

An aerial photograph of the UAB campus, showing a large green lawn with several trees, a red brick path, and a modern building with a glass facade. The image is partially obscured by a dark green geometric shape in the top right corner.

*HIV and alcohol use: why is  
risk reduction in alcohol use  
important in HIV care?*

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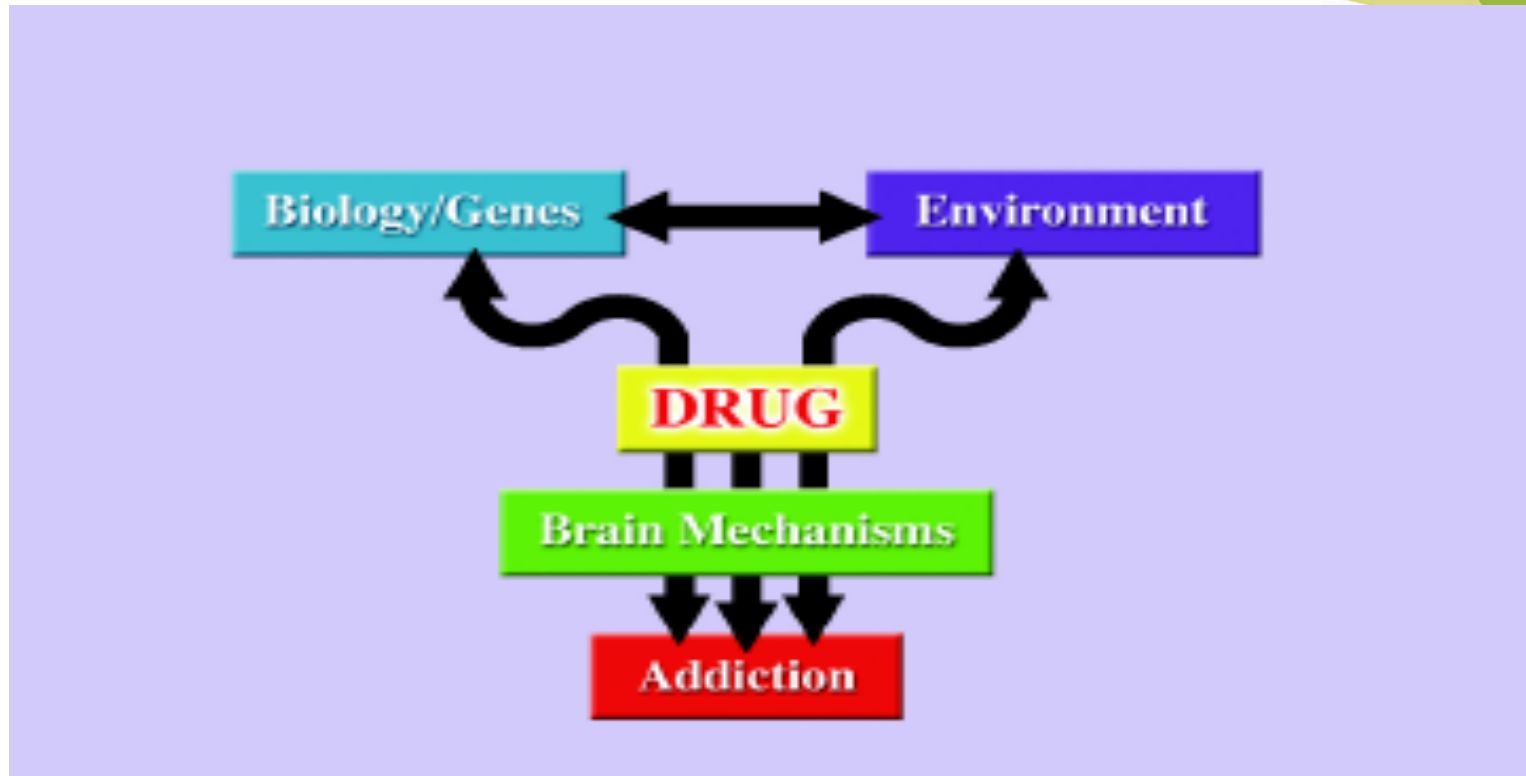
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# Objectives for today's session

- Define alcohol use disorder by DSM 5 criteria and name 3 important elements
- Review concepts of addiction – 4 “C”s.
- Recognize what is SBIRT, (Screening, Brief, Intervention and Referral to Treatment) and how to use it in clinical practice
- Discuss how “risky” drinking is more than a threat for people living with HIV

# Unhealthy alcohol use

- Characterized by at risk and heavy episodic drinking along with alcohol use disorder prevalent among people living with HIV
- Significant detrimental impact of unhealthy alcohol use on viral load suppression, primarily mediated through antiretroviral therapy adherence
- Unhealthy alcohol use has a direct effect on the immune system
  - Associated with CD4 cell count decline
  - Increased mortality with lower levels of alcohol consumption



- Drugs, Brains, and Behavior: The Science of Addiction. National Institute on Drug Abuse, NIH pub #10.5605 revised Aug 2010.

# 4 “C” of addiction

- Loss of control
- Compulsion to use
- Craving
- Consequences

# Is there a single pathway to addiction?

- Drugs of abuse have very different structures and neurotransmitter targets in the brain, but they all exhibit:
  - acute reward
  - chronic reward
  - sensitization
  - negative withdrawal symptoms
  - associative cue learning
  - incentive motivation (relapse)
- A progression from impulsive to compulsive drug use (which defines the progression from abuse into addiction).

- Repeated drug use leads to long lasting changes in the brain that undermine voluntary control

- Dopamine

- reinforcing effects of most drugs of abuse

- Drug of abuse

- increase intracellular dopamine concentrations limbic regions
    - including the **nucleus accumbens**

# Poor Inhibitory Control & Poor Executive Functioning Mediated by Prefrontal Cortical Regions of Brain

- **Prefrontal Cortex (PFC)**—Regions of the PFC are selectively damaged by chronic intermittent use
- Result in poor decision-making that can perpetuate addiction cycle
- Contribute to impaired judgment and cognitive defects
- Twofold Impact on Addiction
  - 1st: Perturbed regulation of limbic reward system
  - 2nd: Involvement w/ higher-order executive functioning
- PFC abnormalities could underlie both:
  - Compulsive nature of drug administration in individuals with addiction; AND
  - Ability to control urges to take drug when exposed to it



- Chronic drug exposure alters the morphology of neurons in dopamine regulated circuits
  - The brain no longer responds to natural rewards

# Changes in neurochemistry

- Neurochemical effects are long lasting
  - continue after the detoxification period when the person is no longer using
  - Endorphins
- Chronic illness model



# Substance use disorder

## **Impaired control /Preoccupation**

A great deal of time getting, using, recovering

Activities given up or reduced

More or longer than intended

Cannot cut down or control

Cravings

Use despite knowledge of health problem

## **Withdrawal**

Symptoms, using to relieve symptoms

## **Tolerance**

Increased amounts to achieve effect

Diminished effect from same amount

# Severity and Specifiers

- **Mild to Severe**

- **Severity** based on **the number** of symptom criteria:
  - **Mild**- two to three symptoms
  - **Moderate** – four to five
  - **Severe** - six or more
- **Specifiers** – in early remission, in sustained remission, on maintenance therapy, & controlled environment

## \*\*Important characteristic \*\*

- Underlying change in brain circuits
  - May persist beyond detoxification
    - Increases risk for relapse
    - Drug cravings

## Chronic illness model

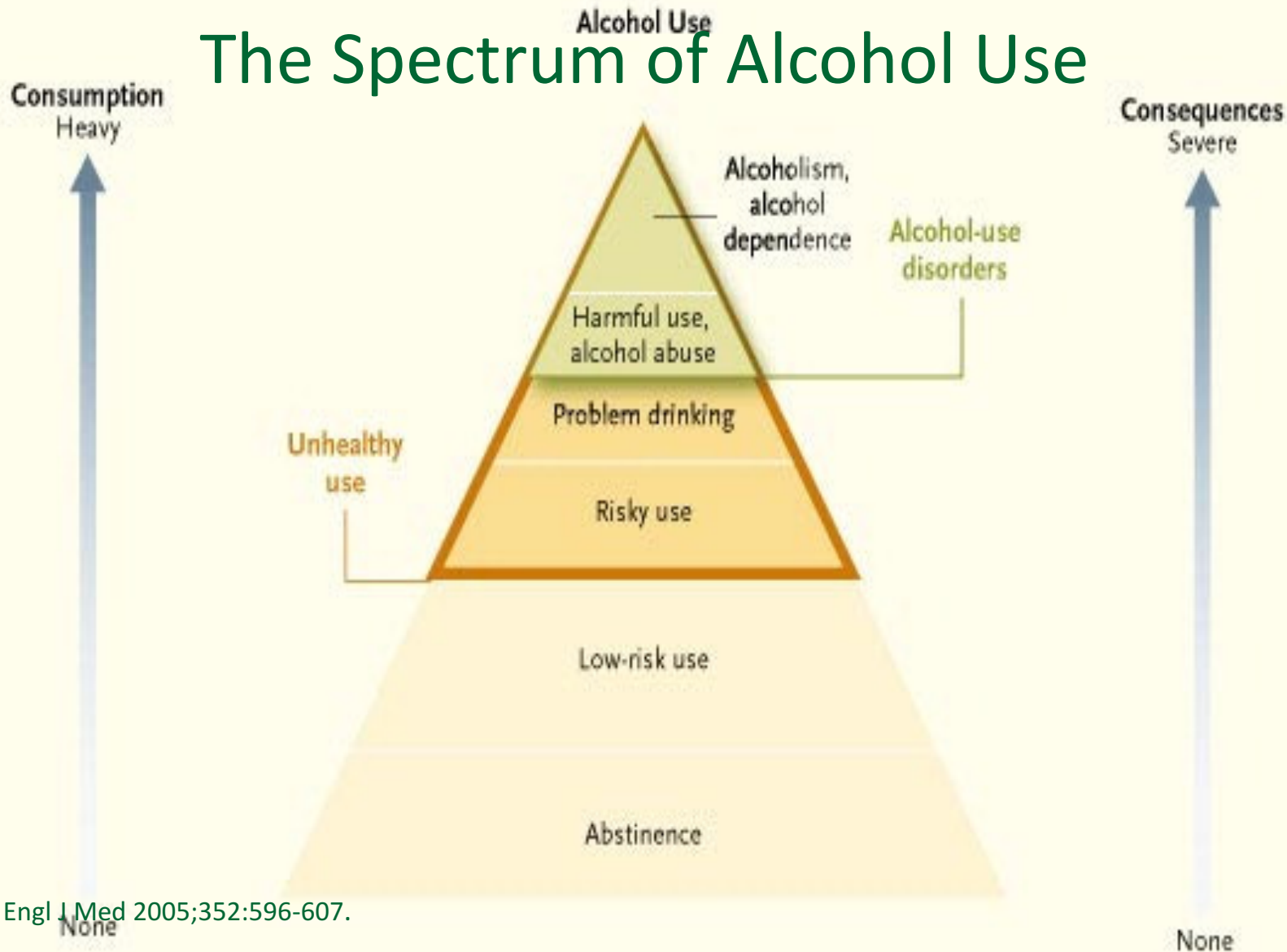
# Alcohol use disorders



# Why assess for substance use?

- Some disease processes or injuries
  - worsened
  - directly caused by substance use
- Diabetes
- Hypertension
- Obesity
- Increased fall risk

# The Spectrum of Alcohol Use



Saitz R. N Engl J Med 2005;352:596-607.



# Standard Drinks

**12 fl oz of  
regular beer**

=

**8–9 fl oz of  
malt liquor**  
(shown in a  
12 oz glass)

=

**5 fl oz of  
table wine**

**1.5 fl oz shot of  
80-proof spirits**  
("hard liquor"—  
whiskey, gin, rum,  
vodka, tequila, etc.)



about 5%  
alcohol



about 7%  
alcohol



about 12%  
alcohol



about 40%  
alcohol

The percent of "pure" alcohol, expressed here as alcohol by volume (alc/vol), varies by beverage.

# Screening for Unhealthy Alcohol Use:

- **Single question:**

“How **many times** in the past year have you had **X** or more **drinks** in a day?”

(X is 5 for men and 4 for women)

\*A response of  $\geq 1$  is positive

| Place an X in one box that best describes your answer to each question. QUESTIONS                              | 0      | 1                 | 2                 | 3                | 4                      |
|--|--------|-------------------|-------------------|------------------|------------------------|
| 1. How often do you have a drink containing alcohol?   | Never  | Monthly or less   | 2-4 times a month | 2-3 times a week | 4 or more times a week |
| 2. How many drinks containing alcohol do you have on a typical day you are drinking?                           | 1 or 2 | 3 or 4            | 5 or 6            | 7 to 9           | 10 or more             |
| 3. How often do you have four or more drinks on one occasion?  | Never  | Less than monthly | Monthly           | Weekly           | Daily or almost daily  |
| 4. How often during the last year have you found that you were not able to stop drinking once you had started? | Never  | Less than monthly | Monthly           | Weekly           | Daily or almost daily  |

# The Spectrum of Unhealthy Use

- Risky Alcohol use<sup>1</sup>
  - Men: >14 standard drinks/week
    - > 4 drinks/occasion
  - Women, Men >65: >7 drinks/week
    - >3 drinks/occasion
- Problem use, Harmful use, Abuse
  - Social, legal, interpersonal, behavioral, role or medical consequences
- Dependence

<sup>1</sup>Helping Patients Who Drink Too Much. A Clinician's Guide. NIAAA.  
<http://pubs.niaaa.nih.gov/publications/practitioner/cliniciansguide2005/guide.pdf>

# Assessing Severity of Unhealthy Use

- 10 item AUDIT\*
  - 10 questions, each scored 0-4
  - **≥ 3 (women) ≥ 5 (men) = unhealthy use**
  - **≥ 13 (women) or ≥ 15 (men) consistent with dependence**

\*[http://whqlibdoc.who.int/hq/2001/who\\_msd\\_msb\\_01.6a.pdf](http://whqlibdoc.who.int/hq/2001/who_msd_msb_01.6a.pdf) and Johnson et al *Alcohol Clin Exp Res* 2012.

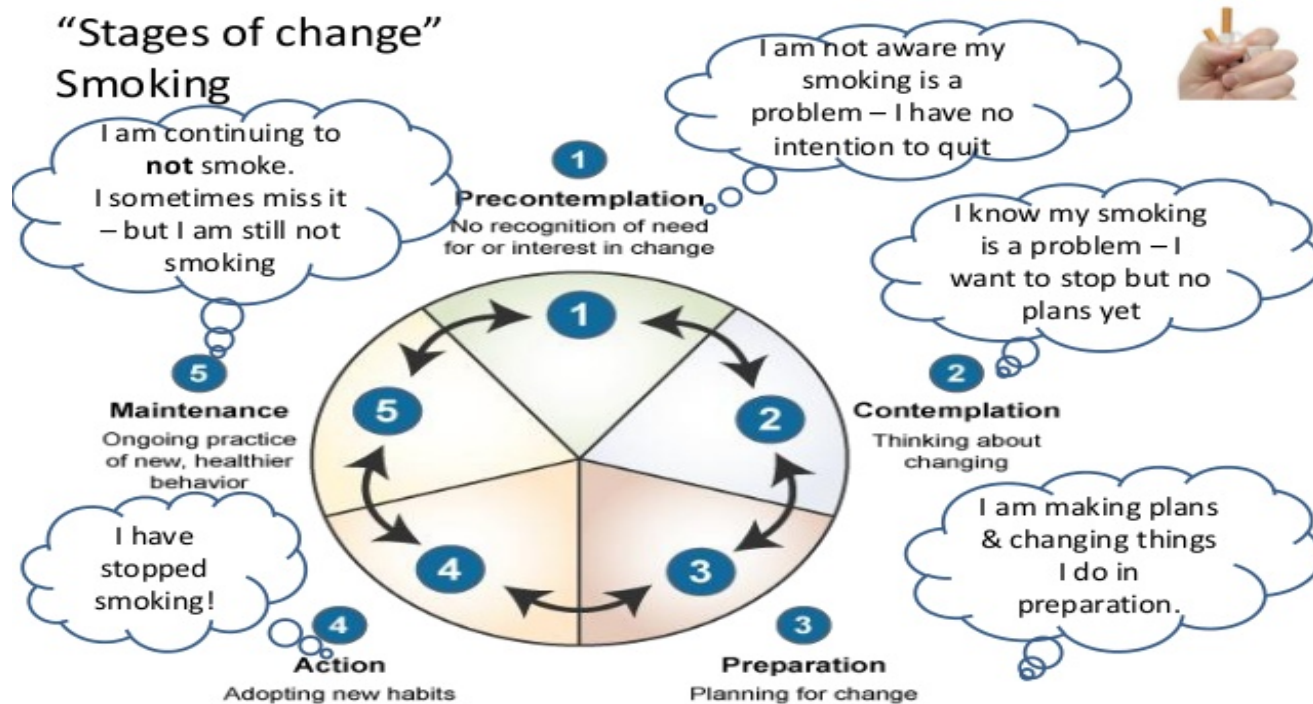
\*\*<https://medical-outcomes.com/> and Sheehan et al *J. Clin Psychiatry*, 1998;59(suppl 20):22-33

## Why is this framework important?

- Individuals who aren't ready to change health-damaging behavior are more likely to leave treatment early (or not even engage in treatment), than those who are ready to change.
- Strategies for helping people change need to be timed to their readiness for change.

Prochaska, J.O., DiClemente, C.C. & Norcross, J.C. ( 1992). In search of how people change: Applications to addictive behaviors. *American Psychologist*, 47(9), 1102-1114.

# Prochaska and DiClemente



@helenbevan #QS13

Prochaska, DiClemente & Norcross (1992)

# High Risk Behavior

- And How to help People Change
- **S – Screening**
- **B - Brief**
- **I – Intervention**
- **R – Referral**
- **T – Treatment**



# Screening

- **Screening** is a way to identify patients with risky substance use patterns
  - It does not establish definitive information
    - about diagnosis and possible treatment needs

# Brief Intervention

Brief intervention is a **single session** or multiple sessions of **motivational discussion** focused on increasing the patient's insight and awareness regarding substance use

**motivation toward behavioral change**

# Common Assumptions About Health Behavior Change

- This person ought to change
- This person is ready to change
- This person's health is a prime motivating factor for him or her
- If he or she does not decide to change his or her behavior, the consultation has failed

D'Onofrio, G., & Degutis, L. C. (2002). Preventive care in the emergency department: screening and brief intervention for alcohol problems in the emergency department: A systematic review. *Academic Emergency Medicine*, 9(6), 627-638.

# Referral to Specialized Treatment

The effectiveness of **the referral process** to specialty addictions treatment is a strong measure of SBIRT success

A proactive and collaborative effort

SBIRT providers and those providing treatment

Ensures access to the appropriate level of care

# Readiness: A “Quick” Version

“On a scale from 1 to 10...”

- “...How *important* is it for you right now to...?”
  - “Why did you say 3 and not 0?”
  - “What would it take to get you from 3 to 6?”
- “If you did decide to change, how *confident* are you that you would succeed?”
- “You’ve decided to change, and think you could succeed--  
When will you do it?”

# Alcohol problems and people living with HIV

- Rates of alcohol problems among people infected with HIV range from 8% to 41%
- Alcohol consumption has been shown to decrease overall survival in this population
- The more people drank the less likely they were to be compliant with medications

- Parsons, J. T., Rosof, E. & Mustanski, B. (2008). The temporal relationship between alcohol consumption and HIV-medication adherence: A multilevel model of direct and moderating effects. *Health Psychology*.27(5), 628-637.

# Other consequences

- Increased physiologic injury
- Alcohol-mediated alterations in immune function can result in chronic inflammation and T-cell activation that may accelerate HIV disease progression
- Fewer drinks to get “buzz” suggesting greater exposure to alcohol at lower levels of consumption

- Marshall, B., Tate, J., McGinnis, K., Bryant, K., Cook, R., Edelman, J., Gaither, J., et al. (2017). Long-term alcohol use patterns and HIV disease severity. *AIDS*, 31:1313-1321.

# MSM population

- More likely to engage in condomless sex with acute alcohol use
  
- Shuper, P, Joharchi, N., Monti, P., Loudtfy & Rehm J. (2017). Acute alcohol consumption directly increases HIV transmission risk: A randomized controlled experiment. *Prevention research*. 76,(5) 493-500.



# Pharmacologic intervention

## Effect neurotransmitters:

### Reestablishing hemostasis

- **Interfere with reinforcing effects**
  - **Interfering with drug binging**
  - **Reducing drug induced dopamine release**
  - **Reducing postsynaptic dopamine responses**
  - **Decrease delivery to the brain**

# Recommendations

- Incorporated alcohol screening and intervention into HIV prevention initiatives may lead to reduction in HIV transmission risk
- Provide HIV-positive MSM with alcohol reduction interventions to diminish consumption levels and binge drinking, which could lead to decreased condomless sex & improved medication adherence

# Risk reduction

- Reducing the amount consumed by 1-2 drinks at each drinking event can positively impact medication adherence
- Moderate drinking goals should be considered for patients who are not interested in abstinence

# Additional resources

- Alcoholics Anonymous  
<http://www.aa.org/>
- National Institute on Alcohol Abuse and Alcoholism (NIAAA) Clinician's Guide  
[http://pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/clinicians\\_guide.htm](http://pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/clinicians_guide.htm)
- Rethinking Drinking: Alcohol and Your Health  
<http://rethinkingdrinking.niaaa.nih.gov/>
- Substance Abuse & Mental Health Services Administration (SAMHSA)  
<http://www.samhsa.gov>

# Questions???

