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Perspective

Alcohol, HCV, and HIV: The Perfect Storm

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The World Health Organization (WHO) recently estimated that approximately 2.3 million individuals worldwide are co-infected with Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) [1]. HIV-infected individuals were, on average, 6 times more likely than HIV-negative individuals to be infected with HCV [1]. In Russia, there were approximately 980,000 people living with HIV, with an increasingly larger proportion of incident infections among women [2]. An NIAAA-funded observational study at the St. Petersburg AIDS Centre observed that 57.1% of young HIV+ women were also co-infected with HCV [3]. Given that co-infection of both, HIV and HCV, can often result in serious adverse comorbidities and accelerate mortality, there is an urgent need to control these epidemics. One important, but understudied driver of HIV/HCV-infection and transmission to uninfected partners is alcohol use.

Studies in Russia show that higher rates of hazardous drinking have been observed among cohorts of HIV-infected individuals [4]. The World Health Organization (WHO) estimates that 5.8% of Russian women are heavy episodic drinkers (defined as drinking ≥ 60 grams of pure alcohol on ≥ 1 occasions during a 7-day period) and 2.6% have an alcohol use disorder [5]. Alcohol use is a prominent factor associated with HIV transmission behavior broadly [6], and within Russia, specifically [4].There are myriad adverse health consequences associated with alcohol use among HIV-infected individuals [7], such as diminished cerebral cortex functioning and increased risk for HIV-associated dementia [8]. Interactions between alcohol and antiretroviral (ARV) medications also heighten poor health outcomes for HIV-infected individuals. Alcohol and ARV interactions may contribute to hepatoxicity and liver disease [9], which may be accelerated by co-morbid HCV infection [10]. Additionally, alcohol use has been associated with poor ARV adherence [11], which is particularly concerning since high levels of ARV adherence is necessary to help maintain optimal levels of viral suppression.

Individuals co-infected with HIV/HCV develop liver diseases (e.g., hepatocellular carcinoma) earlier and are more severe relative to those with HIV-infection [12]. The use of alcohol among individuals with HCV further accelerates liver damage (e.g., steatosis, cirrhosis) and disease progression [12]. Among HIV-infected individuals, HCV co-infection poses additional health risks and further complicates already complex medical care [12]. Currently, recommendations are for HCV-infected individuals to abstain from alcohol use [12].

People co-infected with HIV/HCV remain understudied and underserved. However, there is a critical need to develop and evaluate efficacious interventions to reduce alcohol use among HIV/HCV co-infected people to protect their own health and control the HIV and HCV epidemics by reducing the likelihood of transmission to uninfected partners. Unfortunately, there is a limited evidenced-base of empirical programs targeting alcohol reduction among this population [7]. One intervention trial for HIV-infected Russian drinkers showed limited evidence of intervention efficacy in reducing incident STIs or HIV-associated transmission behaviors relative to an attention-control group [13]. A review of 14 interventions to reduce alcohol use among HIV-infected individuals found mixed efficacy in reducing alcohol use frequency and quantity, with limited evidence that interventions reduced binge drinking frequency, alcohol abuse, or dependence symptoms [7]. The majority of interventions targeted alcohol use within the context of multiple, other high risk behaviors, with alcohol use itself not being reduced through participation in these interventions. This gap suggests that there is a critical need to focus specifically on developing, implementing, and evaluating interventions to reduce alcohol use among HIV/HCV co-infected women.

A promising strategy to reduce alcohol use among co-infected people is cognitive-behavioral therapy (CBT) model. Recent findings suggest that CBT may an important catalyst associated with alcohol reductions as it provides individuals with personalized feedback about their alcohol use, allows them to track their use over time which, ultimately, may provide a concrete, real-time target for achieving alcohol reduction. Personalized feedback, another key feature of this intervention approach, may be efficacious and cost-effective as one element of brief alcohol interventions [14]. Furthermore, the use of measurable goals in CBT has been considered a key ingredient because they maximize efficiency [15]. Thus, promoting reductions in alcohol use can have a broad impact facilitating the overall health of HIV/HCV-infected individuals, directly, by mitigating the adverse physiological sequelae and, indirectly, by mitigating poor ARV adherence.

Recent advances in computer technology provide a promising opportunity to deliver CBT interventions through a more cost-effective and more easily disseminated intervention

approach. Historically, alcohol interventions have been administered in individualized sessions lead by an experience clinical provider, which is labor- and time- intensive, resulting in this approach being cost- intensive [7]. On the other hand, computer-based interventions have a number of advantages, including: greater confidentiality, more flexibility for participants to learn at their own pace, the ability to replay segments of the intervention to reinforce content and impact, portability with laptops which can be used in many clinical contexts, computers can be linked to a website that hosts the intervention or the intervention can be downloaded on the hard drive, and computers can accurately monitor the time participants are exposed to the intervention. The use of computerized intervention approach may prove to be more feasible, efficient, and cost-effective in reaching a larger target audience as the HIV and HCV epidemics continue to grow. While these intervention models and modalities are promising, more research is needed to evaluate the efficacy and cost-effectiveness of implementing computer-based CBT interventions for HIV/HCV co-infected populations.

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