

Summary Statement Title:

Do prevention interventions reduce HIV risk behaviours among people living with HIV?: Evidence and implications for public health

Quality Assessment Rating: 10 (strong)

Reviews on which this summary statement is based:

Crepaz, N., Lyles, C.M., Wolitski, R.J., Passin, W.F., Rama, S.M., Herbst, J.H., Purcell, D.W., Malow, R.M., Stall, R., HIV/AIDS Prevention Research Synthesis (PRS) Team. (2006). **Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials.** *AIDS*, 20(2), 143-57.

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This is a summary statement written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary

This systematic review with meta-analysis of 10 randomized controlled trials (RCTs) and 2 non-RCTs synthesizes the available literature on prevention interventions for reducing risky sex and needle-sharing behaviours in persons living with human immunodeficiency virus (PLWH). The sample sizes of the primary studies ranged from 90 to 886. Interventions were included if they met the following criteria: a) human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) or sexually transmitted infections (STIs) behavioural interventions specifically designed for PLWH; b) data collected on at least one HIV-related behavioural outcome (i.e. unprotected insertive or receptive anal intercourse, unprotected vaginal intercourse, condom use, needle or works sharing) or biological outcome (i.e. acquisition of STI or hepatitis B or C); c) at least one follow-up assessment at 3 months (or longer) post-completion of the intervention; d) RCTs or controlled trials with designs that minimized systematic bias associated with non-randomization; and e) data such that the calculation of effect sizes was possible. Trials were excluded if they explicitly allowed participants to self-select into the intervention or if they provided intervention to only one group and assessed effect on the basis of behavioural change of the participants from before to after the intervention. All included interventions provided information to increase HIV knowledge and motivated participants to eliminate or reduce risky drug use and/or sexual practices. Nine interventions provided skill building through multiple activities, including live demonstrations, role plays or practice. The skills included technical (e.g. correct use of condoms or needle cleaning), personal (e.g. coping, problem solving) or interpersonal skills (e.g. communication about safer sex, harm reduction negotiation, disclosing seropositive status). Significant intervention effects included increased condom use, and reduction in unprotected sexual intercourse, number of sexual partners, injection drug use or needle sharing, and newly acquired STIs.

Comments on this review's methodology

This is a methodologically strong review. The authors formed a focused research question, and used appropriate inclusion criteria to select primary studies. A comprehensive search strategy was employed using health, psychological, and social science electronic databases from 1988 to 2004, as well as handsearching of journals, examination of reference lists, and review of unpublished manuscripts to locate relevant studies. No language restrictions were applied to the search. Multiple reviewers assessed quality of study design, quality of implementation and analysis, and strength of evidence. Criteria for quality of study design included assignment method, type of control group, participation rate, follow-up, and intent-to-treat analysis. Tests for heterogeneity were conducted and appropriate analyses used to combine the data.

Why is this issue of interest to public health?

HIV attacks the immune system, resulting in a chronic, progressive illness that leaves infected individuals vulnerable to opportunistic infections and cancers.¹ The median time from being infected with HIV to being diagnosed with AIDS now exceeds 10 years.¹ AIDS remains incurable.² The number of people estimated to be living with HIV/AIDS in Canada is increasing. At the end of 2005, an estimated 58 000 (48 000-68 000) Canadians were living with HIV/AIDS, which represented an increase of almost 16% from 2002.³ A considerable number of PLWH do not consistently practice HIV risk reduction behaviours, thereby placing others at risk for HIV infection, and themselves at risk for STIs.⁴ Thus, there is a significant need for prevention interventions to reduce HIV risk behaviours amongst PLWH. The provision of such interventions may prevent numerous HIV infections (and other STIs), and as a result may also help prevent the evolution and spread of drug resistance.⁴ It is important that the best-evidence on behavioral prevention interventions be identified and widely implemented.²

Evidence and implications

Evidence points are not in order of the strength of the evidence.

What's the evidence?	Implications for practice and policy:
<p>1. Behavioural outcomes</p> <p>1.1. Unprotected sexual behaviour (10 RCTs, 2 non-RCT)</p> <p>1.1.1. Participants who received prevention interventions aimed at the reduction of HIV risk behaviour (“interventions”) were 43% less likely to participate in unprotected sexual behaviour compared with control persons living with human immunodeficiency virus (PLWH). The true intervention effect ranged from 60% to 18% less likely (OR 0.57, 95% CI 0.40 to 0.82; n=2719).</p> <p>1.1.2. Sub-population analysis</p> <p>1.1.2.1. Men who have sex with men were no less likely to engage in unprotected sexual behaviours as compared with controls PLWH (OR 0.63, 95%CI 0.35 to 1.14) (4 studies).</p> <p>1.1.2.2. Injection drug users/substance abusers were no less likely than controls of PLWH to participate in unprotected sexual behaviours (OR 0.47, 95%CI 0.18 to 1.25) (3 studies).</p> <p>1.1.2.3. Other sub-populations were no less likely than the controls of PLWH to participate in unprotected sexual behaviours (OR 0.53, 95%CI 0.27 to 1.07) (5 studies).</p> <p>The sub-populations included in this analysis were not clearly identified by review authors, however descriptions of primary studies provided population characteristics according to race/ethnicity (e.g., Hispanic, African American, Asian and Pacific Islanders, “White”), sex, age, other characteristics (incarcerated men, AIDS diagnosis)</p> <p>1.1.3. Theory based</p> <p>1.1.3.1. Participants who received interventions for which the theoretical basis was reported were 48% less likely than control PLWH to engage in unprotected sexual behaviour. The true intervention effect ranged between 67% and 25% less likely (OR 0.52, 95%CI 0.36 to 0.75) (10 studies).</p> <p>1.1.3.2. Participants who received interventions for which no theoretic basis was reported were no less likely than control PLWH to engage in unprotected sexual behaviours (OR 1.02, 95%CI 0.45 to 2.32) (2 studies).</p> <p>1.1.4. Intervention components/characteristics</p> <p>1.1.4.1. Proportion of intervention session addressing HIV risk behaviours</p> <p>1.1.4.1.1. Participants who participated in intervention sessions of which more than 2/3 addressed HIV risk behaviour were 51% less likely to engage in unprotected sexual behaviours as compared with control PLWH. The true intervention effect ranged from 70% to 21% less likely (OR 0.49, 95%CI 0.30 to 0.79) (9 studies).</p> <p>1.1.4.1.2. Participants who participated in intervention sessions of which less than 2/3 of the intervention sessions addressed HIV risk behaviour were no less likely to engage in unprotected sexual behaviours than control PLWH (OR 0.74, 95%CI 0.53 to 1.03) (3 studies).</p> <p>1.1.4.2. Unit of delivery</p> <p>1.1.4.2.1. Participants who received the intervention in a group setting were no less likely to engage in unprotected sexual behaviours than control PLWH (OR 0.66, 95%CI 0.43 to 1.00) (8 studies).</p> <p>1.1.4.2.2. Participants who received individually-focused interventions were 51% less likely to engage in</p>	<p>1. Behavioural outcomes</p> <p>1.1. Unprotected sexual behaviour</p> <p>1.1.1. Public health programs that aim to reduce HIV risk behaviours among PLWH should include interventions specifically aimed at reducing engagement in unprotected sexual behaviour. These interventions should:</p> <p>1.1.1.1. be universally offered</p> <p>1.1.1.2. be theory-based</p> <p>1.1.1.3. focus 2/3 or more of the content on addressing HIV risk behaviours</p> <p>1.1.1.4. be individually focused</p> <p>1.1.1.5. delivered by a health care provider, not peer</p> <p>1.1.1.6. include skill building components</p> <p>1.1.1.7. include content related to at least 2 of:</p> <p>1.1.1.7.1. HIV risk behaviour,</p> <p>1.1.1.7.2. coping, and</p> <p>1.1.1.7.3. adherence</p> <p>1.1.1.8. be delivered in settings in which PLWH receive other services</p> <p>1.1.1.9. include > 10 sessions or last > 20 h</p> <p>1.1.1.10. be delivered over 3 months or more</p> <p>1.1.2. Given the lack of research on particular sub-populations and intervention components, rigorous program evaluations and high quality research conducted in real world settings should be conducted ensuring sufficient power (sample size) and include sub-group analyses.</p> <p>1.2. Needle-sharing</p> <p>1.2.1. Given the limited number of studies in this population assessing the reduction of needle sharing through interventions aimed at HIV risk behaviour reduction, rigorous program evaluations and high quality research should be conducted. This research should include:</p> <p>1.2.1.1. outcome measures related to needle sharing</p> <p>1.2.1.2. interventions targeted specifically to changing needle-sharing behaviour</p> <p>1.2.1.3. subgroup analyses such as those identified in section 1</p>

unprotected sexual behaviours than control PLWH (OR 0.49, 95%CI 0.27 to 0.89) (4 studies).

1.1.4.3. Intervention deliverer

1.1.4.3.1. Participants who received the intervention delivered by a health-care provider/counsellor were 48% less likely to engage in unprotected sexual behaviour as compared with control PLWH. The true intervention effect ranged from 77% to 18% less likely (OR 0.52, 95%CI 0.33 to 0.82) (8 studies).

1.1.4.3.2. Participants who received the intervention delivered by a peer were no less likely than control PLWH to engage in unprotected sexual behaviour (OR 0.72, 95%CI 0.50 to 1.03) (5 studies).

1.1.4.4. Skill building

1.1.4.4.1. Participants whose intervention contained any skill building components were 41% less likely than control PLWH to engage in unprotected sexual behaviour. The true intervention effect ranged from 61% to 11% less likely (OR 0.59, 95%CI 0.39 to 0.89) (9 studies).

1.1.4.4.2. Participants whose intervention did not contain any skill building component were no less likely than control PLWH to engage in unprotected sexual behaviour (OR 0.56, 95%CI 0.26 to 1.22) (3 studies).

1.1.4.5. Intervention content (HIV risk behaviour, coping, adherence)

1.1.4.5.1. Participants whose intervention contained all three topics were 75% less likely than control PLWH to participate in unprotected sexual behaviour. The true intervention effect ranged from 87% to 53% less likely (OR 0.25, 95%CI 0.13 to 0.47) (3 studies).

1.1.4.5.2. Participants whose intervention contained one or two of the above three topics were 32% less likely to participate in unprotected sexual behaviour than control PLWH. The true intervention effect ranged from 53% to 1% less likely (OR 0.68, 95%CI 0.47 to 0.99) (9 studies).

1.1.4.6. Intervention setting

1.1.4.6.1. Participants who were exposed to interventions delivered in settings where they received services were 59% less likely to participate in unprotected sexual behaviours as compared with control PLWH. The true intervention effect ranged from 74% to 35% less likely (OR 0.41, 95%CI 0.26 to 0.65) (7 studies).

1.1.4.6.2. Participants who were exposed to the intervention in a standalone setting set up for the purposes of the study were no less likely to engage in unprotected sexual behaviours as compared with control PLWH (OR 0.85, 95%CI 0.61 to 1.19) (3 studies).

1.1.4.6.3. Participants who were exposed to the intervention in other settings were no less likely to engage in unprotected sexual behaviours as compared with control PLWH (OR 1.02, 95%CI 0.45 to 2.32) (2 studies).

1.1.4.7. Number of intervention sessions/duration

1.1.4.7.1. Participants whose intervention included ≤ 10 sessions/ ≤ 20 h were no less likely to engage in unprotected sexual behaviours than control PLWH (OR 0.77, 95%CI 0.55 to 1.07) (7 studies).

<p>1.1.4.7.2. Participants whose intervention included > 10 sessions/> 20 h were 75% less likely than controls to engage in unprotected sexual behaviour. The true intervention effect ranged from 87% to 53% less likely (OR 0.25, 95%CI 0.13 to 0.47) (3 studies).</p> <p>1.1.4.7.3. Participants whose intervention sessions involved on-going activities were no less likely than control PLWH to engage in unprotected sexual behaviours (OR 0.56, 95%CI 0.2 to 1.57) (2 studies).</p> <p>1.1.4.8. Total time to deliver intervention</p> <p>1.1.4.8.1. Participants whose intervention sessions spanned 1–2 months were no less likely than control PLWH to engage in unprotected sexual behaviours (OR 0.78, 95%CI 0.53 to 1.15) (6 studies).</p> <p>1.1.4.8.2. Participants whose intervention sessions spanned 3 months or longer were 57% less likely than control PLWH to engage in unprotected sexual behaviour. The true intervention effect ranged from 74% to 28% less likely (OR 0.43, 95%CI 0.26 to 0.72) (6 studies).</p> <p>1.1.5. Follow-up</p> <p>1.1.5.1. Participants who received the intervention and were assessed at 3-4 months post intervention were 45% less likely to engage in unprotected sexual behaviour as compared with controls. The true intervention effect at 3-4 month follow-up ranged between 68% and 5% less likely (OR 0.55, 95% CI 0.32 to 0.95) (7 studies).</p> <p>1.1.5.2. Participants who received the intervention and were assessed at 6-12 months post intervention were 39% less likely to engage in unprotected sexual behaviour as compared with controls. The true intervention effect at 6-12 month follow-up ranged from 57% to 13% less likely (OR 0.61, 95% CI 0.43 to 0.87) (8 studies).</p> <p>1.2. Needle-sharing (3 studies)</p> <p>1.2.1. Participants exposed to interventions were no less likely to share needles than controls (OR 0.47, 95% CI 0.13 to 1.71; n= 403).</p>	
<p>2. Biological outcomes</p> <p>2.1. Sexually Transmitted Infection (2 studies)</p> <p>2.1.1. Participants exposed to interventions aimed at the reduction of HIV risk behaviours were 80% less likely to acquire Chlamydia or gonorrhoea as compared with controls. The true intervention effect ranged from 95% to 27% less likely (OR 0.20, 95% CI 0.05 to 0.73; n=1,177).</p>	<p>2. Biological outcomes</p> <p>2.1. STIs</p> <p>2.1.1. Public health programs that aim to reduce STIs should include interventions that focus on reducing HIV risk behaviours.</p> <p>2.1.2. Given the limited number of studies in this population assessing the reduction of STIs through interventions aimed at HIV risk behaviour reduction, rigorous program evaluations and high quality research should be conducted. This research should include:</p> <p>2.1.2.1. outcome measures related to HIV and other STIs.</p> <p>2.1.2.2. subgroup analyses such as those identified in section 1</p>
<p>3. Methodological Issues</p> <p>3.1. Small number of trials in subgroup analysis</p> <p>3.2. Failure of primary studies to provide information on potential confounders</p> <p>3.3. Lack of blinding (though this is difficult for this type of study)</p> <p>3.4. Validity of data collection tools</p> <p>3.5. Lack of outcome data specific to HIV status</p> <p>3.6. Interpretation of findings complicated by failure to include individual study</p>	<p>3. Program Evaluation and Research</p> <p>3.1. Rigorous program evaluations and high quality research should be conducted. This research should:</p> <p>3.1.1. be adequately powered for subgroup analysis</p> <p>3.1.2. focus on specific populations of</p>

<p>results and weighting details</p> <p>3.7. Issues with combining data and analyses</p> <p>3.7.1. Data from RCTs and non-RCTs were pooled</p> <p>3.7.2. Odds ratios derived from both continuous and dichotomous data of outcomes which were similar, but not identical were pooled</p> <p>3.7.3. Clinical and methodological diversity of the studies and the heterogeneity reported may have suggested that it was inappropriate to pool the results</p>	<p>PLWH</p> <p>3.1.3. use valid and reliable data collection tools</p> <p>3.1.4. use appropriate analyses</p> <p>3.1.5. outcome measures related to HIV status</p> <p>3.2. Reports of these studies should:</p> <p>3.2.1. provide adequate detail on the intervention and populations</p> <p>3.2.2. include sufficient detail to enable interpretation of findings and conducting of reviews</p>
<p>4. Cost benefit or cost-effectiveness information</p> <p>4.1. No cost related information was included in the review.</p>	<p>4. Cost benefit or cost-effectiveness information</p> <p>4.1. Future research should include cost-effectiveness of interventions.</p>
<p>General Implications</p> <ul style="list-style-type: none"> • Interventions most likely to result in desired reductions in HIV risk behaviours among PLWH are those that <ul style="list-style-type: none"> ○ integrate theory-based prevention within routine health care and services ○ address aspects of mental health and adherence to treatment in addition to HIV risk behaviour; ○ provide PLWH with opportunities to develop the skills for successful HIV risk reduction • Rigorous program evaluations and high quality research should be conducted to examine the effectiveness of interventions that aim to reduce HIV risk behaviour among PLWH and thereby reduce their risk of transmitting HIV to others 	
<p>Legend: CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk</p> <p><i>**please see the health-evidence.ca glossary of terms (found under 'How to Use This Site') for definitions</i></p>	

References used to outline issue

1. Health Canada. (2006). *HIV and AIDS*. Retrieved from <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/hiv-vih-eng.php>
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Other quality reviews on this topic

- Crepaz, N., Horn, A.K., Rama, S.M., Griffin, T., Deluca, J.B., Mullins, M.M., Aral, S.O., & HIV/AIDS Prevention Research Synthesis Team. (2007). The efficacy of behavioral interventions in reducing HIV risk sex behaviors and incident sexually transmitted disease in black and Hispanic sexually transmitted disease clinic patients in the United States: A meta-analytic review. *Sexually Transmitted Diseases, 34*(6), 319-332.
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Related links

- Centers for Disease Control and Preventions <http://www.cdc.gov/>
- National Collaborating Centre for Infectious Diseases <http://www.nccid.ca/en/home>
- Public Health Agency of Canada. Infectious Diseases. HIV/AIDS <http://www.phac-aspc.gc.ca/id-mi/az-index-eng.php#st>

Summary statement authors

Greco, L., Spoelstra, K., Dobbins, M. (2010). Do prevention interventions to reduce HIV risk behaviours among people living with HIV?: Evidence and implications for public health. Hamilton, ON: McMaster University. Retrieved March 10, 2010 from *health-evidence.ca*: www.health-evidence.ca/documents/16911/Crepaz_2006_Summary_Statement_-_English.pdf

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