The clinical effectiveness of individual behaviour change interventions to reduce risky sexual behaviour after a negative human immunodeficiency virus test in men who have sex with men: systematic and realist reviews and intervention development

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Scientific summary

Interventions to reduce risky sexual behaviour after a negative HIV test

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Scientific summary

Background

Men who have sex with men (MSM) experience significant inequalities in health and well-being. They are the group in the UK that is at the highest risk of acquiring a human immunodeficiency virus (HIV) infection. Guidance relating to both HIV infection prevention, in general, and individual-level behaviour change interventions, in particular, is very limited.

Objectives

To conduct an evidence synthesis of the clinical effectiveness of behavioural change interventions to reduce risky sexual behaviour among MSM after a negative HIV infection test. To identify the components within interventions that are most effective in reducing HIV risk-related behaviours and to develop a candidate intervention. To host expert events addressing the implementation and optimisation of a candidate intervention.

Data sources

Electronic databases (British Education Index, BioMed Central, Cumulative Index to Nursing and Allied Health Literature, EMBASE, Educational Resource Index and Abstracts, Health and Medical Complete, MEDLINE, PsycARTICLES, PsycINFO, PubMed and Social Science Citation Index) were searched between January 2000 and December 2014.

Study selection

Studies were included if the majority of men (> 66%) were HIV negative, verified by confirmed status, self-report status or through testing as part of the study procedures. Studies were excluded if they focused exclusively on commercial sex workers, people who are transgender, victims of sexual or domestic abuse or violence, intravenous drug users, and those in prison, psychiatric facilities or nursing homes or individuals with no fixed address. All individual-level behavioural change interventions designed to promote HIV infection risk reduction were included as long as they were brief (short duration and between one and five sessions). Relevant comparators were usual care or minimal intervention.

Data extraction

Data relating to study design, quality, sample characteristics, interventions and comparators, and primary and secondary outcomes were extracted using a standard pro forma. Study quality was assessed according to the Cochrane risk-of-bias assessment tool for randomised controlled trials. Data were extracted from the studies by one reviewer and checked by a second. Any disagreements were resolved through consensus or, if necessary, by referral to a third reviewer. Intervention content was assessed using the behaviour change technique (BCT) taxonomy version 1, the theory coding scheme, and assessment of intervention fidelity by using the Treatment Fidelity Checklist. Intervention content was reviewed by two independent reviewers who coded BCTs. Disagreements and additional BCTs identified were subsequently discussed. Where agreement could not be reached, a third reviewer resolved the discrepancies between the first two reviewers. Data utilised in the post hoc realist synthesis were extracted by a single reviewer and checked by a second.

Data regarding the sequencing of intervention components, and the historical and social context of primary studies, were extracted by one reviewer.

Data synthesis

All data were tabulated, discussed in a narrative review and, where appropriate, subjected to pairwise meta-analysis. Supplemental data synthesis for the development of the candidate intervention focused on post hoc realist review methods. These re-examine primary studies and associated tabulated data through several iterative stages [familiarisation, individual context, mechanism and outcome (C-M-O) configurations, patterns across C-M-O configurations, the development of general statements and the development of explanatory theories], which are in turn used to formulate hypotheses in a final refined framework. Equally, data were synthesised across the assessment of the sequential delivery and content of intervention components, and the social and historical context of primary studies. A final process of metasynthesis examined patterns in evidence provided by the narrative review, meta-analyses, the realist review and the sequential content of interventions to develop a detailed candidate intervention.

Results

Overall, the trials included in this review ($n = 10$) reported positive findings and suggest that individual-level behavioural change interventions are effective in reducing HIV risk-related behaviour in HIV-negative MSM. Overall, there is a statistically significant reduction in behaviours most associated with risk of HIV transmission (risk ratio 0.75, 95% confidence interval 0.62 to 0.91), although there is considerable statistical and methodological heterogeneity in primary studies ($I^2 = 57\%$; $\tau^2 = 0.04$). Exploratory stratified meta-analyses suggested that effectiveness may be enhanced through face-to-face contact immediately after testing, theory-based content, and BCTs drawn from 'goals and planning' and 'identity' groups. Realist review methods highlighted additional aspects of primary studies that potentially enhance intervention effectiveness; these included a focus on the affective dimensions of intervention receipt and an acknowledgement of the complex skills needed by interventionists. Examination of the sequential content of interventions highlighted the potential importance that they have multiple components delivered with increasing complexity and often focusing on a single developmental, or narrative, trajectory, beginning with the personal exploration of risk-related behaviour and ending with the client setting goals or agreeing an action plan for future behaviour. Metasynthesis of these data provided sufficient detail to develop a candidate intervention.

The candidate intervention

Delivery

The results suggested that the candidate intervention should be delivered immediately after testing and should be delivered face to face. Interventions should be delivered by people with skilled facilitation techniques.

Content and purpose

The intervention should be non-judgemental, and include a reduction in negative effect and an increase in positive effect. Interventions should focus on high-risk men and, if possible, demonstrate some novelty, or capture contemporary issues affecting gay men and their sexual cultures. Interventions should be sensitive to issues of identity and contain a clear focus on the gay community. The intervention should deliver a demonstrable sense of cultural competency. Moreover, interventions should be multicomponent and be composed of sequential elements: they should begin with a risk assessment, include a normative peer reference point and the use of discrete tools, and end with a future-facing element.

The candidate intervention should be personalised and address the intrasubjective (i.e. include elements that encourage clients to consider their own thinking as part of how they should change their behaviour).

It should focus on encouraging a sense of individual responsibility but be mindful of issues concerning capacity, for example paying particular attention to issues of health and digital literacy.

In terms of the specific content the candidate intervention should utilise theory-congruent BCTs if possible and be based on the following: 'goals and planning', 'identity', 'social support' and 'comparative outcomes'. It should utilise the following specific BCTs: 'pros and cons', 'goal-setting' 'social support (emotional)', 'framing and reframing,' 'incompatible beliefs', 'social support (unspecified)' and 'information about health consequences'.

The candidate intervention was further optimised through expert events that highlighted the overall acceptability of the candidate intervention and its fit with existing service provision in the UK. They recommended that it was important to acknowledge the role of institutional support, clearly defined intervention content and details of intervention delivery, provide training to ensure intervention fidelity, consider clinical rather than community settings, and identify the financial barriers to implementing the intervention.

Limitations

There were a limited number of primary studies. Among these primary studies there was considerable methodological and statistical heterogeneity. The lack of detailed intervention manuals limited the assessment of content and delivery.

Conclusions

The evidence regarding the effectiveness of behaviour change interventions suggests they are effective in reducing those behaviours associated with the highest risk of HIV transmission. Effectiveness is likely to be enhanced through face-to-face delivery and delivery associated with HIV infection testing. There are uncertainties around the generalisability of these findings to the UK setting, however, experts from the UK found the candidate intervention acceptable and implementable.

Future work

There is a need for well-designed, UK-based trials of individual behaviour change interventions among MSM. These should clearly articulate intervention content in terms of the granularity of BCTs and the sequential ordering of intervention components. Adequate mixed-methods process evaluation should address and validate hypothesised mechanisms of behaviour change and methods should be adopted that can rigorously demonstrate intervention fidelity.

Study registration

The study is registered as PROSPERO CRD42014009500.

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