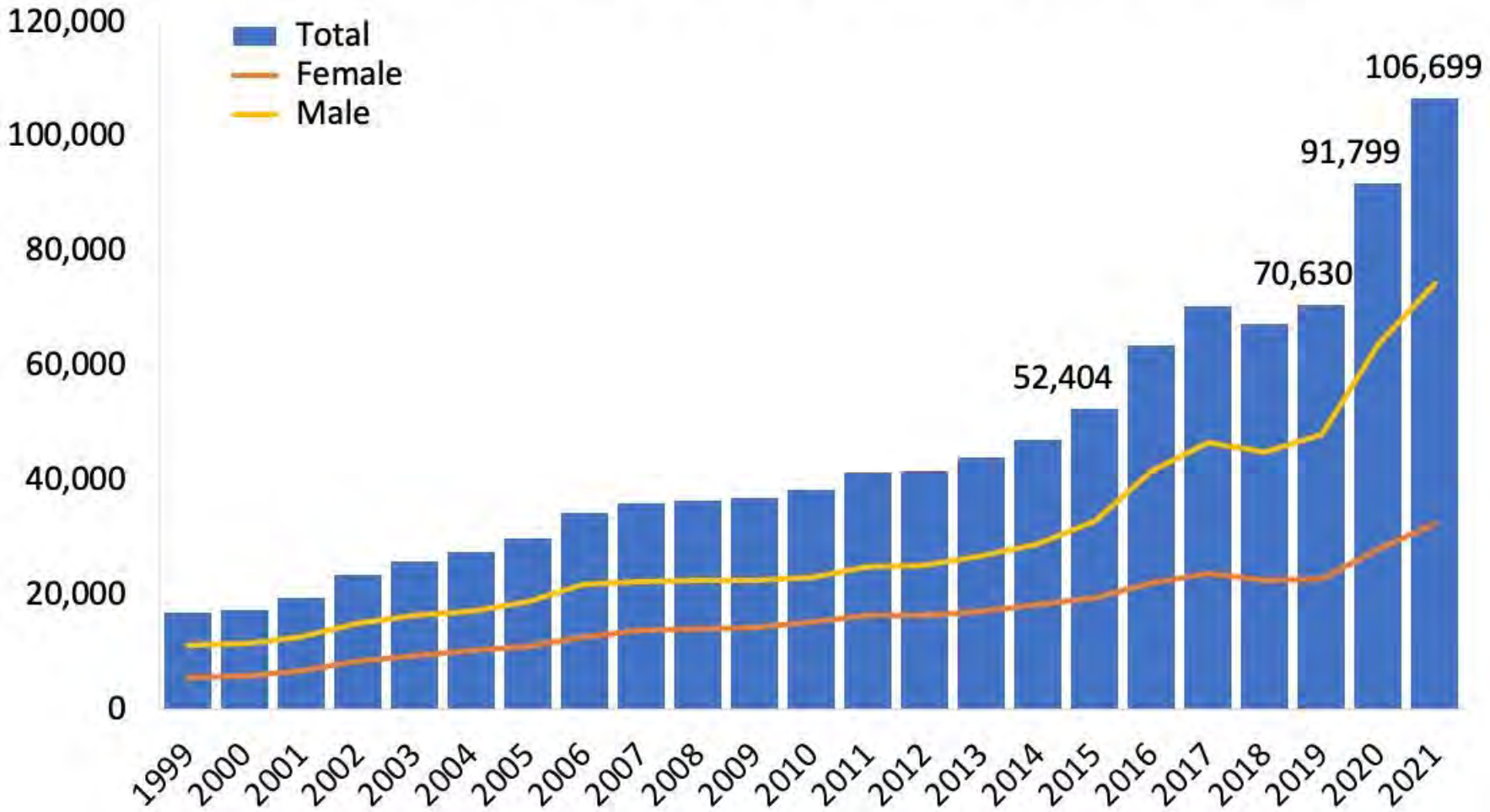
Substance Use in Pregnancy and Postpartum: Special Focus on Opioid Use Disorder

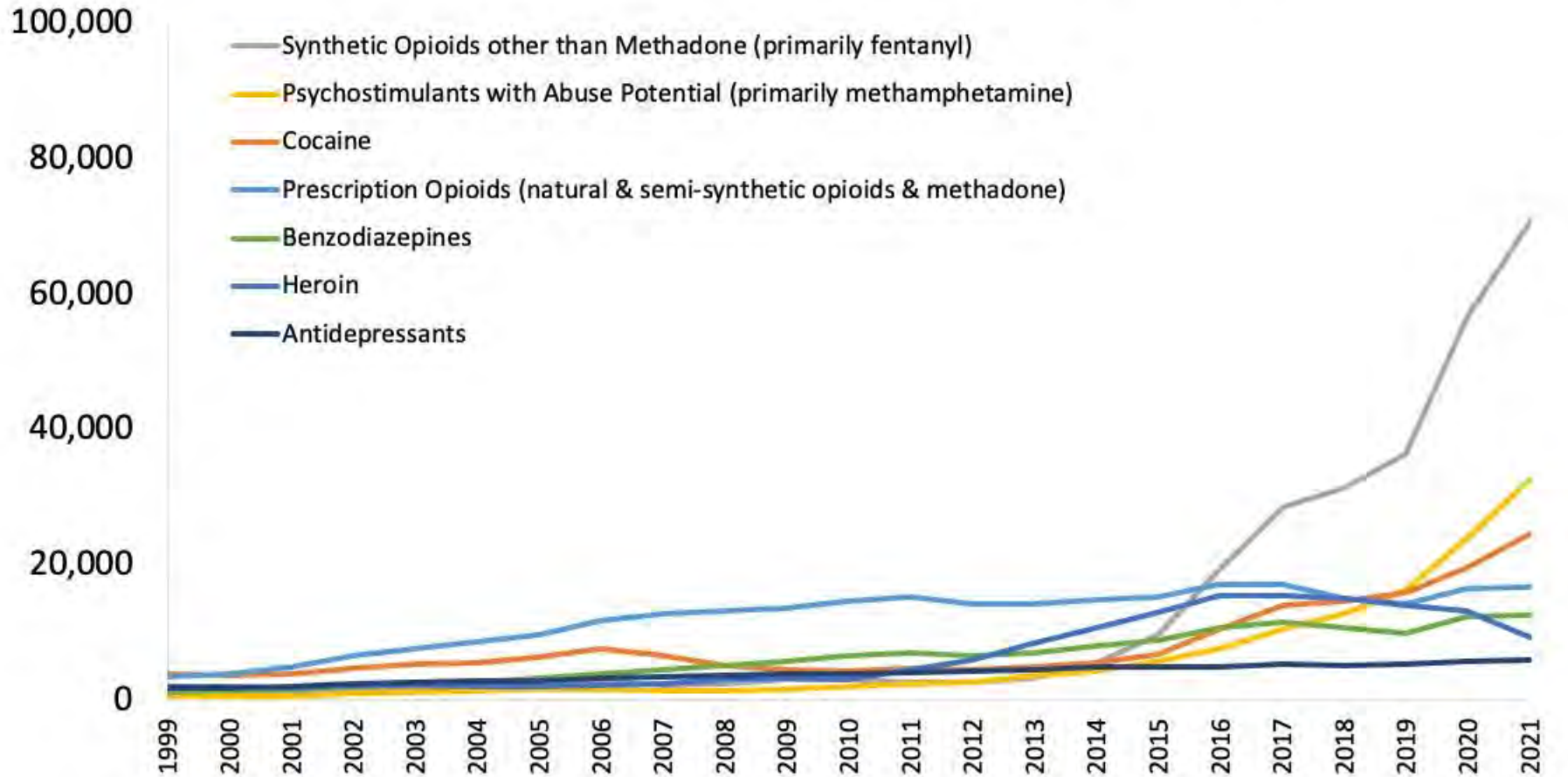
John Dougherty, MD, Medical Director Maternal Substance Use Disorder Program
Taffy Anderson, MD, OB/GYN, Addiction Medicine

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

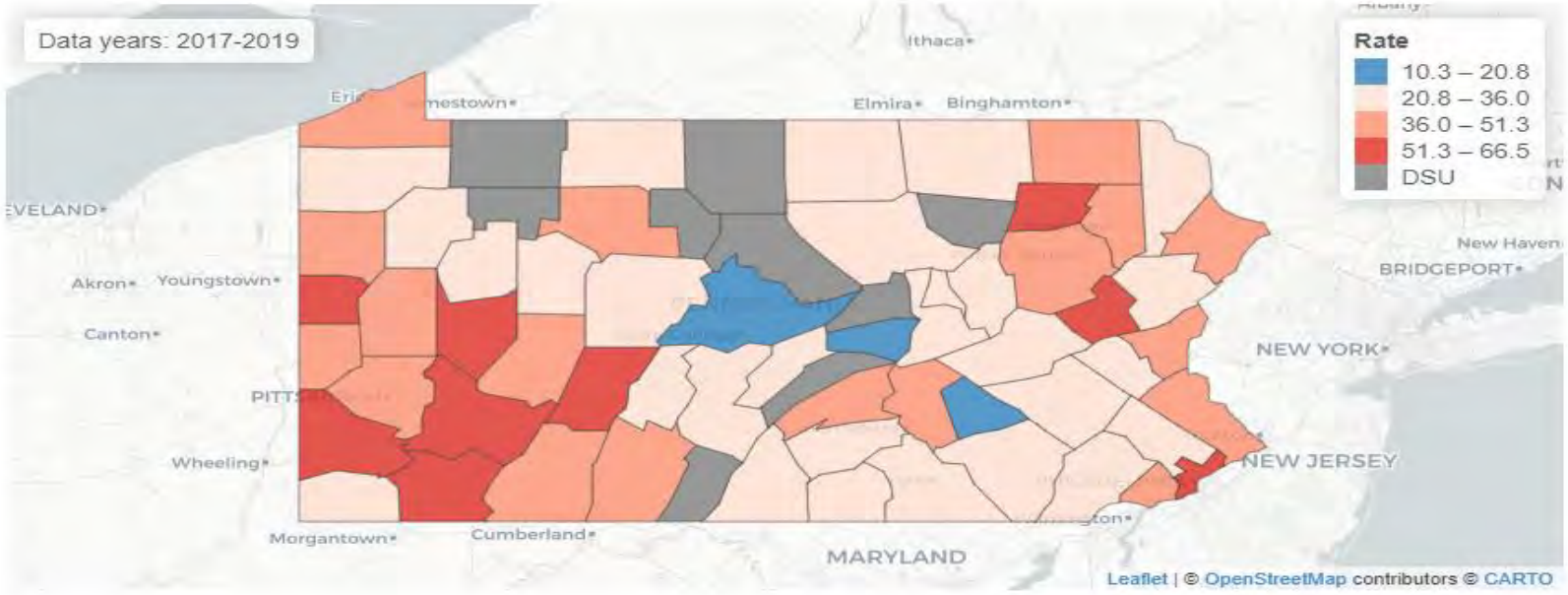


*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision.
Source: Centers for Disease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

(Historical Trends from PA – DOH)

SU-03: Drug overdose death rate (LHI)

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

PA Department of Health Data Source:
https://www.health.pa.gov/topics/HealthStatistics/HealthyPeople/Documents/current/county/su-03-drug-overdose-death-rate-lhi.aspx

Pregnancy-Associated Deaths PA

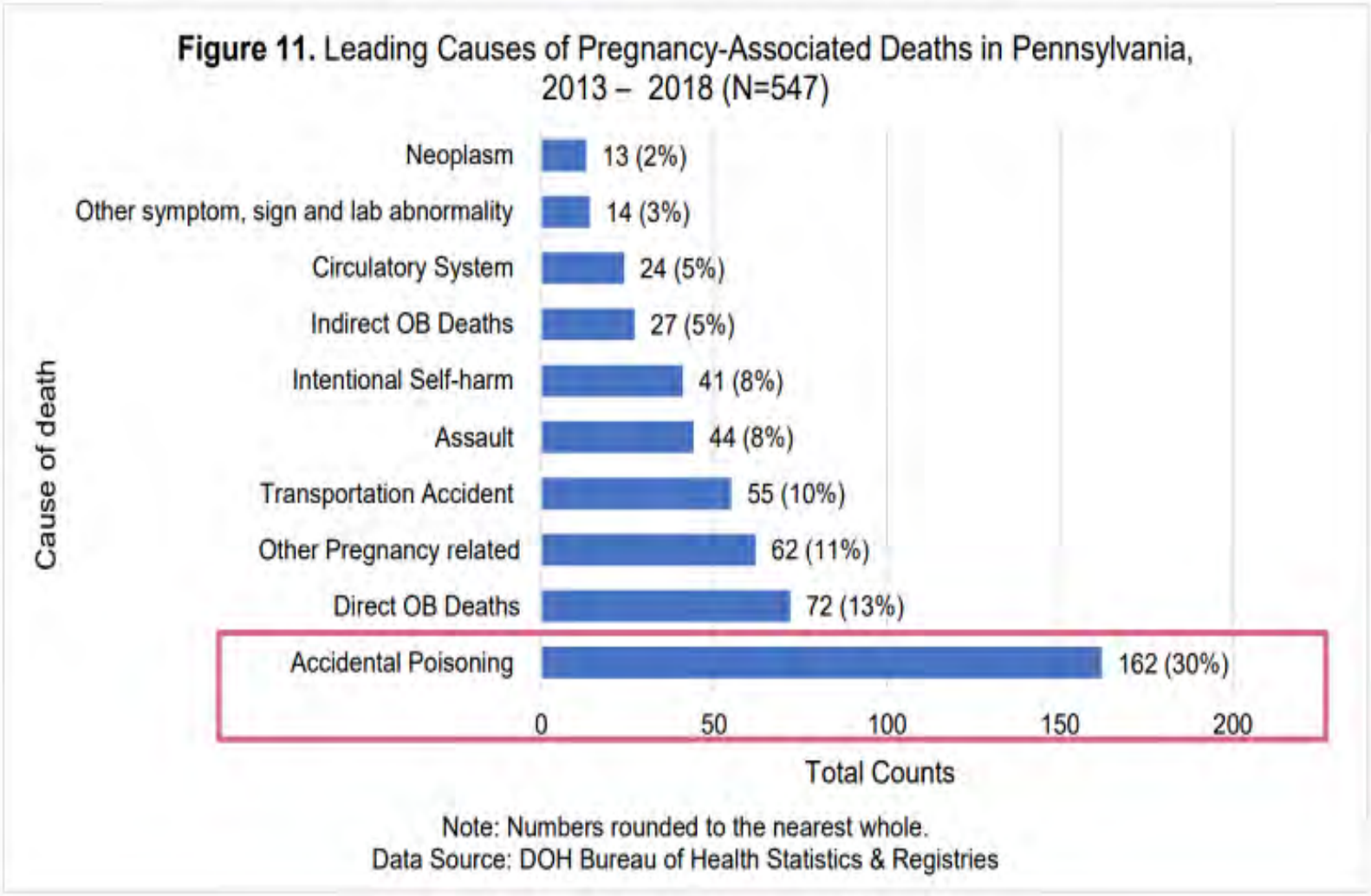
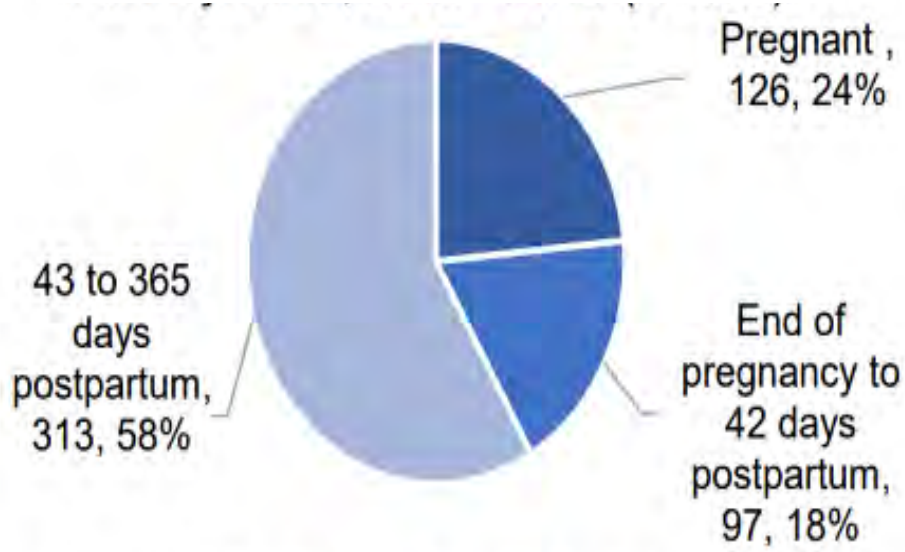


Figure 9. Distribution of Pregnancy-Associated Deaths by Time Between Pregnancy and Death in Pennsylvania, 2013-2018 (N=536)



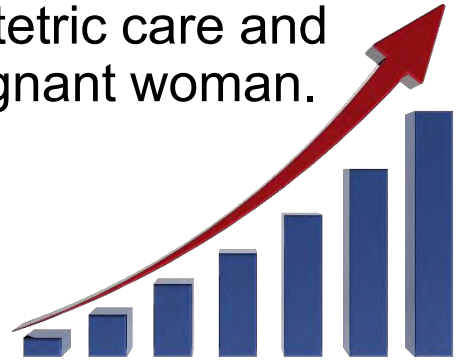
Data source: DOH Bureau of Health Statistics & Registries

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

Sarah E. Wakeman, MD et. Al. Pocket Addiction Medicine, copyright 2023 Wolters Kluwer.

The Neurobiology of Addiction

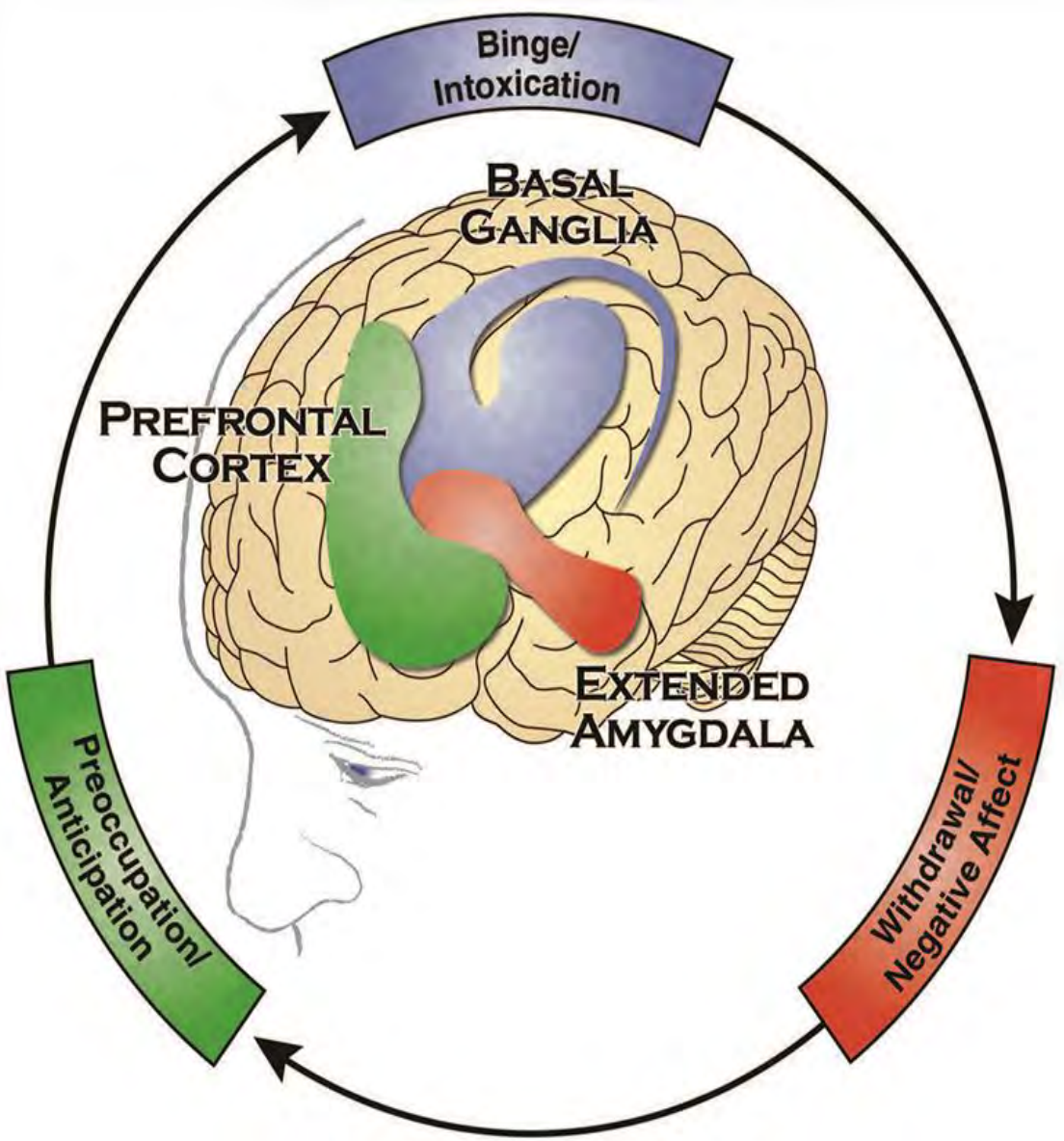
Three Stages of the Addiction Cycle:

Binge/Intoxication: an individual uses an intoxicating substance and experiences its rewarding or pleasurable effects, involves the basal ganglia of the brain

Withdrawal/Negative Affect: an individual experiences a negative emotional state in the absence of the substance, involves extended amygdala of the brain

Preoccupation/Anticipation: an individual seeks substance use again after a period of abstinence, involves the prefrontal cortex of the brain

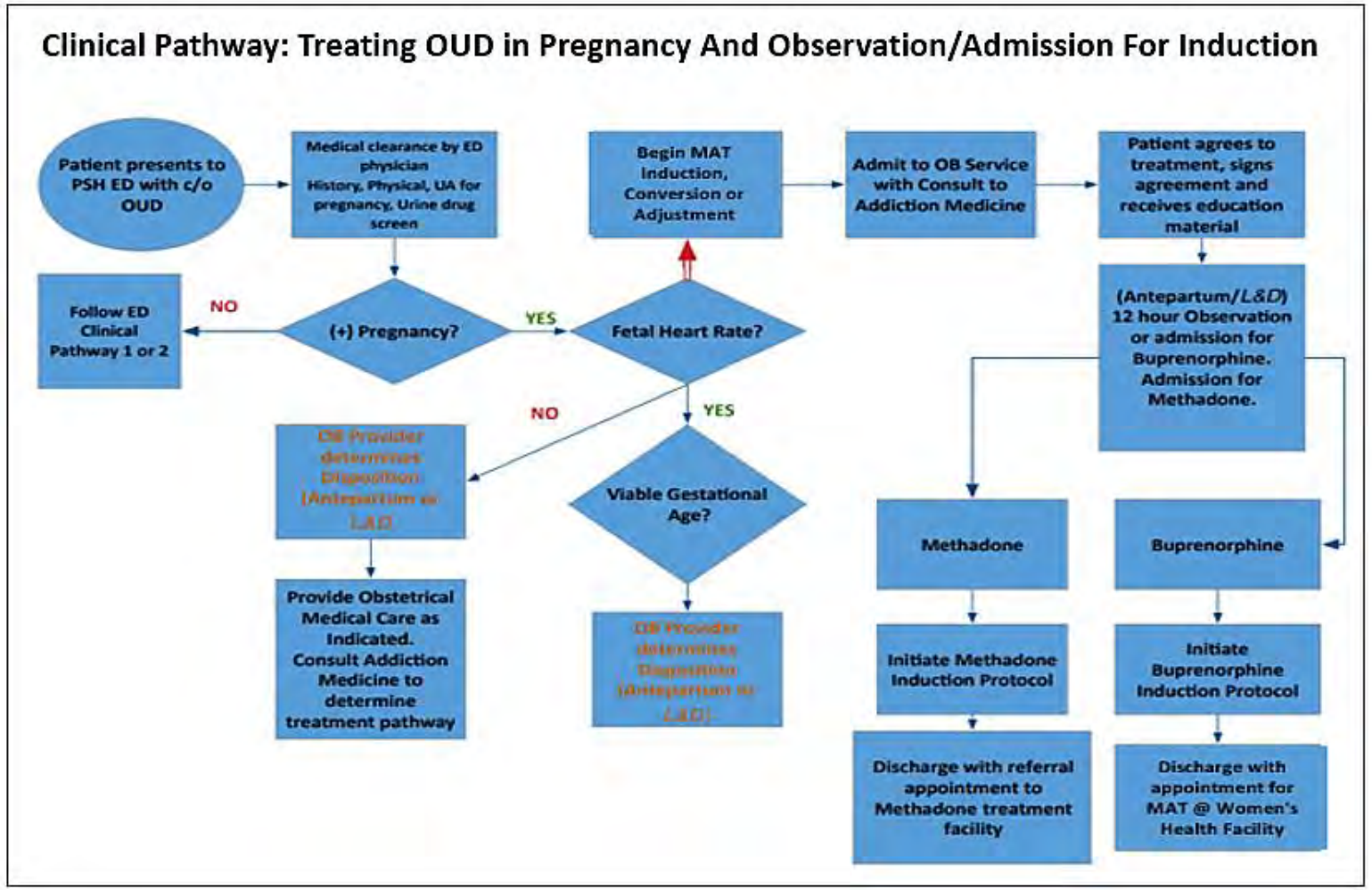
Butler Center for Research: The Brain Disease Model of Addiction, Butler Center for Research, May 2021


Binge/
Intoxication
BASAL
GANGLIA
PREFRONTAL
CORTEX
EXTENDED
AMYGDALA
Withdrawal/
Negative Affect
Preoccupation/
Anticipation

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…)

Hersey Medical Center Inpatient Program To Treat Women With Opioid Use Disorder



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 Clinical Opiate Withdrawal Scale

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

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

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

Comfort Medications

- Clonidine 0.1 mg PO QID if hypertensive (hold if hypotensive, HR<60 or postural hypotension ensues; can give higher doses, up to 0.3 mg PO TID if tolerated.)
- Clonidine patch if necessary
- Acetaminophen 1,000 mg 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 Q6H 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…)

References

- CDC, National Center for Health Statistics, Multiple Causes of Death, 1999-2021 on CDC WOUNDER Online Database, released 1/2023
- PA Department of Health Data Source: https://www.health.pa.gov/topics/HealthStatistics/HealthyPeople/Documents/current/county/su-03-drug-overdose-death-rate-lhi.aspx
- https://www.health.pa.gov/topics/Documents/Diseases%20and%20Conditions/Pregnancy%20Associated%20Deaths%202013-2018%20FINAL.pdf
- *Opioid use and opioid use disorder in pregnancy. Committee Opinion No 711. American college of Obstetricians and Gynecologists. Obstetrics & Gynecology 2017; 130:e81-94.*
- Sarah E. Wakeman, MD et. Al. Pocket Addiction Medicine, copyright 2023 Wolters Kluwer.

References

- Butler Center for Research: The Brain Disease Model of Addiction, Butler Center for Research, May 2021
- Center for Substance Abuse Treatment. Medication- assisted treatment for opioid addiction during pregnancy
- Kampman, K et al. (2015). The ASAM National Practice Guideline For the Use of Medications in the Treatment of Addiction Involving Opioid Use
- Volkow, et al, NEJM. 2016 ASAM National Practice Guideline, June 1, 2015. 11 Goals of Medication
- https://www.whamglobal.org/list-documents/44-mdwise-and-synergy-with-pa-pqc/file
- Wesson & Ling, J Psychoactive Drugs. 2002 Apr-June; 35 (2) 253-9