Since the earliest days of the epidemic, HIV prevention providers have sought to facilitate risk reduction by formulating a hierarchical ranking of behaviors, ranging from those involving the greatest risk of HIV transmission to those involving the least risk. While broad comparisons between some behaviors—for example, mutual masturbation versus unprotected anal intercourse—are fairly straightforward, the degree of risk involved with other behaviors, such as oral sex, is far more debatable.

This article provides a brief overview of the concept of risk and its use in epidemiological research as well as a discussion of how and why HIV risk varies across individuals. It also summarizes key research findings on the risk associated with various sexual behaviors including why the risk associated with some behaviors is so difficult to estimate. It concludes with general recommendations for HIV prevention providers about advising clients on how best to manage their risk of HIV infection.

Researching Risk

In order to interpret the epidemiological research on HIV risk, it is useful to have a basic understanding of how this risk is typically expressed. A person’s risk of developing a disease is frequently expressed as his or her odds or probability of developing that disease. Prevention messages frequently use the terms “high risk” and “low risk” but these terms are relative. They may, therefore, be misleading because there is no standard for what odds would constitute high or low risk.

There is a great deal of variability in the risk levels for individual HIV transmission making it difficult to arrive at accurate estimates. Further, these estimates usually apply only to a given population—often the general population. Such estimates are useful for making comparative judgments about the risk of one behavior compared to another behavior, but a particular individual’s risk is extremely variable, and individual risk may be much higher or lower than the estimated population risk.

There are several factors that affect an individual’s level of risk:

- Type of sexual activity: sexual activities that involve greater physical trauma to the anal, vaginal, or oral cavities lead to increased risk;
- Number of sexual partners: higher numbers of sexual partners lead to increased risk and, for some behaviors, significantly increased risk;
- Frequency of behavior: repeatedly engaging in sexual behaviors—even those low in risk—leads to increased risk of transmission;
- Viral load of an infected partner and how recently that partner seroconverted: in general, the higher the viral load the greater the likelihood of transmission, and there is evidence that people who recently seroconverted have particularly high viral loads;¹
- Circumcision: recent evidence suggests that male circumcision reduces the likelihood of female-to-male transmission;²
- Presence of other sexually transmitted diseases: having other STDs may increase the infectiousness of HIV.³

Despite the presence of all these factors and the individual variability they impart, several studies have attempted to offer precise estimates. That is, they have sought to express numerically the risk associated with various sexual behaviors.

One challenge to communicating and interpreting this body of research involves the different ways in which epidemiologists...
Editorial: Risk, Harm, and Choice
Robert Marks, Editor

An author corrected me recently when I suggested changing the words "HIV-related risk reduction" to "HIV-related harm reduction." Typically, risk reduction has been used to describe the goals of HIV prevention, and harm reduction has been limited to substance use-related dangers.

The difference seems subtle, since the ultimate goal may amount to the same thing: protecting people from dangerous health outcomes. But the nuance becomes clearer in this definition from the web site of the British organization Action on Smoking and Health: "The term harm reduction refers to various strategies and approaches for reducing the physical and social harms associated with risk-taking behaviour." Harm reduction seeks to decrease harms associated with risk; risk reduction seeks to diminish the risks themselves.

Over the past 25 years, HIV prevention has, in fact, shifted its focus from risk elimination to risk reduction toward harm reduction. It took only a few years for prevention providers to abandon the goal of risk elimination as unrealistic: no longer do we expect all people to avoid altogether behaviors that may transmit HIV. It has taken longer for many prevention strategists to suggest that "risk reduction" does not encompass the full range of behaviors that may protect people against HIV. In fact, many "risk reduction" providers have recognized this nuance and embraced it for years. But since risk reduction guidelines evolved from the risk elimination model, these guidelines have retained vestiges of an intolerance towards behaviors that seem to confer any significant risk.

Risk reduction guidelines focus on behaviors, defining, for example, unprotected anal sex as "high risk" and therefore to be avoided. Harm reduction guidelines, simply by employing different language, emphasize that risk and harm are choices, that harm reduction is a fluid and dynamic process, and that the degree of harm associated with a behavior may vary depending on a variety of factors. By focusing on consequences, harm reduction guidelines appeal to the creativity of individuals to develop approaches that sustain behaviors but reduce the risk of harm: some but not all forms of anal sex remain dangerous, and some forms are less dangerous than others.

This issue of FOCUS explores two aspects of this topic. Amie Ashcraft and Willi McFarland review the statistical basis for the hierarchy of HIV-related sexual risk. Michael Shernoff describes the variety of harm reduction approaches that have flourished over the past five years in response to a weariness, at least among men who have sex with men, about condoms and safe sex. While the statistical evaluation of behaviors remains a helpful tool, a linear hierarchy risks toppling under the weight of qualifications raised by such new strategies as negotiated safety, serosorting, and strategic positioning.

The message from both of these articles, however, is not contradictory, and it remains the same as it has always been: no approach beyond abstinence promises absolute safety; individual factors are as significant as general rules in determining whether transmission occurs; and whether you call it risk reduction or harm reduction, HIV prevention is essentially about informed, individual choices. The more an individual knows about his or her own feelings and values about risk and about options to reduce harm, the more likely that he or she will embrace and sustain a health-affirming strategy.

References

express risk estimates, making it difficult to compare estimates across studies. For example, some researchers estimate the probability of transmission or percentage of transmissions per sexual contact; others estimate the probability of transmission or percentage of transmissions per sexual partner.

Estimates of Sexual Risk
Numerous epidemiologic studies have attempted to estimate the level of risk associated with specific sexual behaviors, including anal intercourse, vaginal intercourse, oral sex, and other sexual behaviors. It is possible to derive from these studies the following hierarchy of risk: high risk—unprotected receptive anal intercourse; moderate risk—protected receptive anal intercourse and unprotected insertive anal intercourse; low risk—vaginal intercourse; very low risk—unprotected receptive oral intercourse, unprotected insertive oral intercourse, and sex between women.

Anal Intercourse. Research has repeatedly shown that unprotected anal intercourse is strongly associated with HIV infection; unprotected receptive anal intercourse has consistently emerged as the highest risk sexual behavior.1,5 Eric Vittinghoff and colleagues estimated the per-contact risk of HIV transmission of unprotected receptive anal intercourse with a sexual partner of unknown serostatus to be about 0.27 percent.5 That is, HIV transmission will occur approximately 27 times out of 10,000 instances of unprotected receptive anal intercourse. This same
study estimated the per-contact risk of transmission for unprotected receptive anal intercourse with a partner known to be seropositive to be 0.82 percent.

The researchers also estimated the risk of unprotected insertive anal intercourse to be 0.06 percent; this estimate was even lower than the estimated risk of protected receptive anal intercourse (0.18 percent).

**Vaginal Intercourse.** In general, the risk of either receptive or insertive vaginal intercourse appears to be lower than that of insertive anal intercourse.\(^6\) One recent study found that, among a group of heterosexual, monogamous couples in Uganda, the estimated probability of HIV transmission per coital act (almost exclusively vaginal intercourse) to either partner was 0.0011 percent.\(^7\) Another study estimated the probability of male-to-female transmission, in general, to be 0.0009 percent.\(^8\) This study also estimated that male-to-female transmission is about eight times more efficient than female-to-male transmission.

**Oral Sex.** It has been particularly difficult to get an accurate estimate of the specific risk of HIV transmission associated with oral sex, because this activity is so frequently combined with other HIV transmission risk behaviors such as unprotected anal sex. Traditionally, researchers have assumed that an HIV-positive person who had engaged in both behaviors had probably contracted HIV through anal sex. But this conclusion was based largely on case reports and observational studies and was never methodologically satisfying. A more recent and rigorous study found no seroconversions as a result of oral sex.\(^9\) There appears to be a greater risk of transmission for receptive oral sex than for insertive oral sex. A 1999 study estimated the per-contact risk of HIV transmission through receptive oral sex between male partners to be 0.04 percent.\(^5\)

**Other Sexual Behaviors.** There appears to be no significant published research that has measured the HIV risk associated with other types of sexual behaviors, such as frottage, fisting, and mutual masturbation. The risk associated with these activities is likely to be even lower than the risk associated with vaginal intercourse. As with other sexual activities, however, these behaviors are much more dangerous when semen, vaginal fluids, or blood comes into contact with open sores or ulcers.

### Problems Associated with Estimating Risk

Most of the uncertainty associated with estimating the risk of HIV transmission involves “gray area” behaviors.\(^11\) These behaviors include activities such as oral sex with or without ejaculation, withdrawal of the penis during intercourse prior to ejaculation, seropositioning, and serosorting. Individuals are increasingly using such approaches to reduce the risk of HIV transmission, but because these activities occur within the context of a host of other sexual behaviors, it is difficult to determine, when seroconversion occurs, whether it is the result of these risk reduction approaches or one of these other “high-risk” activities.

It is also difficult to arrive at accurate estimates of risk because of difficulties recruiting sufficient numbers of participants who engage in only one kind of sexual behavior. Many studies cannot make accurate estimates or detect changes in disease occurrence because these studies are designed with sample sizes that are too small to muster the necessary statistical power.

The “gold standard” research study is a randomized controlled trial. A randomized trial investigating risk would likely involve randomly assigning research participants to different groups: seronegative participants in each group would engage only in a specific sexual behavior with seropositive partners. For example, one group would include seronegative participants who would engage only in unprotected receptive anal intercourse and a second group would include seronegative participants who would engage only in unprotected receptive oral sex. This type of study would allow researchers to separately gauge and compare seroconversion for the two behaviors, more accurately estimate the risk associated with each behavior, and make causal inferences about which behav-


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Clearinghouse: Sexual Risk Hierarchy

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In the third decade of the epidemic, it remains difficult for many men who have sex with men, whether or not they identify as "gay" or "bisexual," to figure out their personal sexual safety limits. Key indicators of this are epidemiological trends over the past decade that confirm fewer men are consistently using condoms. But there is also evidence that sex without condoms is the relatively infrequent act of a relatively large number of gay men—rather than the very frequent act of a few—and that it is often moderated by relationship status as well as HIV status.1

According to Australian researcher Susan Kippax and her colleagues, many gay men are currently behaving in ways that ask and answer the provocative question: Are there ways to minimize the damage of unprotected sex—rather than eliminating the behavior itself?2 This article seeks to answer this question by describing the range of condomless strategies that men who have sex with men are consciously employing to stop the spread of HIV, creating a grass roots AIDS prevention approach for the new century. It also discusses a hybrid therapeutic approach that helps clients define their risk reduction goals and strategies and evaluate whether the ways they have condomless sex are adaptive or maladaptive for them.

**Alternatives to the Condom Code**

In 1994, Berkeley psychologist Walt Odets described the futility of what has become known as the “condom code,” the absolutist message to “use a condom every time.” Odets suggested that this unrealistic message created a sense of hopelessness for gay men who occasionally had condomless sex and that this sense of hopelessness might actually contribute to increased sexual risk taking.3 Since then, University of California, Los Angeles researchers, Steven Pinkerton and Paul Abramson found that, “For certain individuals, under certain circumstances, risky sexual behavior may indeed be rational, in the sense that the perceived physical, emotional, and psychological benefits of sex outweigh the threat of acquiring HIV.”4 A study conducted in San Francisco and New York found the vast majority of HIV-positive men who said they had sex without condoms were trying to avoid infecting others by using “sexual harm reduction practices” extending beyond condom use, practices that Jeffrey Parsons and colleagues suggested enhance personal freedom and responsibility for sexual decision making.5 Another New York study found that both HIV-positive and HIV-negative men who label themselves as “barebackers” were regularly using harm reduction approaches to minimize the risk of spreading or contracting HIV.6

A harm reduction approach towards sex without condoms neither condemns nor condones the behavior. It acknowledges that men are having sex without condoms, and it encourages exploring the behavior in a nonjudgmental manner in the context of reducing both harm to the individual and the spread of new infections.

**A New Harm Reduction Menu**

Among the condomless harm reduction approaches that have arisen in the past few years are: negotiated safety, serosorting, strategic positioning, withdrawal (including “dipping,” defined below), viral load calculating, and unprotected oral sex. The precise degree to which any of these harm reduction strategies is effective risk reduction is not currently known. While all reduce the odds of transmission, none provides full protection; consistent...
condom use remains the most effective way of preventing HIV transmission.

Negotiated Safety refers to an agreement between two HIV-negative men who are in a relationship and who go through the process of getting ready to stop using condoms for anal sex only within the relationship. The process usually requires that the partners have protected sex with each other until each receives an HIV-negative test result at least several months after each partner’s most recent unprotected encounter. If either partner has unprotected anal sex outside the relationship, that partner commits to immediately informing his partner; the couple then resumes using condoms until repeated HIV tests determine that the partner who had unprotected sex outside the relationship has remained uninfected. Research has demonstrated that negotiated safety agreements are fairly widespread in Europe and Australia and that partners adhere to them approximately 90 percent of the time. The percentage of partners who were nonadherent, while relatively low, nonetheless raises important public health issues.

Serosorting, used by both HIV-positive and HIV-negative men, refers to the practice of men having condomless sex with other men of the same HIV status.

Strategic Positioning, used during sex between an HIV-positive and HIV-negative man or between men where at least one does not know his HIV-status, refers to the practice of the HIV-positive man adopting the receptive role during unprotected anal intercourse and the uninfected man engaging only in insertive roles.

Withdrawal refers to the practice, used for ages by men trying to avoid impregnating their female partners, of withdrawing the penis at some point prior to ejaculation. Dipping, a type of withdrawal, refers to inserting the penis into the rectum for just one or two strokes without wearing a condom.

Viral Load Calculating refers to the practice of using information about the infective HIV-positive partner’s viral load to make decisions about whether or not to ejaculate inside of a partner. Studies conducted in Sydney and the Netherlands revealed that, among men in serodiscordant relationships, unprotected anal intercourse was more likely to occur when the HIV-positive partner reported having a viral load below the level of detectability.

Viral load calculation is supported by research that suggests that a seropositive person is much less likely to transmit HIV when he or she has a viral load below the level of detection. However, there may be limits to the practical implementation of this approach. Susan Buchbinder, of the San Francisco Department of Public Health and the University of California San Francisco notes that viral load levels in the blood, on which viral load readings are based, may be lower than viral load in semen, and viral load readings may change over days or even hours depending on a variety of factors, including concurrent STD infection.

Oral Sex. Perhaps the most common harm reduction approach is the substitution of unprotected oral sex for unprotected anal sex. This speaks to the importance of semen exchange for many gay men. Case reports have attributed individual instances of transmission to oral sex, and transmission is theoretically possible, particularly if both partners have cuts or sores in their mouths or throats or inflamed gums. No study, however, has demonstrated a measurable risk, and at least one large San Francisco study found no instances of HIV transmission in 239 men who engaged in oral sex. The study states that among participants, the median number of oral sex partners in the prior six months was three; oral sex was unprotected in almost 98 percent of these instances; and 35 percent of participants reported getting semen in their mouths.

A Hybrid Counseling Approach

All the evidence suggests that telling clients—whether on billboards or in face-to-face settings—to “use a condom every time” is not realistic. For those who might most benefit from some sort of risk reduction, this all-or-nothing solution may leave them with nothing. From a clinical perspective, “use a condom every time” creates a highly adversarial relationship between the worker and client. Instead, prevention efforts must be forged with the understanding that condomless sex will inevitably continue among some men who have sex with men.

To avoid the experience of marginalizing and failing these men, the new HIV prevention might take advantage of two strategies:
a hybrid of face-to-face counseling and psychotherapy and a community approach that fosters a new standard for risk reduction. A hybrid therapy model can successfully engage sexual risk takers in the process of figuring out whether they want to change their behavior, and, if so, the practical steps they might take to do so. It would utilize motivational enhancement therapy, which is an amalgam of several clinical interventions including harm reduction, motivational interviewing, and traditional psychodynamic therapy. The following snapshot of a session illustrates this approach.

Counselor: Let me see if I understand you. You’re fed up with feeling afraid that you might have gotten HIV. You are clear, at least for now, that condoms for you and your partners are not an option. But you want to protect yourself from HIV. Is this an accurate summary of how you feel?

Client: Bingo. Any ideas?

Counselor: Short of using a condom, the best way you could protect yourself would be by not having sex with men who are infected. Right?

Client: That’s a no-brainer.

Counselor: Good, so we’re on the same page there. Are you willing to try to increase the odds that the men you have sex with are not infected?

Client: I think so. What do you have in mind?

Counselor: There are two things that a lot of HIV-negative guys who don’t want to use condoms are doing. One is called serosorting. A guy asks every potential partner whether he is infected and when was the last time he was tested, and then only has unprotected anal sex with other uninfected men. Another option is to only be the top. Neither is foolproof, but both can reduce your risk. What do you think?

In this scenario, the counselor reinforces the collaborative nature of the process and assesses how ready, willing, and able the client is to make a change. The client specifically asks for suggestions, and the counselor responds by making it clear that whether and how to change is the client’s choice; the counselor is providing options, not giving advice.

Prevention and Community

Second, prevention planners must develop a community-wide effort to remove the stigma of being HIV-positive. This might help encourage the development of the broad cultural norm of “Do ask (about HIV status), and do tell (that you are HIV-positive)” prior to first having sex. It is important to note, however, that disclosure cannot solve all prevention challenges. A recent review of literature found mixed results among 15 studies with data addressing the relationship between disclosure of HIV status and safer sex.

Another necessary community effort is to normalize and clarify the evolving harm reduction options, for instance, in HIV prevention campaigns. For example, in response to data indicating that most gay men have sex without condoms at some point in their lives, the London organization Gay Men Fighting AIDS (GMFA) developed a set of practical harm reduction guidelines and made it available on the Internet. These guidelines included strategies such as serosorting, strategic positioning, and withdrawal. Another British web site has posted online a suggested negotiated safety agreement. The only harm reduction approach to HIV prevention adopted by AIDS service organizations in the United States relates to oral sex. For the most part, however, U.S. prevention messages reflect fear and confusion. The kind of honest harm reduction information that appears in England and Australia might be construed in the United States as an endorsement of needle exchange, just as U.S. politicians have construed needle exchange as an endorsement of injection drug use.

Conclusion

As psychologist Michael Stirrat suggests, while we may embrace the goals of eliminating unsafe sex and new infections, we must accept that we will never attain these goals. Further, we cannot abandon men who “fail” to achieve these goals. Harm reduction models of HIV prevention offer more nuanced messages that may be more acceptable to large numbers of men. Just as in successful addiction treatment models, the elimination of risk is included as a harm reduction option; therefore, HIV prevention need not abandon the condom code completely. But by meeting people where they are, setting the groundwork for further behavior change, and facilitating rather than impeding approaches that can reduce risk and harm, HIV prevention can offer harm reduction tools to clients who would never have considered HIV risk reduction if it meant only using condoms.

15. Stirrat M. Personal communication, June 2005.

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Recent Reports

Negotiated Safety and Rule-Breaking


Negotiated safety agreements were more likely to work when they included a pact to disclose any instances of rule breaking, according to a San Francisco study of HIV-negative men with HIV-negative primary partners.

Researchers interviewed 76 HIV-negative men who reported having a male HIV-negative primary partner of at least six months. They defined negotiated safety relationships as those in which partners had had unprotected anal sex with each other within the prior three months and had rules against unprotected anal sex outside the relationship.

Of the 76 participants, 50 percent utilized negotiated safety risk reduction strategies, compared to 39 percent who reported no unprotected anal sex with their primary partners. Younger participants and those with higher income were more likely to practice negotiated safety than older participants and those with lower income. Men in negotiated safety relationships were as likely as men in relationships that did not involve unprotected anal sex to allow sex outside of the relationship (58 percent and 57 percent, respectively). Another 11 percent of the sample reported having unprotected anal sex with their primary partners but did not have any rules prohibiting unprotected anal sex with other partners.

Of the 38 men in negotiated safety relationships, 29 percent reported sexual behaviors in the previous three months that violated the self-reported negotiated safety rules in their primary relationships. Of these participants, 64 percent reported having unprotected anal sex with their primary partners but did not have any rules prohibiting unprotected anal sex with other partners.

Among men in negotiated safety relationships, 74 percent reported that they had an agreement with their primary partner to disclose any instances of rule breaking. Of these participants, 18 percent broke a rule that was a part of the negotiated safety agreement. Of the 26 percent of men who did not have disclosure agreements, 60 percent broke a rule.

Dipping: An Under-the-Radar Risk Behavior

Hoff CC, Faigeles B, Wolitski RJ, et al. Sexual risk of HIV transmission is missed by traditional methods of data collection. AIDS. 2004; 18(2): 340–342. (University of California, San Francisco; Centers for Disease Control and Prevention; and Hunter College of the City University of New York.)

“Dipping,” a form of condomless anal sex, is a prevalent, underreported sexual risk behavior, according to a multi-site study of HIV-positive men who have sex with men.

Researchers from the Seropositive Urban Men’s Intervention Trial recruited 858 HIV-positive men from San Francisco and New York during 2000 and 2001. Participants must have reported having an HIV-negative or unknown-status male partner in the prior three months.

Surveys assessed the frequency of anal sex with and without condoms and with and without ejaculation. The survey also asked about dipping: “In the past 90 days were there times that you ‘dipped’ a partner that you did not count in the questions you just answered? ‘Dipping’ refers to teasing or playing with your partner by putting your penis in his ass just once or twice without a condom.”

Of the whole sample, 18 percent of participants reported insertive dipping with an HIV-negative or unknown status partner. Moreover, of the men who had reported no unprotected insertive anal sex, 11 percent reported engaging in dipping. In all, the survey uncovered 773 acts of a form of unprotected insertive anal sex that would have been unreported had the survey not asked specifically about dipping.

Latino men, men who reported engaging in unprotected insertive anal sex, and men who reported that condoms interfere with sexual pleasure were more likely than other participants to report insertive dipping with an HIV-negative or unknown status partner.

Next Issue

Narrative therapy is based in the constructivist perspective that people’s lives are shaped by the meanings they ascribe to their experiences—not by the experiences themselves. In the February issue of FOCUS, Olga Grinstead, PhD, MPH, Director of the Technology and Information Exchange (TIE) Core at the UCSF Center for AIDS Prevention Studies, describes the application of narrative therapy to research on “seroconversion narratives,” a person’s story about how he or she believes that he or she became infected with HIV.
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