



# ROLE OF ALCOHOL BEHAVIORAL RESEARCH IN THE DESIGN OF BIOMEDICAL HIV PREVENTION INTERVENTIONS

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# HIV PREVENTION: EARLY DAYS

- In the beginning there was behavior, target of sexual risk behaviors given what was known about HIV transmission
  - No known biological intervention
- Proliferation of psychosocial/behavioral models applied to the development of HIV prevention intervention development (e.g., Noar, 2007)
  - Both general health behavior models (Health Belief model) and HIV-specific (IMB model)
- Attention to alcohol as a HIV transmission risk factor
  - Findings of early global association (between average patterns of alcohol use and frequency of engaging in unprotected sexual intercourse) studies as impetus
- The two literatures grew in volume and quality but also largely in parallel
  - Little to no integration of alcohol into mainstream models of HIV prevention and their application



# ERA OF ART

- ART radically changed treatment of HIV/AIDS in the mid-1990s, more recently altered the primary prevention playing field with PrEP
- Prominence of the biomedical model of HIV primary and secondary prevention
  - Goal of lowering HIV blood levels through HIV testing and uptake of ART
  - TasP (HPTN 052)
  - Vaccine trials
  - Cure research



# WHAT'S NEEDED FOR THE BIOMED MODEL TO HAVE SIGNIFICANT IMPACT?

- Mayer (2010):
  - Excellent adherence to prescribed ART
  - In case of PrEP, excellent uptake
  - Adequate management of genital tract inflammation, such as may result from STIs
  - No increase in sexual risk behaviors occasioned by the premise that PrEP = 100% protection from HIV infection



# RETURN OF BEHAVIOR

- Problems in ART adherence and PrEP uptake
- Continued prevalence of sexual risk behaviors
  - While on PrEP: It is not associated with reduction in STIs other than HIV
- Importance of a psychosocial-behavioral component to HIV primary and secondary prevention re-emerged
  - Need to integrate mental health care
- Led to the appearance of combined biomedical-behavioral-social/structural HIV prevention approaches
- Like their psychosocial forbears, combined approaches tend to be on a molar level, and alcohol tends not to be integrated in them in any specific way



# WHY INTEGRATE ALCOHOL WITH THE BEHAVIORAL LEVEL?

- Direct effects of alcohol consumption on HIV progression and mortality, HIV-related co-morbidities, and every stage of HIV continuum of care
- Causal relationship between acute alcohol intoxication and sexual risk behaviors (Berry & Johnson, 2017; Rehm et al., 2017)
  - Increased sophistication of observational study designs: A long way from the early global association studies
  - Unique contribution of experimental analogue studies, effects of alcohol on intentions to engage in risky sex
- Negative association between alcohol consumption and ART adherence (e.g., Hendershot et al., 2009; Kahler et al., 2016)
- Points 2 and 3, effects of alcohol on behavior more proximal to a potential risk-taking event, have been the focus of alcohol behavioral research in this area, especially “risky sex”



# WHAT HAVE WE LEARNED ABOUT ALCOHOL AND SEXUAL RISK AFTER 20+ YEARS OF RESEARCH?

- Meta-analyses (Rehm et al., 2011; Scott-Sheldon et al., 2016) of experimental analogue studies suggest a direct causal relation between alcohol and (primarily) intentions to engage in unprotected sex
  - Direct relation between intention and behavior is assumed and is used to go from a conclusion of correlation that follows from observational study designs to causal
- Not so simple: This same line of research suggests that there are numerous proximal and distal variables that moderate the alcohol-sexual risk relation





# MODERATORS OR MEDIATORS OF THE ALCOHOL-SEXUAL RISK RELATION (Freeman, 2016)

- Distal factors
  - History of sexual violence, as perpetrator or victim, social context of alcohol consumption, alcohol-related sex expectancies, sexual partner characteristics and drinking-sex connection in the relationship, self-regulation and neuropsychological functioning, and personality variables
- Proximal factors
  - Dose and BAC function limb, sexual arousal, implicit and explicit motivations





# ALCOHOL AND ART ADHERENCE

- Alcohol consumption negatively associated with ART adherence and PrEP uptake
- Research does not provide strong empirical evidence for causal connections or mechanisms underlying this general association



## BACK TO THE QUESTION: THE ROLE OF ALCOHOL BEHAVIORAL RESEARCH AND HIV PREVENTION IN THE ERA OF ART, TasP, & PrEP

- In interactions with a medical provider
- Referral to a behavioral health provider, either human or computer



# INTERACTION WITH MEDICAL PROVIDER

- General education: Heavier drinking and HIV progression and medication adherence
- Education: Effects of higher doses of alcohol on decisions affecting sexual behaviors and risk of transmitting or contracting HIV
  - Combined affects of alcohol, expectancies about alcohol and sex, and sexual arousal
  - Alcohol and sexual arousal and dominance of implicit over explicit motivations of behavior



## WHEN A BEHAVIORAL HEALTH PROVIDER IS AVAILABLE

- Brief intervention to moderate alcohol consumption if needed, based on findings of Scott-Sheldon et al. (2017) meta-analysis
  - Effects on sexual risk behaviors and medication adherence
- Training to counter the tendency to engage in sexual risk behaviors in the moments when some combination of alcohol intoxication, sexual arousal, positive alcohol sex expectancies are brought together (Maisto & Simons (2016))
  - Review of past similar events
  - Simple “protocol” to avoid risk



# FUTURE RESEARCH: MECHANISMS

- HIV prevention, ART medication interventions ESs small-moderate
- Can be more powerful by understanding mechanisms of association between alcohol intoxication and sexual risk and medication non-adherence
- Need:
  - HIV-specific prevention models
  - Need medication adherence-specific models
  - Studies of the interaction of alcohol with constructs identified in such models, i.e., the intersection of alcohol with these theoretical models
  - Experimental studies of alcohol and medication adherence
  - Design of observational studies with causal inference in mind

THANK YOU

