AIDS Behav (2010) 14:987–990
DOI 10.1007/s10461-010-9737-5

EDITORIAL REVIEW

Reducing Numbers of Sex Partners: Do We Really Need Special Interventions for Sexual Concurrency?

Seth C. Kalichman · Tamar Grebler

Published online: 16 June 2010

Multiple and overlapping sexual relationships, commonly referred to as sexual concurrency, are believed by some to account for the rapid spread of HIV infection in sub-Saharan Africa [1]. Research shows that concurrent sex partners are prevalent in several populations hit hardest by AIDS including gay communities, commercial sex workers, and some countries of sub-Saharan Africa. Recent research shows sexual concurrency may be playing a role in resurgent HIV infections among gay and bisexual men in North America [2] and emerging HIV epidemics among men who have sex with men in Asia [3]. In addition to epidemiological trends, the potential impact of concurrent sex partners on the spread of HIV transmission is biologically grounded. Sexual concurrency is thought to afford the rapid turnover of HIV when multiple partners are exposed to the virus during the brief and highly infectious period of acute infection [4]. Mathematical models suggest that concurrent sex partners during acute HIV infection may be a driving force in heterosexually transmitted HIV epidemics of southern Africa [5, 6]. Other known and unknown co-factors for HIV transmission also interact with sexual concurrency to propel HIV epidemics.

While stimulating great interest, the existing empirical research on the role of sexual concurrency in HIV epidemics is not definitive. In the February 2010 issue of *AIDS and Behavior* (volume 14, Number 1) Lurie and Rosenthal [7] pointed out that sexual concurrency has not yet been empirically shown to increase HIV transmission beyond what would be expected from multiple sex partnerships that do not overlap in time. They also note that epidemiological evidence is mixed as to whether sexual concurrency is spreading HIV in southern Africa and that there is even evidence that polygamy, certainly an example of concurrency, can protect against HIV transmission [7–10]. At the heart of the controversy surrounding the role of sexual concurrency in HIV epidemics is the question of whether limited HIV prevention resources should be directed at interventions to target sexual concurrency [1, 11]. Furthermore, even if interventions are designed to specifically target sexual concurrency, it is not clear how they would differ from programs that aim to reduce not-necessarily concurrent multiple sex partners. Sending a strong message against concurrent partnerships may even have adverse outcomes if people believe they are safe by having serial multiple partners.

The jury may be out on whether sexual concurrency is necessary for the rapid spread of HIV, but there is no disputing that multiple sex partners, whether concurrent or serial, are important in HIV epidemics. Recognizing the need for behavioral interventions that reduce numbers of sex partners regardless of their temporal sequencing is not new. Throughout the 1980s and 1990s social marketing campaigns for HIV prevention in US gay communities commonly promoted reducing numbers of sex partners. Indeed, many of the early HIV prevention successes in gay communities and countries like Uganda are attributed to aggressive efforts aimed at reducing numbers of sex partners [12, 13]. Mass public health message campaigns result in behavior change for only a segment of a population. Thus, more focused behavioral interventions are needed to reduce high-risk behaviors, including reducing numbers of sex partners, in populations with high HIV prevalence.

Several controlled intervention trials have demonstrated significant reductions in numbers of sex partners. Table 1 summarizes the findings from 15 selected prevention trials

S. C. Kalichman (✉) · T. Grebler
Department of Psychology, University of Connecticut,
406 Babbidge Road, Storrs, CT 06269, USA
e-mail: seth.k@uconn.edu

Table 1 Partner reduction outcomes from selected behavioral HIV prevention interventions

Study	Sample	Intervention format	Intervention duration	Partner reduction outcomes
Wenger et al. [14]	STD clinic patients, USA	HIV information + HIV testing HIV information	15 min video 10 min counseling	Both groups decreased numbers of partners from baseline to follow-up; HIV information 1.7–1.3; Information + testing 1.9–1.4, with no difference between conditions
Jemmott et al. [15]	African-American adolescent males, USA	HIV risk reduction counseling Career counseling control	5 h single session workshop	HIV prevention intervention had fewer partners at the 6 month follow-up
Malow et al. [16]	Substance users in recovery, USA	Psychoeducational HIV risk reduction program Information session control	6 h of small group sessions	HIV risk reduction intervention reduced partners with 75% reporting multiple partners at baseline and 47% at 6 month follow-up
St. Lawrence et al. [17]	African-American adolescents, USA	Behavioral skills training Educational program control	8 weekly group sessions	Skills training intervention reduced partners 0.7–0.3 over 12 months follow-up compared to 0.8–0.7 for the Education Program
Choi [18]	Self identified Asian Pacific Islander Gay men, USA	Behavioral skills training workshop Waitlist control	3 h single session workshop Wait-list control group	Behavioral skills workshop had fewer partners (3.9) at the 3 month follow-up compared to waitlist (6.4)
Kelly et al. [19]	Psychiatric patients, USA	Cognitive behavioral skills training + advocacy training Cognitive behavioral skills training AIDS education control	Seven 90 min small group sessions for skills interventions 60 min education	Cognitive behavioral skill training + advocacy training reduced partners over 3 months from 1.7 to 0.9, but cognitive behavioral skills alone did not, from 0.9 to 0.9
Kamb et al. [20]	STI clinic patients receiving HIV testing	Standard single session risk reduction counseling Standard counseling plus ongoing group intervention Didactic health messages	20 min post HIV test 20 min post HIV test + three 60 min groups 5 min	Brief standard session reduced number of new and casual partners over the other conditions
St. Lawrence et al. [21]	Drug-dependent adolescents, USA	Information + skills based safer sex + risk sensitization Health information + safer sex skills-based training Health information control	12 90 min sessions	Baseline to 12 month follow-up, both skills-based conditions showed greater decrease in number of partners; information + skills, reduced from 5.1 to 1.6 partners, the information + skills + sensitization from 4.8 to 1.6
Rotheram-Borus et al. [22]	Runaway adolescents from four shelters, USA	Street smart intervention: HIV knowledge, coping skills, barriers to safe sex, emotional regulation, risk assess Care as usual control group	Nine small group sessions	Average number of partners lower for intervention condition at 24 month follow-up among females but not for males
Shain et al. [23]	Women STI clinic patients, USA	HIV prevention small group sessions HIV prevention + monthly support groups Control condition	HIV prevention 3-weekly 3-h group sessions	HIV Prevention intervention reduced new STI infections and reduced multiple sex partners. Reductions in multiple sex partners explained protection against STI
Carey et al. [24]	Psychiatric patients, USA	HIV risk reduction Substance abuse reduction Standard of care control	Ten small group sessions	Pre-intervention to 6 month follow-up: HIV 1.25–0.97 SUR 1.41–0.95 CTR 1.24–1.07 HIV risk reduction reduced number of partners from 1.2 to 0.9, and substance use reduction interventions reduced number of partners from 1.4 to 0.9; both reductions were greater than standard of care control, from 1.2 to 1.0
Jemmott et al. [25]	Latin/African American adolescent females, USA	Skills based counseling Information based counseling Health promotion counseling control	4.5 h single session workshop	Skills based intervention had greater decrease in partners from baseline to 12 month follow-up (1.04–0.93) compared to information based and health promotion conditions
Kalichman et al. [26]	STI clinic patients, South Africa	Motivation/skills HIV and alcohol use risk reduction counseling HIV information control	60 min single counseling session 20 min single counseling session	Motivational/skills condition reduced number of partners from 2.5 to 1.2, with no difference from the control condition

Table 1 continued

Study	Sample	Intervention format	Intervention duration	Partner reduction outcomes
Kalichman et al. [27]	Men who use alcohol recruited from community venues, South Africa	Alcohol-sex risk reduction skills workshop	Single 3 h session	Reductions in partners occurred in the skills intervention, but moderated by alcohol use; lighter drinkers reduced having 2+ partners from 12% at baseline to 6% at 3-month and 8% at 6-month follow-up
		Alcohol risk education control	Single 1 h session	
Carey et al. [28]	STD clinic patients, USA	Brief motivational counseling or brief educational session	15 min	Number of partners reduced from 2.7 to 1.9 over 12 months with no differences between experimental intervention conditions
		Intensive information groups	4 h	
		Intensive motivational and skills groups	4 h	

that report decreased numbers of sex partners over time. All of these studies found evidence for reductions in numbers of sex partners, with eleven trials demonstrating an experimental intervention that reduced numbers of partners to a significantly greater degree than a control condition. The interventions varied in their content and duration, with some lasting several hours and conducted over multiple sessions and others having only one brief session. All of the interventions included a heavy dose of interactive training for communication and preventive behavioral skills. The interventions were tested in various settings and with a wide range of populations including men who have sex with men, women, substance users, adolescents, and patients attending sexually transmitted infection clinics. The magnitude of partner reduction varied, with some studies showing more than a three-fold reduction in numbers of sex partners over time.

Examining the outcomes reported in these trials suggests that reducing numbers of sex partners may not be any more difficult to achieve than changing other sexual behaviors, such as increasing condom use. However, reductions in sexually transmitted infections (STI) has not been directly linked to partner reductions relative to other changes in behavior. Research is needed to better understand motivations for maintaining multiple sex partners and how the meaning of multiple partners differs by gender, sexual orientation, and culture. The importance of multiple sex partners in facilitating the spread of HIV is indisputable. The importance of acute HIV infection in HIV transmission also applies to multiple partners even if non-overlapping and should therefore remain a focus in HIV prevention. Interventions that have shown promise in reducing numbers of sex partners are available and should be implemented in places with high-HIV prevalence and high-rates of multiple partners, concurrent or not. Given that the role of sexual concurrency in HIV epidemics is not known, limited HIV prevention resources should be concentrated on known risks and evidence-based interventions.

Acknowledgments Preparation of this Editorial was supported the National Institute of Alcohol Abuse and Alcoholism Grant RC1AA018983.

References

1. Mah TL, Halperin DT. Concurrent sexual partnerships and the HIV epidemics in Africa: evidence to move forward. AIDS Behav. 2010;14(1):11–6 (dicussion 34–7).
2. Bohl DD, Raymond HF, Arnold M, McFarland W. Concurrent sexual partnerships and racial disparities in HIV infection among men who have sex with men. Sex Transm Infect. 2009;85(5):367–9.
3. Choi KH, Hudes ES, Steward WT. Social discrimination, concurrent sexual partnerships, and HIV risk among men who have sex with men in Shanghai, China. AIDS Behav. 2008;12(4 Suppl):S71–7.
4. Steward WT, Remien RH, Higgins JA, Dubrow R, Pinkerton SD, Sikkema KJ, et al. Behavior change following diagnosis with acute/early HIV infection—a move to serosorting with other HIV-infected individuals. The NIMH Multisite Acute HIV Infection Study: III. AIDS Behav. 2009.
5. Morris M. Barking up the wrong evidence tree. Comment on Lurie & Rosenthal, "Concurrent partnerships as a driver of the HIV epidemic in sub-Saharan Africa? The evidence is limited". AIDS Behav. 2010;14(1):31–3 (discussion 4–7).
6. Epstein H. The mathematics of concurrent partnerships and HIV: a commentary on Lurie and Rosenthal, 2009. AIDS Behav. 2010;14(1):29–30 (discussion 4–7).
7. Lurie MN, Rosenthal S. Concurrent partnerships as a driver of the HIV epidemic in sub-Saharan Africa? The evidence is limited. AIDS Behav. 2010;14(1):17–24 (discussion 5–8).
8. Lurie MN, Rosenthal S. The concurrency hypothesis in sub-Saharan Africa: convincing empirical evidence is still lacking. Response to Mah and Halperin, Epstein, and Morris. AIDS Behav. 2010;14(1):34.
9. Lurie M, Rosenthal S, Williams B. Concurrency driving the African HIV epidemics: where is the evidence? Lancet. 2009;374(9699):1420 (author reply 1420–1).
10. Reniers G, Watkins S. Polygyny and the spread of HIV in sub-Saharan Africa: a case of benign concurrency. AIDS. 2010;24(2):299–307.
11. Epstein H, Swidler A, Gray R, Reniers G, Parker W, Parkhurst J, et al. Measuring concurrent partnerships. Lancet. 2010;375(9729):1869–70.
12. Slutkin G, Okware S, Naamara W, Sutherland D, Flanagan D, Carael M, et al. How Uganda reversed its HIV epidemic. AIDS Behav. 2006;10(4):351–60.
13. Parkhurst J. Evidence, politics, and Uganda's HIV sucess: moving forward ABC and HIV prevention. J Int Dev. 2010.
14. Wenger NS, Linn LS, Epstein M, Shapiro MF. Reduction of high-risk sexual behavior among heterosexuals undergoing HIV antibody testing: a randomized clinical trial. Am J Public Health. 1991;81(12):1580–5.
15. Jemmott JB III, Jemmott LS, Fong GT. Reductions in HIV risk-associated sexual behaviors among black male adolescents:

effects of an AIDS prevention intervention. Am J Public Health. 1992;82(3):372–7.
16. Malow RM, West JA, Corrigan SA, Pena JM, Cunningham SC. Outcome of psychoeducation for HIV risk reduction. AIDS Educ Prev. 1994;6(2):113–25.
17. St Lawrence JS, Jefferson KW, Alleyne E, Brasfield TL. Comparison of education versus behavioral skills training interventions in lowering sexual HIV-risk behavior of substance-dependent adolescents. J Consult Clin Psychol. 1995;63(1): 154–7.
18. Choi KH, Lew S, Vittinghoff E, Catania JA, Barrett DC, Coates TJ. The efficacy of brief group counseling in HIV risk reduction among homosexual Asian and Pacific Islander men. AIDS. 1996;10(1):81–7.
19. Kelly JA, McAuliffe TL, Sikkema KJ, Murphy DA, Somlai AM, Mulry G, et al. Reduction in risk behavior among adults with severe mental illness who learned to advocate for HIV prevention. Psychiatr Serv. 1997;48(10):1283–8.
20. Kamb ML, Fishbein M, Douglas JM Jr, Rhodes F, Rogers J, Bolan G, et al. Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases: a randomized controlled trial. Project RESPECT Study Group. JAMA. 1998;280(13):1161–7.
21. St Lawrence JS, Crosby RA, Brasfield TL, O'Bannon RE III. Reducing STD and HIV risk behavior of substance-dependent adolescents: a randomized controlled trial. J Consult Clin Psychol. 2002;70(4):1010–21.
22. Rotheram-Borus MJ, Lee M, Leonard N, Lin YY, Franzke L, Turner E, et al. Four-year behavioral outcomes of an intervention for parents living with HIV and their adolescent children. AIDS. 2003;17(8):1217–25.
23. Shain RN, Piper JM, Holden AE, Champion JD, Perdue ST, Korte JE, et al. Prevention of gonorrhea and Chlamydia through behavioral intervention: results of a two-year controlled randomized trial in minority women. Sex Transm Dis. 2004; 31(7):401–8.
24. Carey MP, Carey KB, Maisto SA, Gordon CM, Schroder KE, Vanable PA. Reducing HIV-risk behavior among adults receiving outpatient psychiatric treatment: results from a randomized controlled trial. J Consult Clin Psychol. 2004;72(2):252–68.
25. Jemmott JB III, Jemmott LS, Braverman PK, Fong GT. HIV/STD risk reduction interventions for African American and Latino adolescent girls at an adolescent medicine clinic: a randomized controlled trial. Arch Pediatr Adolesc Med. 2005;159(5):440–9.
26. Kalichman SC, Simbayi LC, Vermaak R, Cain D, Jooste S, Peltzer K. HIV/AIDS risk reduction counseling for alcohol using sexually transmitted infections clinic patients in Cape Town, South Africa. J Acquir Immune Defic Syndr. 2007;44(5):594–600.
27. Kalichman SC, Simbayi LC, Vermaak R, et al. Randomized trial of a community-based alcohol-related HIV risk reduction intervention for men and women in CapeTown South Africa. Ann Behav Med. 2008;36:270–9.
28. Carey MP, Senn TE, Vanable PA, Coury-Doniger P, Urban MA. Brief and intensive behavioral interventions to promote sexual risk reduction among STD clinic patients: results from a randomized controlled trial. AIDS Behav. 2009.