

## Researchers examine the relationship between drug injection risk behaviors and immune activation

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The use of heroin and other illicit drugs has been shown to trigger a response from the body's immune system. Consequently, high levels of immune activation (inflammation)—that is associated with the progression of chronic disease and disability—are frequently found among people who inject drugs (PWID).

In an effort to promote better health outcomes for PWID, investigators, working in a three-institution multidisciplinary team, examined the relationship between <u>injection drug</u> use and immune activation in a sample of HIV infected and uninfected PWID. The team, led by Martin Markowitz, MD, Principal Investigator, from the Aaron Diamond AIDS Research Center, conducted a series of studies to assess correlates of immune activation.

"Injection drug use (IDU), with or without HIV-infection, is associated with an increase in immune activation, measured in blood and in the GI tract," says the study's co-investigator, Sauarabh Mehandru, MD, assistant professor, Medicine and Gastroenterology, at the Mount Sinai School of Medicine.

Research participants for the studies included people who were current and former injectors, and comparison participants who never injected. The investigators found the high prevalence of the hepatitis C virus among PWID made it difficult to distinguish between effects of IDU



and active HCV infection. To disentangle the effects of injection from HCV infection, the researchers compared immune markers between active PWID and individuals who had ceased injection (for 1-4 months).

"Cessation of injection resulted in a decline in immune activation," notes Dr. Markowitz. "But only in the absence of HCV viremia, i.e., there was no decline in immune activation among those who stopped injecting who were HCV viremic.

The team also examined three risk behaviors: sharing injection equipment; duration of injection frequency in years; and injection frequency over the past 30 days.

"Existing research on the relationship between injection behaviors and immune activation has primarily focused on people who were HIVinfected and yielded inconsistent results," explains co-investigator Sherry Deren, PhD, co-director of CDUHR and a senior research scientist at the NYU Rory Meyers College of Nursing (NYU Meyers). "One contributing factor to these mixed results may be the lack of attention to HCV, which is hyper-endemic worldwide among PWID and was found by our team to be related to immune activation."

However, an examination of the relationship between injection behaviors and immune activation, controlling for HCV viremia, found that while sharing injection equipment was not related to immune activation, frequency of injection and duration of injection were related to the immune markers studied.

The researchers also note that it is possible for HCV-negative PWID to normalize their levels of immune activation by discontinuing injections. The results also suggest that harm reduction efforts to decrease injection frequency, without altogether stopping, can have positive effects towards reducing immune activation.



"Harm reduction efforts for PWID should include treatment of HCV infection, to reduce immune activation and enhance related health benefits," said Dr. Markowitz. "A longitudinal study to test the impact of curing HCV on immune activation among PWID is underway by our group."

The investigators' findings also suggest that efforts to encourage injection cessation or reduction in frequency can have positive health benefits through reducing immune activation.

"Further study to determine the mechanisms of the relationship between <u>injection</u> drug use behaviors and <u>immune activation</u> are needed in order to achieve the comprehensive understanding required to improve health of PWID " conclude the investigators.

**More information:** Sherry Deren et al. Brief Report, *JAIDS Journal* of Acquired Immune Deficiency Syndromes (2017). DOI: 10.1097/QAI.0000000001270

Martin Markowitz et al. Chronic Hepatitis C Virus Infection and the Proinflammatory Effects of Injection Drug Use, *Journal of Infectious Diseases* (2016). DOI: 10.1093/infdis/jiw373

Saurabh Mehandru et al. Behavioural, Mucosal and Systemic Immune Parameters in HIV-infected and Uninfected Injection Drug Users, *Journal of Addiction Research & Therapy* (2015). DOI: <u>10.4172/2155-6105.1000257</u>

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