

RE-INFECTION: IS IT A CONCERN FOR PEOPLE LIVING WITH HIV?

A PUBLICATION FROM

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Inspiration and
Advocacy for People
Living With HIV/AIDS

MAY 2004



Re-infection is a term used to describe a new or secondary infection by a virus that has already infected a person. In most viral diseases, re-infection with the same virus doesn't occur because once the immune system conquers the original viral infection, it creates immunity against that virus. Re-infection occurs almost constantly, however, in some types of infection, such as the cold or flu viruses, because each new version of those new viruses is substantially different from the last. This is why a person may develop immunity to the flu strain that is common in one year, but still be at risk from the strain that becomes dominant the next year.

The question of re-infection with HIV has long been debated. There is no theoretical reason to think re-infection isn't possible, since the immune system never fully conquers the initial HIV infection. Still, many people, including many physicians, clung to the hope that re-infection with HIV either does not happen or that it only happens rarely. This view is the basis of the belief held by some HIV-positive people that having sex or sharing needles with another HIV-infected person poses little or no risks. Many if not most virologists, however, have long believed that re-infection is both possible and perhaps even likely. What is not known are the individual short- and long-term clinical consequences (which may vary from person to person for wholly unknown reasons).

For many years, there were no clear cases of re-infection presented at scientific conferences, but this did not mean such re-infection wasn't occurring. Instead, we know that finding and documenting cases of re-infection is extraordinarily difficult, if for no other reason than that no structured program has looked for them. Finding a case of re-infection has largely been a matter of chance. Yet, several observations over the years support the notion that re-infection is possible, including observations of sex workers in Africa infected with several different recombined "clades" of HIV as well as detailed genetic analysis of a few people's virus suggesting that re-infection was possible. This research is very difficult to conduct. Perhaps the only simple example of re-infection is in western Africa, where people are routinely found to carry both HIV-1 and HIV-2. At the very least, this proves that having HIV-1 does not protect a person from infection with HIV-2.

Recently, there has been considerable media attention about a few well documented cases of suspected re-infection with two versions of HIV-1. The most interesting case, presented by Dr. Bruce Walker, was the result of an almost accidental observation. While researching the effects of Structured Treatment Interruption (STI) in some newly infected volunteers, Walker's team was intrigued by one particular case in which the volunteer responded well to two initial cycles of STI. After each, the person's viral load remained undetectable for several months without treatment. Shortly after a third STI, however, the viral load remained low for only a brief period and then suddenly soared upward. The team wondered what made things different this time. After conducting extensive genetic analysis, they found their answer: the volunteer had become infected with a second, slightly different strain of HIV. Most striking, and discouraging, was that the genetic makeup of the new infection differed by only 12% compared to the original infection. Despite this small difference, the second infection had completely escaped control by the immune system, breaking through the suppression achieved against the original virus. This discovery, while important enough in

regards to re-infection, also had discouraging implications for vaccine development, suggesting that as little as 12% variation between viruses might be enough to make a vaccine fail.

Several questions remain in regards to re-infection. Will it lead to more rapid disease progression? Will re-infection with HIV result in transmission/acquisition of drug-resistant HIV that will limit a persons' anti-HIV treatment options? Both of these concerns are theoretically possible, and both have now been demonstrated in case studies. Currently there is not a large amount of data to assess the actual risk to the individual. Although only a little data currently exists and it is extremely difficult to gather more, it does not lessen the real potential for re-infection or its consequences.

There are several reasons why people living with HIV would want to maintain safer sex activities. While the clinical implications of re-infection remain unknown (and will likely be unknown for many years to come), there is some evidence of harm and no evidence of harmlessness. We also know for certain that safer sex does protect against many blood-borne infections that are major causes of life-threatening diseases and death in people with HIV. These likely include CMV, some forms of hepatitis, genital herpes, possibly the JC virus (cause of a particularly destructive condition known as PML), to name a few.

Ultimately people living with HIV need to consider this information and make informed decisions about safer sex for themselves. In the early 1980s many did not want to believe that HIV was caused by unsafe sex. Many people have dearly paid the price for that belief. The optimal outcome here is for people not to fight against data and shy away from acknowledging the potential consequences of re-infection. Some people will come to a conclusion that it's better to be safe than sorry. Others will choose the risk of being sorry rather than safe and will continue to participate in unsafe sex with positive partners. What matters most is that people make a conscious decision based on the available information.

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