Crystal Meth Accelerates HIV Reproduction

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Crystal methamphetamine (crystal meth) speeds up HIV replication in both test tube studies and in specially bred HIV-infected mice, according to a study published in *AIDS Research and Human Retroviruses*.

The connection between crystal meth use and HIV transmission has been well established by researchers—people using the drug are more likely to become infected with the virus, or transmit it onward. Studies have also documented more substantial brain damage and cognitive impairment among HIV-positive meth users, compared with people living with HIV not using the drug.

Whether crystal meth speeds up HIV replication—higher viral loads and more rapid CD4 cell loss—in people infected with the virus has not been determined, though some test tube data suggest that it might.

To look at crystal meth's potential to accelerate HIV disease progression, Aviva Joseph, PhD, at the Albert Einstein College of Medicine, in Bronx, New York, and her colleagues looked at HIV reproduction both in a test tube model and in mice bred to carry human immune systems that can be infected with HIV.

In the test tube studies, Joseph's team found that adding crystal meth to immune cells significantly increased HIV replication, particularly in CD4 cells and in a type of cell known as a monocyte. These findings are synonymous with those of other research teams.

Joseph and her colleagues also saw increased HIV replication in the mouse model. Specifically, when crystal meth was given to HIV-infected mice, it activated a portion of the HIV genetic code known as the long terminal repeat (LPR), which prompted the cells to release a protein that can stimulate tumor necrosis factor alpha, a protein tied to more rapid HIV disease progression.

The authors concede that further studies are necessary. However, they also conclude that these data support the theory that regular crystal meth use might hasten the progression of HIV disease.

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