

ASAM REVIEW COURSE 2023

Prevention and Public Health: From Theory to Practice

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Financial Disclosure

Amesika Nyaku, MD, MS

- No relevant disclosures

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LEARNING OBJECTIVE

Explain ways the principles of prevention can be applied to addiction medicine and the impact of prevention on public health.

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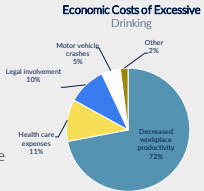
Presentation Outline

- Scope of substance use on public health
- Commonly used public health frameworks of prevention
- Evidence informed prevention interventions

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Addiction and Public Health

- Mortality
 - Alcohol related deaths – 140,000 deaths/year between 2015-2019
 - Drug related deaths – Since 1999 over 1 million deaths, age-adjusted rate increased by 31% from 2019 to 2020
- Economic impact
 - In 2010, \$249 billion related to excessive alcohol use
- Negative impact on chronic diseases
- Exacerbation of social problems



Economic Costs of Excessive Drinking


Category	Percentage
Decreased work/academic productivity	72%
Health care expenses	11%
Legal involvement	10%
Motor vehicle crashes	3%
Other	7%

<https://www.cdc.gov/alcohol/features/excessive-alcohol-deaths.html>
<https://www.cdc.gov/drugoverdose/deaths/index.html>
<https://www.cdc.gov/alcohol/features/excessive-drinking.html>
 SAMHSA. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, 2016

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What is a Public Health Systems Approach?

- Defines the problem through the systematic collection of data on the scope, characteristics, and consequences of substance misuse
- Identifies the risk and protective factors that increase or decrease the risk for substance misuses and its consequences, and the factors that could be modified through interventions
- Works across the public and private sector develop and test interventions that address social, environmental, or economic determinants of substance misuse and related health consequences
- Supports broad implementation of effective prevention and treatment interventions and recovery supports in a wide range of settings
- Monitors the impact of these interventions on substance misuse and related problems as well as on risk and protective factors



SAMHSA. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, 2016

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Goals of Prevention

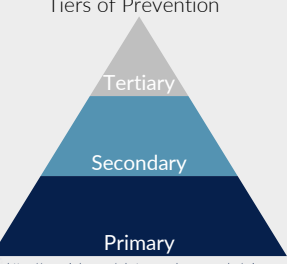
- Preserve or improve the general health and well being
- Reduce mortality
- Reduce co-morbidity
- Improve public health




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Frameworks in Public Health for Prevention

Tiers of Prevention



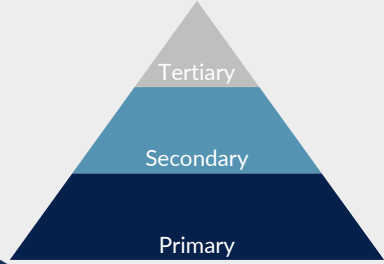
Social-Ecological Model



<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>
https://www.at.sdr.cdc.gov/communityengagement/pce_models.html

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Public Health Frameworks: Tiers of Prevention



<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

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Tiers of Prevention: Primary Prevention

Primary prevention aims to prevent disease or injury before it ever occurs. This is done by preventing exposure to hazards that cause disease or injury, altering unhealthy or unsafe behaviors that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur.

<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

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Tiers of Prevention: Secondary Prevention

Secondary prevention aims to reduce the impact of a disease or injury that has already occurred. This is done by detecting and treating disease or injury as soon as possible to halt or slow its progress, encouraging personal strategies to prevent reinjury or recurrence, and implementing programs to return people to their original health and function to prevent long-term problems.

<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

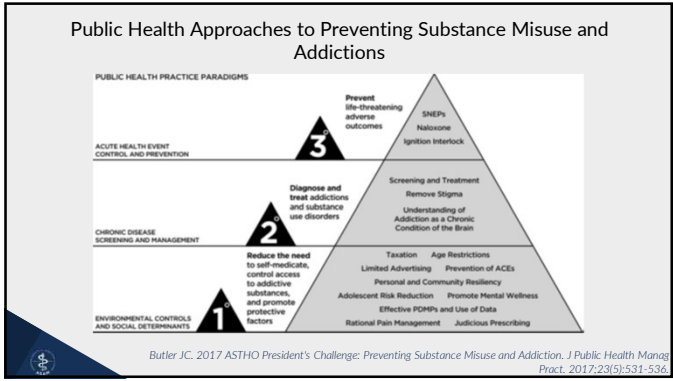
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Tiers of Prevention: Tertiary Prevention

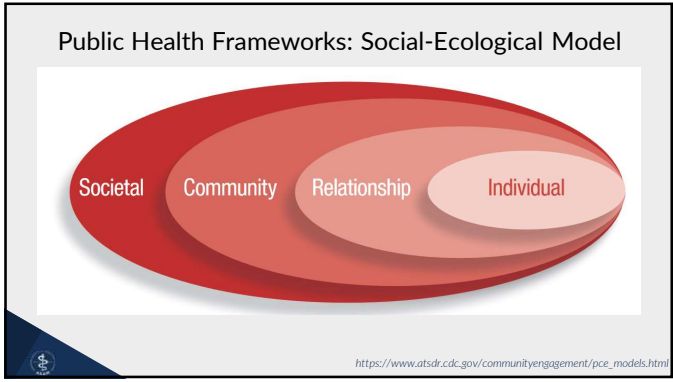
Tertiary prevention aims to soften the impact of an ongoing illness or injury that has lasting effects. This is done by helping people manage long-term, often-complex health problems and injuries (e.g. chronic diseases, permanent impairments) in order to improve as much as possible their ability to function, their quality of life and their life expectancy. Tertiary prevention interventions are essentially forms of treatment aimed to prevent worsening conditions and the emergence of secondary problems.

<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

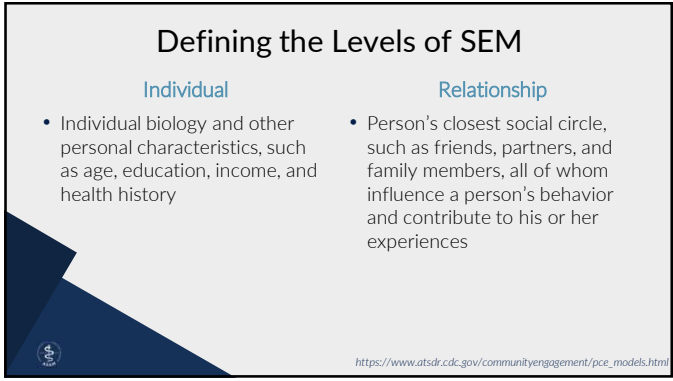
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Defining the Levels of SEM, con't

Community

- Settings in which people have social relationships, such as schools, workplaces, and neighborhoods, and seeks to identify the characteristics of these settings that affect health

Societal

- Broad societal factors that favor or impair health. This includes cultural and social norms and the health, economic, educational, and social policies that help to create, maintain, or lessen socioeconomic inequalities between groups

https://www.atsdr.cdc.gov/communityengagement/pce_models.html

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Social-ecological Framework

Jalali MS, et al. Health Research Policy and Systems 2020;18(1):87.

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Harm Reduction

Policies, programs and practices that aim to minimize negative health, social and legal impacts associated with drug use, drug policies and drug laws. Harm reduction is grounded in justice and human rights – it focuses on positive change and on working with people without judgement, coercion, discrimination, or requiring that they stop using drugs as a precondition of support.

<https://www.hri.global/what-is-harm-reduction>
Health, Rights, and Drugs UNAIDS 2019

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Other Prevention Concepts	
Environmental prevention	Limit opportunities for unhealthy or risky behavior or promote the availability of healthier options in order to prevent problems associated with substance use. They do so by altering the environment in ways that can unconsciously influence behavior.
Demand reduction	Preventing the uptake and/or delaying the onset of use of alcohol, tobacco and other drugs; reducing the misuse of alcohol, tobacco and other drugs in the community and supporting people to recover from dependence through evidence- informed treatment
Supply reduction	Preventing, stopping, disrupting or otherwise reducing the production and supply of illegal drugs; and controlling, managing and/or regulating the availability of legal drugs.

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Environmental Interventions

Actions to minimize future hazards to health and hence inhibit the establishment factors (environmental, economic, social, behavioral, cultural) known to increase the risk of disease

Examples related to drug use with some evidence base

- Purchase laws
- Price controls
- Restrictions on retail/density
- Controls on advertising

Center for Substance Abuse Prevention (CSAP). 1999. Environmental prevention strategies: Putting theory into practice, training and resource guide. Rockville, MD: National Clearinghouse for Alcohol and Drug Information.

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Demand Reduction

Preventing the uptake and/or delaying the onset of use of alcohol, tobacco and other drugs; reducing the misuse of alcohol, tobacco and other drugs in the community and supporting people to recover from dependence through evidence- informed treatment

- Criminal sanctions for possession/use
- Drug treatment (coerced and voluntary)
- Drug education and persuasion
- Drug testing and noncriminal sanctions

National Research Council. Informing America's Policy on Illegal Drugs: What We Don't Know Keeps Hurting Us [Internet]. Washington, D.C.: National Academies Press; 2001

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Supply Reduction

Preventing, stopping, disrupting or otherwise reducing the production and supply of illegal drugs; and controlling, managing and/or regulating the availability of legal drugs by:

- Crop eradication
- Crop substitution
- Disruption of transport
- Domestic enforcement
- Regulation of pharmaceuticals
- Youth employment programs

National Research Council, *Informing America's Policy on Illegal Drugs: What We Don't Know Keeps Hurting Us* [Internet]. Washington, D.C.: National Academies Press; 2001

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What We Know Works

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Behavioral Interventions: School Based

- Focused on groups that are high risk and aims to strengthen protective factors
- Good Behavior Game
- Classroom-Centered Intervention
- The Fast track Program
- LifeSkills Training
- Delayed early use of alcohol, tobacco, and other substances
- Reduced rates of use

SAMHSA. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. 2016

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Behavioral Interventions: Family Strengthening

- Focus on enhancing parenting skills and adolescent refusal skills
- Nurse-Family Partnership – this is an early childhood intervention
- Strengthening Families Program: for Parents and Youth
- Coping power
- I Hear What You're Saying
- Parent Handbook
- Reduced early alcohol and substance use

SAMHSA. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, 2016

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Behavioral Interventions: Medical Settings

- Utilizes motivational interviewing and has demonstrated reduction up to 12 months
- Brief alcohol interventions for all ages
 - Adults 18 years or older – USPSTF Grade B recommendation
 - Adolescents 12 to 17 - USPSTF Grade I recommendation
- Brief Alcohol Screening and Intervention for College Students
- Project Share
- Computerized Alcohol-Related Problems Survey

US Preventive Services Task Force et al. JAMA 320, 1899 (2018); Levy, S. J. L. et al. Pediatrics 138, e20161211 (2016). SAMHSA. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, 2016

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Behavioral Interventions: Community Based

- Communities that Care (CTC)
 - Community stakeholders assessed and prioritized which evidence-based interventions were needed to be implemented for their middle/high school kids
 - Had lower alcohol and tobacco initiation rates
- PROMoting School-community-university Partnerships to Enhance Resilience (PROSPER)
 - Collaborative that implemented family strengthening and school based behavioral interventions
 - Had lower marijuana, methamphetamine, inhalant, and prescription opioid use

SAMHSA. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, 2016

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Societal Based Interventions

- Pricing and Taxes
 - Largest evidence base is for alcohol
 - Roughly 10% increase in alcohol price reduces drinking by 5%
- Increased alcohol taxes has:
 - Large effect on morbidity and mortality
 - Moderate effect on traffic crashes
 - Smaller effects on crime, violence, and STDs

Wagenaar, A. C., et al. *Addiction* 104, 179-190 (2009); Wagenaar, A. C., et al. *Am J Public Health* 100, 2270-2278 (2010); SAMHSA. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. 2016

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Societal Based Interventions

- Outlet Density
 - Reduction correlated with reduction in alcohol-related crimes
- Commercial Host Liability Policies
 - 6.4% decrease in alcohol-related motor vehicle fatalities
- Limit Days and Hours of Availability
 - Clear correlation between increased availability and increased alcohol-related harms

SAMHSA. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. 2016

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Societal Based Interventions

- Policies to Reduce Drinking and Driving
 - Impaired Driving Laws
 - Checkpoints
 - Ignition Interlocks
 - Treatment programs
- Policies to Reduce Underage Drinking
 - Raising minimum legal drinking age
 - Zero tolerance and/or Use it-Lose it
 - Social host liability (criminal or civil)

SAMHSA. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. 2016
https://www.cdc.gov/transportationsafety/impaired_driving/strategies.html

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Multi-Level Interventions: Naloxone

- Opioid antagonist which rapidly reverses opioid related sedation and respiratory depression and may cause withdrawal
- Administration by medical and community members
 - 11 to 21% reduction in opioid overdose deaths
- Good Samaritan Laws
 - 14% reduction in overdose deaths
- Co-prescribing for at-risk patients
 - Decreases opioid-related emergency room visits

<https://www.hhs.gov/opaids/sites/default/files/2018-12/naloxone-coprescribing-guidance.pdf>
Walley, A. Y. et al. *BMJ* 346, 1174 (2013); Townsend, T. et al. *Int J Drug Policy* 75, 102536 (2020); McClellan, C. et al. *Addict Behav* 86, 90–95 (2018)

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Multi-Level Interventions: Syringe Services Programs

- Benefit and cost-effectiveness is well established
 - 58% reduction in HIV infections in people who inject
 - 56% in HCV infections in people who inject
- Has not been effectively scaled up due to regulations and community norms

Annual number of syringes exchanged and HIV incidence among PWIDs in NYC, 1990-2002

Aspinall *Int J Epidemiol* 2014; Des Jarlais *AIDS* 2016; Platt et al. *The Cochrane Review* 2017; Broz et al. *AJPM* 2021

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Multi-Level Interventions: Medications for Opioid Use Disorder

- Tertiary Prevention
 - Decreased mortality
- Secondary Prevention
 - Improves HIV treatment outcomes
- Primary Prevention
 - Prevents HIV and HCV acquisition

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Medications for Opioid Use Disorder: Tertiary Prevention

- Decreases opioid and non-opioid related mortality
- Increases quality of life
- Increases employment
- Decreases emergency department use

Mortality Type	on MOUD	discontinued MOUD	no treatment
All-cause mortality	~1.5	~2.5	~5.5
Overdose mortality	~0.5	~1.5	~3.5

Ma, et al. Molecular Psychiatry 2019; Mattick RP, et al. Cochrane Database Syst Rev 2003; Mattick RP, et al Database Syst Rev 2009; Mattick RP, et al. Cochrane Database Syst Rev 2014; Dupouy J, et al. Ann Fam Med 2017;15(4):355-8.

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Medications for Opioid Use Disorder: Secondary Prevention

Systematic review and meta-analysis of 32 studies showed treatment for OUD (methadone, buprenorphine, naltrexone, other) associated with:

- 69% increase in ART uptake
- 2-fold increase in ART adherence
- 45% increase in viral suppression

Low. Clin Infect Dis. 2016;63:1094. Slide credit: clinicaloptions.com

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Medications for Opioid Use Disorder: Primary Prevention

- HIV incidence
 - 54% reduction in people who injected drugs
- HCV incidence
 - 60% reduction in people who injected drugs
- Strongest effect with agonist forms of MOUD


MacArthur GJ et al. BMJ 2012; 345 :e5945; Hagan et al. JID; 204(1):74-83; Tsui JJ, et al. JAMA Intern Med. 2014;174(12):1974-1981

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Conclusions

Public health prevention interventions for drug use

- Utilize a tiered approach to prevention that considers the individual, interpersonal dynamics, community settings, and societal aspects
- Has a well-established body of evidence-based interventions
- Requires ongoing scale up and systematic monitoring




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Thank You!
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