Cell-associated HIV mucosal transmission: The neglected pathway

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Dr. Deborah Anderson from Boston University School of Medicine (BUSM) and her colleagues are challenging dogma about the transmission of the human immunodeficiency virus type 1 (HIV-1). Most research has focused on infection by free viral particles, while this group proposes that HIV is also transmitted by infected cells. While inside cells, HIV is protected from antibodies and other antiviral factors, and cell-to-cell virus transmission occurs very efficiently through intercellular synapses. The *Journal of Infectious Diseases* (*JID*) has devoted their December supplement to this important and understudied topic.

The 10 articles, four from researchers at BUSM, present the case for cell-associated HIV transmission as an important element contributing to the HIV epidemic. Anderson chides fellow researchers for not using cell-associated HIV in their transmission models: "The failure of several recent vaccine and microbicide clinical trials to prevent HIV transmission may be due in part to this oversight."

Approximately 75 million people in the world have been infected with HIV-1 since the epidemic started over 30 years ago, mostly through sexual contact and maternal-to-child transmission. A series of vaccine and microbicide clinical trials to prevent HIV transmission have been unsuccessful, and scientists are returning to the drawing board to devise new approaches. The *JID* supplement advocates for new strategies that target HIV-infected cells in mucosal secretions.

The publication presents evidence that HIV-infected cells populate genital secretions from HIV-infected men and women as well as breast milk, and genetic evidence suggesting that cell-associated HIV transmission occurs in people. Various models for studying cell-associated HIV transmission and molecular targets for intervention are also presented. Finally, the efficacy of current HIV prevention strategies against cell-associated HIV transmission and opportunities for further development are described.

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