

The risk of getting HIV varies widely, depending on the type of exposure. Transmission happens most often during sexual or drug-using activity, and the chance of getting HIV varies for each act. The table lists the risk of transmission for various exposures.

Different factors can increase or decrease transmission risk. For example, taking antiretroviral therapy (i.e., medicines for HIV infection) can reduce the risk of an HIV-infected person transmitting the infection to another by as much as 96% [1]. Consistent use of condoms reduces the risk of getting or transmitting HIV by about 80% [2]. Conversely, having a sexually transmitted infection or a high level of HIV virus in the blood (which happens in early and late-stage infection) may increase transmission risk.

The Centers for Disease Control and Prevention (CDC) is reviewing the most recent science and constructing mathematical models to update transmission risk.

## References

1. Cohen MS, Chen YQ, McCauley M, et al; HPTN 052 Study Team. Prevention of HIV-1 Infection with early antiretroviral therapy. *N Engl J Med* 2011;365(6):493-505.
2. Weller SC, Davis-Beatty K. *Condom effectiveness in reducing heterosexual HIV transmission (Review)*. The Cochrane Collaboration. Wiley and Sons, 2011.

## Estimated Per-Act Probability of Acquiring HIV from an Infected Source, by Exposure Act<sup>a</sup>

Type of Exposure	Risk per 10,000 Exposures
<b>Parenteral</b>	
Blood Transfusion	9,000 <sup>b</sup>
Needle-sharing during injection drug use	67 <sup>c</sup>
Percutaneous (needle-stick)	30 <sup>d</sup>
<b>Sexual</b>	
Receptive anal intercourse	50 <sup>e, f</sup>
Receptive penile-vaginal intercourse	10 <sup>e, f, g</sup>
Insertive anal intercourse	6.5 <sup>e, f</sup>
Insertive penile-vaginal intercourse	5 <sup>e, f</sup>
Receptive oral intercourse	low <sup>e, i</sup>
Insertive oral intercourse	low <sup>e, i</sup>
<b>Other<sup>h</sup></b>	
Biting	negligible <sup>j</sup>
Spitting	negligible
Throwing body fluids (including semen or saliva)	negligible
Sharing sex toys	negligible

<sup>a</sup> Factors that increase the risk of HIV transmission include sexually transmitted infections, early and late-stage HIV infection, and a high level of HIV in the blood. Factors that reduce the risk of HIV transmission include condom use, male circumcision, and use of antiretrovirals.

<sup>b</sup> Donegan E, Stuart M, Niland JC, et al. Infection with human immunodeficiency virus type 1 (HIV-1) among recipients of antibody-positive blood donations. *Ann Intern Med* 1990;113(10):733-739.

<sup>c</sup> Kaplan EH, Heimer R. A model-based estimate of HIV infectivity via needle sharing. *J Acquir Immune Defic Syndr* 1992;5(11):1116-1118.

<sup>d</sup> Bell DM. Occupational risk of human immunodeficiency virus infection in healthcare workers: an overview. *Am J Med* 1997;102(5B):9-15.

<sup>e</sup> Varghese B, Maher JE, Peterman TA, Branson BM, Steketee RW. Reducing the risk of sexual HIV transmission: quantifying the per-act risk for HIV on the basis of choice of partner, sex act, and condom use. *Sex Transm Dis* 2002;29(1):38-43.

<sup>f</sup> European Study Group on Heterosexual Transmission of HIV. Comparison of female to male and male to female transmission of HIV in 563 stable couples. *BMJ* 1992;304(6830):809-813.

<sup>g</sup> Leynaert B, Downs AM, de Vincenzi I; European Study Group on Heterosexual Transmission of HIV. Heterosexual transmission of HIV: variability of infectivity throughout the course of infection. *Am J Epidemiol* 1998;148(1):88-96.

<sup>h</sup> HIV transmission through these exposure routes is technically possible but extremely unlikely and not well documented.

<sup>i</sup> HIV transmission through oral sex has been documented, but rare. Accurate estimates of risk are not available.

<sup>j</sup> Pretty LA, Anderson GS, Sweet DJ. Human bites and the risk of human immunodeficiency virus transmission. *Am J Forensic Med Pathol* 1999;20(3):232-239.