

# Gender differences in substance use disorder



# Gender differences and substance use disorder

- Men are more likely than women to use almost all types of illicit drugs.<sup>1</sup>
  - Women probably use prescription drugs at greater rates than men.<sup>2</sup>
  - Men are 1.9 times more likely to have drug dependence.<sup>3</sup>
- Men have higher rates of alcohol use, including binge drinking, than women, except for teens, where rates are similar.<sup>4</sup>

1. Substance Use in Women. Revised September 2015. Drugfacts. <https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women> Accessed 3/4/17
2. Greenfield et al. Substance Abuse in Women. *Psychiatr Clin Nort Am*. 2010 June; 33(2): 339-355
3. Ibid
4. Substance Use in Women. Revised September 2015. Drugfacts. <https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women> Accessed 3/4/17

- Patient is a 56 year old man with multiple medical problems, including a history of hepatitis C, treated, a history of alcohol use disorder, in remission, and alcoholic liver disease, stable. He has not had any alcohol to drink in 20 years. He frequently laments that he has no friends, because the only way he could socialize was while drinking. He was never able to get another group of friends after he quit drinking.

- Patient is a 42 year old woman with opioid use disorder, stable on buprenorphine since her pregnancy two years ago. Her partner also has opioid use disorder, in addition to severe alcohol use disorder and moderate stimulant use disorder. He went to jail for about 9 months, starting at midway through her pregnancy. She was completely drug-free during that time. When he was released, they got back together, and both started using cocaine. He is also drinking heavily. He has had three arrests for domestic violence since his release. She has kicked him out multiple times but always ends up getting back together, and her cocaine use is accelerating.

# Men and opioid use disorder

- Men are more likely than women to use prescription opioids for experimentation or to get high.<sup>1</sup>
- Men with chronic pain and opioid abuse were more likely than women to have engaged in aberrant behaviors, such as contact with street culture or being arrested.<sup>2</sup>
- Men were also more likely to abuse alcohol or drugs and to increase medication doses without authorization.<sup>3</sup>

1. Greenfield et al. Substance Abuse in Women. *Psychiatr Clin Nort Am.* 2010 June; 33(2): 339-355
2. Manubay et al. Sex Differences Among Opioid-Abusing Patients with Chronic Pain in a Clinical Trial. *J Addict Med.* Volume 9, Number 1. January/February 2015
3. Ibid

# Gender differences and opioid use disorder

- Women are more likely to hoard unused medications or use sedatives to enhance effect.<sup>1</sup>
- Women are also more likely to use prescription opioids to self-medicate for anxiety or stress.<sup>2</sup>
- Women with chronic pain and opioid abuse reported significantly more physical limitations and negative emotional states related to pain.<sup>3</sup>

1. Greenfield et al. Substance Abuse in Women. *Psychiatr Clin Nort Am.* 2010 June; 33(2): 339-355
2. Final Report: Opioid Use, Misuse, and Overdose in Women.. Office on Women's Health. July 19, 2017
3. Manubay et al. Sex Differences Among Opioid-Abusing Patients with Chronic Pain in a Clinical Trial. *J Addict Med.* Volume 9, Number 1. January/February 2015

# Gender differences and injection drug use

- Women are more likely to be introduced to injection drug use by their male sexual partner, whereas men are more likely to be injected by a friend.<sup>1</sup>

1. Greenfield et al. Substance Abuse in Women. Psychiatr Clin Nort Am. 2010 June; 33(2): 339-355

# Gender and methamphetamine use disorder

- Women report using the drug because they believe it will increase energy and decrease exhaustion from work, home care, child care, and family responsibilities.
- Women are also significantly more likely to use if for weight loss.

Substance Use in Women. Revised September 2015. Drugfacts.

<https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women> Accessed

3/4/17

# Gender differences and alcohol use disorder

- Women are more likely to drink in response to stress and negative emotions.
- Men are more like to drink to enhance positive emotions or conform to a group.<sup>2</sup>

1. Greenfield et al. Substance Abuse in Women. Psychiatr Clin Nort Am. 2010 June; 33(2): 339-355
2. Ibid

# Women and alcohol

- Women get drunker faster:
  - Decreased body weight<sup>1</sup>
  - Decreased alcohol dehydrogenase<sup>2</sup>
  - Decreased volume of water compartment distribution<sup>3</sup>
  - Less muscle than then men

1. Zweben. Special Issues in Treatment: Women in Miller et al. The ASAM Principles of Addiction Medicine. Sixth Edition Wolters Kluwer 2019 p. 529
2. Ibid
3. Ibid

# Health risks for women with alcohol use disorder

- Women have “telescoped course” for alcohol use disorder.<sup>1</sup>
  - They develop pathologic effects of alcohol more rapidly.
- Women have a 50-100% higher death rate from alcohol use disorder, including deaths from suicide, alcohol-related accidents, heart disease, stroke, and liver damage.<sup>2</sup>

1. Zweben. Special Issues in Treatment: Women in Miller et al. The ASAM Principles of Addiction Medicine. Sixth Edition Wolters Kluwer 2019 p. 525
2. Substance Use in Women. Revised September 2015. Drugfacts.  
<https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women>  
Accessed 3/4/17

# Health risks for women with alcohol use disorder

- Drinking as little as 1 drink daily can increase a woman's risk of breast cancer<sup>1</sup>
  - Increased risk may actually be associated with heavy drinking in early adult life<sup>2</sup>

1. Substance Use in Women. Revised September 2015. Drugfacts. <https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women> Accessed 3/4/17
2. Scientists rethink alcohol/breast cancer relationship. NIAAA Research News. <https://www.niaaa.nih.gov/research/niaaa-research-highlights/scientists-rethink-alcoholbreast-cancer-relationship> Accessed 3/4/17

# Health risks for women with alcohol use disorder

- Women develop alcoholic liver disease at  $\frac{1}{2}$  the consumption levels of men<sup>3</sup>
  - Women have significantly increased risk of alcoholic liver disease than men for any level of alcohol intake<sup>1</sup>
  - There is an increased risk of cirrhosis for women at 7-13 drinks/week<sup>2</sup>

1. Becker et al. Prediction of risk of liver disease by alcohol intake, sex, and age: A prospective population study. Hepatology May 1996 pp 1025-1029
2. Ibid

# CDC guidelines for risky drinking

- Excessive drinking (or risky drinking or at risk drinking) is defined as the following:
- Binge drinking, the most common form of excessive drinking, is defined as consuming
  - For women, 4 or more drinks during a single occasion.
  - For men, 5 or more drinks during a single occasion.
- Heavy drinking is defined as consuming
  - For women, 8 or more drinks per week.
  - For men, 15 or more drinks per week.
- Most people who drink excessively are not alcoholics or alcohol dependent.

<https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm> accessed 11/10/19

# Health risks of risky drinking, even without alcohol use disorder

- Injuries
- Violence, including homicide, suicide, sexual assault, and intimate partner violence.
- High blood pressure, heart disease, and stroke
- Liver disease, and digestive problems.
- Cancer of the breast, mouth, throat, esophagus, liver, and colon.
- Learning and memory problems, including dementia
- Mental health problems, including depression and anxiety.
- Excess drinking is responsible for about 1 in 10 deaths for adults age 10-64.

<https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm> accessed 11/10/19

# Overdose and women

- Men have higher overdose rates, but women are increasing more rapidly. For males, the rate increased from 8.2 per 100,000 in 1999 to 20.8 in 2015, an overall average increase of 5% per year. For females, the rate increased from 3.9 per 100,000 in 1999 to 11.8 in 2015, an overall average increase of 6% per year.<sup>1</sup>
- Women heroin users use smaller amounts and are less likely to inject. They are more at risk for overdose deaths than men initially but more likely to survive long-term.<sup>2</sup>
- Women between the age of 45-54 more likely than women of other age groups to die from prescription pain reliever overdose.<sup>3</sup>

1. Hedegaard, Holly et al. Drug Overdose Deaths in the United States, 1999-2015. NCHS Data Brief. No 273. February 2017.

2. Substance Use in Women. Revised September 2015. Drugfacts. <https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women>. Accessed 3/4/17

3. Ibid

# Concordance of drug screen results with self use report and gender

- Median male concordance was 86%, whereas median female concordance was 96%.
- 42% of women achieved 100% concordance, but only 22% of men did.

Schuler et al. Temporal and Gender Trends In Concordance of Urine Drug Screens and Self-Reported Use in Cocaine Treatment Studies. J Addict Med. Volume 3, Number 4, December 2009

- Patient was a 42 yo woman who I had taken care of for ten years with severe alcohol use disorder and alcoholic liver disease. During the second Iraq war, out of the blue, she mentioned that she had been raised in Iraq. I asked her about it, and she said that her stepfather had been stationed there. She added, almost as an afterthought, that he had sexually abused her from the time she was 8 until the time she turned 15 and there was nothing she could do about it because she was in a foreign country with no support. She was not able to stop drinking, and she died about 6 months later.

# Women and violence and substance use disorder

- In community samples, more than one-third of female children experienced sexual abuse by the age of 18.<sup>1</sup>
- Women with a history of childhood sexual abuse show 3 times higher rates of substance use disorder.<sup>2</sup>
- High rates of PTSD in women with SUD.

1. Zweben. Special Issues in Treatment: Women in Miller et al. The ASAM Principles of Addiction Medicine. Sixth Edition . Wolters Kluwer 2019 p. 529

# Women and violence and substance use disorder

- African-American and Native American women more likely than women of other racial groups to be victims of rape, stalking, and physical violence – risk factors for substance use disorder. <sup>1</sup>

1. Substance Use in Women. Revised September 2015. Drugfacts.  
<https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women> Accessed 3/4/17

# Women and violence and substance use disorder

- Women with alcohol use disorder have increased risk of unprotected sex and increased risk of becoming a victim of violent sexual assault.<sup>1</sup>

1. Substance Use in Women. Revised September 2015. Drugfacts.  
<https://www.drugabuse.gov/publications/drugfacts/substance-use-in-women>  
Accessed 3/4/17

# Menstrual cycle and substance use disorder

- 55% of long-term users of methamphetamine had disruption of the menstrual cycles, with prolonged, shortened, and irregular cycles.<sup>1</sup>
  - 72.9% had deregulation of sex hormones even with normal periods.<sup>2</sup>
  - Only 39.5% of women had returned to normal hormonal levels after 10 months of abstinence from methamphetamine.<sup>3</sup>
- Women who use both marijuana and tobacco have a luteal phase that is an average of 4.5 days shorter than women who just use tobacco.<sup>4</sup>

1. Shen et al. Long-term Use of Methamphetamine Disrupts the Menstrual Cycles and Hypothalamic-Pituitary-Ovarian Axis. *J. Addict Med.* Volume 8, Number 3, May/June 2014.

2. Ibid

3. Ibid

4. Lammert et al. Menstrual Cycle in Women Who Co-use Marijuana and Tobacco. *J Addict Med* Volume 12, Number 3, May/June 2018

# Menstrual cycle and substance use disorder

- Women who attempt to quit smoking during the luteal phase of their menstrual cycle had more favorable outcomes than women who attempted to quit during the follicular phase.<sup>1</sup>
- Response to stimulants, such as cocaine and methamphetamine, is higher in the follicular than the luteal phase.<sup>2</sup>

1. Allen et al. Menstrual phase effects on smoking relapse. *Addiction*. Volume 103. Issue 5. April 14, 2008.
2. Terner et al. **Menstrual cycle phase and responses to drugs of abuse in humans.** [Drug Alcohol Depend.](#) 2006 Sep 1;84(1):1-13.

# Testosterone and substance use

- Testosterone levels in men are suppressed by both alcohol<sup>1</sup> and opioids<sup>2</sup>.

1. Malabanan and Jack. Endocrine and Reproductive Disorders Related to Alcohol and Other Drug Use. The ASAM Principles of Addiction Medicine. Sixth Edition. Wolters Kluwer 2019 p. 1298
2. Bawor et al. Testosterone suppression in opioid users: A systematic review and meta-analysis. Drug and Alcohol Dependence 149 (2015) 1–9

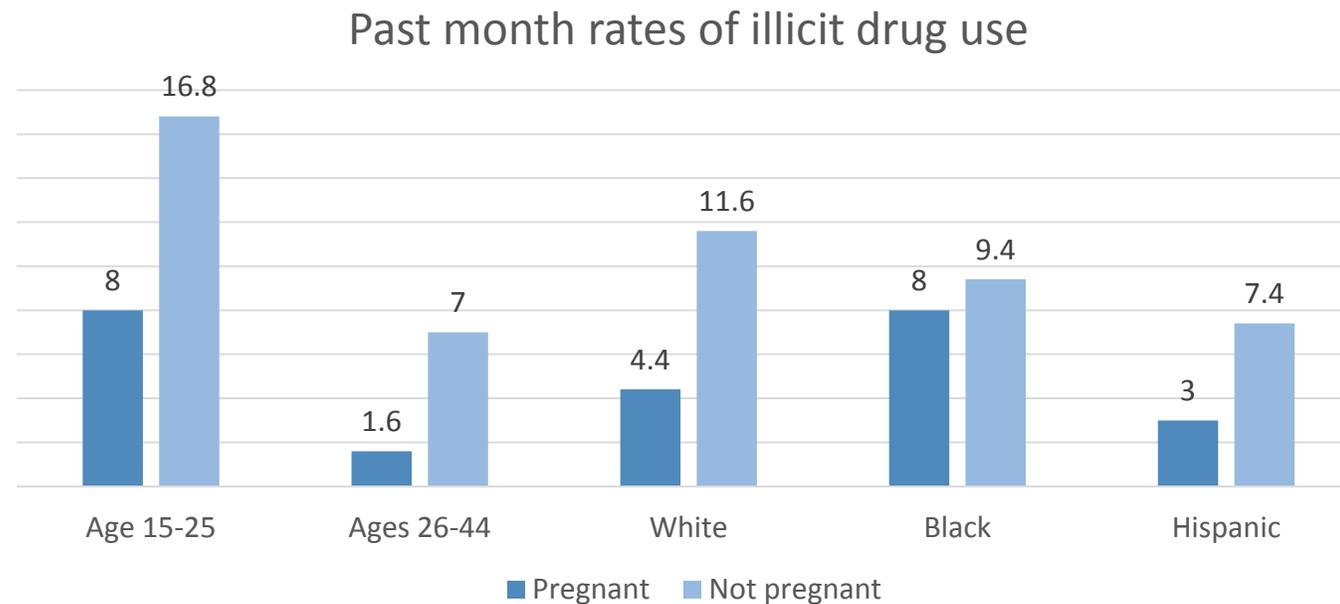
## Comorbid Medical Conditions Case Study Pregnancy and Opioid Dependence

34 yo G2P1 had been on Suboxone for heroin use disorder. She moved away and got pregnant and weaned herself off the Suboxone. Moved back and declined to restart buprenorphine because “I am not going to ever go back to drugs.” NSVD of healthy baby with negative urine drug screens throughout pregnancy. Died of an overdose about 1 year post-partum.

# Opiate replacement therapy and pregnancy

- Opiate replacement therapy is standard of care for pregnancy.

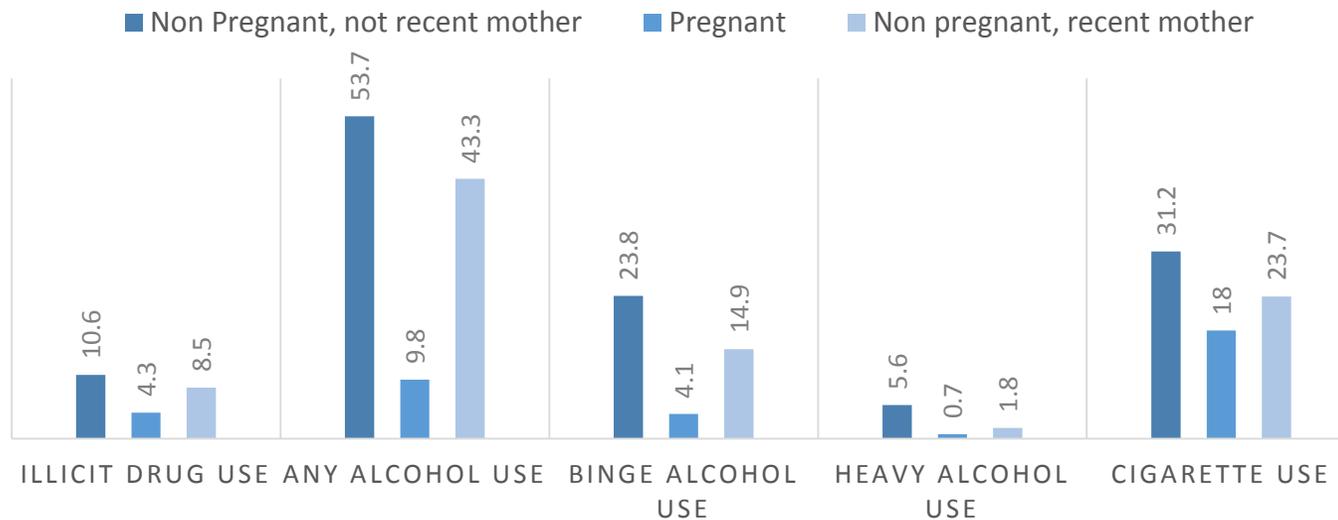
## Percentages of past-month illicit drug use in pregnant and non-pregnant women



Helmbrecht et al. Management of Addiction Disorders in Pregnancy. *J Addict Med*; Vol 2, Number 1, March 2008, pp 1-16

Percentages among women aged 15-44 years who reported past-month substance use by pregnancy and recent motherhood status

## PAST-MONTH RATES OF SUBSTANCE USE



Helmbrecht et al. Management of Addiction Disorders in Pregnancy. *J Addict Med*; Vol 2, Number 1, March 2008, pp 1-16

# Maternal mortality and opioid use disorder

- In a Maryland Maternal Mortality Review, substance use disorder-related deaths from 2008-2012 were the second-most common cause of pregnancy-associated deaths.<sup>1</sup>
- 30% (63/211) of total maternal deaths from 2004-2012 in Colorado study resulted from accidental overdose or suicide.<sup>2</sup>
- substance use disorder contributed to 33% of all maternal deaths in 2017 and mental health conditions contributed to 18% of deaths in Tennessee.<sup>3</sup>
- Massachusetts noted 11 fatal overdoses among 4,154 women with opioid use disorder who delivered from 2012-2014. Rate was lowest in the third trimester and highest 7-12 months postpartum. <sup>4</sup>

1. Maryland Maternal Mortality Review. 2014 Annual Report. MD Dept of Health and Mental Hygiene. Prevention and Health Promotion Administration.
2. Metz et al. Maternal Deaths from Suicide and Overdose in Colorado, 2004-2012. *Ob Gyn*. Vol 128. No. 6. December 2016. pp 1233-1240
3. Tennessee Maternal Mortality Review of 2017 Maternal Deaths
4. Schiff et al. Fatal and Nonfatal Overdose Among Pregnant and Postpartum Women in Massachusetts. *Obstet Gynecol*. 2018

# Incarceration and gender differences

- Men are far more likely than women to be incarcerated than women. 126/100,000 women were incarcerated in 2010 vs 1,352/100,000 men.<sup>1</sup>
- More than a quarter of women in state prison were incarcerated for drug offenses at the end of 2015, compared to 15 percent of men. More than 61 percent of women in federal prison are incarcerated for drug offenses, compared to approximately 50 percent of men.<sup>2</sup>
- Blacks and Latinos are far more likely to be incarcerated for drug law violations than whites, even though rates of drug use and drug selling are similar.<sup>3</sup>

1. Wagner, P. Incarceration is not an equal opportunity punishment. Updated August 28, 2012 on <https://www.prisonpolicy.org/articles/notequal.html> Accessed 11/15/19
2. Women, Prison, and the Drug War. The Drug Policy Alliance. May 2018.
3. <http://www.drugpolicy.org/resource/drug-war-mass-incarceration-and-race-englishspanish> Accessed 11/15/19

# Incarceration and gender differences

- More than half (54%) of incarcerated people are parents of minor children, including 120,000 mothers and 1.1 million fathers.
- More than 5 million children (1 in 14) have an incarcerated parent.
  - By 2008:
    - 1 in 9 black children
    - 1 in 28 Latino children
    - 1 in 57 white children
- An estimated 84% of parents in federal prison and 62% of parents in state prison are housed 100 miles or more from their children.

Women, Prison, and the Drug War. The Drug Policy Alliance. May 2018.

# Gender differences in treatment

- Men are more likely to be mandated to treatment by employers, through the criminal justice system, and by their families. Women are more likely to be referred to child protective services.
- Women are more likely than men to feel shame or embarrassment about SUD treatment.
- Women who complete treatment are 9 times more likely to be abstinent than women who do not complete treatment. Men who complete treatment are 3 times more likely to be abstinent than men who do not complete treatment.

Green, Carla. Gender and Use of Substance Abuse Treatment Services. [Alcohol research & health: the journal of the National Institute on Alcohol Abuse and Alcoholism](#) 29(1):55-62 · February 2006

# Gender differences in treatment

- Women are more likely to relapse when their romantic partners are substance users.
- Women are more likely to relapse in the presence of a romantic partner than men are and less likely to relapse when they are alone than men are.
- Women have better long-term recovery.

Green, Carla. Gender and Use of Substance Abuse Treatment Services. [Alcohol research & health: the journal of the National Institute on Alcohol Abuse and Alcoholism](#) 29(1):55-62 · February 2006