EPID 7013 Epidemiology of Substance Use and Related Complex Health Behaviors

1. Course Overview & Objectives

The course presents an overview of the epidemiology of substance use and related complex health behaviors within a public health framework. Students will explore a range of contributors to substance use, considering mechanisms ranging from biological to societal/structural. The course will introduce the historical background of the "war on drugs" and racial underpinnings of policies towards substance use; mental health definitions of addiction; substance use prevention strategies; substance use policies and their impacts; intervention and treatment approaches; barriers to treatment access and adherence; and structural risk factors for substance use and related problems. Students will critically evaluate methods for studying hidden and hard-to-reach populations—including sources of bias, measurement issues, and ethical considerations—as well as explore new and emerging innovations in studying substance use. We will also discuss the application of cross-cutting methods to the study of substance use (e.g., population surveillance and surveys, case-control studies, quasi-experimental designs such as difference-in-difference, mixed/qualitative methods).

LEARNING OBJECTIVES

i. Describe the leading substances of abuse in the U.S., their prevalence of use, and their health and social impacts
ii. Describe challenges in substance use research, including studying hidden and hard-to-reach populations, sources of bias, measurement issues, and ethical issues when conducting substance use research
iii. Critically examine key data sources for monitoring substance use trends locally, nationally, and internationally, as well as tradeoffs and limitations of data sources and methodological approaches (e.g., risk for selection bias, nongeneralizability)
iv. Describe the impact of substance use on a variety of inter-related complex health behaviors and health problems, such as mental health disorders; treatment access and adherence; injuries and violence; and sexual health and HIV transmission.
v. Explore methodological approaches to studying substance use in a structural health disparities context

2. General Information

Course Director	Elizabeth Nesoff, PhD MPH Office: Blockley Hall 934 Email: enesoff@upenn.edu
Office hours	By appointment
Guest Lecturers	TBD
Location	Blockley 940
Time	Thursdays at 1:45pm
Credits	1 cu
Prerequisites	EPID 7010 or PUBH 5020 or equivalent; one semester of graduate-level biostatistics; or permission of course director. EPID 7040 recommended but not required. Students enrolling in this class should have a working knowledge of the core aspects of epidemiology and biostatistics. Students who do not meet these requirements may be allowed to enroll in the class, but we may recommend supplemental readings and/or tutorials to help fill in the necessary background.

Readings

Original articles will be used to illustrate the methodologies described in the lectures and will be provided prior to the time in which they will be discussed. The required readings are the minimum basis for the response papers and student-led discussions (see below). The recommended readings provide greater breadth on each topic, as well as research resources.

Class Format

a. Faculty presentation segment with student questions and discussion for 60-90 minutes.

b. Student-led discussion segment for 30-60 minutes. Students will sign up to lead weekly class discussions; each week's discussion question is posted with the weekly readings below. Each discussion will address a topic related to material covered in the lecture and readings. The student will give a 15-minute presentation on different aspects of the topic, incorporating information from the required and recommended readings. Students can incorporate information from other sources, but additional research is not required. Student-led discussions should use approximately 10 PowerPoint slides: 1-2 slides summarizing the importance of the issue, 2-3 slides for the "pro" argument and 2-3 for the "con" argument, and 1-2 slides summarizing the evidence and supporting either a pro or con position. If the evidence is insufficient to draw a conclusion, describe what research is needed. The class will then discuss these positions, the strength of the evidence for them, and their public health implications.

Evaluation

a. Response papers (3): Students will write response papers for three course sessions of their choice, answering the Discussion Question for the week's topic. Response papers are due before the start of class each week; late submissions will not be read. The papers must draw on materials from the lectures and required and recommended readings; students may include additional research but this is not required. Response papers will be graded based on quality of the paper (e.g., argument, organization, and engagement with reading material). Each response paper will be returned to students with feedback within 1-2 weeks of submission. The feedback is intended to help improve your writing and critical thinking so that you can produce a better final paper. Canvas online submissions are required; email or paper submissions will not be accepted. Response paper format:
   - Include the Discussion Question on the top of the first page (will not be counted against the page limit).
   - In the first paragraph, briefly introduce the question and its importance. Provide a thesis statement explaining your position, and describe what you will cover in the paper.
   - Answer the question(s) completely, concisely, and thoughtfully, ending with a final conclusion. Include a discussion of the strength of the available evidence, including the dearth or breadth of available research and the limitations of current studies on the topic (e.g., data sources, study design).
   - Use proper in-text citations in AMA format. See Penn's Citation Best Practices for guidance.
   - Maximum length: 2 pages, single-spaced, .5" to 1.0" margins, Arial 11 font (NIH requirements).

b. Student-led discussion presenter (see course format for instructions)

c. Final paper. Write a mini-proposal for a study that addresses a specific research question emerging from one of the class sessions/topics. The paper will follow the format of NIH grant proposals—Specific Aims, Background and

Significance, Innovation and Approach (Methods). A half-page summary of your plan for the final paper will be due by class time on Week 8. This will summarize the aims of your proposal and the justification for those aims. The purpose of this mid-semester summary is to give you feedback and guidance on your ideas in order to improve your final paper. Feedback on this summary will be provided within 1-2 weeks. The final paper will be due by 5:00 pm on May 9.

- Use proper in-text citations in AMA format. See Penn's Citation Best Practices for guidance.
- Maximum length: 6 pages, single-spaced, .5" to 1.0" margins, Arial 11 font (NIH requirements).

d. Final project presentation. Students will give a 15-minute presentation summarizing the study proposed in their final paper in Week 14. This should be a formal presentation of a nearly-finished project, but students are allowed to solicit feedback from classmates to incorporate into their written final projects. The presentation should include data sources, study design, and limitations.

Ethics of the final paper

The final paper must be your own, original work and cannot be recycled from previous coursework. Students are encouraged to use this assignment as an opportunity to draft a grant proposal for submission. Original manuscripts intended for publication may also be considered with permission from the instructor. All references or paraphrasing must be properly acknowledged with a citation. This includes material from peer-reviewed publications, reports or white papers, news articles, or webpages. If you use the actual words of another person or source, including material from the Internet, you must use quotation marks and a proper citation (e.g., journal, website). If questions arise concerning proper use of quotations, citations, or bibliography, students should contact the instructor. Examples of someone else's work: papers, or portions of papers, written by other people as one's own; collaborating with others on an assignment or examination without specific faculty permission to do so. Students are encouraged to use Turnitin software to check their work before submitting their final paper.

Method of Evaluation for course grade

Grades will be assigned with the following weights:

- Class participation: 10%
- Response papers: 30% (10% each)
- Discussion leader presentation: 10%
- Final presentation: 10%
- Final paper: 40%

3. Course Outline

Week 1. Course Overview; Defining substance use epidemiology and the "war on drugs"

Learning objectives:

1. Describe the DSM criteria for substance use disorder
2. Discuss the history and framing of substance use disorder in the "war on drugs"
3. Discuss common substances of abuse, prevalence and trends of use and use disorders

Required:

Volkow ND, Gordon JA, Koob GF. Choosing appropriate language to reduce the stigma around mental illness and substance use disorders. Neuropsychopharmacology. 2021;46(13):2230-2232.

Hasin DS, O'Brien CP, Auriacombe M, et al. DSM-5 criteria for substance use disorders: recommendations and rationale. Am J Psychiatry. 2013;170(8):834-851.

Flórez-Salamanca L, Secades-Villa R, Hasin DS, et al. Probability and predictors of transition from abuse to dependence on alcohol, cannabis, and cocaine: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Am J Drug Alcohol Abuse*. 2013;39(3):168-179.

Netherland J, Hansen HB. The War on Drugs That Wasn't: Wasted Whiteness, "Dirty Doctors," and Race in Media Coverage of Prescription Opioid Misuse. *Cult Med Psychiatry*. 2016;40(4):664-686.

A History of the War on Drugs by Drug Policy Alliance (YouTube video)

Recommended:

DSM-IV: American Psychiatric Association: Diagnostic and Statistical Manual (DSM-IV-TR), 4th edition. Washington DC, American Psychiatric Association, 2000, pp.191-202.

DSM-5: American Psychiatric Association: Diagnostic and Statistical Manual (DSM-5), 5th edition. Washington DC, American Psychiatric Association, 2013, pp.481-497.

Palamar JJ, Davies S, Ompad DC, et al. Powder cocaine and crack use in the United States: an examination of risk for arrest and socioeconomic disparities in use. *Drug Alcohol Depend*. 2015;149:108-116.

Robins LN, Helzer JE, Hesselbrock M, Wish E. Vietnam veterans three years after Vietnam: how our study changed our view of heroin. *Am J Addict*. 2010;19(3):203-211.

Keyes KM, Rutherford C, Miech R. Historical trends in the grade of onset and sequence of cigarette, alcohol, and marijuana use among adolescents from 1976-2016: Implications for "Gateway" patterns in adolescence. *Drug Alcohol Depend*. 2018;194:51-58.

Sacco LN. Drug Enforcement in the United States: History, Policy, and Trends. Congressional Research Service, Washington, DC; 2014. https://fas.org/sgp/crs/misc/R43749.pdf

Resources:

NIDA Commonly Used Drugs Charts

DEA Drug Scheduling

Words Matter - Terms to Use and Avoid When Talking About Addiction (NIDA)

Alinsky RH, Hadland SE, Quigley J, et al. Recommended Terminology for Substance Use Disorders in the Care of Children, Adolescents, Young Adults, and Families. *Pediatrics*. 2022;149(6):e2022057529.

Week 2. Studying hidden and hard-to-reach populations: Data sources, methods, and ethical considerations

Learning objectives:

1. Describe major U.S. surveys for monitoring substance use trends
2. Describe other sources of data for substance use and related outcomes
3. Examine tradeoffs and limitations of data sources and methodological approaches (e.g., risk for selection bias, nongeneralizability)

Discussion question: Consider one of the common substances of abuse in the US (e.g., alcohol, marijuana). Is there an ideal study design and data source to assess prevalence of use? Could you apply this methodological framework to other, less common substances of abuse (e.g., heroin, cocaine)? Why or why not? Consider ethical implications for studying these populations in your response.

Required:

i. Ongoing annual US surveys

Monitoring The Future (MTF. 1976-present, 12th graders; 1991-present, 8th and 10th graders)

National Survey on Drug Use and Health (NSDUH; 2002-present)

National Health Interview Survey (NHIS)

Medical Expenditure Panel Survey (MEPS)

National Health and Nutrition Examination Survey (NHANES)

Adolescent Brain Cognitive Development (ABCD) Study

Treatment Episode Data Set (TEDS)

ii. Other types of data/data sources

Horon IL, Singal P, Fowler DR, Sharfstein JM. Standard Death Certificates Versus Enhanced Surveillance to Identify Heroin Overdose-Related Deaths. *Am J Public Health*. 2018;108(6):777-781.

Moore PQ, Weber J, Cina S, Aks S. Syndrome surveillance of fentanyl-laced heroin outbreaks: Utilization of EMS, Medical Examiner and Poison Center databases. *Am J Emerg Med*. 2017;35(11):1706-1708.

Garnick, D. W., Hodgkin, D., & Horgan, C. M. (2002). Selecting data sources for substance abuse services research. *Journal of substance abuse treatment*, *22*(1), 11–22.

iii. Methodological and ethical considerations

Heidt J, Wheeldon J. Data, Damn Lies, and Cannabis Policy: Reefer Madness and the Methodological Crimes of the New Prohibitionists. *Crit Crim.* 2022;30: 403-419.

Nesoff ED, Martins SS, Palamar JJ. Caution Is Necessary When Estimating Treatment Need for Opioid Use Disorder Using National Surveys. *Am J Public Health*. 2022;112(2):199-201. (Opinion)

Souleymanov R, Kuzmanović D, Marshall Z, et al. The ethics of community-based research with people who use drugs: results of a scoping review. *BMC Med Ethics*. 2016;17(1):25

Davis CG, Thake J, Vilhena N. Social desirability biases in self-reported alcohol consumption and harms. *Addict Behav*. 2010;35(4):302-11.

Recommended:

Susukida R, Crum RM, Ebnesajjad C, et al. Generalizability of findings from randomized controlled trials: application to the National Institute of Drug Abuse Clinical Trials Network. *Addiction*. 2017;112(7):1210-1219.

Susukida R, Crum RM, Stuart EA, et al. Assessing sample representativeness in randomized controlled trials: application to the National Institute of Drug Abuse Clinical Trials Network. *Addiction*. 2016;111(7):1226-34.

Robinson R. County Coroners and Their Role in the Heart of the Opioid Epidemic. *Acad Forensic Pathol*. 2017;7(1):80-86.

Hanzlick R. Medical examiners, coroners, and public health: a review and update. *Arch Pathol Lab Med*. 2006;130(9):1274-82.

Damon W, Callon C, Wiebe L, Small W, Kerr T, McNeil R. Community-based participatory research in a heavily researched inner city neighbourhood: Perspectives of people who use drugs on their experiences as peer researchers. *Soc Sci Med*. 2017;176:85-92.

Nunes EV, Lee JD, Sisti D, et al. Ethical and clinical safety considerations in the design of an effectiveness trial: A comparison of buprenorphine versus naltrexone treatment for opioid dependence. *Contemp Clin Trials*. 2016;51:34-43

Asiimwe SB, Fatch R, Emenyonu NI, et al. Comparison of Traditional and Novel Self-Report Measures to an Alcohol Biomarker for Quantifying Alcohol Consumption Among HIV-Infected Adults in Sub-Saharan Africa. *Alcohol Clin Exp Res*. 2015;39(8):1518-27.

Jernigan DH. Global alcohol producers, science, and policy: the case of the International Center for Alcohol Policies. *Am J Public Health*. 2012;102(1):80-9.

Socías ME, Wood E, McNeil R, Kerr T, et al. Unintended impacts of regulatory changes to British Columbia Methadone Maintenance Program on addiction and HIV-related outcomes: An interrupted time series analysis. *Int J Drug Policy*. 2017;45:1-8

Nesoff ED, Branas CC, Martins SS. Challenges in studying statewide pedestrian injuries and drug involvement. *Inj Epidemiol*. 2018;5(1):43.

Week 3. Stigma, discrimination, and intersectionality: Measurement considerations and sources of bias

Learning objectives:

1. Critically examine the impact of stigma and discrimination as sources of bias in epidemiologic studies
2. Explore the differential impact of stigma and discrimination on people with intersecting gender, sexual, and/or racial/ethnic minority identities

Discussion questions:

Historically, many studies of substance use have been agnostic to gender, sexual, or racial/ethnic identity other than including them as control variables. Do stigma and discrimination impact rigor of epidemiologic studies of substance use? Validity of findings? Should intersecting identities be considered in future epidemiologic studies of substance use and, if so, how?

Required:

Yang LH, Wong LY, Grivel MM, Hasin DS. Stigma and substance use disorders: an international phenomenon. *Curr Opin Psychiatry*. 2017;30(5):378-388.

Barry CL, McGinty EE, Pescosolido BA, Goldman HH. Stigma, discrimination, treatment effectiveness, and policy: public views about drug addiction and mental illness. *Psychiatr Serv*. 2014;65(10):1269-72.

Kulesza M, Matsuda M, Ramirez JJ, et al. Towards greater understanding of addiction stigma: Intersectionality with race/ethnicity and gender. *Drug Alcohol Depend*. 2016;169:85-91.

Kennedy-Hendricks A, Barry CL, Gollust SE, et al. Social Stigma Toward Persons with Prescription Opioid Use Disorder: Associations With Public Support for Punitive and Public Health-Oriented Policies. *Psychiatr Serv*. 2017;68(5):462-469.

Hatzenbuehler ML, Pachankis JE. Stigma and Minority Stress as Social Determinants of Health Among Lesbian, Gay, Bisexual, and Transgender Youth: Research Evidence and Clinical Implications. *Pediatr Clin North Am*. 2016;63(6):985-997.

van Boekel LC, Brouwers EPM, van Weeghel J, Garretsen HFL. Healthcare professionals' regard towards working with patients with substance use disorders: comparison of primary care, general psychiatry and specialist addiction services. *Drug Alcohol Depend*. 2014;134:92-98.

Recommended:

McGinty EE, Goldman HH, Pescosolido B, Barry CL. Portraying mental illness and drug addiction as treatable health conditions: Effects of a randomized experiment on stigma and discrimination. *Soc Sci Med*. 2015;126:73-85.

Livingston JD, Milne T, Fang ML, Amari E. The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. *Addiction*. 2012;107(1):39-50.

Goodyear K, Haass-Koffler CL, Chavanne D. Opioid use and stigma: The role of gender, language and precipitating events. *Drug Alcohol Depend*. 2018;185:339-346

Keyes KM, Hatzenbuehler ML, McLaughlin KA, Link B, Olfson M, Grant BF, Hasin D. Stigma and treatment for alcohol disorders in the United States. *Am J Epidemiol*. 2010;172(12):1364-72.

Schuler MS, Collins RL. Sexual minority substance use disparities: bisexual women at elevated risk relative to other sexual minority groups. *Drug Alcohol Depend*. 2020;206:107755.

Collins AB, Bardwell G, McNeil R, Boyd J. Gender and the overdose crisis in North America: Moving past gender-neutral approaches in the public health response. *Int J Drug Policy*. 2019;69:43-45. (Opinion)

Compton WM, Jones CM. Substance Use among Men Who Have Sex with Men. *N Engl J Med*. 2021;385(4):352-356

Philbin MM, Greene ER, Martins SS, LaBossier NJ, Mauro PM. Medical, Nonmedical, and Illegal Stimulant Use by Sexual Identity and Gender. *Am J Prev Med*. 2020;59(5):686-696.

Krasnova A, Diaz JE, Philbin MM, Mauro PM. Disparities in substance use disorder treatment use and perceived need by sexual identity and gender among adults in the United States. *Drug Alcohol Depend*. 2021;226:108828.

Week 4. Mental health and substance use co-occurrence

Learning objectives:

1. Examine the overlap between mental health and substance use
2. Describe potential mechanisms of co-morbidity
3. Explore potential implications of comorbid mental health disorders on the course of treatment for substance use disorders

Discussion question:

Consider the prevalence of people who use drugs who have co-occurring mental health problems. Do you think substance use causes mental health problems or mental health causes substance use or are the two unrelated? Should policies and/or

treatment prioritize one concern over the other or attempt to address both simultaneously?

Required: "Common Comorbidities with Substance Use Disorders Research Report," NIDA, April 2020. Parts 1 & 2.

Davis L, Uezato A, Newell JM, Frazier E. Major depression and comorbid substance use disorders. *Curr Opin Psychiatry*. 2008;21(1):14-18.

Swendsen J, Conway KP, Degenhardt L, et al. Mental disorders as risk factors for substance use, abuse and dependence: results from the 10-year follow-up of the National Comorbidity Survey. *Addiction*. 2010;105(6):1117-1128.

Khantzian EJ. Addiction as a self-regulation disorder and the role of self-medication. *Addiction*. 2013;108(4):668-9.

Krawczyk N, Feder KA, Saloner B, et al. The association of psychiatric comorbidity with treatment completion among clients admitted to substance use treatment programs in a U.S. national sample. *Drug Alcohol Depend*. 2017;175:157-163.

Mericle AA, Ta Park VM, Holck P, Arria AM. Prevalence, patterns, and correlates of co-occurring substance use and mental disorders in the United States: variations by race/ethnicity. *Compr Psychiatry*. 2012;53(6):657-65.

Recommended: i. Further readings

Degenhardt L, Bharat C, Glantz MD, et al. The epidemiology of drug use disorders cross-nationally: Findings from the WHO's World Mental Health Surveys. *Int J Drug Policy*. 2019;71:103-112.

Smith JP, Randall CL. Anxiety and alcohol use disorders: Comorbidity and treatment considerations. *Alcohol Res Curr Rev*. 2012;34(4):414-431.

Crum RM, Mojtabai R, Lazareck S, et al. A Prospective Assessment of Reports of Drinking to Self-medicate Mood Symptoms With the Incidence and Persistence of Alcohol Dependence. *JAMA Psychiatry.* 2013;70(7):718–726.

ii. Adverse Childhood Experiences (ACES)

He J, Yan X, Wang R, et al. Does Childhood Adversity Lead to Drug Addiction in Adulthood? A Study of Serial Mediators Based on Resilience and Depression. *Front Psychiatry*. 2022;13:871459.

Broekhof R, Nordahl HM, Tanum L, Selvik SG. Adverse childhood experiences and their association with substance use disorders in adulthood: A general population study (Young-HUNT). *Addict Behav Rep*. 2023;17:100488.

iii. Neurobiology of addiction

Dr. Nora Volkow, Director of NIDA, discusses what goes on in the human brain when an individual is addicted to drugs: NIH: Brain Imaging Reveals What Causes Drug Addiction in Humans. December 2014. (YouTube)

Surgeon General's Report. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Chapter 2: The Neurobiology of Substance Use, Misuse, and Addiction. 2016.

Week 5. Trends, risk factors, and policy interventions for alcohol use and associated problems

Learning objectives:

1. Describe prevalence and trends in adult and adolescent drinking, risky drinking, and alcohol use disorder
2. Describe major risk factors and potential adverse health consequences of alcohol use, risky drinking, and alcohol use disorder
3. Describe prevalence and trends in harms related to alcohol use, risky drinking, and alcohol use disorder
4. Describe policies and structural interventions to reduce use and related harms.

Discussion question:

Are policies to regulate alcohol use necessary? Do policies affect short- and/or long-term alcohol use? Risky drinking? Alcohol use disorder? Related harms? Frame your answers for a specific population or demographic (e.g., adolescents, adults, men, women, racial/ethnic minorities).

Required:

i. Alcohol use trends, risk factors, and associated problems

Anderson BO, Berdzuli N, Ilbawi A, et al. Health and cancer risks associated with low levels of alcohol consumption. *Lancet Public Health*. 2023;8(1):e6-e7. (Opinion)

Iranpour A, Nakhaee N. A Review of Alcohol-Related Harms: A Recent Update. *Addict Health*. 2019;11(2):129-137.

Knox J, Hasin DS, Larson FRR, Kranzler HR. Prevention, screening, and treatment for heavy drinking and alcohol use disorder. *Lancet Psychiatry*. 2019;6(12):1054-1067.

White, AM. Gender Differences in the Epidemiology of Alcohol Use and Related Harms in the United States. *Alcohol Res*. 2020;40(2):01.

McKetta S, Prins SJ, Bates LM, et al. US trends in binge drinking by gender, occupation, prestige, and work structure among adults in the midlife, 2006–2018. *Annals of Epidemiology.* 2021;62:22-29.

ii. Policy interventions for alcohol use and related harms

Anderson P, Chisholm D, Fuhr DC. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet*. 2009;373(9682):2234-2246.

Jernigan D, Noel J, Landon J, Thornton N, Lobstein T. Alcohol marketing and youth alcohol consumption: a systematic review of longitudinal studies published since 2008. *Addiction*. 2017;112 Suppl 1:7-20.

Graham K, Miller P, Chikritzhs T, Bellis MA, et al. Reducing intoxication at licensed premises. *Addiction*. 2014;109:693-698.

Gruenewald PJ. Regulating availability: how access to alcohol affects drinking and problems in youth and adults. *Alcohol Res Health*. 2011;34(2):248-256.

Morrison C, Cameron P. The case for environmental strategies to prevent alcohol-related trauma. *Injury*. 2015; 46(7):1183. (Editorial)

Fone D, Morgan J, Fry R, et al. *Change in alcohol outlet density and alcohol-related harm to population health (CHALICE): a comprehensive record-linked database study in Wales*. Southampton (UK): NIHR Journals Library; 2016. Chapter 1.

Recommended:

GBD 2016 Alcohol Collaborators. Alcohol use and burden for 195 countries and territories, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*. 2018;392(10152):1015-1035.

Dawson DA. Defining risk drinking. *Alcohol Res Health*. 2011;34(2):144-56

Hasin DS, Wall M, Witkiewitz K, et al; Alcohol Clinical Trials Initiative (ACTIVE) Workgroup. Change in non-abstinent WHO drinking risk levels and alcohol dependence: a 3-year follow-up study in the US general population. *Lancet Psychiatry*. 2017;4(6):469-476.

White AM, Castle IP, Hingson RW, Powell PA. Using Death Certificates to Explore Changes in Alcohol-Related Mortality in the United States, 1999 to 2017. *Alcohol Clin Exp Res*. 2020;44(1):178-187.

Ward S, Autaubo J, Waters P, et al. A scoping review of health inequities in alcohol use disorder. *Am J Drug Alcohol Abuse*. Published online January 31, 2024. Doi:10.1080/00952990.2023.2296860

Babor T. Alcohol: No Ordinary Commodity – a summary of the second edition. *Addiction*. 2010; 105: 769-779.

Branas CC, Elliott MR, Richmond TS, et al. Alcohol consumption, alcohol outlets, and the risk of being assaulted with a gun. *Alcohol Clin Exp Res*. 2009;33(5):906-915.

Mair C, Lipperman-Kreda S, Gruenewald PJ, Bersamin M, Grube JW. Adolescent Drinking Risks Associated with Specific Drinking Contexts. *Alcohol Clin Exp Res*. 2015;39(9):1705-1711.

Nesoff ED, Milam AJ, Branas CC, et al. Alcohol Outlets, Neighborhood Retail Environments, and Pedestrian Injury Risk. *Alcohol Clin Exp Res*. 2018;42(10):1979-1987.

Sparks M, Jernigan DH, Mosher JF. Regulating alcohol outlet density: An action guide. Community Anti-Drug Coalitions of America. 2011.

Resources: Alcohol Policy Information System from NIAAA, provides information on many state and Federal policies including taxation, underage drinking, BAC limits.

Week 6. Marijuana use trends and policies

Learning objectives:

1. Describe major risk factors and potential adverse health consequences of cannabis use
2. Describe prevalence and trends in adult and adolescent cannabis attitudes, use, and use disorder
3. Explore changes in cannabis potency, modes of use, and associated changes in use and use disorder
4. Describe how federal and state marijuana policies affect cannabis use and use disorder

Discussion question: Consider trends in the prevalence of U.S. cannabis use since the early 2000s. Frame your answer for either adolescents or adults:

(1) Do you think new modes of cannabis use and changes in potency have or have not impacted cannabis use? Why or why not?

(2) Do you think medical marijuana laws and/or recreational marijuana laws affect use? Are the effects of both policies the same? Why or why not?

Required: i. Trends, risk factors, and associated problems

Leung J, Chan GCK, Hides L, Hall WD. What is the prevalence and risk of cannabis use disorders among people who use cannabis? A systematic review and meta-analysis. *Addict Behav*. 2020;109:106479.

Spindle TR, Bonn-Miller MO, Vandrey R. Changing landscape of cannabis: novel products, formulations, and methods of administration. *Curr Opin Psychol*. 2019;30:98-102.

ElSohly MA, Chandra S, Radwan M, et al. A Comprehensive Review of Cannabis Potency in the United States in the Last Decade. *Biol Psychiatry Cogn Neurosci Neuroimaging*. 2021; 6(6):603-606.

Volkow ND, Swanson JM, Evins AE, et al. Effects of Cannabis Use on Human Behavior, Including Cognition, Motivation, and Psychosis: A Review. *JAMA Psychiatry*. 2016;73(3):292-297.

Li MC, Brady JE, DiMaggio CJ, et al. Marijuana use and motor vehicle crashes. *Epidemiol Rev*. 2012;34:65-72.

ii. Health impact of cannabis use policies

Martins SS, Segura LE, Levy NS, et al. Racial and Ethnic Differences in Cannabis Use Following Legalization in US States With Medical Cannabis Laws [published correction appears in JAMA Netw Open. 2021;4(10):e2136454]. *JAMA Netw Open*. 2021;4(9):e2127002.

Sarvet AL, Wall MM, Fink DS, et al. Medical marijuana laws and adolescent marijuana use in the United States: a systematic review and meta-analysis. *Addiction*. 2018;113(6):1003-1016.

Cerdá M, Mauro C, Hamilton A, et al. Association Between Recreational Marijuana Legalization in the United States and Changes in Marijuana Use and Cannabis Use Disorder From 2008 to 2016. *JAMA Psychiatry*. 2020;77(2):165-171.

Carlini BH. Potency increase, product development and marijuana marketing in times of legalization. *Addiction*. 2017;112(12):2178-2179.

Recommended:

Miech R, Johnston L, O'Malley PM. Prevalence and Attitudes Regarding Marijuana Use Among Adolescents Over the Past Decade. *Pediatrics*. 2017;140(6):e20170982.

Compton WM, Han B, Jones CM, Blanco C. Cannabis use disorders among adults in the United States during a time of increasing use of cannabis. *Drug Alcohol Depend*. 2019;204:107468.

Lim CCW, Sun T, Leung J, et al. Prevalence of Adolescent Cannabis Vaping: A Systematic Review and Meta-analysis of US and Canadian Studies. *JAMA Pediatr*. 2022;176(1):42-51.

Gobbi G, Atkin T, Zytynski T, et al. Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. *JAMA Psychiatry*. 2019;76(4):426–434

Brown QL, Sarvet AL, Shmulewitz D, et al. Trends in Marijuana Use Among Pregnant and Nonpregnant Reproductive-Aged Women, 2002-2014. *JAMA*. 2017;317(2):207-209.

Carliner H, Mauro PM, Brown QL, et al. The Widening Gender Gap in Marijuana Use Prevalence in the U.S. during a Period of Economic Change, 2002-2014. *Drug Alcohol Depend*. 2017;170:51-58.

Fergusson DM, Boden JM, Horwood LJ. Psychosocial sequelae of cannabis use and implications for policy: findings from the Christchurch Health and Development Study. *Soc Psychiatry Psychiatr Epidemiol*. 2015;50(9): 1317-1326

Hall W, Lynskey M. Assessing the public health impacts of legalizing recreational cannabis use: the US experience. World Psychiatry. 2020;19(2):179-186.

Martins SS, Mauro CM, Santaella-Tenorio J, et al. State-level medical marijuana laws, marijuana use and perceived availability of marijuana among the general U.S. population. *Drug Alcohol Depend*. 2016;169:26-32

Pacula RL, Powell D, Heaton P, Sevigny EL. Assessing the effects of medical marijuana laws on marijuana use: the devil is in the details. *J Policy Anal Manage*. 2015;34(1):7-31.

Gunadi C, Shi Y. Association of Recreational Cannabis Legalization With Cannabis Possession Arrest Rates in the US. *JAMA Netw Open*. 2022;5(12):e2244922.

Moreno MA, Jenkins M, Binger K, et al. A Content Analysis of Cannabis Company Adherence to Marketing Requirements in Four States. *J Stud Alcohol Drugs*. 2022;83(1):27-36.

Gonçalves PD, Bruzelius E, Levy NS, et al. Recreational Cannabis Legislation and Binge Drinking in U.S. Adolescents and Adults. *Int J Drug Policy*. 2023;118:104085.

Gonçalves PD, Levy NS, Segura LE, et al. Cannabis recreational legalization and prevalence of simultaneous cannabis and alcohol use in the United States. *J Gen Intern Med*. 2023; 38:1493-1500.

Resources: Marijuana laws by state

Week 7. Opioid I: Trends, risk factors, and associated problems

Learning objectives:
1. Understand the history of the opioid epidemic, including trends in opioid prescribing, trends in heroin use, and the rise of fentanyl in the drug supply.
2. Describe the evidence supporting policies addressing opioid prescribing.

Discussion questions: Describe the factors contributing to the fatal opioid overdose epidemic in the U.S. since the early 2000s, including how factors may or may not have changed over time. Which factor do you think is potentially the most modifiable to reduce this epidemic? Justify your response.

Required:

Lyden J, Binswanger IA. The United States opioid epidemic. *Semin Perinatol*. 2019;43(3):123-131.

Spencer MR, Miniño AM, Warner M. Drug overdose deaths in the United States, 2001–2021. NCHS Data Brief, no 457. Hyattsville, MD: National Center for Health Statistics. 2022.

Post LA, Lundberg A, Moss CB, et al. Geographic Trends in Opioid Overdoses in the US From 1999 to 2020. *JAMA Netw Open*. 2022;5(7):e2223631

Ciccarone, D. The triple wave epidemic: Supply and demand drivers of the US opioid overdose crisis. *Int J Drug Policy*. 2019;71:183-188.

Ciccarone, D. The Rise of Illicit Fentanyls, Stimulants and the Fourth Wave of the Opioid Overdose Crisis. *Curr Opin Psychiatry*. 2021; 34(4)344-350.

Recommended: Johnson EM, Lanier WA, Merrill RM, et al. Unintentional prescription opioid-related overdose deaths: description of decedents by next of kin or best contact, Utah, 2008-2009. *J Gen Intern Med*. 2013;28(4):522-9.

Palamar JJ, Ciccarone D, Rutherford C, et al. Trends in seizures of powders and pills containing illicit fentanyl in the United States, 2018 through 2021. *Drug Alcohol Depend*. 2022;234:109398

Dash GF, Gizer IR, Slutske WS. Predicting first use of heroin from prescription opioid use subtypes: Insights from the Monitoring the Future longitudinal panel. *Drug Alcohol Depend*. 2024;255:111084.

Dasgupta, N., Beletsky, L., Ciccarone, D. Opioid Crisis: No easy fix to its social and economic determinants. *Am J Public Health*. 2018; 108(2), 182-186.

Cerdá M, Wheeler-Martin K, Bruzelius E, et al. Spatiotemporal Analysis of the Association Between Pain Management Clinic Laws and Opioid Prescribing and Overdose Deaths. *Am J Epidemiol*. 2021;190(12):2592-2603.

Hadland SE, Cerdá M, Li Y, Krieger MS, Marshall BDL. Association of Pharmaceutical Industry Marketing of Opioid Products to Physicians with Subsequent Opioid Prescribing. *JAMA Intern Med*. 2018;178(6):861-863.

Oliva, E.M. et al. Associations between stopping prescriptions for opioids, length of opioid treatment, and overdose or suicide deaths in US veterans: observational evaluation. *BMJ*. 2020; 368.

Volkow ND, Jones EB, Einstein EB, Wargo EM. Prevention and Treatment of Opioid Misuse and Addiction: A Review. *JAMA Psychiatry*. 2019;76(2):208-216.

Resources: Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC Clinical Practice Guideline for Prescribing Opioids for Pain – United States, 2022. *MMWR Recomm Rep*. 2022;71(3):1-95. (Factsheet summary can be found here).

Centers for Disease Control and Prevention. National Vital Statistics Rapid Release. Provisional overdose death counts.

Week 8. Opioids II: Policy and structural interventions to reduce opioid use and related harms

Learning objectives:
1. Understand the different goals of opioid policy—harm reduction or use reduction
2. Describe the range of federal, state, and local interventions for reducing opioid-related harms
3. Describe the evidence supporting harm reduction or use reduction strategies

Discussion questions: What is the evidence that opioid policies (e.g., abuse-deterrent formulations, naloxone distribution laws) successfully improve individual and population health for people who use opioids? Choose the specific policy you think is the most effective, justify your choice, and state what changes you think could improve its efficacy.

Required: Ellis JD, Dunn KE, Huhn AS. Harm Reduction for Opioid Use Disorder: Strategies and Outcome Metrics. *Am J Psychiatry*. 2024;181(5):372-380.

Hawk KF, Vaca FE, D'Onofrio G. Reducing Fatal Opioid Overdose: Prevention, Treatment and Harm Reduction Strategies. *Yale J Biol Med*. 2015;88(3):235-245.

Rao IJ, Humphreys K, Brandeau ML. Effectiveness of Policies for Addressing the US Opioid Epidemic: A Model-Based Analysis from the Stanford-Lancet Commission on the North American Opioid Crisis. *Lancet Reg Health Am*. 2021;3:100031.

Lee B, Zhao W, Yang K, Ahn Y, Perry BL. Systematic Evaluation of State Policy Interventions Targeting the US Opioid Epidemic, 2007-2018. *JAMA Netw Open*. 2021;4(2):e2036687.

PBS Thirteen. "What Happens at a Safe Injection Site, or Overdose Prevention Center?" (YouTube video)

Recommended: i. Abuse-deterrent formulations

Cicero, T. J., & Ellis, M. S. Abuse-deterrent formulations and the prescription opioid abuse epidemic in the United States: lessons learned from OxyContin. *JAMA Psychiatry*. 2015; 72(5), 424-430.

ii. Prescription Drug Monitoring Programs (PDMP)

Fink DS, Schleimer JP, Sarvet A, et al. Association Between Prescription Drug Monitoring Programs and Nonfatal and Fatal Drug Overdoses: A Systematic Review. *Ann Intern Med*. 2018;168(11):783-790.

Haffajee RL. Prescription Drug Monitoring Programs-Friend or Folly in Addressing the Opioid-Overdose Crisis?. *N Engl J Med*. 2019;381(8):699-701.

iii. Opioid prescribing guidelines

Oliva, E.M. et al. Associations between stopping prescriptions for opioids, length of opioid treatment, and overdose or suicide deaths in US veterans: observational evaluation. *BMJ.* 2020; *368.*

iv. Pain management clinic laws

Cerdá M, Wheeler-Martin K, Bruzelius E, et al. Spatiotemporal Analysis of the Association Between Pain Management Clinic Laws and Opioid Prescribing and Overdose Deaths. *Am J Epidemiol*. 2021;190(12):2592-2603

Kennedy-Hendricks A, Richey M, McGinty EE, Stuart EA, Barry CL, Webster DW. Opioid Overdose Deaths and Florida's Crackdown on Pill Mills. *Am J Public Health*. 2016;106(2):291-7.

v. Naloxone distribution

Weiner J, Murphy SM, Behrends CN. Expanding Access to Naloxone: A Review of Distribution Strategies. 2019. Penn LDI/CHERISH Issue Brief.

vi. Supervised consumption facilities

Kennedy MC, Karamouzian M, Kerr T. Public Health and Public Order Outcomes Associated with Supervised Drug Consumption Facilities: a Systematic Review. *Curr HIV/AIDS Rep*. 2017;14(5):161-183.

McAteer JM, Mantha S, Gibson BE, et al. NYC's Overdose Prevention Centers: Data from the First Year of Supervised Consumption Services. NEJM Catal. 2024;5(5).

Chalfin A, del Pozo B, Mitre-Becerril D. Overdose Prevention Centers, Crime, and Disorder in New York City. *JAMA Netw Open*. 2023;6(11):e2342228.

vii. Prescription heroin/hydromorphone "safer supply"

Ledlie S, Garg R, Cheng C. Prescribed safer opioid supply: A scoping review of the evidence. *Int J Drug Policy*. 2024;125:104339.

Nguyen HV, Mital S, Bugden S, McGinty EE. British Columbia's Safer Opioid Supply Policy and Opioid Outcomes. *JAMA Intern Med*. 2024.

viii. Drug checking & self-testing

Maghsoudi N, Tanguay J, Scarfone K, et al. Drug checking services for people who use drugs: a systematic review. *Addiction*. 2022;117(3):532-544.

McGowan CR, Harris M, Platt L, Hope V, Rhodes T. Fentanyl self-testing outside supervised injection settings to prevent opioid overdose: Do we know enough to promote it? *Int J Drug Policy*. 2018;58:31-36. (Opinion)

"Fentanyl Test Strips Empower People and Save Lives—So Why Aren't They More Widespread?" Health Affairs Blog, June 2, 2021. (Opinion)

Halifax JC, Lim L, Ciccarone D, Lynch KL. Testing the test strips: laboratory performance of fentanyl test strips. *Harm Reduct J*. 2024;21(1):14.

Mars SG, Ondocsin J, Ciccarone D. Toots, tastes and tester shots: user accounts of drug sampling methods for gauging heroin potency. *Harm Reduct J*. 2018;15(1):26.

ix. Harm reduction overview (includes other substances)

Ramprashad A, Burnett GM, Welsh C. Harm Reduction: Not Dirty Words Any More. *Psychiatr Clin North Am*. 2022;45(3):529-546

Week 9. Emerging trends in substance use and novel substances of abuse

Learning objectives:

1. Describe emerging trends in substance use and related harms
2. Describe health effects of novel substances of abuse and trends in use
3. Describe challenges in studying new and emerging substances and use trends

Discussion questions:

Are novel substances of abuse harmful in and of themselves, or do they only pose a significant health risk when combined with opioids? Is the discussion around emerging trends and novel substances of abuse alarmist? Why or why not?

Required:

i. Polysubstance use

Polysubstance Use Facts (CDC)

Peppin JF, Raffa RB, Schatman ME. The Polysubstance Overdose-Death Crisis. *J Pain Res*. 2020;13:3405-3408. (Opinion)

Ciccarone, D. The Rise of Illicit Fentanyls, Stimulants and the Fourth Wave of the Opioid Overdose Crisis. *Curr Opin Psychiatry*. 2021; 34(4)344-350

ii. Cocaine

Spencer MR, Miniño AM, Garnett MF. Co-involvement of opioids in drug overdose deaths involving cocaine and psychostimulants, 2011–2021. NCHS Data Brief, no 474. Hyattsville, MD: National Center for Health Statistics. 2023

Cano M, Oh S, Salas-Wright CP, Vaughn MG. Cocaine use and overdose mortality in the United States: Evidence from two national data sources, 2002-2018. *Drug Alcohol Depend*. 2020;214:108148.

iii. Methamphetamines

NIDA. Methamphetamine Research Report. 2019.

Han B, Compton WM, Jones CM, et al. Methamphetamine Use, Methamphetamine Use Disorder, and Associated Overdose Deaths Among US Adults. *JAMA Psychiatry*. 2021;78(12):1329-1342.

iv. Benzodiazepines

Votaw VR, Geyer R, Rieselbach MM, McHugh RK. The epidemiology of benzodiazepine misuse: A systematic review. *Drug Alcohol Depend.* 2019;200:95-114.

Liu S, O'Donnell J, Gladden RM, et al. Trends in Nonfatal and Fatal Overdoses Involving Benzodiazepines — 38 States and the District of Columbia, 2019–2020. *MMWR Morb Mortal Wkly Rep* 2021;70:1136–1141.

v. Party drugs and new psychoactive substances

Palamar JJ, Le A, Cleland CM, Keyes KM. Trends in drug use among nightclub and festival attendees in New York City, 2017-2022. *Int J Drug Policy*. 2023;115:104001.

Wilkinson ST, Palamar JJ, Sanacora G. The Rapidly Shifting Ketamine Landscape in the US. *JAMA Psychiatry*. Published online January 03, 2024.

vi. Xylazine

"Learn about Xylazine with Dr. Kim Sue" (YouTube)

Friedman J, Montero F, Bourgois P, et al. Xylazine spreads across the US: A growing component of the increasingly synthetic and polysubstance overdose crisis. *Drug Alcohol Depend*. 2022;233:109380.

Recommended:

Amin-Esmaeili M, Farokhnia M, Susukida R, et al. Reduced drug use as an alternative valid outcome in individuals with stimulant use disorders: Findings from 13 multisite randomized clinical trials. *Addiction*. 2024;119(5):833-843.

Lim JK, Earlywine JJ, Bagley SM, et al. Polysubstance Involvement in Opioid Overdose Deaths in Adolescents and Young Adults, 1999-2018. *JAMA Pediatr*. 2021;175(2):194–196.

Mars SG, Ondocsin J, Ciccarone D. Sold as Heroin: Perceptions and Use of an Evolving Drug in Baltimore, MD. *J Psychoactive Drugs*. 2018;50(2):167-176.

Collins AB, Bardwell G, McNeil R, Boyd J. Gender and the overdose crisis in North America: Moving past gender-neutral approaches in the public health response. *Int J Drug Policy*. 2019;69:43-45. (Opinion)

Palamar JJ, Fitzgerald ND, Carr TH, et al. National and regional trends in seizures of shrooms (psilocybin) in the United States, 2017-2022. *Drug Alcohol Depend*. Published online January 29, 2024. doi:10.1016/j.drugalcdep.2024.111086

Palamar JJ, Salomone A, Massano M, Cleland CM. Trends in reported and biologically confirmed drug use among people who use ecstasy in the nightclub/festival-attending population, 2016-2022. *Drug Alcohol Depend Rep*. 2023;9:100198.

Roxburgh A, Sam B, Kriikku P, et al. Trends in MDMA-related mortality across four countries. *Addiction.* 2021;116(11):3094-3103.

Korthuis PT, Cook RR, Foot CA, et al. Association of Methamphetamine and Opioid Use With Nonfatal Overdose in Rural Communities. *JAMA Netw Open.* 2022;5(8):e2226544.

Week 10. Approaches to studying substance use in a structural health disparities context

Learning objectives:

1. Discuss substance use in a structural health disparities framework
2. Conceptualize structural risk factors for substance use and related harms (e.g., segregation, neighborhood disorder, structural racism)
3. Discuss epidemiologic methods for studying structural health disparities

Discussion questions: Are structural health disparities worth studying in addition to individual- and population-level disparities? How do structural health disparities impact individual risk factors for substance use and related harms, if at all?

Required:

Amaro H, Sanchez M, Bautista T, Cox R. Social vulnerabilities for substance use: Stressors, socially toxic environments, and discrimination and racism. *Neuropharmacology*. 2021;188:108518.

Cook BL, Alegria M. Racial-ethnic disparities in substance abuse treatment: The role of criminal history and socioeconomic status. *Psychiatr Serv*. 2011;62(11):1273-1281.

Acevedo A, Panas L, Garnick D, et al. Disparities in the Treatment of Substance Use Disorders: Does Where You Live Matter? [published correction appears in J Behav Health Serv Res. 2018 Oct 8;:]. *J Behav Health Serv Res.* 2018;45(4):533-549.

Pamplin JR 2nd, Rouhani S, Davis CS, et al. Persistent Criminalization and Structural Racism in US Drug Policy: The Case of Overdose Good Samaritan Laws. *Am J Public Health*. 2023;113(S1):S43-S48.

Recommended:

i. Background reading on structural determinants of health & substance use

Collins AB, Boyd J, Cooper HLF, McNeil R. The intersectional risk environment of people who use drugs. *Soc Sci Med*. 2019;234:112384.

Braveman PA, Arkin E, Proctor D, Kauh T, Holm N. Systemic And Structural Racism: Definitions, Examples, Health Damages, And Approaches To Dismantling. *Health Aff*. 2022;41(2):171-178.

LaVeist T, Pollack K, Thorpe R Jr, Fesahazion R, Gaskin D. Place, not race: disparities dissipate in southwest Baltimore when blacks and whites live under similar conditions. *Health Aff*. 2011;30(10):1880-1887.

Diez Roux AV, Mair C. Neighborhoods and health. *Ann N Y Acad Sci*. 2010;1186:125-145.

ii. Example studies

Davis CS, Burris S, Kraut-Becher J, et al. Effects of an intensive street-level police intervention on syringe exchange program use in Philadelphia, PA. *Am J Public Health*. 2005;95(2):233-236.

Mauro PM, Philbin MM, Greene ER, et al. Daily cannabis use, cannabis use disorder, and any medical cannabis use among US adults: Associations within racial, ethnic,

and sexual minoritized identities in a changing policy context. *Prev Med Rep*. 2022;28:101822.

Nesoff ED, Miesel ZF, Saeed H, Martins SS. Neighborhood and individual disparities in community-based naloxone access. *J Urban Health*. 2024. J Urban Health. 2024;101(1):64-74.

Nesoff ED, Branas CC, Martins SS. The Geographic Distribution of Fentanyl-Involved Overdose Deaths in Cook County, Illinois. *Am J Public Health*. 2020;110(1):98-105.

Furr-Holden CDM, Milam AJ, Nesoff ED, et al. Not in My Back Yard: A Comparative Analysis of Crime around Publicly-funded Drug Treatment Centers, Liquor Stores, Convenience Stores, and Corner Stores in one Mid-Atlantic City. *J Stud Alcohol Drugs*. 2016;77(1):17-24.

Week 11. Behavioral & pharmacological treatment modalities

Learning objectives:

1. Describe the similarities and differences between the three main evidence-based behavioral treatments, Motivational Interviewing/Motivational Enhancement Therapy, Cognitive Behavioral Therapy, and Contingency Management, and the evidence for the efficacy of each.
2. Describe common pharmacological therapies for substance use disorder.

Discussion questions:

Between behavioral or pharmacological treatment, which is the most positively impactful on substance use disorders? Or are both equally helpful or equally ineffective? Design a study to support your conclusion. Frame your response for a specific substance.

Required:

i. Behavioral treatments

Carroll KM, Onken LS. Behavioral therapies for drug abuse. *Am J Psychiatry*. 2005;162(8):1452-1460.

Kelly JF, Abry A, Ferri M, Humphreys K. Alcoholics Anonymous and 12-Step Facilitation Treatments for Alcohol Use Disorder: A Distillation of a 2020 Cochrane Review for Clinicians and Policy Makers. *Alcohol Alcohol*. 2020;55(6):641-651.

Moos RH. Theory-Based Active Ingredients for Effective Treatments for Substance Use Disorders. *Drug Alcohol Depend*. 2007; 88(2-3): 109-21.

Ray LA, Meredith LR, Kiluk BD, Walthers J, Carroll KM, Magill M. Combined Pharmacotherapy and Cognitive Behavioral Therapy for Adults With Alcohol or Substance Use Disorders: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2020;3(6):e208279.

DiClemente CC, Corno CM, Graydon MM, Wiprovnick AE, Knoblach DJ. Motivational interviewing, enhancement, and brief interventions over the last decade: A review of reviews of efficacy and effectiveness. *Psychol Addict Behav*. 2017;31(8):862-887.

Davis DR, Kurti AN, Skelly JM, Redner R, White TJ, Higgins ST. A review of the literature on contingency management in the treatment of substance use disorders, 2009-2014. *Prev Med*. 2016;92:36-46

ii. Pharmacological treatments

SAMHSA. Medications for Substance Use Disorders. (Click on individual medications to learn more about each treatment).

Bagley S, Glover D, Foreman J, et al. Effective Treatments for Opioid Use Disorder – Finding Recovery and Staying Safe. *N Engl J Med*. 2024;390(4):e7. (Video)

Kranzler HR, Soyka M. Diagnosis and pharmacotherapy of alcohol use disorder: a review. *JAMA*. 2018; 320:815-824

Lee J. D., Nunes E. V., Novo P., et al. Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone for opioid relapse prevention (X: BOT): a multicentre, open-label, randomised controlled trial. *Lancet*. 2017; 391: 309–318.

LeFevre N, St Louis J, Worringer E, et al. The End of the X-waiver: Excitement, Apprehension, and Opportunity. *J Am Board Fam Med*. 2023;36(5):867-872.

Recommended:

Bentzley BS, Han SS, Neuner S, et al. Comparison of Treatments for Cocaine Use Disorder Among Adults: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2021;4(5):e218049.

Calomarde-Gómez C, Jiménez-Fernández B, Balcells-Oliveró M, et al. Motivational Interviewing for Cannabis Use Disorders: A Systematic Review and Meta-Analysis. *Eur Addict Res*. 2021:1-15.

Carroll KM, Kiluk BD. Cognitive behavioral interventions for alcohol and drug use disorders: Through the stage model and back again. *Psychol Addict Behav*. 2017;31(8):847-861

Brezing CA, Levin FR. The Current State of Pharmacological Treatments for Cannabis Use Disorder and Withdrawal. *Neuropsychopharmacology*. 2018;43(1):173-194.

Kranzler HR, Feinn R, Morris P, Hartwell EE. A meta-analysis of the efficacy of gabapentin for treating alcohol use disorder. *Addiction*. 2019;114(9):1547-1555.

Tardelli VS, Bisaga A, Arcadepani FB, et al. Prescription psychostimulants for the treatment of stimulant use disorder: a systematic review and meta-analysis. *Psychopharmacology*. 2020;237(8):2233-2255

Srivastava AB, Mariani JJ, Levin FR. New Directions in the Treatment of Opioid Withdrawal. *Lancet*. 2020; 395: 1938-48.

Hadland SE, Burr WH, Zoucha K, et al. Treating Adolescent Opioid Use Disorder in Primary Care. *JAMA Pediatr*. 2024;178(4):414–416

Week 12. Service utilization, treatment adherence, and unmet treatment need

Learning objectives:

1. Describe prevalence of treatment access and utilization for substance use disorders and trends over time.
2. Explore barriers and facilitators of behavioral and pharmacological substance use disorder treatment initiation and adherence, including attitudes towards treatment among people who use drugs, service providers, and others.

Discussion questions:

Do low rates of substance use disorder treatment result from limited supply or little demand? What do you think are the main factors contributing to low treatment utilization? Do the same factors influence treatment adherence? The same or differently?

Required: Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav*. 1995;36(1):1-10.

Alegría M, Pescosolido BA, Williams S, Canino G (2011). Culture, Race/Ethnicity and Disparities: Fleshing Out the Socio-Cultural Framework for Health Services Disparities. In: Pescosolido B, Martin J, McLeod J, Rogers A. (eds) Handbook of the Sociology of Health, Illness, and Healing. Springer, New York, NY.

Mackey K, Veazie S, Anderson J, Bourne D, Peterson K. Barriers and Facilitators to the Use of Medications for Opioid Use Disorder: a Rapid Review. *J Gen Intern Med*. 2020;35(Suppl 3):954-963.

Handanagic S, Broz D, Finlayson T, et al. Unmet need for medication for opioid use disorder among persons who inject drugs in 23 U.S. cities, *Drug Alcohol Depend*, 2024. doi:10.1016/j.drugalcdep.2024.111251.

Krasnova A, Diaz JE, Philbin MM, Mauro PM. Disparities in substance use disorder treatment use and perceived need by sexual identity and gender among adults in the United States. *Drug Alcohol Depend*. 2021;226:108828.

Blanco C, Iza M, Rodriguez-Fernandez JM, et al. Probability and predictors of treatment-seeking for substance use disorders in the U.S. *Drug Alcohol Depend*. 2015;149:136-144

Mauro PM, Samples H, Klein KS, Martins SS. Discussing drug use with health care providers is associated with perceived need and receipt of drug treatment among adults in the United States: We need to talk. *Medical Care*. 2020; 58(7), 617-624.

Kilaru AS, Xiong A, Lowenstein M, et al. Incidence of Treatment for Opioid Use Disorder Following Nonfatal Overdose in Commercially Insured Patients. *JAMA Netw Open*. 2020;3(5):e205852.

Lowenstein M, Perrone J, McFadden R, et al. Impact of Universal Screening and Automated Clinical Decision Support for the Treatment of Opioid Use Disorder in Emergency Departments: A Difference-in-Differences Analysis. *Ann Emerg Med*. 2023;82(2):131-144.

Recommended: National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Sciences Policy; Committee on Medication-Assisted Treatment for Opioid Use Disorder; Mancher M, Leshner AI, editors. Medications for Opioid Use Disorder Save Lives. Washington, DC: National Academies Press; 2019. Chapter 5, Barriers to Broader Use of Medications to Treat Opioid Use Disorder. Available from: https://www.ncbi.nlm.nih.gov/books/NBK541389/

Mauro PM, Gutkind S, Askari MS, et al. Associations between cannabis policies and state-level specialty cannabis use disorder treatment in the United States, 2004-2019. *Drug Alcohol Depend*. 2024;257:111113.

Moore KE, Siebert SL, Kromash R, Owens MD, Allen DC. Negative attitudes about medications for opioid use disorder among criminal legal staff. *Drug Alcohol Depend Rep*. 2022;3:100056.

Askari MS, Martins SS, Mauro PM. Medication for opioid use disorder treatment and specialty outpatient substance use treatment outcomes: Differences in retention and completion among opioid-related discharges in 2016. *J Subst Abuse Treat*. 2020;114:108028.

Mantha S., Mauro, P.M., Mauro, C.M., Martins, S.S. (2020). Criminal justice referral to medication-assisted treatment among opioid treatment admissions, 2015. *Drug Alcohol Depend*. 2021; 206.

Mojtabai, R., Mauro, C., Wall, M.M., et al. Medication treatment for opioid use disorders in substance use treatment facilities. *Health Aff*. 2019; 38, 14–23.

Priester MA, Browne T, Iachini A, et al. Treatment access barriers and disparities among individuals with co-occurring mental health and substance use disorders: An integrative literature review. *J Subst Abuse Treat*. 2016;61:47-59.

Mauro PM, Gutkind S, Annunziato EM, Samples H. Use of medication for opioid use disorder among US adolescents and adults with need for opioid treatment, 2019. *JAMA Network Open*. 2022; 5(3), e223821.

Nesoff ED, Marziali ME, Martins SS. The estimated impact of state-level support for expanded delivery of substance use disorder treatment during the COVID-19 pandemic. *Addiction*. 2022;117(6):1781-1786.

Week 13. HIV and substance use syndemic

Learning objectives:

1. Describe the epidemiology of the HIV and substance use syndemic
2. Explore the impact of the HIV epidemic on substance use and harm reduction policies
3. Describe unique barriers to care experienced by people living with HIV who use drugs

Discussion questions: Has HIV affected the substance use research agenda and/or substance use interventions? Do you think the syndemic has positively or negatively impacted people living with HIV who do not use drugs and/or people who use drugs who do not live with HIV? What do you think should be the top research priorities for combatting the HIV and substance use syndemic?

Required:

NIDA. 2023, May 30. "Still Reaching: The Syndemics that Complicate and Characterize How Drugs and HIV Intersect in People's Lives." (Blog).

Perlman DC, Jordan AE. The Syndemic of Opioid Misuse, Overdose, HCV, and HIV: Structural-Level Causes and Interventions. *Curr HIV/AIDS Rep*. 2018;15(2):96-112.

Hyshka E, Strathdee S, Wood E, Kerr T. Needle exchange and the HIV epidemic in Vancouver: lessons learned from 15 years of research. *Int J Drug Policy*. 2012;23(4):261-270.

West BS, Diaz JE, Philbin MM, Mauro PM. Past-year medical and non-medical opioid use by HIV status in a nationally representative US sample: Implications for HIV and substance use service integration. *J Subst Use Addict Treat*. 2023;147:208976.

Dasgupta S, Tie Y, Beer L, et al. Unmet needs and barriers to services among people who inject drugs with HIV in the United States. *J HIV AIDS Soc Serv*. 2021;20(4):1-14.

Shiau S, Arpadi SM, Yin MT, et al. Patterns of drug use and HIV infection among adults in a nationally representative sample. *Addict Behav*. 2017; 68, 39–44.

Recommended:

Grov C, Westmoreland D, Morrison C, et al. The Crisis We Are Not Talking About: One-in-Three Annual HIV Seroconversions Among Sexual and Gender Minorities

Were Persistent Methamphetamine Users. *J Acquir Immune Defic Syndr*. 2020;85(3):272-279.

Tofighi B, Sindhu SS, Chemi C, et al. Perspectives on the HIV continuum of care among adult opioid users in New York City: a qualitative study. *Harm Reduct J*. 2019;16(1):58

Lesko CR, Nance RM, Lau B, et al. Changing Patterns of Alcohol Use and Probability of Unsuppressed Viral Load Among Treated Patients with HIV Engaged in Routine Care in the United States. *AIDS Behav*. 2021;25(4):1072-1082.

Vagenas P, Azar MM, Copenhaver MM, et al. The impact of alcohol use and related disorders on the HIV continuum of care: A systematic review: Alcohol and the HIV continuum of care. *Current HIV/AIDS reports*. 2015;12(4):421-36.

Week 14. Student final project presentations & course wrap-up