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## HIV Winners and Losers

"People died while public health authorities and the political leaders who guided them refused to take the tough measures necessary to curb the epidemic's spread, opting for political expediency over the public health."<sup>1</sup>

"There is no way to head off this facet of the epidemic without widespread and vigorous use of the antibody test, mandatory public health reporting of infection, and contact tracing and notification of infected individuals."<sup>2</sup>

Balanced pathogenicity suggests that human host and pathogen have adapted to one another. Yet in the race for survival, there are often immediate winners and losers, as typified by the human immunodeficiency virus (HIV) epidemic. Much is going well for HIV. Virus family members currently reside in 13–15 million adult human hosts throughout the world.<sup>3</sup> Often, hosts remain habitable for 10–12 years or longer, before death eventually takes hold. Fortunately for the virus, a decade provides ample time and opportunity for movement to other hosts. Most HIV travels with sperm or vaginal fluids that flow from infected to susceptible during sexual intercourse. Anal intercourse makes migration all the easier, as does the presence of vaginal or penile ulcers caused by sexually transmitted diseases.

Other HIV relocate through exchange of blood, either with transfusions or in contaminated injection equipment. Owing to testing and rejection of contaminated blood, however, reliance on transfusions has created more losers than winners for HIV. On the other hand, blood is not tested in all regions of the world. Other HIV face condom barriers before reaching susceptibles, or are cast free when withdrawal interrupts sexual intercourse. Winners and losers take different paths toward survival.

Although humans have done much research to inhibit *in vivo* viral replication, so far the effect on HIV has been only temporary. Being flexible and adaptive has helped the virus weather the storm caused by drugs such as zidovudine or the presence of immune cells that limit cell-to-cell movement. Likely, the virus will soon be forced to replicate more slowly, extending the life of the human host. Of course, longer life provides additional time and opportunity for transmission to susceptible hosts. Since most humans who practice frequent sexual intercourse do not know their partners' HIV status and will not use condoms on a regular basis, the future for the virus is bright. Of course, widespread testing of sexual partners could limit movement, as has occurred with blood. Fortunately for the virus, humans

appear unwilling or unable to promote HIV antibody testing, focusing instead on the rights of infected persons to remain free from detection. Such inaction will continue to separate winners from losers.

Since the HIV epidemic first became prominent in the mid-1980s, epidemiologists have relentlessly reported its existence and debated how best to control or prevent further transmission. Similar to the human immunodeficiency virus, we as a species face a fundamental need to replicate. Unlike HIV, however, we have convinced ourselves that the fight for survival can be waged in a way that is socially acceptable but not always biologically credible. During a time when more than 18 million people around the world have become infected with HIV and 3–5 millions have died of AIDS,<sup>3</sup> public health officials have remained steadfast in their commitment to programs and approaches that have hidden the identity of HIV carriers but have failed to halt viral transmission. Such strategies include expensive and restrictive HIV antibody testing, public health education, use of condoms, cleaning of injection equipment, and early recognition and treatment of sexually transmitted diseases. Unfortunately, when relying on epidemiologic outcome measures such as HIV prevalence or incidence, there is a

dearth of proven cost-effective control programs.<sup>4,5</sup>

The situation is even more troublesome in the developing world. Investigators spend time and effort developing and evaluating programs that counsel and advise prostitutes on safe sex practices or drug addicts on safe injection procedures. Yet, less thought is given to the feasibility or sustainability of such programs. Prostitutes, for example, remain in their profession for only a few years. Training in safe sex practices would have to be offered on a continuing basis, perhaps in a school. Would the women be willing to attend and pay for this service, or would scholarships have to be awarded? Would governments that spend no more than 3–5% of their gross national product on health be willing to fund a school for prostitutes, with the premise that such education would save sex customers from HIV or other sexually transmitted diseases? Most likely, the answer is "no," and such programs would lie dormant once donor funding evaporated. Such ill-fated strategies are what many offer to create winners from likely losers.

For humans to become winners in the race for survival, we need to do more to empower people to protect themselves and their loved ones from HIV. Such protection is being promised with the arrival of a vaccine, the development of female microbicides, and the regular use of condoms. More is needed, however, if susceptible persons are to avoid infectious contact with the 12–14 million silent carriers that now roam the world. To this end, I have advocated the development of inexpensive HIV tests that people could easily use in the privacy of their homes to screen for HIV infection.<sup>6</sup> My colleagues and I have field tested in several Asian countries an effective home collection device that uses saliva rather than blood.<sup>7,8</sup> With sensitivity and specificity indistinguishable from serum-based assays, saliva offers

an appealing alternative to the discomfort and expense of blood testing. The next step is to develop a simple color-strip test with saliva that can rapidly identify HIV infection without need of a laboratory. Progress is steady but slow, owing in part to the reluctance of societies to demand or governments to accept a rapid saliva-based home test.

For widespread testing and easy identification of HIV infection to become a reality, people must be willing to change their attitude toward HIV carriers. Whereas governments are often faulted for denying the reality of the HIV epidemic, individual citizens also have erred by refusing to accept that friends and neighbors are HIV infected. Widespread testing challenges both groups to shed their illusions and face the epidemic in an open and caring manner. Anonymous testing and absolute confidentiality, as promoted by many public health officials, are self-defeating, making winners of the virus but losers of people. Such testing strategies may have served a useful purpose at the onset of the AIDS epidemic because of overwhelming societal prejudice, but they no longer do so. To address the epidemic realistically, we must now face the problem of discrimination and move people to accept and feel compassion for HIV carriers, but also to avoid infectious contact. We help normalize HIV when we view the disease as a viral infection rather than as retribution for past sins. Even epidemiologists have contributed to the problem by constantly presenting HIV as a disease of men-who-have-sex-with-men (a cumbersome term for gays or homosexuals), prostitutes, or drug addicts. Is it any wonder that people around the world misunderstand and believe that HIV infection is attributable to being a member of these often outcast groups? I believe that by emphasizing both HIV normal-

ization and the need for widespread testing, control programs will become more successful than the failed efforts of the past.

Here in the United States, courageous people like Magic Johnson and Elizabeth Glaser have brought their infection to center stage and made people accept them as human beings. Other HIV-infected persons, however, continue to hide behind a mask of silence endorsed by many in the public health community, making losers of those with whom they have intimate contact. Only the virus thrives on their silence. If normalization and widespread testing become socially acceptable, HIV carriers may voluntarily elect to wear an arm bracelet or necklace with a medallion that identifies their status. Such items are now routinely worn by people with drug allergies, diabetes, or other severe medical problems that require special medical attention. As their immune system becomes increasingly compromised, HIV carriers need to take special care to avoid infectious diseases that may pose little harm for normal people. If hospitalized, such care becomes essential both to protect the medical provider from contaminated blood and to protect the HIV carrier from the many nosocomial infections that occur in every hospital. Carriers may also want to make friends and associates aware of their HIV status without constantly having to make verbal pronouncements. A discrete bracelet or necklace would tell colleagues that the wearer is infected. Colleagues would then have a moment or two to gather their senses so that they could treat the infected person in a sensitive and appropriate manner. Finally, when considering a sexual relation, both partners would know that at least one is infected. Such information, along with public health education, would empower susceptible persons to make lifesav-

ing decisions. People may not always act in the correct manner, but at least they would be aware of the danger they face.

For the past decade, HIV has won the survival game, helped along by ineffective control strategies that failed to identify HIV carriers. More than 18 million adults and countless children

have lost their opportunity for old age to the conquering virus. With creative new strategies that openly recognize and accept HIV as a viral infection rather than a social disorder, we can probably reverse the deadly trends of the epidemic. Without such strategies, epidemiologists will continue to count endless

deaths, allowing only the virus to savor the thrill of survival.

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