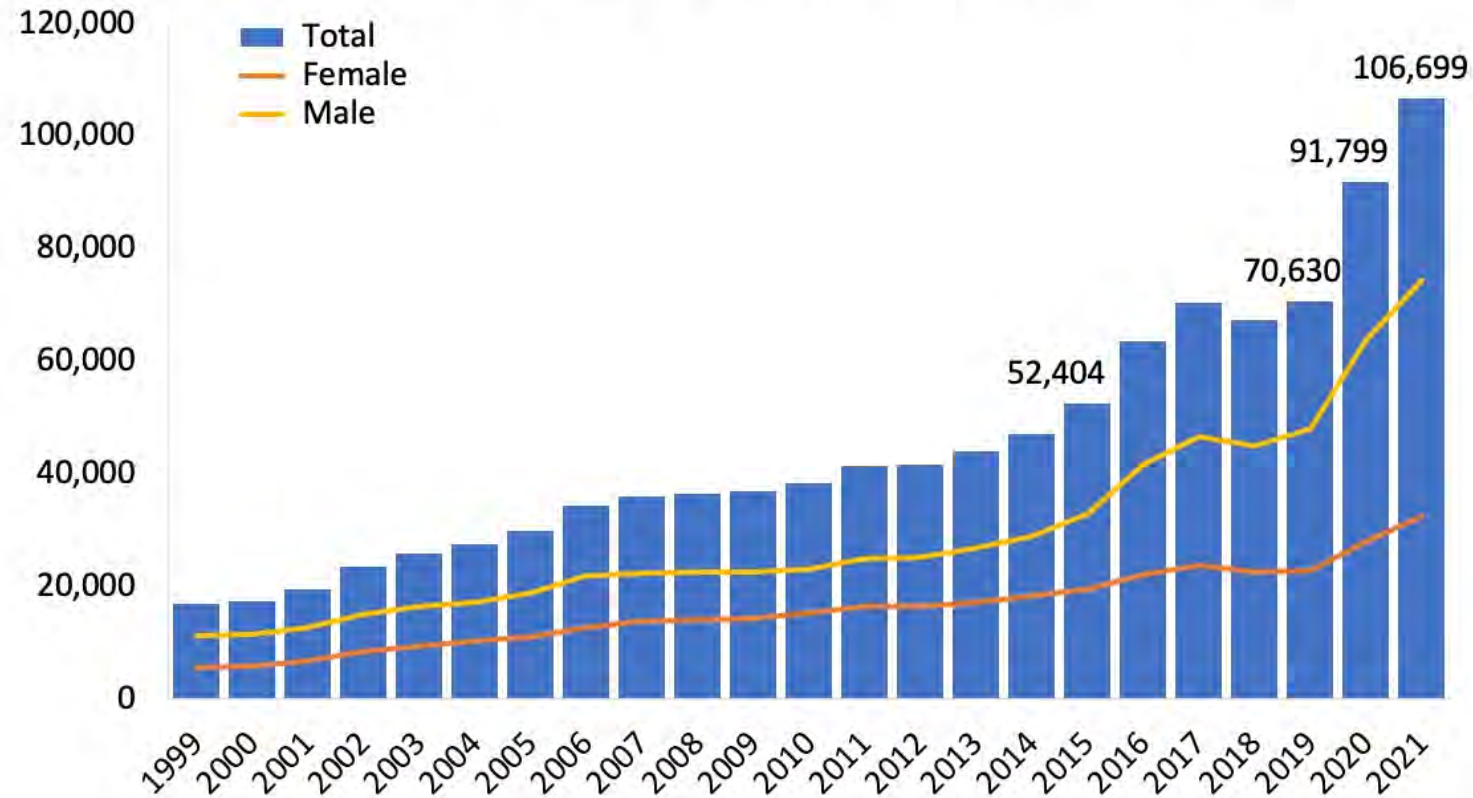


# **Substance Use in Pregnancy and Postpartum: Special Focus on Opioid Use Disorder**

**John Dougherty, MD, Medical Director Maternal Substance Use Disorder Program**  
**Taffy Anderson, MD, OB/GYN, Addiction Medicine**



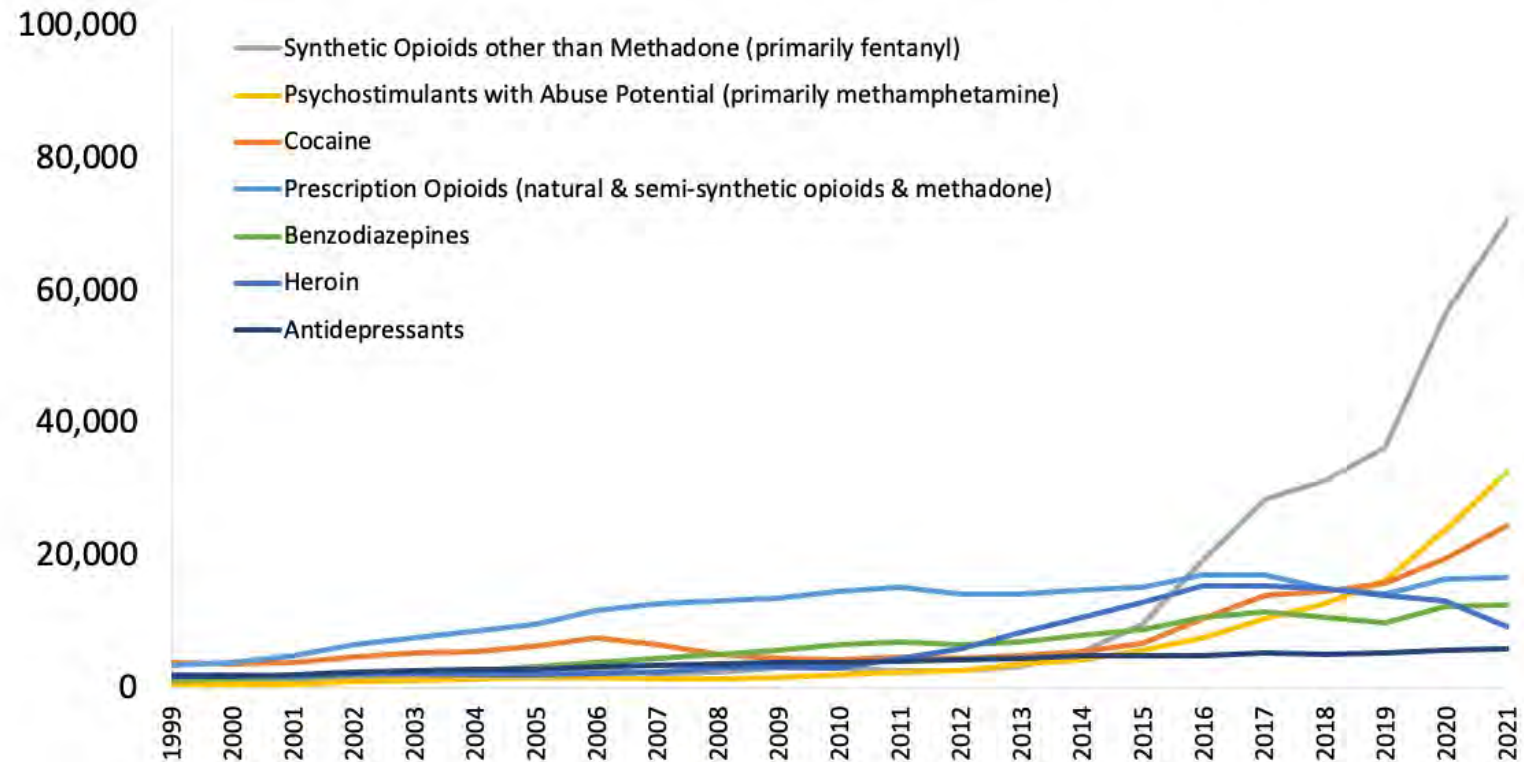
**Figure 1. National Drug-Involved Overdose Deaths\*,  
Number Among All Ages, by Gender, 1999-2021**



\*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2021 on CDC WONDER Online Database, released 1/2023.



Figure 2. National Drug-Involved Overdose Deaths\*,  
Number Among All Ages, 1999-2021



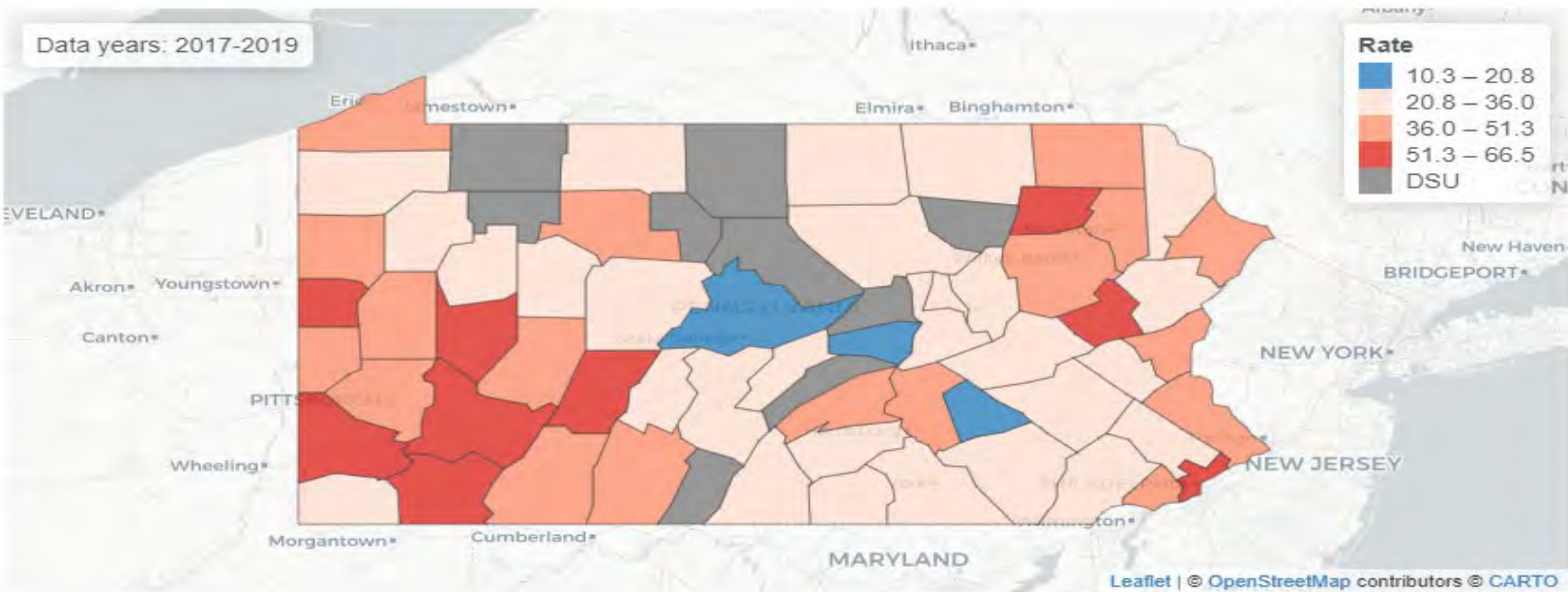
\*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999–2021 on CDC WONDER Online Database, released 1/2023.



# SU-03: Drug overdose death rate (LHI)

(Historical Trends from PA – DOH)

| Objective details |   |
|-------------------|---|
| Measure:          | Age-adjusted drug overdose death rate per 100,000                 |
| Goal:             | Less than or equal to 20.7 by 2030                                |
| Data years:       | 2017-2019 for map, 2013-2015 through 2017-2019 for table          |
| Data source:      | Pennsylvania Death Certificate, Pennsylvania Department of Health |



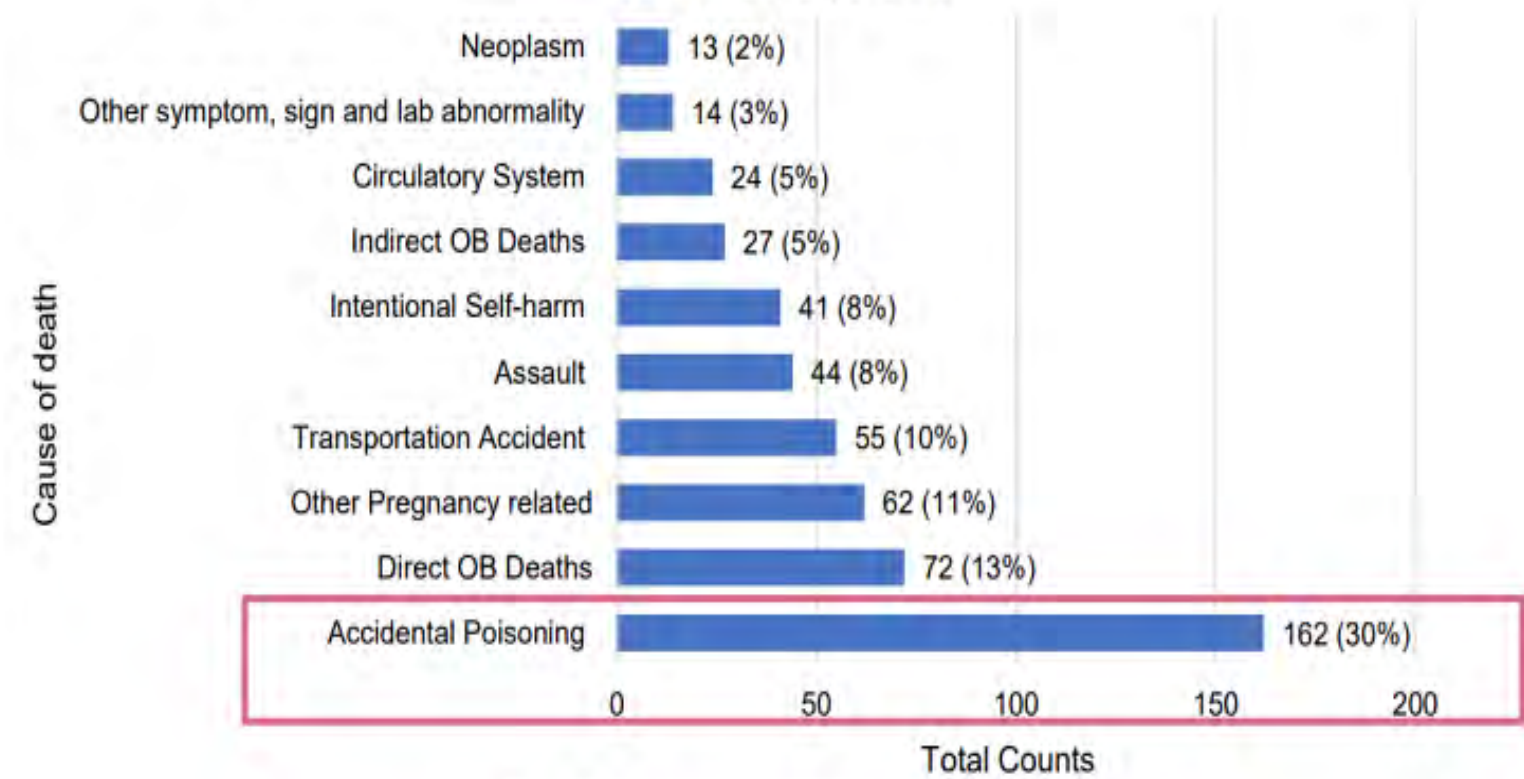
| County       | 2013-2015 | 2014-2016 | 2015-2017 | 2016-2018 | 2017-2019 | Met goal |
|--------------|-----------|-----------|-----------|-----------|-----------|----------|
| Pennsylvania | 20.4      | 23.8      | 31.7      | 40.7      | 40.1      | No       |





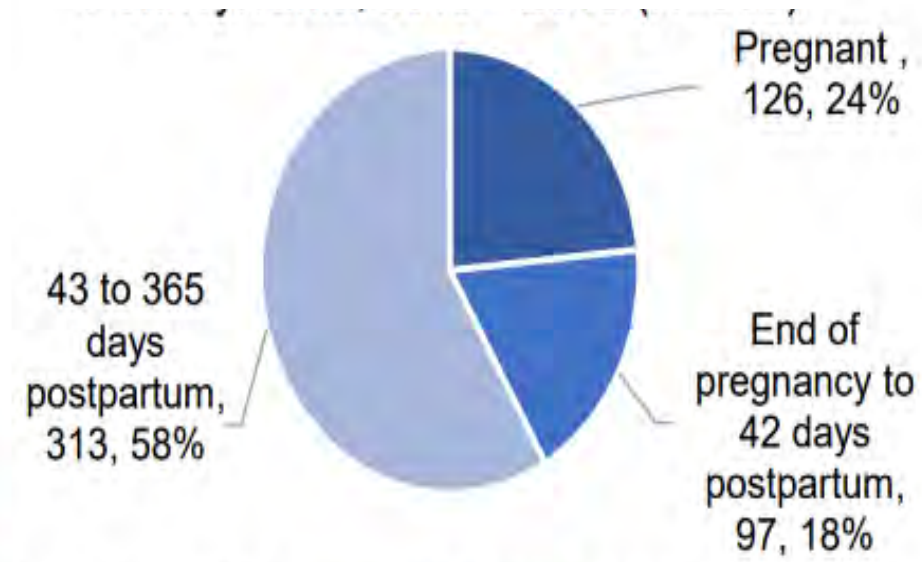
# Pregnancy-Associated Deaths PA

**Figure 11.** Leading Causes of Pregnancy-Associated Deaths in Pennsylvania, 2013 – 2018 (N=547)



Note: Numbers rounded to the nearest whole.  
Data Source: DOH Bureau of Health Statistics & Registries

**Figure 9.** Distribution of Pregnancy-Associated Deaths by Time Between Pregnancy and Death in Pennsylvania, 2013-2018 (N=536)

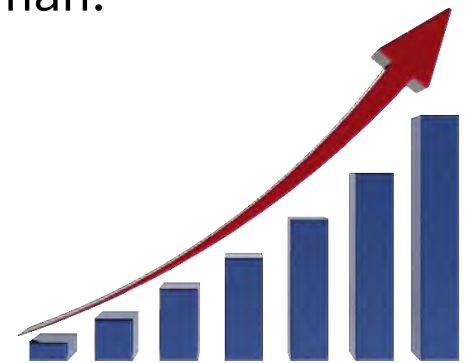


Data source: DOH Bureau of Health Statistics & Registries

<https://www.health.pa.gov/topics/Documents/Diseases%20and%20Conditions/Pregnancy%20Associated%20Deaths%202013-2018%20FINAL.pdf>

# Substance Use in Pregnancy

- The Centers for Disease Control and Prevention reported that national opioid use disorder (OUD) rates at delivery have more than quadrupled from 1999 to 2014.
- In 2017, the American College of Obstetricians and Gynecologists (ACOG) Committee Opinion on Opioid Use and Opioid Use Disorder in Pregnancy included the following recommendations and conclusions:
  - Early universal screening, brief intervention, and referral for treatment (BIRT) of pregnant women with opioid use or opioid use disorder improve maternal and infant outcomes
  - Screening for substance use should be part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman.
  - Routine screening should rely on validated screening tools



# Substance Use in Pregnancy

- To combat the opioid epidemic, all health care providers (clinicians, nursing, leadership) need to take an active role in providing health care
- Pregnancy provides an important opportunity to identify and treat women with substance use disorders
- Substance use disorders affect women across all racial and ethnic groups and all socioeconomic groups, and affect women in rural, urban, and suburban populations

*Opioid use and opioid use disorder in pregnancy. Committee Opinion No 711. American college of Obstetricians and Gynecologists. Obstetrics & Gynecology 2017; 130:e81-94.*



# Addiction

- A treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual's life experiences
- People with addiction use substances or engage in behaviors that become compulsive and often continue despite harmful consequences
- Prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases
- Repeat substance use results in brain changes that affect self-control
  - Most drugs affect “reward circuit” and result in excess dopamine
  - Long-term effects include impaired learning, judgment, decision-making, stress response, memory and behavior



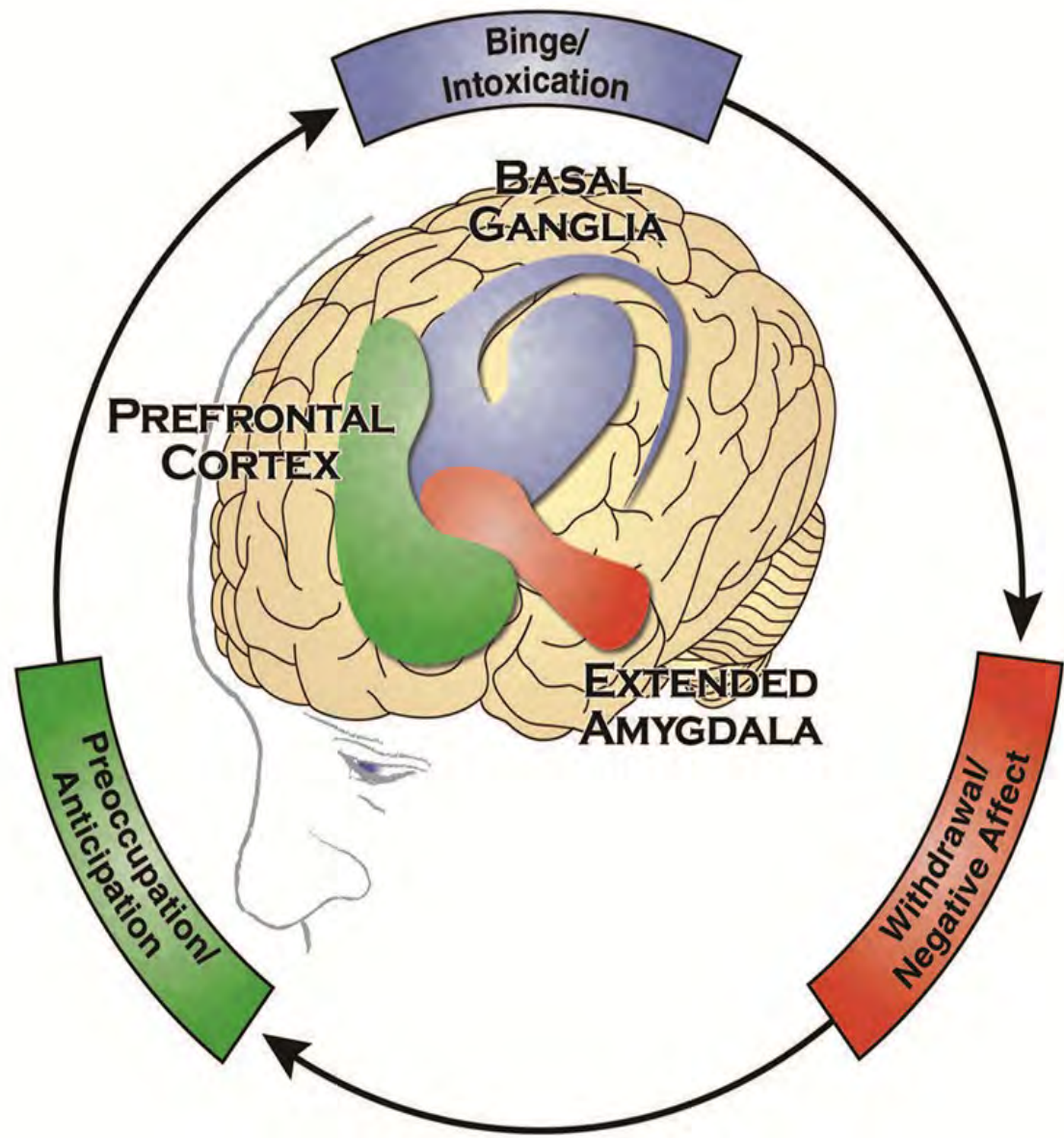


# The Neurobiology of Addiction

## Three Stages of the Addiction Cycle:

- 1. Binge/Intoxication:** an individual uses an intoxicating substance and experiences its rewarding or pleasurable effects, involves the basal ganglia of the brain
- 2. Withdrawal/Negative Affect:** an individual experiences a negative emotional state in the absence of the substance, involves extended amygdala of the brain
- 3. Preoccupation/Anticipation:** an individual seeks substance use again after a period of abstinence, involves the prefrontal cortex of the brain





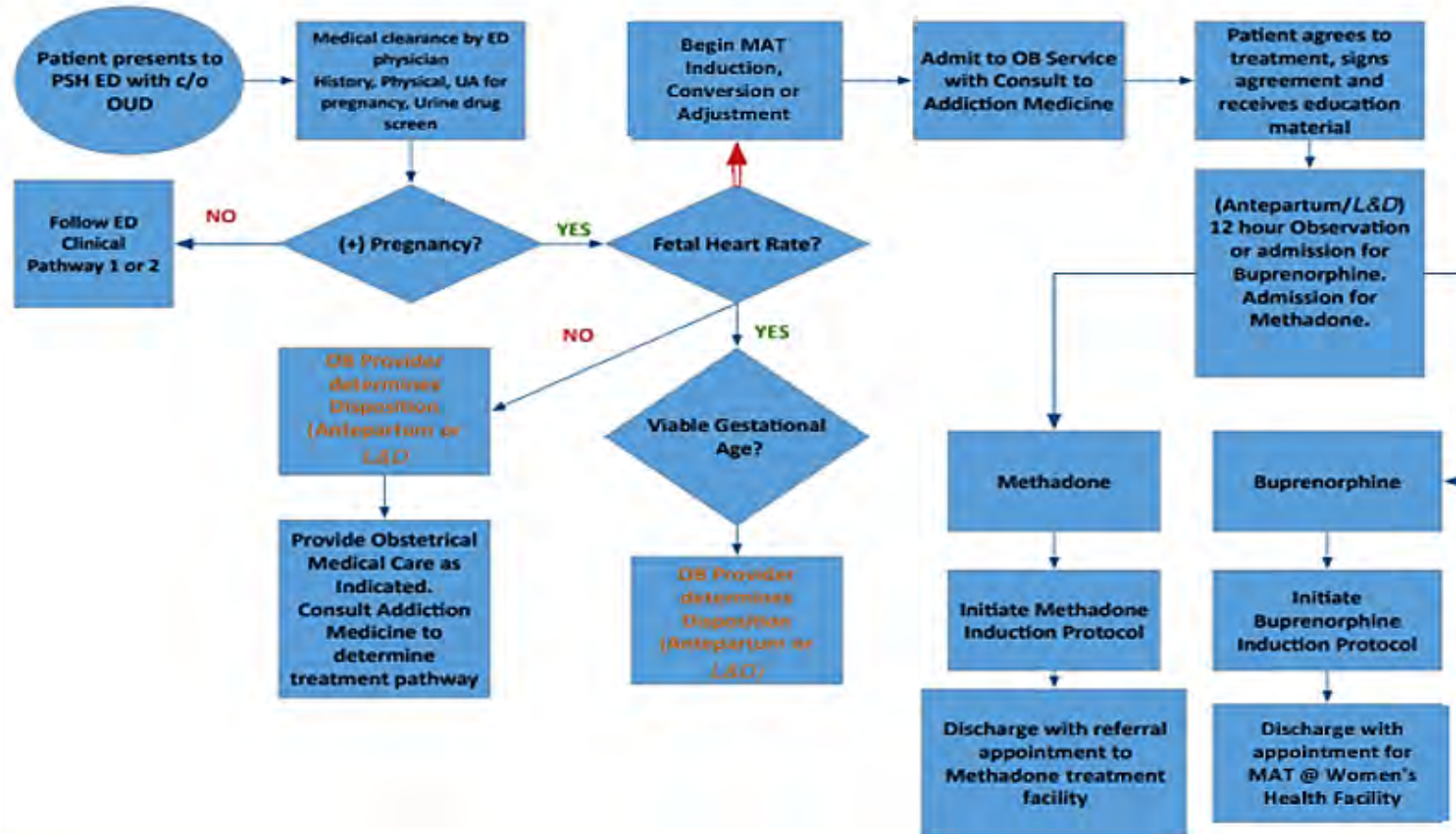
# Other Factors Contributing to Addiction

- Genetics & epigenetics
- Environmental factors
- Social factors
- Unaddressed trauma (Adverse Childhood Experiences & PTSD)
- Mental Illnesses (ADHD, depression, bipolar disorders, anxiety disorders etc...)



# Hershey Medical Center Inpatient Program To Treat Women With Opioid Use Disorder

## Clinical Pathway: Treating OUD in Pregnancy And Observation/Admission For Induction



## Multidisciplinary Team:

- Obstetrics/Gynecology
- Addiction Medicine
- Pediatric Neonatal Intensive Care
- Psychiatry/Behavioral Health
- Pain Management
- Certified Recovery Specialist
- Social Services/Case Management





# Purpose Of Medication For Opioid Use Disorder (MOUD)

Allow reestablishment of homeostasis of the reward pathways in the brain away from substances

- Restore emotional and decision-making capacities
- Control symptoms of opioid withdrawal
- Suppress opioid cravings
- Block the reinforcing effects of ongoing opioid use and reduce/discontinue use
- Promote and facilitate patient engagement in recovery-oriented activities
- Coupled with behavioral interventions

Enhance the salience of natural, healthy rewards

Reduce stress reactivity and negative emotional state

Improve self-regulation

Increase avoidance of relapse triggers

Volkow, et al, NEJM. 2016 ASAM National Practice Guideline, June 1, 2015. 11 Goals of Medication



# Benefits Of Medication For Opioid Use Disorder (MOUD) In Pregnancy

## Maternal:

- 70% reduction in overdose related deaths
- Decrease in risk of HIV, HBV, HCV
- Increased engagement in prenatal care and recovery treatment

## Infant:

- Reduces fluctuations in maternal Opioid levels; reducing fetal stress
- Decrease in intrauterine fetal demise
- Decrease in intrauterine growth restriction
- Decrease in preterm delivery



# COWS Wesson & Ling, J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9.

## Clinical Opiate Withdrawal Scale

|   |  |
|---|--|
| <p>Resting Pulse Rate: _____ beats/minute<br/> <i>Measured after patient is sitting or lying for one minute</i></p> <p>0 Pulse rate 80 or below<br/>         1 Pulse rate 81-100<br/>         2 Pulse rate 101-120<br/>         4 Pulse rate greater than 120</p>   | <p>GI Upset: <i>over last 1/2 hour</i></p> <p>0 No GI symptoms<br/>         1 Stomach cramps<br/>         2 Nausea or loose stool<br/>         3 Vomiting or diarrhea<br/>         5 Multiple episodes of diarrhea or vomiting</p>                                     |
| <p>Sweating: <i>over past 1/2 hour not accounted for by room temperature or patient activity</i></p> <p>0 No report of chills or flushing<br/>         1 Subjective report of chills or flushing<br/>         2 Flushed or observable moistness on face<br/>         3 Beads of sweat on brow or face<br/>         4 Sweat streaming off face</p>   | <p>Tremor: <i>observation of outstretched hands</i></p> <p>0 No tremor<br/>         1 Tremor can be felt, but not observed<br/>         2 Slight tremor observable<br/>         4 Gross tremor or muscle twitching</p>   |
| <p>Restlessness: <i>Observation during assessment</i></p> <p>0 Able to sit still<br/>         1 Reports difficulty sitting still, but is able to do so<br/>         3 Frequent shifting or extraneous movements of legs/arms<br/>         5 Unable to sit still for more than a few seconds</p>   | <p>Yawning: <i>Observation during assessment</i></p> <p>0 No yawning<br/>         1 Yawning once or twice during assessment<br/>         2 Yawning three or more times during assessment<br/>         4 Yawning several times/minute</p>                               |
| <p>Pupil size</p> <p>0 Pupils pinned or normal size for room light<br/>         1 Pupils possibly larger than normal for room light<br/>         2 Pupils moderately dilated<br/>         5 Pupils so dilated that only the rim of the iris is visible</p>  | <p>Anxiety or irritability</p> <p>0 None<br/>         1 Patient reports increasing irritability or anxiousness<br/>         2 Patient obviously irritable anxious<br/>         4 Patient so irritable or anxious that participation in the assessment is difficult</p> |
| <p>Bone or Joint aches: <i>If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored</i></p> <p>0 Not present<br/>         1 Mild diffuse discomfort<br/>         2 Patient reports severe diffuse aching of joints/ muscles<br/>         4 Patient is rubbing joints or muscles and is unable to sit still because of discomfort</p> | <p>Gooseflesh skin</p> <p>0 Skin is smooth<br/>         3 Piloerection of skin can be felt or hairs standing up on arms<br/>         5 Prominent piloerection</p>  |
| <p>Runny nose or tearing: <i>Not accounted for by cold symptoms or allergies</i></p> <p>0 Not present<br/>         1 Nasal stuffiness or unusually moist eyes<br/>         2 Nose running or tearing<br/>         4 Nose constantly running or tears streaming down cheeks</p>  | <p>Total Score _____<br/>         The total score is the sum of all 11 items<br/>         Initials of person completing Assessment: _____</p>  |

Score:        5-12 mild; 13-24 moderate; 25-36 moderately severe; more than 36 = severe withdrawal



# Comfort Medications

- Clonidine 0.1mg PO QID if hypertensive (hold if hypotensive, HR<60 or postural hypotension ensues; can give higher doses, up to 0.3mg PO TID if tolerated.)
- Clonidine patch if necessary
- Acetaminophen 1,000mg PO Q8H for pain control
- Promethazine or Ondansetron for nausea/vomiting
- Loperamide for diarrhea (Diphenoxylate as a last resort)
- Cyclobenzaprine for myalgias
- Hydroxyzine for anxiety, lacrimation or rhinorrhea (ensure no other antihistamines recently)
- Dicyclomine for stomach cramps
- Diphenhydramine 25 mg q 6hr for runny nose





# Urine Drug Testing

- Initial screen is often an immunoassay, may not cover all drugs, if positive confirmatory testing is done by gas or liquid chromatography and mass spectrometry to identify what substances are present
  - Opioids (synthetic & non-synthetic)
  - Oxycodone
  - Methadone
  - Cannabinoids
  - Amphetamines/Methamphetamine
  - Cocaine
  - Phencyclidine (PCP)
  - Barbiturates
  - Benzothiazines
  - Other (xylazine, etc...)



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