Best-evidence interventions: findings from a systematic review of HIV behavioral interventions for US populations at high risk, 2000-2004


CRD summary
The authors identified eighteen behavioural best-evidence interventions for reducing HIV-related risk behaviours or sexually transmitted disease, and also areas in which further research is required. Some aspects of this review were well-conducted but the inclusion of only studies reporting positive results biased the evidence presented, hence the conclusions cannot be considered reliable.

Authors' objectives
To identify interventions with the best evidence of efficacy in reducing the risk of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) and sexually transmitted disease (STD).

Searching
EMBASE, MEDLINE, PsycINFO and Sociofile, including AIDSLINE before December 2000, were searched in November 2004. Manual searches were also conducted for articles that had not yet been indexed (to January 2005) and for articles from 32 pre-specified journals in the last 6 months. In addition, reference lists, HIV/AIDS e-mail discussion lists and reviewed unpublished manuscripts submitted to the review team by the study authors were screened. Studies had to be published or accepted for publication between 2000 and 2004.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials and prospective studies with an appropriate, concurrent comparison group that made efforts to minimise bias were eligible for inclusion. The duration of follow-up in the included studies ranged from 3 to 12 months post-intervention.

Specific interventions included in the review
Studies that evaluated behavioural HIV/AIDS or STD interventions conducted in the USA or its territories were eligible for inclusion. Studies had to be targeted at individuals or small groups. Interventions delivered to communities or schools, substance abuse interventions, needle exchange programmes, interventions aimed strictly at HIV testing or partner counselling and referral services, and policy interventions were excluded. Most of the staff delivering the interventions were non-peer ‘facilitators’ or ‘group leaders’, peers, counsellors and therapists matched to the participants targeted. The duration of the interventions ranged from 1 to 6 sessions. The interventions varied with respect to content; most included skill building (technical, personal and interpersonal).

Participants included in the review
Interventions that explicitly targeted school-based youths were excluded. Most of the included studies targeted heterosexual adults; other studies targeted drug users, HIV-positive individuals and men who have sex with men (MSM). In most studies, the majority of participants belonged to minorities (including African Americans and Hispanics). Some studies included only women or adolescent females. All but one of the interventions were conducted in urban geographical areas, and most were conducted in people with relatively low socioeconomic status.

Outcomes assessed in the review
Studies that reported relevant biological measures, HIV-testing behaviours, or sexual or drug-injection behaviours that were directly related to the risk of HIV transmission were eligible for inclusion. Studies were only included if they reported a pre-specified level of evidence; this was defined as a statistically significant (p<=0.05) and positive effect of the intervention for at least one relevant outcome, at least 3 months post-intervention and no significant negative effects.
How were decisions on the relevance of primary studies made?
Members of the review team conducted the searches. The review group reached consensus on eligible studies.

Assessment of study quality
Studies were only included if they met pre-specified best-evidence criteria for: study design (see 'Study Designs' section, and at least 50 participants in each intervention group); quality of implementation (assessing the outcomes at least 3 months after the intervention with at least 70% of enrolled participants retained in each arm; quality of analysis (use of cluster-level analysis where appropriate, intention-to-treat analysis); and strength of evidence (see 'Outcomes' section). Studies that were considered to show any fatal flaw were also excluded. The review group reached consensus on eligible studies.

Data extraction
Pairs of trained reviewers extracted efficacy-related data. Any disagreements were resolved by discussion. Authors were contacted for missing data and formal documentation regarding the intervention. For each study, statistically significant outcomes were tabulated.

Methods of synthesis
How were the studies combined?
The characteristics of the included studies were summarised in the text of the review.

How were differences between studies investigated?
Differences between the studies were discussed in the text.

Results of the review
Eighteen studies (n=12,446) were included. The sample size ranged from 175 to 4,295.

Significant reductions were reported in unprotected sexual intercourse (12 studies), number of sexual partners (4 studies), injection drug-use or needle-sharing behaviours (3 studies), sex-related risk behaviours among drug users (4 of 5 studies) and injection-related risk behaviours in drug users (3 of 5 studies). Significant increases were reported in condom use (8 studies).

Four studies reported significant reductions in new cases of STDs at least 12 months post-intervention.

The one study that assessed HIV incidence reported no significant reduction in the incidence associated with the intervention.

Authors' conclusions
Eighteen behavioural interventions with proven efficacy for reducing risk behaviours for HIV or STD were identified. Further research is required.

CRD commentary
The review addressed a clear question that was defined in terms of the intervention, outcomes and study design. Several relevant sources were searched but, although unpublished manuscripts were eligible, only studies reporting positive results were included and this introduces bias. In addition, it was not clear whether any language restrictions had been applied. Methods were used to minimise reviewer errors and bias in the study selection, validity assessment and data extraction processes. Only studies meeting pre-specified quality criteria were included. However, one of these quality criteria was that only studies showing a statistically significantly positive effect of the intervention in at least one outcome, and no negative effects, could be included. This was reflected in the fact that 100 studies met the eligibility criteria but only 18 were included once the criteria for best evidence were applied. This meant that the findings of the
review were positively biased towards the interventions included, and any attempts to minimise publication bias were negated by these inclusion criteria. It is not possible to tell how many of the 82 excluded studies looked at the same interventions as the 18 included studies but found a negative effect or no effects. In view of the heterogeneity among the studies, a narrative review that summarised aspects of the interventions and characteristics of the participants appeared appropriate. Some aspects of this review were well-conducted but limiting inclusion to only studies reporting positive results biased the evidence presented, hence the conclusions cannot be considered reliable.

**Implications of the review for practice and research**

**Practice:** The authors stated that providers of HIV prevention programmes could use the results of the review to select appropriate evidence-based interventions. The review provided contact details for all interventions classified as of proven efficacy.

**Research:** The authors stated that the highest priority should be given to identifying effective interventions in populations that are most affected by (or at greatest risk of) the HIV/AIDS epidemic. Specifically: African American, Hispanic and other MSM of colour; young MSM, especially young African American and Hispanic MSM; substance-using MSM; transgender persons; HIV-positive intravenous drug users; and rural populations. Interventions of proven effectiveness (or adaptation of these interventions) should be evaluated in different real-world (as opposed to research) settings and in different populations, to determine their applicability. In addition, interventions that just failed to meet review criteria for ‘best-evidence’ should be more rigorously evaluated. Authors of future research should adhere to the Consolidated Standards of Reporting Trials and Transparent Reporting of Evaluations with Nonrandomized Designs.

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