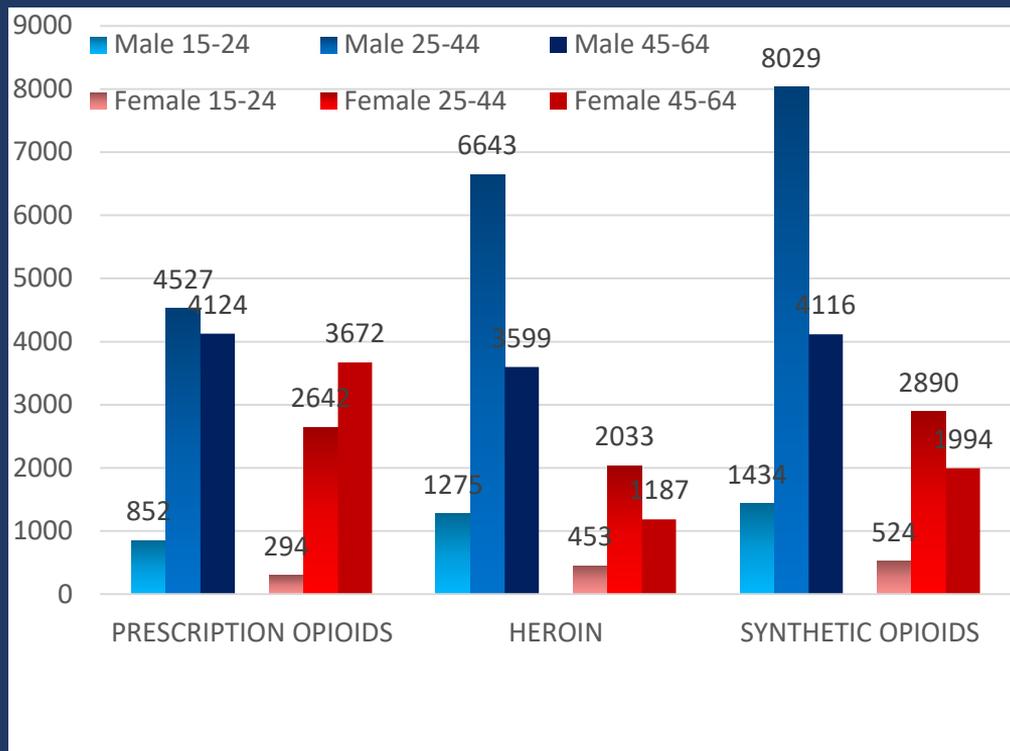
OVERDOSE FATALITIES



Source: Centres for Disease Control and Prevention

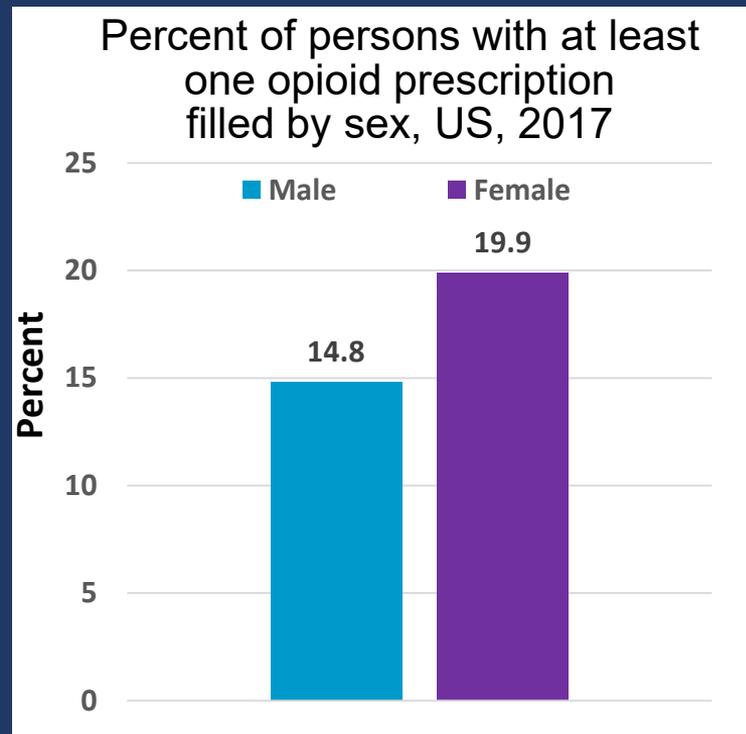
EVOLUTION OF THE OPIOID CRISIS

Overdose Deaths Involving Opioids, U.S., 2016

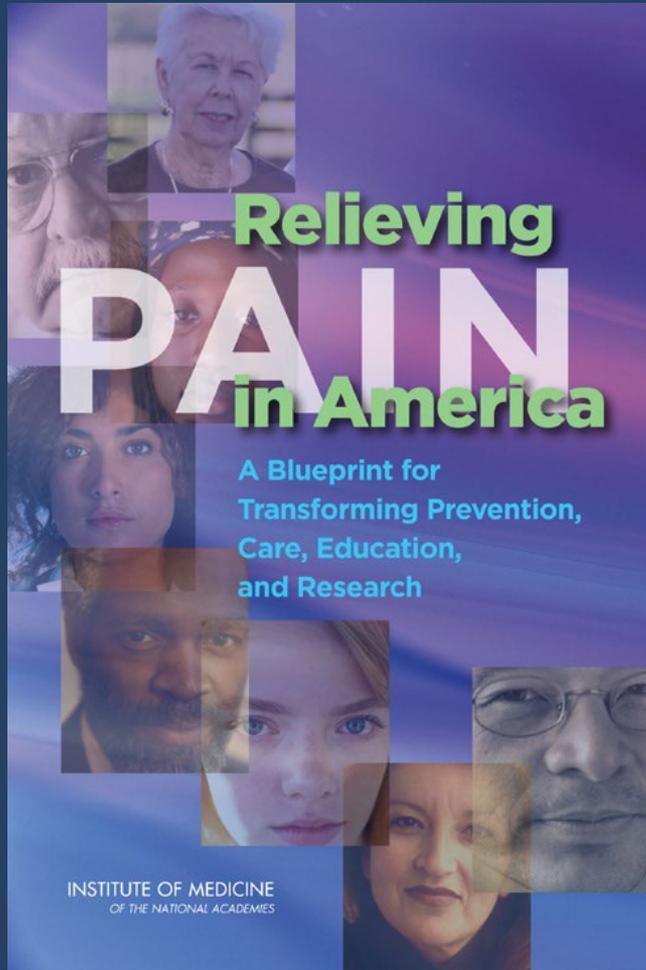


Puja Seth et al., *MMWR, Weekly* / March 30, 2018 / 67(12);349–358.

Sex Related Differences in Opioid Prescribing

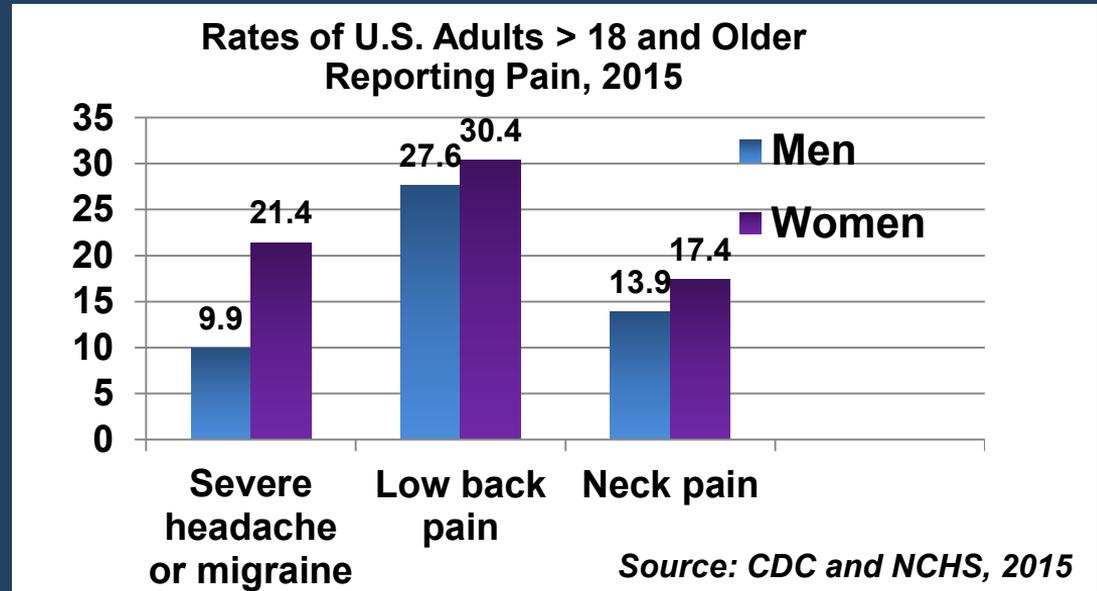


Source: IQVIA™ Total Patient, Tracker, 2017 Enhanced



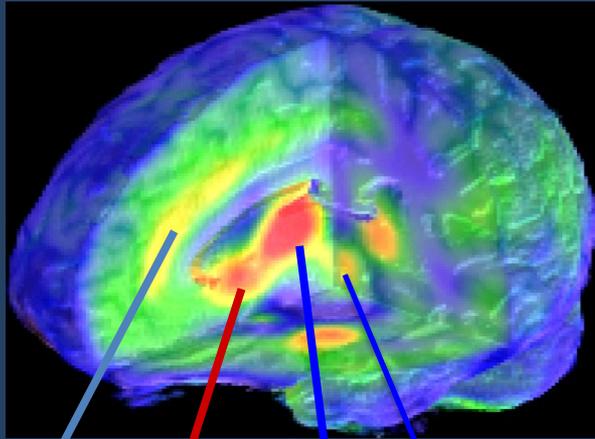
Recommendations included *addressing disparities in the experience of pain*

Women Appeared To Suffer More Pain In Many Categories

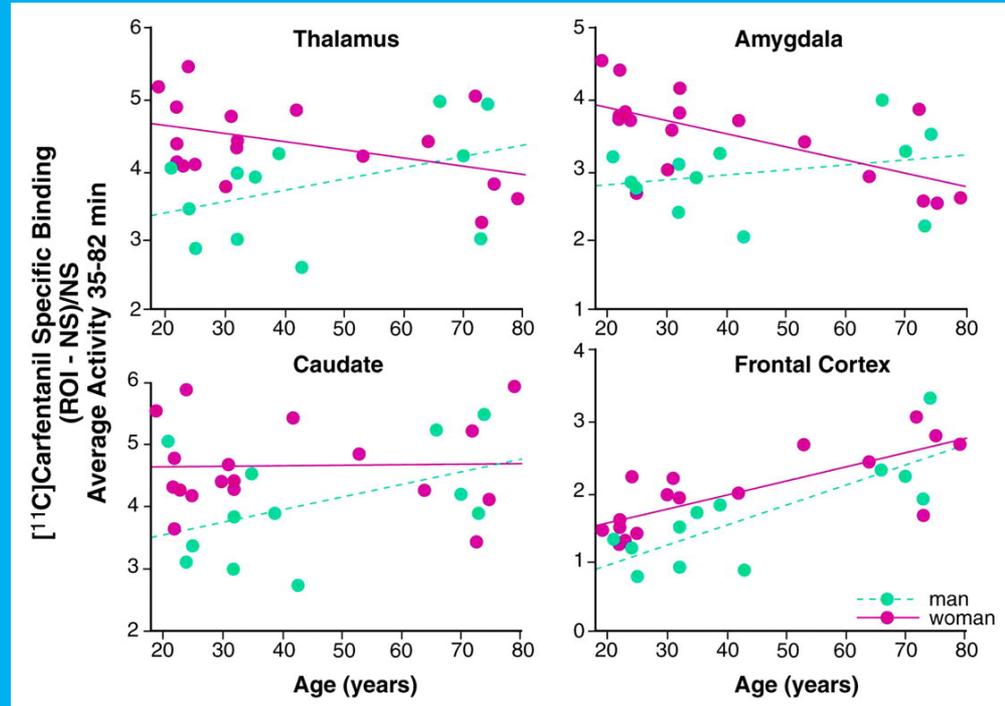


And Women's reports of pain were more likely to be dismissed

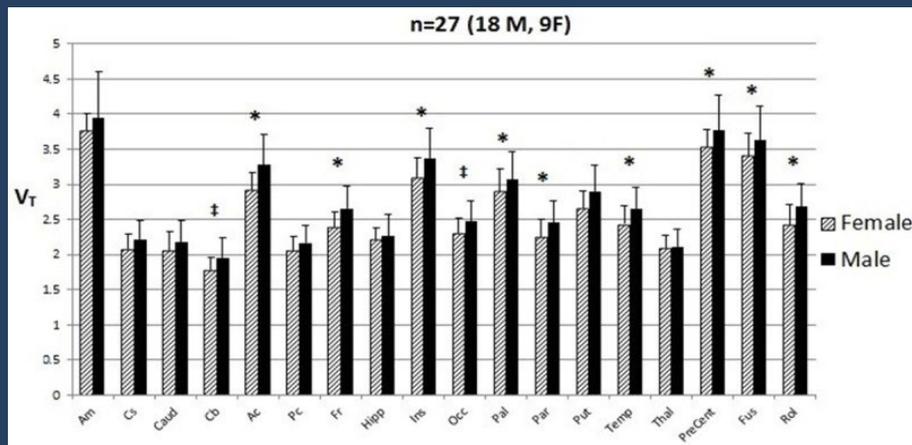
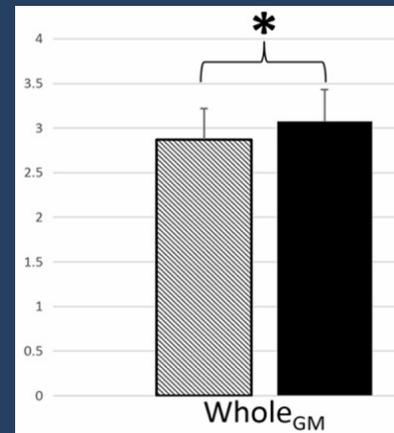
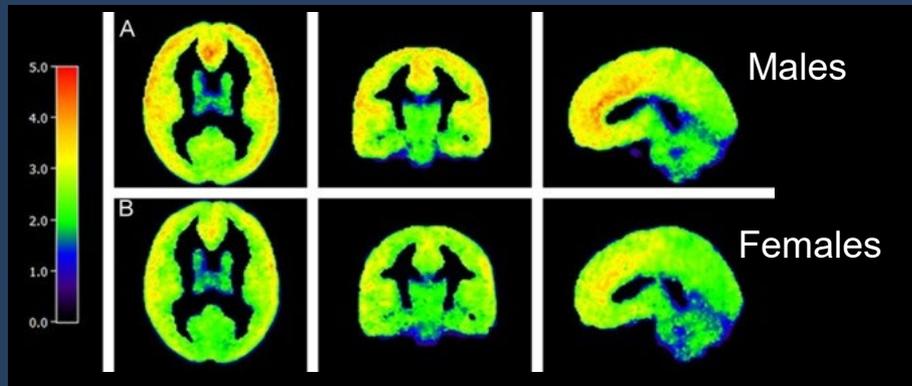
Gender and Age Effects on Mu-Opioid Receptors (MOR) in Human Brain (PET [¹¹C]Carfentanyl)



ACC (pain)
Accumbens (reward)
Thalamus (pain)
PAG (pain)

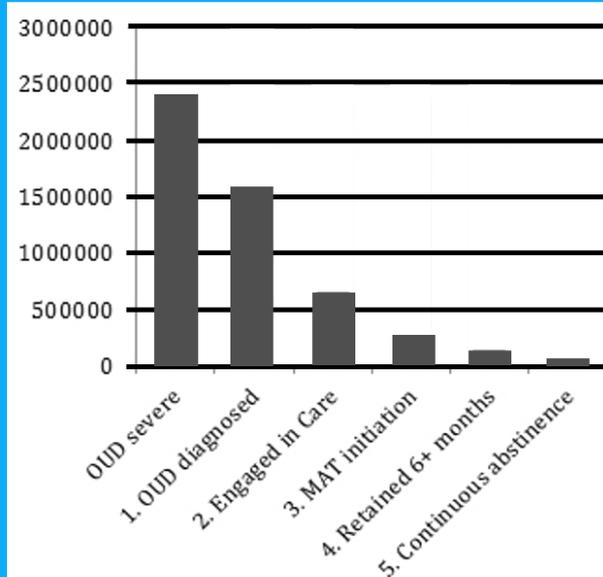
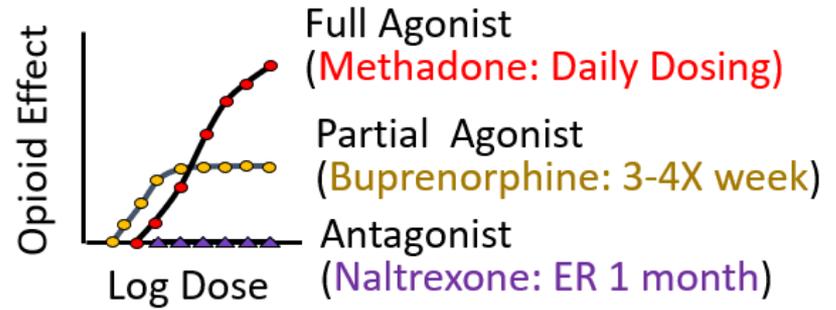


Gender Differences in Kappa Opioid Receptor Availability



- Males had higher K receptor availability than females presumably from increased dynorphin, which is aversive.
- This might help explain gender differences in pain catastrophizing

MEDICATIONS FOR OUD (MOD)



**OAD
CASCADE
OF
CARE IN
USA**

MEDICATIONS FOR OUD (MOD)

DECREASES

OPIOID USE
OPIOID-RELATED
OVERDOSE DEATHS
CRIMINAL ACTIVITY
INFECTIOUS DISEASE
TRANSMISSION

INCREASES

SOCIAL FUNCTIONING
RETENTION IN
TREATMENT

MOD IS HIGHLY UNDERUTILIZED!
RELAPSE RATES ARE VERY HIGH (50% IN 6 MONTHS)

Priority Research Areas

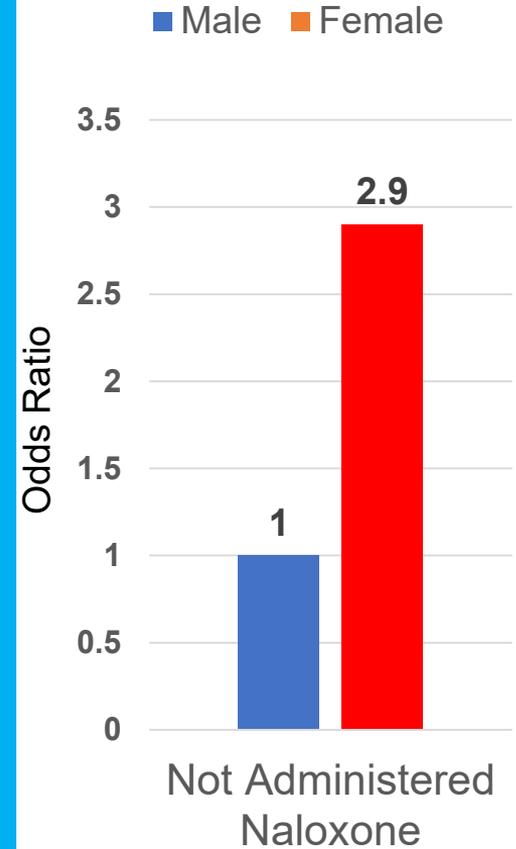
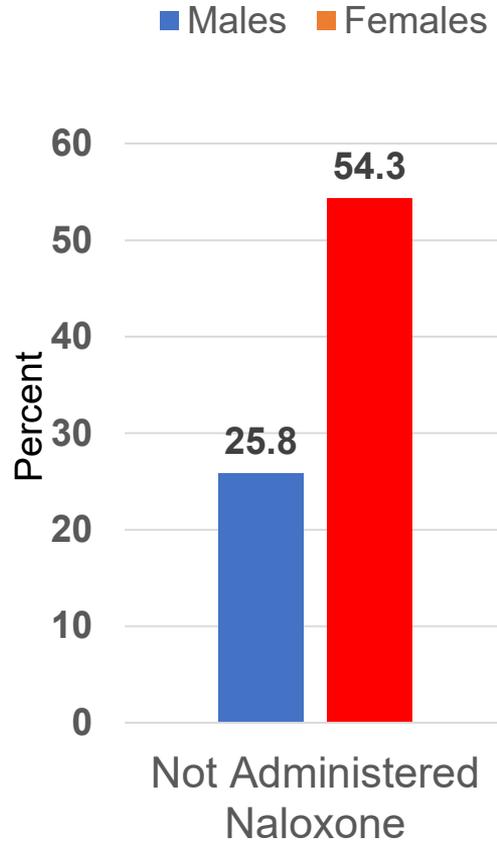
EXPAND THERAPEUTIC
OPTIONS

OPTIMIZE EFFECTIVE
TREATMENT STRATEGIES

DEVELOP NEW/IMPROVED
PREVENTION & TREATMENT
STRATEGIES

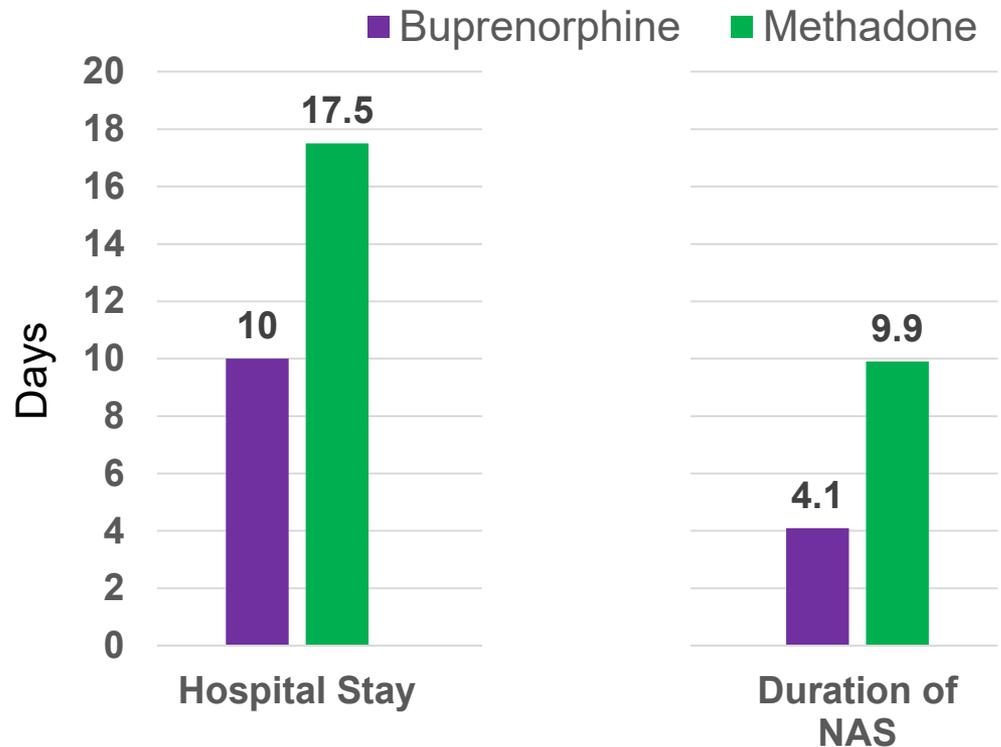
ENHANCE TREATMENTS
FOR INFANTS WITH
NAS/NOWS

Women Are Less Likely To Receive Naloxone Than Males



Offspring of mothers receiving BUP had shorter hospital stays than mothers receiving methadone

and shorter duration of Neonatal Abstinence Syndrome (NAS)



If BUP is adopted as standard of care, then
7.5 fewer hospital days X \$1,500/day x 23,000
babies = **\$258,750,000 SAVINGS/YEAR**

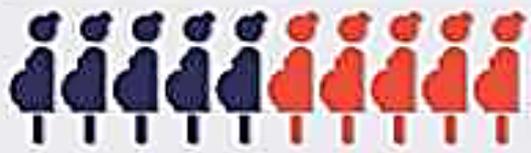
Jones, et al., NEJM, 2010.

Opioid agonist therapy (OAT) is evidence-based treatment for opioid use disorders, often using medications like *buprenorphine* or *methadone*. OAT decreases the risk of overdose death and improves pregnancy outcomes

Surveying OAT providers in 4 Appalachian states in 2017 revealed



91% of opioid treatment programs accepted pregnant patients



53% of buprenorphine providers accepted pregnant patients

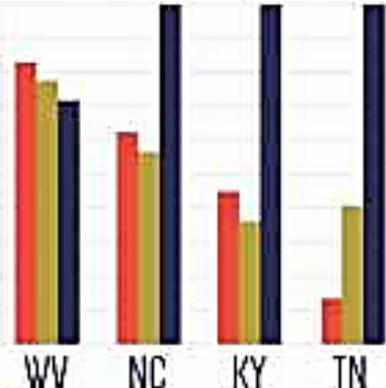


OAT providers were *less likely* to treat pregnant women

Only **1/2** of providers accepted any insurance



Wait times: **>2x** longer for pregnant women *with insurance* than for those paying cash



Percentage of OAT providers accepting **Medicaid, Private Insurance, & Cash**

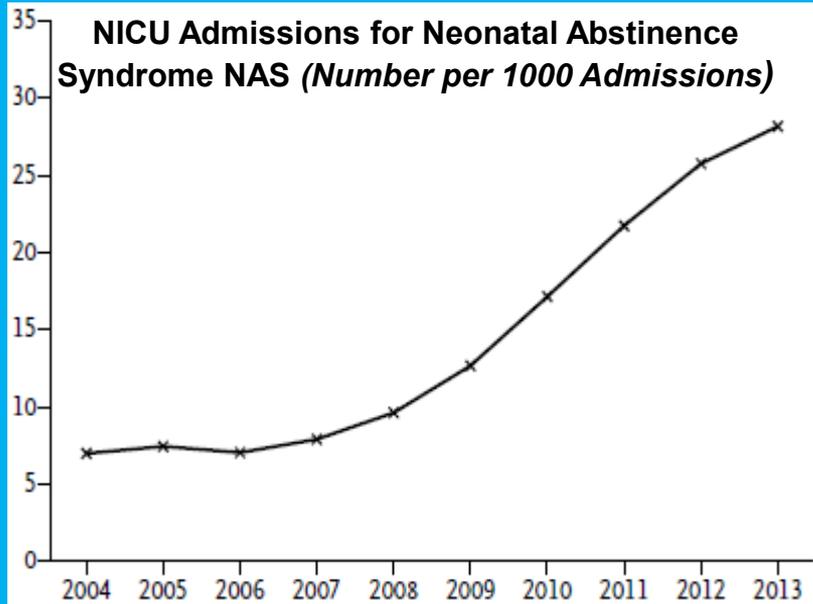
Pregnancy: Barriers to Accessing MOD

Graphic Courtesy of Department of Health Policy, Vanderbilt University School of Medicine/Data from Patrick SW et al., Substance Abuse 2018.

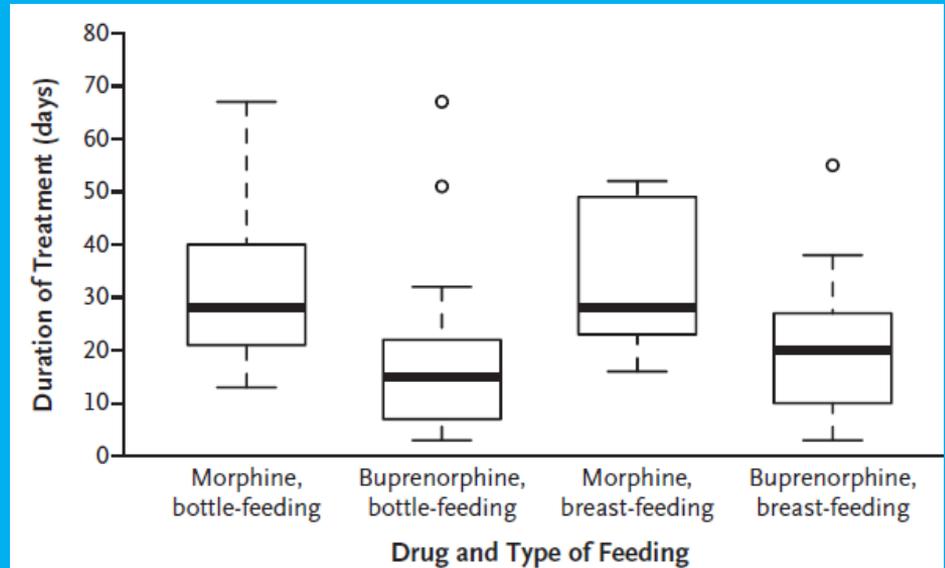


NAS Treatment

17% of pregnant women are prescribed an opioid during pregnancy



Buprenorphine for NAS Tx



Buprenorphine resulted in a *shorter duration of NAS treatment* and *length of hospital stay* than treatment with morphine

HEALTHY BRAIN AND CHILD DEVELOPMENT (HBCD) STUDY

Large multi-site longitudinal study to examine brain, cognitive, behavioral, social, and emotional development beginning prenatally and extending through childhood.

Oversample for prenatal opioid exposure

