



Serosorting and Strategic Positioning

What is serosorting?

Serosorting is defined as “a person choosing a sexual partner known to be of the same HIV serostatus, often to engage in unprotected sex, in order to reduce the risk of acquiring or transmitting HIV.”¹ It is a sexual risk management approach that has been identified among many groups of gay men and other men who have sex with men (MSM), mostly in higher-income countries.²⁻²²

What is strategic positioning?

Strategic positioning, also known as sero-positioning, is the act of choosing a different sexual position or practice depending on the serostatus of one’s partner.²³ Typically, a person living with HIV chooses to take the receptive position (“bottom”) during unprotected anal sex with a partner believed to be HIV-negative. The practice is based on the belief that it is less likely for HIV to be transmitted from a receptive partner to an insertive partner (“top”) during unprotected anal sex.¹⁰ While strategic positioning does not eliminate the risk of HIV transmission, it is practiced based on evidence that there is a lower relative risk for HIV acquisition per-contact when HIV-negative men engage in insertive anal sex, compared to receptive anal sex, with an HIV-positive partner.^{24, 25}

What is known about serosorting, strategic positioning and HIV transmission?

- While the practices of serosorting and strategic positioning are prevalent in different settings, few studies have assessed the effect of these strategies in preventing HIV transmission. The question of whether serosorting or strategic positioning can be effective methods for HIV

prevention does not yet have a definitive answer.^{22, 26, 27}

- According to a World Health Organization (WHO) systematic review that included 3 studies on serosorting among MSM, serosorting was associated with a 79% increase in HIV transmission when compared with consistent condom use.^{17, 28-30} Serosorting has also been associated with a 61% increase in sexually transmitted infection (STI) transmission when compared with consistent condom use.³⁰
- When serosorting was compared to no condom use, serosorting was associated with a 53% reduction in HIV transmission and 14% reduction in STI transmission.³⁰ While evidence suggests that consistent condom use is a more effective means of HIV prevention than serosorting, it appears that serosorting may be a viable harm reduction strategy for those unwilling or unable to use condoms. This strategy depends on high coverage rates of HIV testing, frequent utilization of HIV testing services, and accurate disclosure of serostatus between partners.³⁰
- Less data are available on the effect of strategic positioning on the risk of HIV transmission among MSM. A large multi-site cohort study of high-risk HIV-negative MSM in the United States did not find evidence that strategic positioning decreased risk of HIV seroconversion.⁹ Conversely, a cohort study of HIV-negative MSM in Sydney, Australia did not find evidence that strategic positioning increased risk of HIV infection compared to consistent condom use.²⁹

What are some possible limitations of serosorting and strategic positioning?

Limitations of serosorting include inaccurate knowledge of one’s HIV serostatus or one’s partner’s HIV serostatus, lack of accurate HIV status disclosure, and lack of awareness of recent and/or acute HIV infections—all of which can lead to

inadvertent transmission of HIV.³¹ Unprotected sex can also expose individuals to other STIs, which serosorting and strategic positioning may not protect against. STIs can increase the likelihood of HIV transmission.³¹ For HIV-positive individuals, there is also a possibility of re-infection with a new strain of HIV (referred to as “HIV superinfection”).³¹

In regard to strategic positioning, it is important to note that while the per-contact probability of HIV infection for unprotected insertive anal sex is lower than unprotected receptive anal sex, this probability is not zero.^{24, 25} Individuals should be aware that strategic positioning does not eliminate HIV transmission risk.^{24, 25}

Finally, the quality of evidence reviewed by the WHO for the effectiveness of serosorting is described as “low” quality according to the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) framework and should be viewed with caution.³⁰ Moreover, research studies on what is known about serosorting have been primarily conducted in higher-income countries, and may not be applicable worldwide.

How can the risks of serosorting and strategic positioning be minimized?

Serosorting is sometimes described as “seroguessing,” alluding to the uncertainty that may impact the efficacy of this strategy. For example, some individuals may make assumptions about the serostatus of their partners or about their own serostatus.² To minimize risk, an individual needs to have up-to-date and accurate knowledge of his HIV serostatus and that of his sexual partners. This is more feasible in areas where HIV testing is widely available, where MSM get tested frequently, and where the environment is supportive of HIV status disclosure.^{9, 30}

Individuals who engage in seroadaptive behaviors such as serosorting and strategic positioning should be informed of the limitations of these strategies. Few interventions have been developed to engage MSM about serosorting, strategic positioning, and associated risks. A brief intervention among MSM to promote informed sexual decision-making and address misconceptions around serosorting has been shown to be feasible and efficacious at reducing number of sexual partners in one randomized control trial.³² Additional efforts are needed to determine how to best optimize the benefits of these strategies and provide nuanced messages on how to reduce potential risks.

Recent global research on serosorting and strategic positioning?

From June through August 2010, the Global Forum on MSM and HIV (MSMGF) conducted a global study on access to and knowledge of HIV prevention strategies—including serosorting and strategic positioning—among more than 5000 gay men and other MSM.³³ Data from this survey indicate that a large proportion of MSM, particularly those outside North America and Europe, have low familiarity with and knowledge of serosorting and strategic positioning. Knowledge of these strategies was particularly low among younger MSM (below 25 years of age) and HIV-negative MSM. The responses to self-reported questions on knowledge of serosorting and strategic positioning are below, including overall responses and responses stratified by region, serostatus, and age group.

Serosorting

Overall, a large proportion of respondents (42.8%) reported being unfamiliar with serosorting, responding “I have never heard of this.” Moreover, 45% of participants rated their knowledge about serosorting as “not knowledgeable at all.”

- **By region**, Asia/Pacific had the highest proportion of participants who were unfamiliar with serosorting (52.2%), followed by Africa (45.3%) and the Middle East (40.7%). North America (20.7%) and Europe (26.1%) had the lowest proportions of participants unfamiliar with serosorting. Moreover, Asia/Pacific (56%) had the highest proportion of participants who reported being “not knowledgeable at all” about serosorting, followed by the Middle East (48.2%) and Australia (46.8%).
- **By HIV serostatus**, more HIV-negative MSM in our sample were unfamiliar with the concept of serosorting than HIV-positive MSM (42.6% vs 40.8%). Similar proportions of HIV-negative and HIV-positive MSM reported being “not knowledgeable at all” about serosorting (41% vs 40.7%).
- **By age group**, MSM under 25 years old had the highest proportion of participants who were unfamiliar with serosorting (56.3%), followed by the 25–40-year-old age group (45.9%); a smaller proportion of MSM over 40 reported unfamiliarity with serosorting (36.6%). Additionally, a greater proportion of MSM below 25 (59%) rated being “not knowledgeable at all” about serosorting compared to MSM between 25 and 40 years of age (50.8%), and MSM above 40 (34.2%).

Strategic Positioning

Overall, a large proportion of respondents (48.9%) reported being unfamiliar with strategic positioning, responding “I have never heard of this.”

- **By region**, Asia/Pacific had the highest proportion of participants who were unfamiliar with strategic positioning (55%), followed by Africa (50.3%) and Australia (46.8%). North America (37.2%) and Europe (37.2%) had the lowest proportions of participants unfamiliar with strategic positioning.
- **By HIV serostatus**, more HIV-negative MSM in our sample were unfamiliar with the concept of strategic positioning than HIV-positive MSM (49% vs 47%).
- **By age group**, MSM under 25 years old had the highest proportion of participants who were unfamiliar with serosorting (59.7%), followed by the 25–40-year-old age group (51.5%); a smaller proportion of MSM over 40 reported unfamiliarity with strategic positioning (45.5%).

Interestingly, data from this sample suggest that these gaps in knowledge and low familiarity with serosorting and strategic positioning are complemented by a strong desire to learn more about these strategies to prevent HIV transmission among MSM. An overwhelming majority (90.3%) of respondents reported agreeing with the statement, “I would like to learn more about serosorting to prevent transmission of HIV among gay men/MSM.” Agreement with this statement was highest in Asia/Pacific (97%), followed by Central/South America and the Caribbean (96.3%) and Africa (96%). And while levels of agreement were lowest in Europe (64.5%)

and North America (78.6%), the majority of MSM in these regions still expressed the desire to learn about serosorting to prevent HIV transmission. By HIV serostatus, the majority of HIV-negative (91%) and HIV-positive (86%) MSM also expressed desire to learn about serosorting for HIV prevention. Finally, across age groups, the majority of MSM expressed desire to learn about serosorting for HIV prevention: 96% of those under 25; 94.2% of those between 25 and 40; and 83.7% of those above 40.

Conclusions

While gay men and other MSM in a variety of different environments currently use serosorting and strategic positioning, many MSM around the world are unfamiliar with these harm-reduction strategies—particularly young MSM and MSM outside of North America and Europe. Yet data for this sample suggest an overwhelming desire to learn about the potential for these strategies to prevent HIV transmission. At present, there is a paucity of strong evidence on the effectiveness of serosorting or strategic positioning on HIV transmission risk. Serosorting and strategic positioning may in fact inadvertently increase risk for HIV transmission. While condom use remains a highly effective method for HIV prevention, serosorting and strategic positioning may be viable harm-reduction options for some MSM who are unable or unwilling to use condoms—depending on their environments. Efforts should be made to inform individuals engaging in serosorting and strategic positioning of the possible limitations of this practice so that they can make informed decisions about their health and take steps to minimize inadvertent exposure to or transmission of HIV.

REFERENCES

- 1 Consultation on serosorting practices among men who have sex with men. <http://www.cdc.gov/hiv/topics/research/resources/other/serosorting.htm>. Published 2009. Accessed September 8, 2011.
- 2 Zablotska IB, Imrie J, Prestage G, et al. Gay men’s current practice of HIV seroconcordant unprotected anal intercourse: serosorting or seroguessing? *AIDS Care*. 2009;21:501-10.
- 3 Xia Q, Molitor F, Osmond DH, et al. Knowledge of sexual partner’s HIV serostatus and serosorting practices in a California population-based sample of men who have sex with men. *AIDS*. 2006;20:2081-9.
- 4 Velter A, Bouyssou-Michel A, Arnaud A, Semaille C. Do men who have sex with men use serosorting with casual partners in France? Results of a nationwide survey (ANRS-EN17-Pressé Gay 2004). *Euro Surveill*. 2009;14.
- 5 Truong HM, Kellogg T, Klausner JD, et al. Increases in sexually transmitted infections and sexual risk behaviour without a concurrent increase in HIV incidence among men who have sex with men in San Francisco: a suggestion of HIV serosorting? *Sex Transm Infect*. 2006;82:461-6.
- 6 Snowden JM, Raymond HF, McFarland W. Seroadaptive behaviours among men who have sex with men in San Francisco: the situation in 2008. *Sex Transm Infect*. 2011;87:162-4.
- 7 Snowden JM, Raymond HF, McFarland W. Prevalence of seroadaptive behaviours of men who have sex with men, San Francisco, 2004. *Sex Transm Infect*. 2009;85:469-76.
- 8 Phillips G, Outlaw AY, Hightow-Weidman LB, et al. Sexual behaviors of racial/ethnic minority young men who have sex with men. *AIDS Patient Care STDS*. 2011;25(suppl 1):S47-53.
- 9 Philip SS, Yu X, Donnell D, Vittinghoff E, Buchbinder S. Serosorting is associated with a decreased risk of HIV seroconversion in the EXPLORE Study Cohort. *PLoS One*. 2010;5.
- 10 Parsons JT, Schrimshaw EW, Wolitski RJ, et al. Sexual harm reduction practices of HIV-seropositive gay and bisexual men: serosorting, strategic positioning, and withdrawal before ejaculation. *AIDS*. 2005;19(suppl 1):S13-25.

- 11 McFarland W, Chen YH, Nguyen B, et al. Behavior, Intention or Chance? A Longitudinal Study of HIV Seroadaptive Behaviors, Abstinence and Condom Use. *AIDS Behav.* 2011.
- 12 Marcus U, Voss L, Kollan C, Hamouda O. HIV incidence increasing in MSM in Germany: factors influencing infection dynamics. *Euro Surveill.* 2006;11:157-60.
- 13 Mao L, Crawford JM, Hospers HJ, et al. "Serosorting" in casual anal sex of HIV-negative gay men is noteworthy and is increasing in Sydney, Australia. *AIDS.* 2006;20:1204-6.
- 14 Lattimore S, Thornton A, Delpech V, Elford J. Changing patterns of sexual risk behavior among London gay men: 1998–2008. *Sex Transm Dis.* 2011;38:221-9.
- 15 Kilmarx PH. Global epidemiology of HIV. *Curr Opin HIV AIDS.* 2009;4:240-6.
- 16 Halkitis PN, Moeller RW, Pollock JA. Sexual practices of gay, bisexual, and other nonidentified MSM attending New York City gyms: patterns of serosorting, strategic positioning, and context selection. *J Sex Res.* 2008;45:253-61.
- 17 Golden MR, Stekler J, Hughes JP, Wood RW. HIV serosorting in men who have sex with men: is it safe? *J Acquir Immune Defic Syndr.* 2008;49:212-8.
- 18 Fendrich M, Mackesy-Amiti ME, Johnson TP, Pollack LM. Sexual risk behavior and drug use in two Chicago samples of men who have sex with men: 1997 vs. 2002. *J Urban Health.* 2010;87:452-66.
- 19 Elford J, Bolding G, Sherr L, Hart G. No evidence of an increase in serosorting with casual partners among HIV-negative gay men in London, 1998-2005. *AIDS.* 2007;21:243-5.
- 20 Cox J, Beauchemin J, Allard R. HIV status of sexual partners is more important than antiretroviral treatment related perceptions for risk taking by HIV positive MSM in Montreal, Canada. *Sex Transm Infect.* 2004;80:518-23.
- 21 Clatts MC, Goldsamt LA, Yi H. An emerging HIV risk environment: a preliminary epidemiological profile of an MSM POZ Party in New York City. *Sex Transm Infect.* 2005;81:373-6.
- 22 Cassels S, Menza TW, Goodreau SM, Golden MR. HIV serosorting as a harm reduction strategy: evidence from Seattle, Washington. *AIDS.* 2009;23:2497-506.
- 23 Le Talec J, Jablonski O. Seroadaptation instead of serosorting: a broader concept and a more precise process model. In: XVII International AIDS Conference Mexico City 2008.
- 24 Vittinghoff E, Douglas J, Judson F, McKirnan D, MacQueen K, Buchbinder SP. Per-contact risk of human immunodeficiency virus transmission between male sexual partners. *Am J Epidemiol.* 1999;150:306-11.
- 25 Jin F, Jansson J, Law M, et al. Per-contact probability of HIV transmission in homosexual men in Sydney in the era of HAART. *AIDS.* 2010;24:907-13.
- 26 Beyrer C, Wirtz A, Walker D, Johns B, Sifakis F, Baral S. The Global HIV Epidemics among Men Who Have Sex with Men: Epidemiology, Prevention, Access to care and Human Rights. Washington, DC: The International Bank for Reconstruction and Development / The World Bank; 2011.
- 27 Wilson DP, Regan DG, Heymer KJ, Jin F, Prestage GP, Grulich AE. Serosorting may increase the risk of HIV acquisition among men who have sex with men. *Sex Transm Dis.* 2010;37:13-7.
- 28 Marks G, Millett GA, Bingham T, Lauby J, Murrill CS, Stueve A. Prevalence and protective value of serosorting and strategic positioning among Black and Latino men who have sex with men. *Sex Transm Dis.* 2010;37:325-7.
- 29 Jin F, Crawford J, Prestage GP, et al. Unprotected anal intercourse, risk reduction behaviours, and subsequent HIV infection in a cohort of homosexual men. *AIDS.* 2009;23:243-52.
- 30 World Health Organization. Prevention and Treatment of HIV and Other Sexually Transmission Infections among Men who have sex with Men and Transgender People: Recommendations for a public health approach Geneva, Switzerland; 2011.
- 31 Eaton LA, Kalichman SC, O'Connell DA, Karchner WD. A strategy for selecting sexual partners believed to pose little/no risks for HIV: serosorting and its implications for HIV transmission. *AIDS Care.* 2009;21:1279-88.
- 32 Eaton LA, Cherry C, Cain D, Pope H. A novel approach to prevention for at-risk HIV-negative men who have sex with men: creating a teachable moment to promote informed sexual decision-making. *Am J Public Health.* 2011;101:539-45.
- 33 Wilson P, Santos GM, Hebert P, Ayala G. *Access to HIV Prevention Services and Attitudes about Emerging Strategies: A Global Survey of Men Who Have Sex with Men (MSM) and their Health Care Providers.* Oakland, CA: The Global Forum on MSM and HIV (MSMGF); July, 2011.