HIV prevention in young people in sub-Saharan Africa:

A Systematic Review

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EXECUTIVE SUMMARY

Due to social, cultural, economic and biological reasons, young people are particularly vulnerable to HIV infection. Global goals to reduce vulnerability and prevent HIV in young people highlight the growing consensus that HIV prevention efforts must include a focus on young people. Resources for HIV prevention in all countries are limited, and therefore it is imperative that resources be used effectively. A compelling case can be made for the need for focussed interventions to prevent HIV among young people, but it is less clear how precisely this should be done.

In 2004-2006, the Department of Child and Adolescent Health and Development of the World Health Organization collaborated with the London School of Hygiene & Tropical Medicine to lead a series of systematic reviews of interventions to prevent HIV among young people in developing countries that were completed or published between 1990 and June 2005. These reviews utilized a new methodology known as the *Steady, Ready, Go!* approach, where different types of HIV interventions for young people in different settings were systematically reviewed alongside each other using a similar methodology and graded for their effectiveness. A major focus of this methodology is to use the implications of the results to generate clear recommendations for policies and programming (Do not go, Steady, Ready, or Go!).

This report presents an update of the first *Steady, Ready, Go!* review, adding evaluations of interventions in sub-Saharan Africa in schools, health services, or geographically-defined communities with results released between January 2005 and December 2008. The results of the limited number of studies which reported the impact on HIV and/or other biological outcomes have been presented separately. An initial screening of nearly 1200 citations resulted in 23 studies which met the criteria for inclusion. This relatively large number of studies reported in the recent four year period reflects an increasing recognition of the importance of HIV prevention among young people, and the need for studies to assess the effectiveness of interventions that aim to achieve that.

- **Interventions in schools**

Interventions in schools were largely successful at demonstrating improvements in reported sexual risk behaviours and other mediating factors. Overall, in-school interventions are a logical and promising means to impart necessary information and skills to school-going young people. However, evidence from the two recent trials that included an assessment of the impact of schools-based interventions on biological outcomes suggests that such interventions may not be sufficient to reduce the risk of HIV, other STIs or early pregnancies.

Recommendation for in-school interventions: Curriculum-based, adult-led interventions that included the "Kirby characteristics" (see Appendix B) with or without the involvement of peers (Go! for evidence of an impact on reported sexual risk behaviours).

- **Interventions to improve young people's access to, and acceptability of, health services**

Access to high-quality health care is not only a global goal, but also a basic aim of all national health services. There is now strong evidence of the potential efficacy of several HIV prevention interventions

that can be delivered by health services, such as male circumcision, condom use, and possibly HIV testing and counselling. However, these specific interventions cannot have any direct population-level effect on the HIV epidemic among young people unless they are made accessible and acceptable to, and are therefore used by, young people. Evidence on the most appropriate way to deliver health care to young people in order to maximise their access to, and appropriate use of, such services remains incomplete. Many of the recently-published evaluations of interventions to improve health services lacked adequate descriptions of the intervention and process evaluation, and had weak intervention and/or impact evaluation designs, making it difficult to decipher which aspect or aspects of the intervention were most effective.

Recommendation for interventions in health facilities: Interventions which train service providers and take actions to make the facility more youth-friendly, coupled with activities in the community with or without involvement of other sectors to link or refer young people to health services ('Ready' for evidence of an impact on promoting utilisation of health services).

- **Interventions in geographically-defined communities**

Interventions in geographically-defined communities are generally the most difficult to evaluate. Interestingly, the results of the recently reported studies in this setting tended to differ from those of the earlier studies reviewed in the 2006 *Steady, Ready, Go!* series. Our updated review demonstrated that intervention types which target the community as a whole, rather than just young people, were more effective at improving reported sexual risk behaviour and impacting biological outcomes, which suggests that it may be important to explore interventions to change the social and sexual norms within the wider community. This highlights the difficulty in disentangling the important elements of community-based interventions and the possibility that the exact nature of the interventions used and the context may be particularly important for interventions in this setting.

Recommendation for interventions in geographically-defined communities: Interventions targeting the community using either traditional networks or community-wide activities for intervention delivery ('Ready' for evidence of an impact on reported sexual risk behaviours and biological outcomes).

- **Interventions with biological outcomes**

Five interventions used biologically measured outcomes to assess HIV, STIs and/or pregnancy. Two large cluster randomized trials (CRTs) (MEMA kwa Vijana in Tanzania and Regai Dzive Shiri in Zimbabwe) evaluated multi-component interventions with activities in schools, health services, and geographically-defined communities. Neither demonstrated a significant effect on any of the biological outcomes they measured. A CRT in South Africa of an intensive series of group health education sessions using the Stepping Stones approach was conducted in volunteers who were either youth or young adults (range 15-26 years). Although this did not detect a significant impact on HIV, the incidence of HSV2 was one third lower in those selected for the intervention than in those who were not selected. The IMAGE study, a CRT in South Africa, aimed to reduce gender-based HIV vulnerabilities through microfinance and HIV education, offered and delivered to self-selected adult women of low economic status. This intervention demonstrated a reduction in reported intimate partner violence among participants,

however there was no significant impact on HIV incidence in the sub-group analysis among young people within participant households or in the participating communities at large. A cross-sectional survey of young people in South Africa found that HIV prevalence was lower in those who reported exposure to the multi-component *loveLife* programme than in those who had not been exposed to it. While encouraging, the observational design of this study makes it open to potential bias and confounding.

Studies with biological outcomes, especially HIV itself, are particularly important for several reasons. First, the primary objective of most of these interventions (and of this review) was HIV prevention, so it is important to evaluate that as a primary outcome. Second, many studies have demonstrated that reporting of sexual behaviour is problematic and potentially unreliable/invalid, especially among young people. This is particularly problematic in the presence of interventions, since these may well introduce differential over-reporting of "desired" behaviours due to social desirability bias. For example, despite evidence that in-school sexual education programmes can improve knowledge and reported sexual behaviour, neither of the rigorously implemented and evaluated in-school interventions reviewed here that measured biological outcomes detected a significant effect on any biological outcomes measured, at least in the short to medium term. This suggests that additional interventions may be needed to achieve that goal. Evidence from this review reinforces the widely held belief that knowledge alone is not enough to facilitate behaviour change, and reported sexual behaviour is an unreliable proxy for HIV and other STIs. It is therefore recommended that in future research, whenever possible, HIV or at the least other biological markers of sexual activity be measured.

There are a number of factors which may mediate behaviour change in young people, and the social, cultural and epidemiological contexts in which interventions are implemented may affect their effectiveness considerably. As such, a one-size-fits-all intervention is unlikely to be the most effective approach, and careful evaluation of local risk factors and context is necessary to determine the optimal intervention. There is a growing consensus that to achieve HIV prevention in young people it is necessary to provide a range of tools and address a number of barriers, and to accomplish this it is necessary to implement interventions in different settings simultaneously, and thus have the capacity to promote change using different approaches on a number of levels. This review has identified the most promising types of interventions among young people in schools, health services and geographically-defined communities in terms of the evidence base supporting their effectiveness – at least to achieve improvements in reported sexual behaviour and/or biological outcomes.

1. Introduction

An estimated 33.2 million people were infected with HIV worldwide in 2007. With an estimated 2.1 million deaths due to AIDS in 2007 alone, HIV is the one of the most serious challenges to global health and development.[1] Sub-Saharan Africa (SSA) remains the most seriously affected region, where AIDS is the leading cause of death. In 2007, 68% of new infections and 76% of AIDS deaths worldwide occurred in SSA.[1]

Nearly half the world's population is under the age of 25, with two thirds of all young people living in SSA.[2] Due to social, cultural, economic and biological reasons, young people are particularly vulnerable to HIV. Approximately 2.7 million new HIV infections occurred in 2007, and UNAIDS estimates that 45% of these occurred in youth 15-24 years of age.[1] Sixty-one percent of all HIV infections in young people are in sub-Saharan Africa, and 76% of the new infections in young people in sub-Saharan Africa in 2007 were in young women.[3]

WHO definitions

Adolescents – young men and women 10-19 years of age

Young people – young men and women 10-24 years of age

Youth - young men and women 15-24 years of age

Global goals for HIV prevention among young people

Young people are at the centre of the HIV epidemic, yet currently are only peripherally included in many efforts to prevent the spread of HIV. A number of factors make young people particularly vulnerable to HIV and AIDS, including lack of knowledge about the disease, poorly-developed life skills, lack of parental protection and mentoring, lack of financial autonomy, early sexual debut, sexual coercion, partner violence, and limited access to health facilities.[2, 4] In recognition of their particular vulnerability, a series of global goals have been agreed in relation to HIV prevention in young people. These goals focus on preventing HIV in young people, as well as on providing young people with adequate information, life skills, protection, related health and social services and policy implementation to help reduce their vulnerability (Box 1).

Preventing HIV/AIDS in young people

Achieving these global goals is a complex endeavour. Many things influence the choice of intervention(s): structural and contextual determinants such as inequity and discrimination, poverty, social unrest and migration, exploitation and abuse; political priorities, political will and availability of resources; social and cultural norms and practices; in addition to evidence of effectiveness. To design and implement successful interventions to prevent HIV in young people, it is essential to have a profound understanding of the unique environment and socio-cultural context being targeted. This will temper the focus and scale of the response, and promote appropriate use of limited resources. It will also be necessary to advocate change of the structural and contextual determinants if prevention efforts are to be sustainable.

There is a broad range of possible interventions or combinations of interventions to choose from, which may be targeted in different ways, such as through interventions directed towards the individual, family, or community. A few examples are:

- In-school sex or life skills education
- Targeted interventions for out-of-school youth
- Community education about youth sexual and reproductive health
- Increased condom access and promotion
- Youth-friendly health services that provide high-quality services including STI treatment, male circumcision, condoms and other family planning services, and HIV testing, counselling, treatment and care
- Mass media interventions

In 2004-2006, the Department of Child and Adolescent Health and Development of the World Health Organization (WHO) collaborated with the London School of Hygiene & Tropical Medicine (LSHTM) to lead a major systematic review of interventions to prevent HIV among young people in developing countries, which was released in full as an issue of the WHO Technical Report Series.[5] Though historically there has been a broad consensus as to what types of interventions are key to preventing HIV in young people, this was the first time that different types of HIV interventions for young people had been systematically reviewed alongside each other, in a transparent way, and graded for their effectiveness. A major focus of this review was on the implications of the results for policies and programming. Studies included in the review took place in all developing countries and were completed or published between 1990 and June 2005. The review of interventions within schools was limited to studies with an experimental or quasi-experimental study design, while reviews of interventions in other settings had less strict criteria in terms of study design.

The review was based on a new methodology for reviewing the available research for policy makers and programmers, which recognized that decisions need to be taken *now* despite the fact that the evidence-base is not perfect, and where multiple interventions are likely to be needed to achieve the desired

Box 1: Important global goals for the health and development of young people, with respect to HIV/AIDS

The UN General Assembly Special Session on Children:[6]
» Develop and implement national health policies and programmes for adolescents, including goals and indicators, to promote their physical and mental health

The Millennium Development Goals:[7]
» Have halted by 2015 and begun to reverse the spread of HIV/AIDS (HIV prevalence in pregnant 15-24 year olds is an indicator)

The United Nations General Assembly Special Session on HIV/AIDS:[8]
» By 2010, ensure that at least 95% of young people…have access to the … **information** … they need … to reduce their vulnerability to HIV
» By 2010, ensure that at least 95% of young people…have access to the … **skills** … they need … to reduce their vulnerability to HIV
» By 2010, ensure that at least 95% of young people…have access to the **services** they need…to reduce their vulnerability to HIV…
» By 2003, develop and/or strengthen strategies, policies and programmes which … reduce the **vulnerability** of children and young people
» By 2005… HIV **prevalence** among young people (15-24years) reduced by 25% in the most affected countries … by 2010 … reduce prevalence by 25% globally

outcome of decreased HIV incidence. Known as the *Steady, Ready, Go!* approach, the methodology is based on the premise that different thresholds of evidence are needed to be able to recommend different types of interventions for wide-scale implementation, and that the strength of the empirical evidence available from research and evaluation studies needs to be assessed in relation to these defined thresholds. Interventions were assessed in terms of the specific goals and targets relating to HIV and young people that were endorsed by the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS, namely increased access to information and services, and improved life skills, as well as their impact on reported sexual behaviours and HIV incidence. The review was based on interventions in schools, health services, geographically-defined communities, the media, and targeting young people most at-risk of HIV (specifically young sex workers, men who have sex with other men and young injecting drug users).[9, 10] The recommendations generated from this review are summarised in Appendix A.

1.1 Objectives

This updated review will focus on interventions carried out and/or published from January 2005 - December 2008. Since the first *Steady, Ready, Go!* (SRG) review was carried out, the results of several major randomized controlled trials of adolescent HIV prevention interventions conducted in Africa have been reported. In view of the urgency of improving prevention programmes for young people and the research and evaluation findings that have recently become available, it is timely to re-evaluate the evidence for HIV prevention in young people in order to reassess the way forward, and the guidance that can be given to policy makers, programmers and funders to take to scale the most promising, evidence-based interventions to prevent HIV among young people, and to update the recommendations for priorities for research.

The overall goal of this report is to systematically review and update the evidence for the effectiveness of HIV/AIDS prevention interventions in young people in sub-Saharan Africa. For this review, we included studies of interventions in one or more of three settings: interventions in schools, interventions to increase the use of health facilities, and interventions in geographically-defined communities. These categories are described in more detail in the relevant results sections below. These settings were chosen because, since 2005, a group of adolescent intervention studies have been reported that were conducted in one or more of the school, health facility or in geographically-defined communities settings, which used biological outcomes to measure the impact of the interventions on the health of young people. At the time of the previous SRG review, there was only one such study (MEMA kwa Vijana) in developing countries with biological outcomes, and, at that time, that study had very limited power to detect all but a very large true difference in HIV. Yet an impact on biological outcomes (HIV, sexually transmitted infections, pregnancies) is the main public health objective of interest, and there is a major potential for measurement error in self-reported sexual behaviours, with great potential for bias between study arms after interventions.[11-13] Unlike the previous SRG review, we have not evaluated mass media interventions or interventions targeting most at-risk groups. All studies included in this review must have measured at least one biological or reported sexual behaviour outcome, including use of reproductive health services. Though in this report we evaluate the impact of interventions on all

outcomes relevant to the global goals, recommendations are made based on their impact on biological and/or reported sexual behaviour outcomes only.

Resources for HIV prevention in all countries are limited, and there are competing programmes and activities, including an increased demand for treatment. Therefore it is imperative that resources be used effectively. A compelling case can be made for the need for focussed interventions for young people, but it is less clear how precisely this should be done. Key intervention settings include schools, health services and geographically-defined communities. The results from this and other recent reviews provide insight into broad types of interventions which have shown evidence of effectiveness.

2. Methods

2.1 Evaluating the evidence

Evaluating the evidence on the effectiveness of HIV prevention interventions in young people is inherently difficult. Interventions are complex, often with multiple components, and with different types of evidence of varying quality. Some interventions target the individual, while others target communities or other groups of individuals. Cultural differences, variation in duration and intensity of the intervention, and length of follow-up will have implications on the effectiveness and generalisability of study findings.

Ultimately we would like to determine how effective an intervention is in reducing HIV prevalence in young people, but very few evaluations include biological testing for HIV, or even other biologically-measured proxies of sexual risk behaviour such as other sexually transmitted infections (STI) or pregnancy. It is well-documented that, particularly among young people, reported sexual behaviour is problematic and potentially unreliable due to social desirability and other biases.[11-13] None-the-less, given these acknowledged limitations, it is necessary to use the evidence available to evaluate interventions and make recommendations for social policy.

The *Steady, Ready, Go!* approach as a systematic method to assess the strength of evidence of effectiveness in HIV prevention interventions is described in detail elsewhere.[14] In this review we used a similar methodology, briefly described here:

1. Interventions are categorised by the 'setting' in which they are implemented, and then, within each setting, by the type of intervention. For this review they have been categorised into interventions in schools, health services, and geographically-defined communities;
2. The theoretical strength of evidence needed for widespread implementation of each type of intervention, or the 'evidence threshold' is defined as low, moderate or high, based on an explicit assessment of key factors;
3. Studies are selected based on pre-defined inclusion/exclusion criteria, the quality of the intervention, implementation process, and quality of the outcome evaluation and are then critically reviewed;

4. The strength of empirical evidence for each type of intervention within a setting is summarized based on the type of evidence available. This takes into consideration factors such as study design, process evaluation and quality of implementation, analysis, and feasibility of the intervention in achieving the desired outcomes (in relation to global goals). This is then compared against the theoretical evidence threshold;
5. Evidence-based recommendations are derived from this comparison for each type of intervention within a given setting and allocated to one of four groups (see Box 2): 'Do not go' if the evidence threshold has been met and there was evidence of a lack of effectiveness or harm, 'Steady' if the threshold of evidence needed to recommend widespread implementation had not been met, 'Ready' if the evidence threshold had been partially met, or 'Go!' if the evidence threshold had been reached.

Box 2: Explanation of recommendations

Go!	**Take these interventions to scale NOW!**
	Sufficient evidence to recommend widespread implementation on large scale now, with careful monitoring (coverage & quality … & cost)
Ready	**Implement widely but continue to evaluate**
	Evidence suggests interventions are effective, but large-scale implementation must be accompanied by further evaluation to clarify impact and mechanisms of action
Steady	**More research and development still needed**
	Evidence is promising, but further intervention development, pilot testing and evaluation urgently needed before they can move into the "Ready" or the "Do not go" categories
Do not go	**Not the way to go …**
	Strong evidence of lack of effect or of harm

The "Do not go, Steady, Ready, Go!" recommendations are particularly important for policy makers, and programmers. However, they also have important implications for researchers, as the "Steady" and "Ready" recommendations indicate types of interventions that should be a priority for further evaluation research in order to move them either to "Do not Go" or "Go!". The recommendations in this report are specifically made for sub-Saharan Africa, but even within this region it will be important to review these recommendations in the context of the unique setting to which they will be applied.

2.2 Defining the evidence threshold

The strength of evidence needed for widespread implementation of an intervention, or the "evidence threshold", will vary for different interventions. Some interventions will require a stronger evidence threshold than others depending on a number of intervention attributes. Considerations for defining the evidence threshold in this report are similar to those described in the SRG review, with the exception of dissociating cost from the consideration of feasibility:

1. **Feasibility** – This includes logistics and human resources required for implementation. The more feasible the intervention, the lower the threshold of evidence required.
2. **Cost** – The lower the cost of the intervention, the lower the threshold of evidence required for implementation. Cost includes all direct and indirect costs related to an intervention. The cost for human resources includes any dedicated position required for implementation of the intervention, or any additional requirements allocated to an existing position, such as an increased teaching or clinical load.
3. **Potential for adverse outcomes** – Any evidence that an intervention may increase the risk of HIV/STI, domestic violence, discrimination or other adverse effects would increase the strength

of evidence of a beneficial effect on HIV prevention required. Conversely, if the potential for adverse outcomes is low, the required threshold of evidence will also be low.

4. **Acceptability** – In assessing the acceptability of an intervention, we must consider not only acceptability by the target population, but also the community and other key stakeholders such as politicians, religious leaders and donors. The greater the acceptability, the lower the required threshold of evidence.
5. **Potential size of effect** – Though the size of the effect of an intervention is often not reported, it is sometimes possible to estimate the effect size. This could be accomplished through theoretical evaluation, data from process evaluation, or existing data from intermediate outcomes. The greater the potential effect size, the lower the required threshold of evidence.
6. **Other health or social benefits** – In addition to the direct effects of an intervention on HIV, some interventions may have other health or social benefits. Interventions with potential for other health or social benefits are likely to require a lower threshold of evidence for policy-makers to consider their implementation.

Box 3 shows the evidence threshold needed for widespread implementation for each of the six attributes discussed here. Each type of intervention in each of the settings covered in this review – schools, health services and geographically-defined communities – was considered separately to determine the strength of evidence that would be needed to recommend its widespread implementation. Consideration of the required strength of evidence was determined prior to evaluating the individual studies included in this report. Tables are included in the respective results sections of this report showing the required threshold of evidence for each category of intervention.

Box 3: Evidence threshold for widespread implementation in sub-Saharan Africa for the six key attributes of an intervention

	Attributes of the intervention					
Threshold of evidence needed	**Feasible**	**Low cost**	**potential for adverse**	**Acceptable**	**Large potential size of effect**	**health or social benefits**
Low	√	√	√	√	D	D
Medium	D	√	√	√	D	D
High	×	D	×	×	×	×
Key						
√ = necessary						
D = desirable						
× = not necessary						

2.3 Search strategy

From a total of approximately 70 available databases, we selected those most likely to contain relevant citations. A computerized search of the Medline, Embase, PsychINFO, GlobalHealth, Popline, ERIC, Cochrane and Web of Science databases was conducted, searching for publications between January 2005 and December 2008. The search was restricted to studies in sub-Saharan Africa, and with no restriction on language. Non-published studies were included where possible in order to avoid publication bias. In order to refine the search criteria, initial searches included the years 1990-2004 and results were checked to see that relevant studies included in the initial SRG review had been identified.

The search strategy was also checked to ensure that pre-identified relevant studies published from 2005-2008 had been correctly identified.

In addition to the database search, we reviewed a number of electronic resources for additional citations: www.clinicaltrials.gov, www.controlled-trials.com, the HIV Prevention Trials Network (HPTN) website, the Reproductive Health Library, ELDIS and id21. Two completed randomized controlled trials were identified that had not yet published results from their final evaluation. Authors from both studies were contacted to request additional information. The author from one of these studies ("Grannies do AIDS speak: a randomized controlled trial of empowerment of female elders in rural South Africa") responded but unfortunately the results were not ready to be shared. The second author did not respond to our request ("Let us protect our future: a cluster-randomized controlled trial of a HIV/STD risk-reduction intervention for young South African learners"). Finally, the references from all relevant studies were examined for any additional relevant citations.

2.4 Study identification

Criteria for inclusion in this review are shown in Box 4. Briefly, the review is limited to studies with a contemporaneous comparison group or time series analysis in the intervention group, and with measurement of the impact on biological outcomes or on reported sexual and reproductive health behaviour. Evaluations needed to be carried out in at least 100 people and at least 3 months post-intervention. There must have been both pre- and post-intervention data, or if only post-intervention data an effort must have been made to exclude other reasons for any differences seen.

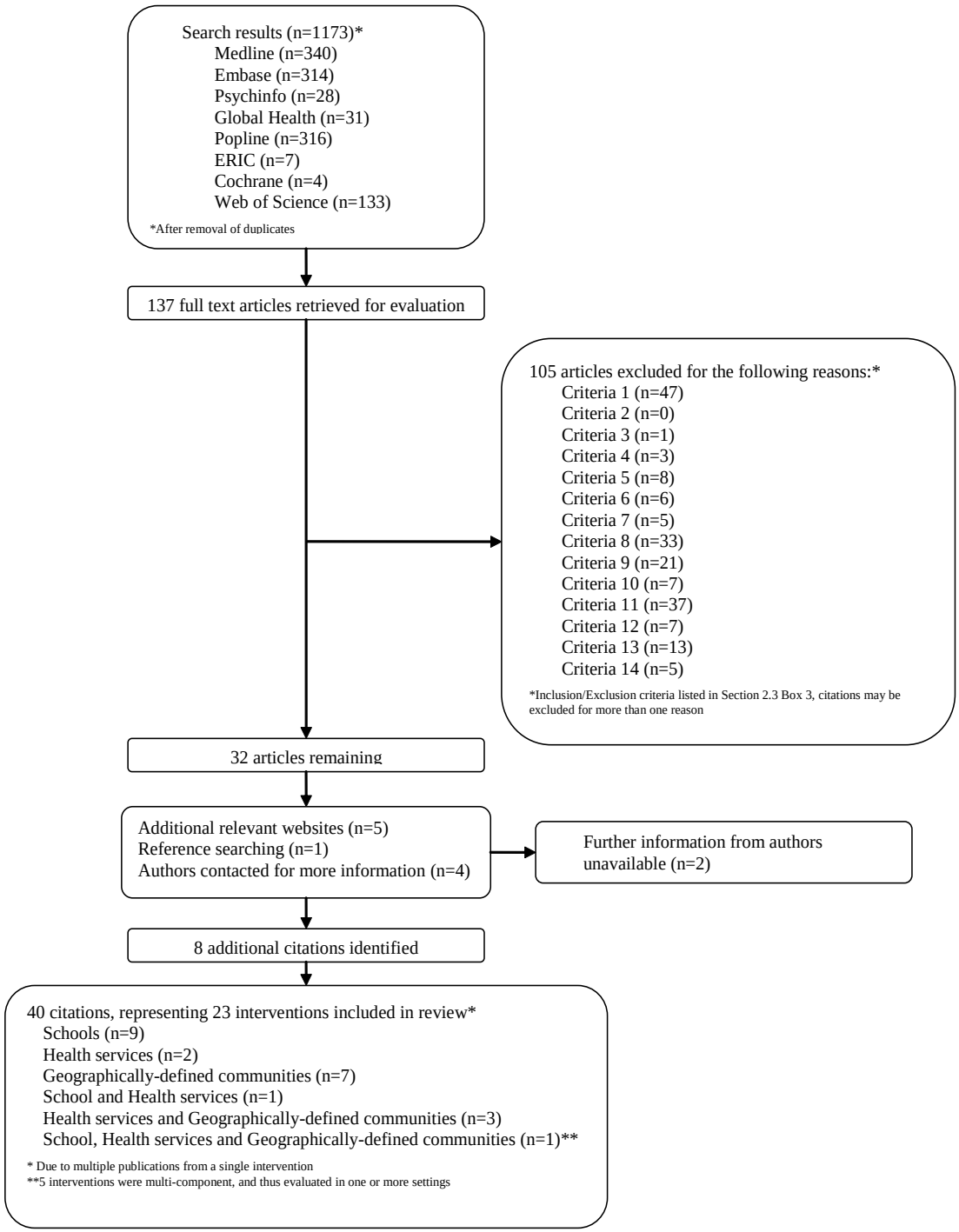
Initially, the citations identified were evaluated for relevance on the basis of their title, abstract, and key words (AD). Non-relevant papers, such as curriculum

Box 4: Inclusion Criteria

1. Is the report of an intervention evaluation?
2. Were the evaluation results released 2005-2008?
3. Was at least one of the intervention settings in sub-Saharan Africa?
4. Was the intervention based in a school, and/or health facility and/or geographically-defined community?
5. Does the target population include young people aged 10-24 years (or part of that age group)? If it also includes other ages, is there an analysis of the impact of the intervention in the young people (10-24y) age range or at least part of that range?
6. Is the study population largely representative of the general population of young people (as opposed to a specific subgroup e.g. young commercial sex workers)?
7. Does the intervention focus on one of the following: (i) Improving sexual and reproductive health skills and behaviour (ii) Controlling sexually transmitted diseases (iii) Reducing unintended pregnancies (iv) Increasing utilisation of health services for treatment of STIs and/or behaviours related to more appropriate service utilisation?
8. Does the evaluation design include a contemporaneous comparison group or a before-after/time series analysis in the intervention group?
9. Does the evaluation include pre and post intervention data, or if only post-intervention data then has an effort been made to exclude other reasons for any differences seen?
10. Was the evaluation carried out in at least 100 people and at least 3 months after the start of the intervention?
11. Did the evaluation outcomes include at least one of the following: (i) Prevalence or incidence of HIV (ii) Prevalence or incidence of another STI (iii) Prevalence or incidence of pregnancy (measured by lab test or clinically-observed) (iv) Reported SRH behaviour (including treatment seeking behaviour)?
12. Are there sufficient details on the content of the intervention to assess its type within the setting?
13. Are there sufficient details on the design and methods of the evaluation to assess Criteria 6-10? (>2 Unclear = Exclude)
14. Were the data analysed appropriately (or are there sufficient details to be able to do that)?

manuals, and policy documents were excluded. Ten percent of all citations were evaluated by a second reviewer as a quality control measure (SNM). Search of additional electronic resources was also conducted (SNM). The full text of potentially relevant papers were read and evaluated for inclusion by two reviewers (SNM, DR) independently. A third reviewer was available in the event of disagreement between reviewers. The study selection process is shown in Figure 1.

Figure 1. Flow diagram of study selection process



Data from studies selected for final inclusion in this review were extracted using a standardized format adapted from one developed by Kirby and Laris (Doug Kirby, personal communication). Completed data extraction forms were sent to the authors for verification of accuracy and completeness.

2.5 Data synthesis

Within each setting, studies were further classified according to type of intervention. The typology is described in detail in the results section for the relevant setting. In making the selection of the classification of types of intervention within each setting that was used in the first SRG review, the authors made an effort to choose a typology that reflected the key choices that policy makers and programme managers needed to make as to what they should invest in within that setting. Although the resulting typologies are not the only way that studies could be classified, in order to provide a basis for comparison with the first SRG review, we have retained the typology used in that review.

Results have been synthesised in four sections: Studies within (i) schools (ii) health facilities, (iii) geographically-defined communities, and (iv) studies that used biological outcomes to measure the impact of the interventions on the health of young people. Some studies evaluated multi-component interventions conducted in more than one setting (e.g. in schools, health facilities and geographically-defined communities). Where this happened, the results from one study are reported under two or more settings. An intervention was considered as having an effect (positive or negative) if one or more significant results were found from among all of the relevant outcomes measured.

As an impact on biological outcomes is the main public health objective of interest, we have presented the results from the group of studies which used biological measurements in a separate section of the report. With the exception of the section describing biologically measured outcomes, the section on each intervention setting begins with a summary of the finding from the previous SRG review which covered studies reported up to the end of 2005. This is followed by the evaluation of the more recent evidence for interventions in that setting. A summary and overall recommendations for the combined results of the first and current SRG reviews are then presented. Results pertinent to each setting are reported, and results for all variables measured in each of the studies are presented in the expanded study descriptions in Appendix C. For simplicity, a p-value of ≤0.05 was considered significant for all reported outcomes in all settings, based either on the entire sample or the sub-sample stratified by gender. This will potentially overestimate the number of true effects (beneficial or harmful) that are reported, since a p-value of 0.05 means that there is a one-in-twenty probability that the observed difference was due to chance, and some individual studies included at least 20 such comparisons, with the total number of comparisons across all the studies reviewed reaching the many hundreds.

ASSESSING EVIDENCE OF EFFECTIVENESS

3. Sex and HIV education interventions in schools

Schools are defined as any establishment providing formal education or training, in this case, to people 25 years or younger. Education alone may reduce vulnerability and protect against HIV, perhaps

especially in established epidemics[15-17] and schools are the most common setting for targeted HIV prevention interventions in young people. They have great potential for HIV prevention education in that students are expected to attend regularly, and the great majority begin attending prior to becoming sexually active. Also, some of what a young person 'learns" while in school affects their lifelong norms, attitudes and behaviours. Schools may therefore play a vital role in HIV prevention among young people, both while they are within the young person's age group (10-24 years) and after that. In places where a large proportion of young people do not attend school, or when interventions target young people who have already become sexually active, school-based interventions are likely to be less effective. A large number of interventions in schools have been evaluated to date, and many show that this type of intervention can be effective at increasing sexual and reproductive health knowledge.[18-21] Few would argue that knowledge is likely to be an important influence on most behaviours, however there is a growing consensus that knowledge alone does not always translate into safer sexual behaviour. While there is some evidence that school-based interventions that follow current advice related to "best practice" can lead to a decrease in reported risky sexual behaviour,[5] there is substantial potential for reporting bias between intervention and comparison or before and after groups. For the purposes of this review, to be categorized as 'In-School' a primary component of the interventions must be set in schools, or the in-school component of the intervention must have been evaluated separately. Interventions in schools in the first SRG review were limited to experimental and quasi-experimental studies with reported sexual behaviours as one of the outcomes, and were further classified according to the typology described here:

- *Curriculum-based versus non curriculum-based*: Curriculum-based interventions are typically more intensive, and based on theory and previous research, often with pilot testing. Non curriculum-based interventions are often less structured, and can involve a wide variety of activities such as dramas, competitions, and health fairs.
- *Adult-led versus peer-led:* Teachers or other adults will likely have more knowledge, skills and experience to lead a sexual health intervention. Teacher-led interventions are typically logistically manageable, more often curriculum-based, and highly replicable. While adults command a level of attention and respect, the downside of this is the position of authority which they represent. Young people may be loath to pose questions or reveal and discuss sensitive issues, or may not respect what they advise in terms of sexual behaviour because of the major gap in age and lifestyle. In some settings, peer-led interventions may facilitate more comfortable discussion and more interactive learning opportunities. However, peer-led interventions have often been less intensive and less structured, and when the peers are other students from the same institution, will necessarily require frequent training of a new cohort of peer educators, usually annually or once every two years.

In addition to the classifications described above, the first SRG review also distinguished whether interventions contained a set of 17 characteristics laid out by Kirby and colleagues ("Kirby characteristics") that were components of programmes that had previously been found to be associated with reducing reported risky sexual behaviours in previous studies, mainly in high-income countries.[18] These characteristics pertain to the curriculum development, content and implementation, and have

been advocated as “best practice”. They are described in detail in Appendix B. For this review we have used a similar typology as the first SRG review, classifying interventions in schools into curriculum versus non curriculum-based, and adult versus peer-led. All of the curriculum-based studies included in this review contained most of the “Kirby characteristics”, and therefore we have not further divided interventions based on this criterion.

The various types of school-based interventions were adjudged by the SRG review authors to require a low to moderate threshold of evidence (Table 3.1).[18]

Table 3.1: Threshold of evidence needed to recommend widespread implementation of interventions in schools in sub-Saharan Africa

	Attributes of the intervention							
Intervention type	**Feasible**	**Low cost**	**Low risk of adverse outcomes**	**Acceptable**	**Large potential size of effect**	**Other health or social benefits**	**Overall threshold**	**Comments**
Curriculum-based	++	++	+	+	+++	+	low	Curriculum-based programmes provide guidance,and have little potential for adverse outcomes and greater potential effect size.
Not curriculum-based	+++	++	-	+	+++	+	low	Non curriculum-based interventions may be easier to implement and require less class time or less training.
Adult-led	++	++	-	+	++	+	Low	Teachers have to be trained, but can then implement intervention at relatively little cost.
Older peer-led	+	+	+	++	++	+	Low	Older peers require considerable training, though potentially less than same-age peers. New peers will have to be trained as others get older, and resources are required to allow them to travel to schools and implement interventions. Peers themselves may learn important skills as peer educators.
Peer-led	+	+	+	+	++	++	Low	Peers require considerable training, and new peers will have to be trained as others get older. Peers themselves may learn important skills as peer educators.
With characteristics of effective interventions	+	+	++	+	+++	+	Low	Characteristics of effective interventions require focus on HIV/STIs, pregnancy, and on the behaviours affecting them. These characteristics might make the intervention more difficult to implement and less accectable, but will increase the potential effect size.
Without characteristics of effective interventions	++	++	++	++	+	+	Low	Interventions without these characteristics may be easier to implement and more acceptable, but with a smaller potential effect size.

Degree of desirability is indicated with a maximum of 3 '+' signs. Degree of undesireability is indicated with a maximum of 3 '-' signs.

3.1 Evidence from the first *Steady, Ready, Go!* review in schools

Twelve of the 22 in-school interventions evaluated in the first SRG review were conducted in sub-Saharan Africa. An increase in knowledge was detected in all in-school sexual and HIV education interventions, and these were therefore awarded a clear ‘Go’ for knowledge. Curriculum-based

interventions led by teachers were generally effective in inducing positive reported behaviour change, and were awarded a 'Go' rating. Both non-curriculum-based and peer-led interventions warranted a 'Steady' rating for reported behaviour change, though this was due in part to the limited number of studies of these types. Only one among the 22 interventions studied was associated with an increased reported sexual behaviour, providing strong evidence that focused sexual and HIV education programmes are very unlikely to lead to increased reported risky sexual behaviours. Only one of the studies in the first SRG review (Study A) reported detailed intervention cost data or included cost-effectiveness analyses.[22] Table 3.2 summarizes the results from the first SRG review in schools.

Table 3.2: Summary of evidence of effectiveness for intervention in schools, in sub-Saharan Africa only, in the first SRG review

Evaluation design	Reported behaviour			Strength of evidence	SRG recommendation
	Positive effect	No significant effect	Negative effect		
Curriculum-based interventions					
» With Characteristics of Effective Programs					
Adult-led				**Very strong**	**Go**
RCT	7	1	-		
Quasi-experimental	4	1	-		
Peer-led				**Weak**	**Steady**
Quasi-experimental	1	-	-		
» Without Characteristics of Effective Programs					
Adult-led				**Weak**	**Steady**
Quasi-experimental	1	1	-		
Peer-led				**Weak**	**Steady**
RCT	-	1	-		
Non curriculum-based interventions					
» Without Characteristics of Effective Programs					
Adult-led				**Weak**	**Steady**
RCT	-	2	-		
Quasi-experimental	2	-	-		
Peer-led				**Equivocal**	**Steady**
Quasi-experimental	1*	-	1*		

* There was only one study of a non-curriculum-based peer-led only program. It had a statistically significant negative impact on initiation of sex and statistically significant positive effects on numbers of sexual partners, condom use and contraceptive use. Thus it is counted twice in the table, both as having a negative impact and a positive impact.

3.2 Evidence from this review in schools

We identified 11 studies of interventions in schools in sub-Saharan Africa that were reported between 2005 and 2008 that met our criteria for inclusion in this update of the SRG review.[19, 21-35] Five were in South Africa, three in Kenya, and there was one intervention each in Tanzania, Uganda and Zimbabwe. Tables 3.3 and 3.4 summarize the studies included in this review and their impact on sexual behaviour outcomes. Most studies measured a number of variables, for which only a small number were significant. To avoid reporting bias, results for all sexual behaviour outcomes measured are presented here, and results for all variables measured including factors mediating sexual behaviour such as knowledge and attitudes are presented in the expanded study descriptions in Appendix C. In some studies, multiple waves of data were collected. Unless otherwise noted, results are presented for the last data collection point.

3.2.1 Characteristics of studies and interventions

Eight studies were teacher-led and curriculum-based. One study (Study B) was peer-led and curriculum-based, though the peers in this intervention were not current students but rather young people in their 'gap year' between A-levels and university. They were rigorously trained as peer-educators during a 5 week residential training, and then went on to live and work in the intervention communities. The final two studies (Studies L and M) were peer-led, non curriculum-based interventions. A total of 3 studies were implemented in primary schools (Studies J and K), 7 were implemented in secondary schools (Studies B, E, F, G, H, I and M), and one study was conducted at a university (Study L).

Three of the 11 studies employed an experimental study design (Studies A, B and K) and 8 were quasi-experimental, where assignment to study arm was not random. While 9 of the 11 studies had fairly large sample sizes, 2 studies (I and L) clearly lacked statistical power to detect a programmatic effect on sexual behaviour, with sample sizes of less than 700 and further stratification by gender. These studies have been retained in this review because they included other measurements where they had sufficient power. In interpreting the overall results of this review, it will be important to bear in mind that inclusion of these studies negatively biases the results pertaining to reported sexual behaviour.

3.2.2 Impact on reported sexual behaviours

A primary objective in many sexual and reproductive health interventions in young people is to delay the age of first sexual intercourse. Young people who become sexually active at an earlier age are at higher risk of contracting HIV due to an increased likelihood of high risk partners, multiple partners, and less condom use.[34, 35] Sexual debut, or initiation of sexual activity, was measured in 10 of the 11 interventions. Five demonstrated a delay in sexual debut overall, or in either males or females in sub group analyses (Studies E, F, J, K and M). Importantly, none of these demonstrated an increase in reported sexual initiation in the intervention versus the comparison arms.

Other important objectives for sexual health interventions are decreasing the number of sexual partners, the number of casual sex partners, and the frequency of sexual activity. Six studies measured the number of sexual partners in the previous 1 - 12 months (Studies B ,E, F, K, L, M). None of these studies showed a significant beneficial effect, and one study demonstrating an increase in the reporting of multiple partners in the intervention arm during the previous 3 months. The number of casual partners was measured in one study (Study E), and this intervention detected a significant decrease in reported sex with a casual partner in the past year. Frequency of sexual activity was measured in 3 studies, either in the past month or 3 months. One reported a reduction in sexual activity, but conversely there was no increase in reported sexual activity as a result of the interventions in the other two studies.

When young people become sexually active, it is important that they develop the skills to practise safe sex, which includes proper and consistent condom use. All 11 studies included some measurement of reported condom use, and none of the interventions detected a decrease in the condom use variables measured in the intervention versus control arms. Two studies measured whether a condom was ever used (Studies K, L), and both reported increased condom use in the intervention arm, among both males and females or overall.

Table 3.3: Description of interventions in schools, by study

Study, location and programme	Target population and primary objectives	Description
Adult-led, Curriculum-based		
A - United Republic of Tanzania, MEMA kwa Vijana [19,22,24,25,27]	* Youth aged 12-19 years in rural areas * Targeted sexual initiation, condom use, number of partners, use of health services * Multi-component intervention	* In-school teacher-led and peer-assisted programme * Covered refusal, self-efficacy, self-esteem, STI/HIV, sexuality, contraception, social values , respect, gender * Used drama, stories, games * Interventions also included interventions to make government health services more youth-friendly, youth condom promotion and distribution, and limited community-wide interventions * 10-15 lessons per year over 3 years
E - Uganda, Voluntary Counseling and Testing and School Health Education [26]	* Youth aged <16-19 years * Targeted HIV/AIDS, sexual behaviours, knowledge and access to condoms * Multi-component intervention	* In-school teacher-led programme * HIV/AIDS education was incorporated into the standard government health education curriculum * Included participatory activities for students such as art competition, drama, poetry, posters
F - South Africa, Life skills education [31]	* Youth aged 14-24 years * Targeted sexual debut, secondary abstinence, number of sex partners, condom use	* In-school teacher-led programme * Based on national curriculum but each school developed their own programme, implemented to varying degress in all schools * Covered STI/HIV, community assistance, self-efficacy, living HIV-positively, caring for people living with AIDS, coping with loss * Sessions at least once per week for 20 weeks
G - South Africa, Department of education life skills programme [29]	* Youth aged 12-21 years * Targeted sexual behaviour, condom use	* In-school teacher-led programme * Covered HIV/AIDS, attitude to condoms, people living with AIDS, gender, perceptions about sexual behavior * Used didactic and interactive teaching, group work and role-play
H - South Africa, HealthWise Program [34]	* Youth mean age 14 years * Targeted sexual debut, sexual activity, condom use, number of sexual partners, substance use	* In-school teacher-led sexual health and substance use programme * Covered sexual activity, condoms, multiple substance use * Youth Development Specialists were also hired to liaise between schools and communities * 12 lessons in grade 8 and 6 booster lessons in grade 9, each lesson taking 2-3 class periods to deliver
I - South Africa, US alcohol/HIV prevention curriculum adapted for South Africa [30]	* Youth mean age 16 years * Targeted sexual debut, condom use, alcohol use, alcohol-related problems	* Teacher-led curriculum along with peer-assistance for group discussions * Covered HIV and alcohol, consequences of alcohol and sex, self-efficacy, avoiding risky situations * Curriculum was 10 units of 30 minutes each over 8 weeks
J - Kenya, Kenya national primary school HIV education [32]	* Youth aged 11-16 years * Targeted sexual debut, sexual activity, condom use	* In-school teacher-led programme * Covered HIV/AIDS, self-efficacy, stigmatization, care for people with AIDS *Used role modeling, activities to build self-efficacy, didactic instruction * Set up school health clubs
K - Kenya, Education and HIV/AIDS Prevention [28]	* Primary school grades 6-8 * Targeted unprotected sex	* Teacher-led intervention where schools received one or a combination of the following: Training teachers in HIV/AIDS curriculum, debates and essay writing, reduced cost of education, information on HIV rates by age and sex * Covered STI/HIV, caring for people with AIDS, pregnancy and STI prevention * Set up school health clubs in schools receiving teacher training

Table 3.3 (continued): Description of interventions in schools, by study

Study, location and programme	Target population and primary objectives	Description
Older peer-led, Curriculum-based		
B - Zimbabwe, Regai Dzive Shiri [21,23]	* Youth with mean age 15 years in rural areas * Targeted sexual initiation, condom use, number of partners, use of health services * Multi-component intervention	* In-school programme led by older, highly trained peers * Covered refusal skills, self-efficacy, self-esteem, STI/HIV, sexuality, contraception, abstinence, access to reproductive health care, social values, respecting individual rights, gender * Highly participatory curriculum offered to all in- and out-of-school youth wishing to participate (not just study cohort) * Interventions to increase the youth-friendliness of local government health services * 10-15 lessons per year over 3 years
Peer-led, Non-curriculum-based		
L - Kenya, I Choose Life [33]	* Youth ?18 years, Years 1-4 of university * Primary or secondary abstinence, faithfulness and condom use	* In-school peer-led programme with no curriculum * Used behavior change communication groups, outreach to people living with AIDS and AIDS orphanages, could choose to enroll in a 4-week life skills course * Abstinence messages and purity pledging, encouraged faithfulness and condom use * Also included mobile VCT clinics and annual HIV testing day
M - South Africa, peer education [35]	* Youth aged 12-19+ years * Targeted sexual initiation, condom use, promote respectful relationships, communication	* In-school peer-led programme with no curriculum * Peers provided health-related information, communication skills, facilitate discussion on sexual behavior, influence peer group norms * Peers developed their own programme including plays, guest speakers, awareness days, drama, song, posters, newsletters, peer discussion, peer support offices

Whether a condom was reported to have always been used was evaluated in four studies (Studies E, F, H and M). Three showed no increase in this measure of reported condom use in the intervention versus control arm. The fourth (Study F) demonstrated an overall increase in males reporting always using a condom, and an increase among females with higher intervention exposure. Due to recall errors, condom use at last sex is an important proxy for overall condom use. This was measured in 6 studies (Studies A, B, F, I, J, and K). Two studies showed no effect on condom use at last sex (Studies B and I). Two studies showed an overall increase in condom use at last sex in males (Study J and K), while one study showed an increase in condom use at last sex with a non-regular partner among females (Study A). The sixth study demonstrated an increase in condom use in males, and among females with higher intervention exposure (Study F).

Overall, 9 of the 11 studies reviewed had a positive effect on at least one measure of reported sexual behaviour, including sexual debut, secondary abstinence, number of partners, condom use and reported pregnancy. One of the interventions demonstrated a negative impact on the number of multiple partners, however the analysis in this study (Study M) can be criticised and its results should be interpreted with caution. None of the other interventions demonstrated a negative impact on any reported sexual behaviour variables.

Table 3.4: Description of outcome evaluations in schools, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Adult-led, Curriculum-based						
A [19,22, 24,25, 27]	Design: Experimental (randomized by community) Sample size: 9645 baseline, 13,814 at last follow up *10 intervention communities and 10 control communities * Baseline and follow-up survey at 36 months in cohort and cross-sectional fnial survey at 8.5-9.5 years after start of intervention *Baseline, 36 and 96 months follow up	HIV prevalence: At 36 & 96 months HSV2 prevalence: At 36 & 96 months Syphilis prevalence: At 36 & 96 months Chlamydia prevalence: At 36 & 96 months Gonorrhoea prevalence: At 36 & 96 months Reported pregnancy: At 36 months Sexual initiation during follow-up: At 36 & 96 months More than 1 partner in last 12 months: At 36 & 96 months First used condom during follow-up: At 36 months Condom use at last sex: At 36 & 96 months Condom use at last sex with non-regular partner: At 96 months		0 0 0 0 0 0 0 0 0 0 0 0 0 + 0 + + 0 0	0 0 0 0 0 0 0 0 - 0 0 0 0 0 0 + 0 0 +	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Restricted to young people who had reached primary school year 5; high out-migration so study population likely to be lower risk
E [26]	Design: Quasi-experimental (randomized by school) Sample size: 1312 * 22 schools with 3 intervention arms: VCT and health education, health education only, or none. Data from health education only vs none presented here * Post-test data only, collected ~3 years after start of intervention	Ever had sex: Age at first sex: Lifetime partners: Partners in the past year: % casual partners in the past year: Always use condom with regular partner: Always use condom with casual partner:	0 + 0 0 + 0 0			Limitations: post-intervention assessment only; no randomized assignment of intervention; not stratified by gender
F [31]	Design: Quasi-experimental (randomized at the household level) Sample size: 3052 baseline, 4185 at last follow up * Analysis based on dose-response as all youth were exposed to the intervention * Baseline and 24 months follow up	Sexual initiation: Overall change/Exposure effect Secondary abstinence: Overall change/Exposure effect >1 partner in last month: Overall change/Exposure effect >2 partners in last year: Overall change/Exposure effect Used condom during first sex: Overall change/Exposure effect Always use condoms: Overall change/Exposure effect Condom use at last sex: Overall change/Exposure effect		+ + + 0 0 0 + 0 0 + + 0 + 0	+ 0 + 0 0 0 0 0 + + 0 + 0 +	Strengths: Large sample size; relatively long term follow-up; well-conducted analysis Limitations: Intervention was introduced in all schools so not possible to have a matched controlled trial; youth were not exposed to life skills at random (though attempted to control for this)
G [29]	Design: Quasi-experimental (randomized by school) Sample size: 1141 baseline, 844 at last follow up * 11 intervention and 11 control schools * Pre-test and multiple post-test cross-sectional surveys of 2 classes within each school * Surveys at baseline, 6 and 10 months	Reported sexually active: At 6 & 10 months Reported condom use: At 6 & 10 months	0 0 0 0			Limitations: Surveys were not among a cohort, intervention was not fully implemented in 4 of 11 schools; not stratified by gender; no attempt to control for confounding

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 3.4 (continued): Description of outcome evaluations in schools, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Adult-led, Curriculum-based						
H [34]	Design: Quasi-experimental (randomized by school) Sample size: 2383 baseline, 1350 at last follow up * 4 intervention schools and 5 control schools * 5 surveys waves every 6 months in cohort	Sexual intercourse in lifetime: At wave 5 (30 months) Sex in the past month: At wave 5 (30 months) Always used condom during sex: At wave 5 (30 months)		0 0 0	0 0 0	Strengths: Relatively large sample size Limitations: non-random assignment; intervention and control differed by race and sexual initiation at baseline
I [30]	Design: Quasi-experimental (randomized by school) Sample size: 661 baseline, 535 at follow up * 3 intervention schools and 2 control schools * Cohort design, baseline and 5 months surveys	Condom use at last sex: Sex at pretest/no sex at pretest Alcohol use concurrent with sex: Sex at pretest/no sex at pretest		0 0 0 +	0 0 0 +	Limitations: Short-term follow up, final survey was 8 weeks after conclusion of curriculum; sample size insufficient to detect change in sexual behaviour when stratified by gender
J [32]	Design: Quasi-experimental (randomized by district and school) Sample size: 3452 at baseline, 3940 at follow up * 40 intervention schools and 40 control schools matched for district and academic standing * Cross-sectional surveys at baseline and 18 months	Sexual debut during program – program effect: PPV* Sexual debut during program – exposure effect: PPV Sexual intercourse in past 3 months – program effect: PPV and NVPP* Sexual intercourse in past 3 months – exposure effect: PPV and NVPP Condom use at last sex– program effect: PPV and NVPP Condom use at last sex – exposure effect: PPV and NVPP * PPV = pre-program virgin; NVPP = non virgin pre-program		+ + 0 0 0 0 0 0 + +	+ 0 + 0 0 0 0 0 0 0	Strengths: Large sample size; matched intervention and control schools; rigorously conducted analysis Limitations: Cross sectional data and large influx of previously out-of-school youth in year 2 due to change in government policy
K [28]	Design: Experimental (randomized by school) Sample size: 74,000 at baseline * 328 schools assigned to receive various combinations interventions including teacher training for sex ed, free uniforms for girls, condom debate/essay *Cross-sectional surveys at baseline and >2 years	Teacher Training Has ever had sex: Has had more than one partner: Has ever used a condom: Used condom at last sex: Has started childbearing: If started childbearing, is married: *Reducing cost of education* Has ever had sex: Has had more than one partner: Has ever used a condom: Used condom at last sex: Has started childbearing: If started childbearing, is married: *Condom debate/essay* Has ever had sex: Has had more than one partner: Has ever used a condom: Used condom at last sex:		0 0 + 0 0 0 0 0 0 0 0 0 0 0 0 +	0 0 0 0 0 + + 0 0 0 + 0 0 0 0 0	Strengths: Large sample size; long term follow up; attempt to evaluate effect of various intervention components Limitations: interventions began at different times so some had greater follow up than others

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 3.4 (continued): Description of outcome evaluations in schools, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Older peer-led, Curriculum-based						
B [21,23]	Design: Experimental (randomized by community) Sample size: 6791 baseline, 4672 at last follow up *15 intervention communities and 15 control communities * Cohort design, baseline and interim surveys, cross-sectional surveys at 36 and 48 months *Baseline, 36 and 48 months follow up	HIV prevalence: At 48 months HSV2 (genital herpes) prevalence: At 48 months Pregnancy prevalence: At 48 months Reported pregnancy during follow-up: At 48 months Sexual initiation during follow-up: At 48 months Two or more partners in last 12 months: At 48 months Two or more lifetime partners: At 48 months Sexual debut at 17 or younger: At 48 months No condom use at last sex; At 48 months No pregnancy prevention with first partner: At 48 months No pregnancy prevention with last partner: At 48 months No pregnancy prevention with any partner: At 48 months		0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 + 0 0 0 0 0 0 0 0 0 0	Strengths: Rigorously evaluated RCT with large sample size; long term follow-up Limitations: Due to excessive out-migration the original cohort was not followed for 48 months, rather a population-based survey was conducted
Peer-led, Non-curriculum-based						
L [33]	Design: Quasi-experimental (randomized by student) Sample size: 632 at baseline, 746 at follow up * 2 cross-sectional surveys of students selected from halls of residence at baseline and 24 months	Ever had sex: Number of sexual partners in previous 6 months: Ever used condom among those having sex: Frequency of condom use among those having sex:	 + +	0 0	0 0	Limitations: no control population; low uptake of the intervention; sample size insufficient to detect change in sexual behaviour when stratified by gender
M [35]	Design: Quasi-experimental (randomized by school and class) Sample size: 1918 at baseline, 2168 at follow up * 13 intervention schools and 4 control schools * Cross-sectional surveys at baseline and 18 months	Ever had sex: Had sex in past 3 months: More than one partner in past 3 months: Used condom every time had sex in past 3 months:	+ + - 0			Strengths: Large sample size Limitations: non-random assignment; baseline differences between control and intervention schools; intervention implemented to varying degrees in schools

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

3.2.3 Knowledge, attitudes, and other mediating factors

Other potential mediating factors for HIV prevention include knowledge, attitudes, values, self-efficacy, peer norms, communication about sexual health and alcohol use. At least some of these potential mediating factors were measured in all 11 studies. Eight studies measured the impact of the intervention on knowledge of HIV, STIs, pregnancy prevention or other sexual and reproductive health topics. Of these, 7 studies (Studies A, B, E, F, G, J and K) had some impact on one or more measurements of knowledge in males, females or both. As findings from developing countries have repeatedly shown school-based sex education interventions can improve knowledge, what is in fact surprising here is that one study did not detect an increase in knowledge (Study I). This study was an

alcohol and HIV prevention intervention developed in the United States and adapted for use in South Africa. The lack of a significant finding in this study may be due to the small sample size, which was further stratified by gender. The curriculum focused heavily on alcohol and alcohol-related problems, which may have diluted the message about HIV prevention. It may also be that, given the high prevalence of HIV in South Africa, many grade 9 students which the intervention targeted were already well-informed about HIV prevention.

Results of other mediating factors measured included:

- 2 out of 5 interventions demonstrated an improvement in attitudes related to sex or condom use (Studies J and L);
- 5 out of 7 interventions demonstrated increased self-efficacy related to sex or condom refusal or other measures of perceived personal control (Studies B, F, H, I, J);
- 2 out of 3 interventions demonstrated a reduction in reported alcohol use (Studies H and I);

Among the 11 studies, two studies showed a negative impact on one or more mediating factors. Study H was a sex and substance use education programme, and it showed increased lifetime marijuana use in males in the intervention versus the control arm. Study M demonstrated an increase in reported sex without consent following a peer sexual health education programme. Though we cannot disregard these alarming findings, in both of these studies there were significant differences in baseline characteristics between the control and intervention arms in the same direction as the differences at follow-up, which may have been responsible for the differences post-intervention. Study H attempted to control for the baseline differences while Study M did not.

A summary of the strength of evidence for each type of intervention is presented in Table 3.5.

Table 3.5: Strength of evidence for each type of in-school intervention

Evaluation design	Reported behaviour			Other mediating factors			Strength of evidence (for biological and/or reported sexual behaviour data)
	Positive effect	No significant effect	Negative effect	Positive effect	No significant effect	Negative effect	
Curriculum-based interventions							
Adult-led							Strong: positive effect
RCT (≥6 clusters)	A, K	-	-	A, K	-	-	
Quasi-experimental	E, F, I, J	G, H	-	E, F, G, H, J	I	H*	
Peer-led							Moderate: weak positive effect
RCT (≥6 clusters)	B	-	-	B	-	-	
Non curriculum-based interventions							
Peer-led							Weak: mixed results
Quasi-experimental	L, M	-	-	L, M	-	M**	

Note: An intervention was considered as having an effect (positive or negative) if ≥1 significant results were found from among all of the relevant outcomes measured

Note: Where interventions are classified in more than one column it is because they had mixed results, see Table 3.4 for details

* Increased reported lifetime marijuana use

** Increased reported sex without consent

3.2.4 Cost-effectiveness

Among the interventions in schools, 3 included some discussion or analysis of cost-effectiveness (Studies A, B and K). Study K evaluated the cost of pregnancies averted through training teachers for sex education in schools, reducing the cost of education by providing free uniforms for girls, and informing girls of the age-profile of HIV prevalence in men. This preliminary cost-effectiveness analysis suggested that the teacher training intervention was least cost-effective at $525 per pregnancy averted, followed by the reduced cost of education at $300 per pregnancy averted, while informing girls of the HIV age-profile of men cost just $91 per pregnancy averted. Study B trained professional peer-educators to live and work in intervention communities. While this intervention is expensive, costing $500 per educator per year, each peer educator can reach hundreds of youth and adults in a community. Study A estimated that the entire annual cost of this multi-component intervention was approximately $30,000 per trial community, which included a total population of roughly 15,000 people of all ages. This equates to about $10 per young person within the target age range (12-19 years). If the intervention was implemented entirely by government staff at the district level, costs would decrease to about $22,000 per community for the first year, and $3,600 in subsequent years ($1.20 per young person targeted).

The data on cost-effectiveness is unfortunately quite limited, and doesn't provide adequate opportunity for comparison or generalisability. If effective, the recurrent costs of in-school interventions might be quite cost-effective, though there is typically an initial expense related to project development and teacher-training. However the costs of the materials required for in-school sex education are generally limited, and once the programme has been developed and initiated, training of new teachers can be included into pre-service training curricula at little added expense.

3.3 Overall recommendation for interventions in schools

Table 3.6 shows the strength of evidence from all interventions in the first SRG review, and limited to studies with biological and/or reported sexual behaviour outcomes in sub-Saharan Africa only. The table then shows overall recommendations for intervention in schools in sub-Saharan Africa, based biological and reported sexual behaviour results from this and the first SRG review. Interventions in schools were largely successful at demonstrating reductions in reported sexual risk behaviours. Curriculum-based, adult-led interventions were the most common interventions seen, and showed strong evidence of effectiveness. Similar results were found in the first SRG review, and this type of intervention was given a 'Go' recommendation overall. The first SRG review did not identify any curriculum-based, peer-led interventions in sub-Saharan Africa, and due to the lack of data a 'Steady' recommendation was given. There was one experimental, curriculum-based intervention led by older peers in the current review, which proved effective at reducing reported pregnancy (Study B). It is also important to remember that this particular evaluation was of an intervention that used nationally-selected older peers who were given an intensive 5 week residential training, whereas many "peer-led" interventions have used locally-recruited peers from within the same school given very limited (e.g. one or two weeks) training. Though this was a well-conducted randomized controlled trial, the limited available data for this type of intervention, and lack of effect on any of the biological or reported sexual behaviour outcomes led to a 'Steady' recommendation overall. Non-curriculum based interventions in schools provided weaker

evidence of effectiveness and similar to the first SRG review, this type of intervention resulted in a "Steady" recommendation, being deemed to require further evaluation before widespread implementation can be recommended. Overall, in-school interventions are a logical and promising means to impart necessary information and skills to school-going young people. However, the evidence from the two recent trials (Studies A and B) that included an assessment of the impact of schools-based interventions (linked to interventions in health facilities and in the communities surrounding the schools) on HIV and other biological outcomes suggest that such interventions may not be sufficient to reduce the risk of HIV, other STIs or early pregnancies, at least in the medium term (2-8 years).

Table 3.6: Overall recommendation for interventions in schools

Evaluation design	Threshold of evidence required	Strength of evidence	SRG recommendation	Explanation	Strength of evidence	SRG recommendation	Explanation	Strength of evidence	Explanation	Strength of evidence	Overall Recommendation	Explanation
Curriculum-based interventions												
» With Characteristics of Effective Programs												
Adult-led	Low	Very strong	Go	*Large number of studies; strength of evidence for some of the individual studies is stronger than for the sutdies in other categories; interventions consistently had a positive effect on behaviour*	Strong: positive effect	Go	*Less studies but still 3 RCT and 2 quasi-experimental with positive results*	Strong: positive effect		Strong: positive effect	**Go!**	*Large number of studies with positive effects*
Older peer-led				*No studies*		Steady	*No studies*	Moderate: weak positive effect	*No impact on biological or behavioural outcomes, positive impact on reported pregnancy*	Moderate: weak positive effect	**Steady**	*One strong RCT with weak positive effect*
Peer-led	Low	Weak	Steady	*Only one study*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
» Without Characteristics of Effective Programs												
Adult-led	Low	Weak	Steady	*Only two quasi-experimental studies, one with positive effect and one no impact*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
Peer-led	Low	Weak	Steady	*One RCT with weak positive results*	Weak: weak positive effect	Steady	*No change*		*No studies*		**Steady**	*One RCT with weak positive results*
Non curriculum-based interventions												
» With Characteristics of Effective Programs												
Adult-led	Low			*No studies*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
Peer-led	Low			*No studies*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
» Without Characteristics of Effective Programs												
Adult-led	Low	Weak	Steady	*Few studies (2 RCT, 2 quasi-experimental); mixed results*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
Peer-led	Low	Equivocal	Steady	*One quasi-experimental study showing negative impact on one behavioural outcome, positive on others*	Weak: mixed results	Steady	*No change*	Weak: mixed results	*2 weak quasi-experimental studies, 1 with mixed results*	Weak: mixed results	**Steady**	*3 studies all with weak designs and mixed effect*

4. Improving health services

Health services play a vital role in the prevention, care and treatment of HIV/AIDS in young people. The importance of access to health services for young people was reinforced when the UNGASS on HIV/AIDS made this an explicit goal for young people's health and development. There is evidence that HIV prevention strategies targeting young people can be successfully implemented in health services.[10] These prevention strategies may include providing information, HIV testing and counselling, condoms, treatment, care and support services, or male circumcision. For these services to be optimized, they must respond to the specific age, gender and socio-cultural needs of young people. To accomplish this, health facilities must adopt a 'youth-friendly' environment, which includes:

- **Accessibility:** putting the services in reach and making them potentially useable by all young people who need them;
- **Acceptability:** making the services such that young people will be willing to use them, by ensuring privacy and treating young people who access these services with respect;
- **Effectiveness:** providing appropriate, high-quality prevention, care and treatment services to young people.

In order to evaluate the capacity of health services to impact HIV, the studies included in this review examine not merely access to health services, but also the use of health services by young people. This takes into account accessibility, but also the acceptability of health services. Measuring effectiveness was not possible, as the studies did not have adequate data to assess this. However, at least some of the specific health services interventions, such as condom use, STI treatment and male circumcision, have been shown to be effective if used, justifying the focus on uptake of services rather than the effectiveness on HIV prevalence and incidence themselves.

Further to this, interventions also had to include interaction between a young person and a clinical health-care worker, such as a doctor, nurse or other clinical officer to be included in this review. Interventions comprised only of interaction with people who are not clinical staff, such as condom distributors, counsellors or peer-educators were not included.

Interventions in health services in the first SRG review were classified according to the following typology:

- *Training service providers (Type 1):* These interventions only provide training to clinic staff to improve their knowledge, skills and attitudes, in order for them to be able to respond more appropriately to the needs of young people.
- *Training service providers plus implementing other interventions in the health facilities to make them more youth-friendly (Type 2):* In addition to training clinic staff as in Type 1 interventions, these interventions also implemented specific actions to further accommodate young people, such as extended clinic hours, reducing prices, or taking measures to increase their privacy.

Each of these two Types of interventions were then coupled with a means to bring information to young people. This could be accomplished in one of three ways:

- *Activities conducted within the community (a):* These included any type of community outreach activities directed at providing youth with health information, such as meetings with youth, meetings with community leaders, or distributing posters or advertisements.
- *Activities conducted with other sectors (b):* For example, in-school education programmes or mass media.
- *Activities conducted within the community and with other sectors (c):* These interventions included a combination of the above two strategies.

We have used a similar typology for the current review, in order to facilitate comparison with the original SRG review. Assigning interventions to the select categories was not always straightforward. Due to insufficient information it was at times difficult to discern how best to classify certain studies.

The various types of health services interventions were adjudged by the SRG review authors to require a low to moderate threshold of evidence (Table 4.1).[36]

Table 4.1: Threshold of evidence needed to recommend widespread implementation of improved health services in sub-Saharan Africa

	Attributes of the intervention							
Intervention type	**Feasible**	**Low cost**	**Low risk of adverse outcomes**	**Acceptable**	**Large potential size of effect**	**Other health or social benefits**	**Overall threshold**	**Comments**
Type 1a (training service providers, with interventions in the community)	+++	++	++	++	+	+	Low	Likely to be easiest and most acceptable type to implement but least impact.
Type 1b (training service providers and involvement of other sectors)	+	++	+	+	+	++	Moderate	The addition of other sectors make problems of acceptability more likely. Likely to be wider debate in the community, having both positive and negative implications.
Type 1c (training service providers, with interventions in the community and involvment of other sectors)	+	+	+	+	++	++	Moderate	Involving community and other sectors is likely more difficult but may also have greater impact and other health and social benefits.
Type 2a (training service providers and actions in the clinic, with interventions in the community)	++	+	++	++	++	+	Low	Including improvement of facilities will likely increase impact without significantly impacting feasibility or decreasing acceptability
Type 2b (training service providers and actions in the clinic and involvment of other sectors)	+	+	+	++	++	++	Moderate	As per Type 1b
Type 2c (training service providers and actions in the clinic, with interventions in the community and involvment of other sectors)	+	+	+	++	+++	++	Moderate	As per Type 1c

Degree of desirability is indicated with a maximum of 3 '+' signs. Degree of undesireability is indicated with a maximum of 3 '-' signs.

4.1 Evidence from the first *Steady, Ready, Go!* review of improving health services

Twelve of the 16 interventions of improving health services in the first SRG review were conducted in sub-Saharan Africa. All but one offered services in public facilities. All of the studies included in this review had training of health service providers, and all had some type of activity in the community. Descriptions of the content of training were limited in the original study reports, and the activities in both the health facilities and in communities were also often poorly described. Activities in health facilities included reducing fees, subsidizing commodities and modifying the physical environment to increase privacy or appeal to young people. Community activities that were most frequently implemented included holding public meetings and advertising the facility using posters or pamphlet distribution. Peer educators were also employed by many studies to provide information, referral, or to increase demand.

Overall most studies included in the first SRG review demonstrated an increased use of health services, though the evidence was weak. The evidence for increased use of health facilities reached statistical significance in interventions that were Types 2a and 2c (there were no studies of Type 2b). That is, interventions training service providers and implementing activities in the community with or without activities in other sectors. Intervention Types 1a and 1b all demonstrated equivocal or negative results. One of the two Type 1c studies showed a significant impact on use of health services, though this was measured by reported rather than documented use of facilities, and this study did not collect baseline data for these findings and suffered contamination of the control arm. Table 4.2 summarizes the results from the first SRG review of health services.

Table 4.2: Summary of evidence of effectiveness of improving in health services, in sub-Saharan Africa only, in the first SRG review

	Positive Effect		No Effect			
Evaluation Design	Statistically Significant	Statistical Significance Not	Statistically Significant	Statistical Significance Not	Strength of evidence	SRG recommendation
Type 1a (training service providers with interventions the community)					**Equivocal**	**Steady (or do not go)**
Quasi-experimental (≥1 comparison group)	-	-	-	1		
Type 1b (training service providers and involvement of other sectors)					**Weak**	**Steady (or do not go)**
Quasi-experimental (≥1 comparison group)	-	-	-	1		
Type 1c (training service providers, with interventions in the community and involving other sectors)					**Equivocal**	**Steady (or do not go)**
Quasi-experimental (≥1 comparison group)	1	-				
RCT	-	-	1			
Type 2a (training service provider and actions in the clinic, with interventions in the community)					**Equivocal**	**Ready**
Qualitative Only	-	1	-	-		
Cross-sectional (no comparison group)	1	-	-	-		
Quasi-experimental (≥1 comparison group)	2	-	-	-		
Type 2b (training service providers and actions in the clinic, and involvment of other sectors) No Type 2b						
Type 2c (training service providers and actions in the clinic,with interventions in the community and involvment of other sectors)					**Weak**	**Ready**
Qualitative Only	-	3	-	-		
Before-After (no comparison group)	-	1	-	-		
Quasi-experimental (≥1 comparison group)	1	1	-	1		
RCT	1	-	-	-		

4.2 Evidence from this review of improving health services

We identified seven studies which evaluated improvement of health services for young people in sub-Saharan Africa, which were reported between 2005 and 2008 and met our criteria for inclusion in this update of the SRG review.[19, 21-25, 27, 37-44] There were two interventions in Tanzania, and one each in Botswana, Ghana, Madagascar, Uganda and Zimbabwe. While one study (Study R) did not directly measure uptake of health services, it did measure the impact of implementation of youth friendly health services on primary and secondary abstinence. This was a single component intervention and therefore it is easier to isolate the impact of the intervention, and thus has been retained in our review. Table 4.3 and 4.4 summarize the studies included in this review and their results in terms of intervention impact on uptake of health services.

4.3 Characteristics and results by intervention

All but one intervention (Study R) were multi-component studies, and six of the seven measured at least one indicator of uptake of health services (Studies A, B, N, O, P and Q). In multi-component interventions, increasing use of health services is one of a number of objectives, and there was often limited description of the improvements made to health facilities or accompanying community activity. Many of the studies identified implemented improvements in public health services, but four studies implemented services in both public and private sector health services. One study (Study R) established a social franchised network of new private clinics specifically for young people. None of the studies identified in this review attempted to explore the relationship or relative contribution of different aspects of health facility improvements versus community activity, and uptake of health services. The scale of the interventions included in this review varied widely, with the smallest study providing services in 10 communities (Study A), and the largest implementing a network of 146 health facilities (Study R).

Table 4.3: Descriptions of interventions in health facilities, by study

Study, location and programme	Target population and primary objectives	Description
Type 1c (training service providers, with interventions in the community and involving other sectors)		
A - United Republic of Tanzania, MEMA kwa Vijana [19,22,24,25,27]	* Youth aged 12-19 years in rural areas * Health service objective: Increase access to high quality sexual and reproductive health services for young people * Multi-component intervention	* Staff at all health units in both intervention and control communities were trained in syndromic management of STIs * The project ensured a steady supply of STI drugs and other supplies *Health workers in intervention communities received training to increase youth-friendliness of clinic services * Also included curriculumn-based, in-school teacher-led and peer-assisted programme and limited community outreach
B - Zimbabwe, Regai Dzive Shiri [21,23]	* Youth with mean age 15 years in rural areas * Health service objective: Increase access to high quality sexual and reproductive health services for young people * Multi-component intervention	* Five-day clinic staff training for at least one nurse per clinic to improve youth friendliness of clinic staff, and re-training after 2 years *On-site training for remaining clinic staff *Monthly clinic support visits by project staff for clinic assessment and additional training, as necessary * Also included curriculum-based, in-school peer-led programme, and community awareness component

Table 4.3 (continued): Descriptions of interventions in health facilities, by study

Study, location and programme	Target population and primary objectives	Description
Type 2c (training service providers and actions in the clinic,with interventions in the community and involvment of other sectors)		
N - Ghana, African Youth Alliance (AYA) [39,41]	* Youth aged 17-22 years * Health service objective: Increase access to and enhance sexual and reproductive health services for young people, increase contraceptive use * Multi-component intervention	* 65 clinics were established or enhanced to improve their youth-friendliness, including staff training and activities in the clinic * Peer-educators provided information at health facilities, in the community and in 'youth talks' * Also included an extensive community behaviour change communication component
O - Tanzania, African Youth Alliance (AYA) [37,42]	* Youth aged 17-22 years * Health service objective: Increase access to and enhance sexual and reproductive health services for young people, increase contraceptive use * Multi-component intervention	* 58 clinics were established or enhanced to improve their youth-friendliness, including staff training and activities in the clinic * Peer-educators provided information at health facilities, in the community and in 'youth talks' * Also included an extensive community behaviour change communication component
P - Uganda, African Youth Alliance (AYA) [38,43]	* Youth aged 17-22 years * Health service objective: Increase access to and enhance sexual and reproductive health services for young people, increase contraceptive use * Multi-component intervention	* 96 clinics were established or enhanced to improve their youth-friendliness, including staff training and activities in the clinic (20 clinics were staff training only) * Peer-educators provided information at health facilities, in the community and in 'youth talks' * Also included an extensive community behaviour change communication component
Q - Botswana, African Youth Alliance (AYA) [44]	* Youth aged 17-22 years * Health service objective: Increase access to and enhance sexual and reproductive health services for young people, increase contraceptive use * Multi-component intervention	* 58 clinics were established or enhanced to improve their youth-friendliness, including staff training and activities in the clinic * Peer-educators provided information at health facilities, in the community and in 'youth talks' * Also included an extensive community behaviour change communication component
R - Madagascar, Top Reseau [40]	* Youth aged 15-24 years * Increase access to high quality sexual and reproductive health services for young people	* A network of 146 private, franchised youth-friendly clinics was established in 7 urban sites that were affordable, high quality and confidential * Clinics had integrated service delivery and health communication * Community outreach was conducted to promote the clinics and motivate young people to practice safe behaviour, including peer education sessions, mobile video units, youth debates, radio and television spots

Studies A and B evaluated the impact of Type 1c interventions. These were both experimental community-randomized trials, and therefore more weight has been put on the strength of evidence from these interventions. In addition to improved health services, Study A also included an in-school intervention with some community outreach, and Study B had an in-school intervention and an extensive community component. Study A showed no improvement in reported clinic attendance for STI symptoms or family planning services, and Study B showed no increase in those reporting visiting the clinic in the past 12 months, or those who reported seeking treatment for STI symptoms. However, during the first three years of the intervention (1999-2001), Study A showed a significantly larger increase in the number of males aged 15-24 years attending government health facilities in intervention

communities with symptoms or signs suggestive of an STI than in facilities in comparison communities during the intervention period.[45] A similar increase associated with the intervention was not seen among males aged 25 years or more. On the other hand, a borderline significantly larger increase was observed in the number of females aged both 15-24 years and 25+ years attending government health facilities in intervention communities with symptoms or signs suggestive of an STI than in facilities in comparison communities during the intervention period.

The remaining five studies were Type 2c interventions (Studies N, O, P, Q and R). Four of the Type 2c interventions were part of the African Youth Alliance (AYA) project, a multi-country, multi-component large-scale intervention in Botswana, Ghana, Tanzania and Uganda (Studies N, O, P and Q). The AYA interventions were implemented by a number of government and non-governmental partners, and in addition to improving health facilities, they also implemented community activities as well as youth advocacy and institutional capacity-building on a national level. Data for uptake of health services was not analysed for statistical significance, but trends in clinic use were described. Though multi-component interventions were implemented in all four countries, only the health service component of the intervention was evaluated in Botswana. Broader programme evaluations were conducted in Ghana, Tanzania and Uganda, where data on reported contraceptive use was collected and was presented as a proxy indicator of uptake of health services. Only post-test surveys were conducted in these countries, and though matched control sites were selected analysis of those 'unexposed' was not appropriately conducted, and therefore their strength of evidence is considered weak. Clinic records from Study Q in Botswana showed a steady increase in clinic attendance. In Ghana (Study N) there was a steady increase in clinic attendance over five consecutive quarters, but then a drop in the sixth and final quarter. This decline in the final quarter may be explained by other extenuating factors, however. There was an increase in reported use of a modern contraceptive at first and last sex in females in Study N, but no impact in males. Quarterly records from Study O in Tanzania indicate an increase in clinic attendance in the first quarter and then a levelling off for the remainder of the intervention period. There was an increase in reported modern contraceptive use at first sex in both males and females, and an increase in reported contraceptive use at last sex in females only in this intervention. The fourth AYA site in Uganda (Study P) demonstrated a steady decrease in clinic use. There was an increase in reported use of modern contraceptive at first and last sex in females, but no impact in males in Study P. Taken as a whole, these four AYA evaluations provide weak evidence that the package of AYA interventions in health facilities and local communities may have been associated with increased use of health services by young people in some settings.

Study R was the only single component intervention. The project developed a network of private youth friendly clinics in Mozambique under the franchise name Top Reseau. Their primary function was to provide young people with high-quality family planning and STI treatment and prevention services, and some also offered VCT services. The network of clinics was supported by an extensive complementary communications campaign using mass media, peer educators, youth debates and other strategies to promote the clinics and encouraged young people to adopt safe sexual behaviours. Based on evidence from two cross-sectional surveys in intervention communities, there was a statistically significant increase in both reported primary and secondary abstinence in the past 12 months. Evaluation of clinic

attendance was not conducted in Study R, and furthermore this evaluation did not take into account the potential effect of other HIV prevention interventions taking place in the same cities in Madagascar on the outcomes measured, and therefore the strength of evidence from this intervention is considered weak.

There were no studies of intervention Types 1a, 1b, 2a or 2b.

Table 4.4: Descriptions of outcome evaluations in health facilities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 1c (training service providers, with interventions in the community and involving other sectors)						
A [19,22, 24,25, 27]	Design: Experimental (cohort by community) Sample size: 9645 baseline, 13,814 at last follow up *10 intervention communities and 10 control communities * All clinics in intervention communities were made more youth-friendly * Cohort design, pre and 36 months post test surveys and cross sectional final survey *Baseline, 36 and 96 months follow up	Went to clinic for STI symptoms and family planning services: At 36 & 96 months		0 0	0 0	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Restricted to young people who had reached primary school year 5; high out-migration so study population likely to be lower risk
B [21,23]	Design: Experimental (cohort by community) Sample size: 6791 baseline, 4672 at last follow up *15 intervention communities and 15 control communities * All clinics in intervention communities were made more youth-friendly * Cohort design, baseline and interim surveys, cross sectional surveys at 36 and 48 months *Baseline, 36 and 48 months follow up	Went to clinic in last 12 months: Sought treatment for STD symptom:		0 0	0 0	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Due to excessive out-migration the original cohort was not followed for 48 months, rather a population-based survey was conducted

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 4.4 (continued): Descriptions of outcome evaluations in health facilities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 2c (training service providers and actions in the clinic,with interventions in the community and involvment of other sectors)						
N [39,41]	Design: Cross-sectional survey Sample size: 3416 * Post-evaluation survey only 2-3 years after start of intervention * 65 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation	Used modern contraceptive first sex Used modern contraceptive at last sex	* Non-statistically measured steady increase in clinic attendance over five quarters, but then a drop in the sixth and final quarter	0 0	+ +	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
O [37,42]	Design: Cross-sectional survey Sample size: 1900 * Post-evaluation survey only 2-3 years after start of intervention * 58 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation	Used modern contraceptive at first sex Used modern contraceptive at last sex	* Non-statistically measured increase in clinic attendance (from 24 clinics) in the first quarter and then a levelling off for the remainder of the intervention period	+ 0	+ +	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
P [38,43]	Design: Cross-sectional survey Sample size: 3176 * Post-evaluation survey only 2-3 years after start of intervention * 96 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA	Used modern contraceptive at first sex Used modern contraceptive at last sex	* Non-statistically measured steady decrease in clinic use	0 0	+ +	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
Q [44]	Design: Cross-sectional survey Sample size: N/A * Post-evaluation survey only 2-3 years after start of intervention * 18 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation		* Non-statistically measured steady increase in clinic attendance			Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
R [40]	Design: Two cross-sectional surveys Sample size: 4041 baseline, 9364 follow up * 146 health facilities in total * Random household sampling from 4 sites at baseline and 7 sites at follow up 2 years after start of intervention	Never had sex Secondary abstinence in past 12 months	+ +			Strengths: Large sample size Limitations: No control population; no data on utilization of health services

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

4.4 Summary

Though most of the evidence from this review of the impact of improvement in health services on their uptake by young people was weak, a number of studies demonstrated increased use of health services and/or a positive impact on mediating factors of reproductive health. Just one study described a decline in health service use (in males), though there was an increase in reported contraceptive use in females observed in this same study (Study P). A summary of the strength of evidence for each Type of intervention is presented in Table 4.5.

Table 4.5: Strength of evidence for each type of intervention in health facilities

Evaluation design	Positive effect		No effect		Negative effect	Strength of evidence (for increased use of health services data)
	Statistically significant	Statistical significance unknown	Statistically significant	Statistical significance unknown	Statistical significance unknown	
Type 1a (training service providers with interventions the community)						
N/A	-	-	-	-	-	
Type 1b (training service providers and involvement of other sectors)						
N/A	-	-	-	-	-	
Type 1c (training service providers, with interventions in the community and involving other sectors)						Strong: no effect
RCT (≥6 clusters)	-	-	A, B	-	-	
Type 2a (training service provider and actions in the clinic, with interventions in the community)						
N/A						
Type 2b (training service providers and actions in the clinic, and involvment of other sectors)						
N/A	-	-	-	-	-	
Type 2c (training service providers and actions in the clinic,with interventions in the community and involvment of other sectors)						Weak: positive effect
Cross-sectional	N, O, P	N, O, Q	-	-	P*	
Before-after (no comparison group)	R	-	-	-	-	

Note: An intervention was considered as having an effect (positive or negative) if ≥1 significant results were found from among all of the relevant outcomes measured

Note: Where interventions are classified in more than one column it is because they had mixed results, see Table 4.4 for details

* Decrease in clinic attendance as per clinic records

Of the interventions that measured use of health services in this review, only those that included training of service providers as well as community activities with involvement of other sectors (Type 2c) showed evidence of increased use. It is particularly difficult with Type 2c interventions to determine which combination of interventions, in the clinic as well as in the community, is most effective or cost-effective. The evidence from this review was weak overall, as clinic use was often not analysed for statistical significance. The large majority of interventions that did statistically evaluate clinic use relied on reported use, where there was likely to be reporting bias. Few studies were randomized controlled trials, which can make it difficult to interpret their results given the potential for desirability bias in reporting of health facility attendance or use of contraceptives associated with interventions. Another issue when interpreting the data is the challenge of differentiating between studies which demonstrate an effective approach to increase the use of health services, and those that show increased use of health services merely because they are filling a provision gap. Though existing evidence is not strong, many studies from this review, and most from the first SRG review demonstrate an increase in use of health services when they are accessible and made more youth friendly. Furthermore, there is no evidence to indicate a reduction in uptake associated with attempts to improve the health services and to make them more youth-friendly.

With most of the attempts to improve health services for youth evaluated here, there are a number of questions outstanding as to how precisely they work. Operational research should focus on attempting to explain in more detail the content of the intervention and its mechanism of action. Efforts should be made to disentangle the various components of an intervention and their relative importance, in order to inform future programming decisions related to what aspects of the provision of "youth-friendly health services" are essential and the most cost-effective.

4.5 Overall recommendation for interventions in health facilities

Access to high-quality health care is not only a global goal, but provision of sexual and reproductive health services of reasonable quality is also a basic aim of all national health services. All governments and communities should ensure that these services are also made available to young people in a way that encourages their use, to enable them to prevent infection with HIV and other sexually transmitted infections, and to access treatment and care if they do become infected. Evidence on the most appropriate way to deliver health care to young people in order to maximise their effective access to and appropriate use of such services remains incomplete. Table 4.5 shows the strength of evidence for intervention in health services from all interventions in the first SRG review, and limited to studies with health service use outcomes in sub-Saharan Africa only. The table then shows overall recommendations for intervention in health facilities in sub-Saharan Africa, based use of health service results from this and the first SRG review.

Many of the recently-published reports of the evaluations of interventions in health facilities that were reviewed here and in the first SRG review lack adequate descriptions of the intervention and process evaluation, and were poorly designed and/or evaluated, making it difficult to decipher which aspect or aspects of the intervention were most effective. Of the six types of potential interventions to improve young people's access to health services that were identified in the previous SRG review, recent studies evaluating interventions of only three types were identified for this review. The most common type of intervention, both in this review and in the first SRG review, was Type 2c – interventions which train service providers and take actions to make the facility more youth-friendly, coupled with activities in the community and with involvement of other sectors to link or refer young people to health services. Type 2c interventions showed the strongest evidence of effectiveness, and were awarded a 'Ready' recommendation overall. Type 1b and 1c interventions train service providers but took no further actions to make the facility more youth-friendly. This training was coupled with activities in the community and/or involvement of other sectors to link or refer young people to health services. There were very few interventions of these Types in total, and provided limited evidence of effectiveness garnering a 'Steady' recommendation overall. Though we identified no Type 2a interventions in our review, the first SRG review did evaluate several interventions of this type. The original recommendation for type 2a interventions was 'Go!', however there were fewer studies when limited to sub-Saharan Africa only, and we awarded a 'Ready' recommendation overall for this Type of intervention.

Table 4.6: Overall recommendation for interventions in health services

Evaluation design	Threshold of evidence required	Strength of evidence	SRG recommendation	Explanation	Strength of evidence	SRG recommendation	Explanation	Strength of evidence	Explanation	Strength of evidence	Overall Recommendation	Explanation
Type 1a (training service providers with interventions the community)	Low	Equivocal	Steady (or do not go)	*One study with no statistical tests*	Weak: weak positive effect	Steady (or do not go)	*No change*		*No studies*		**Steady**	*No studies*
Type 1b (training service providers and involvement of other sectors)	Moderate	Equivocal	Steady (or do not go)	*One weak quasi-experimental study, no evidence of increased use and increased acess to information*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
Type 1c (training service providers, with interventions in the community and involving other sectors)	Moderate	Equivocal	Steady (or do not go)	*One RCT, moderate strength, no evidence of increased use; one quasi-experimental study with weak evidence of increased use*	Moderate: mixed results	Steady	*No change*	Strong: no effect	*2 RCT neither showing an impact*	Strong: little or no effect	**Steady**	*4 studies with moderate to strong designs, little evidence of an effect*
Type 2a (training service provider and actions in the clinic, with interventions in the community)	Low	Weak	Go	*3 studies with weak evidence and 1 study with moderate evidence of increased use*	Weak: weak positive effect	Ready	*There were less studies, weak study designs*		*No studies*	Weak: weak positive effect	**Ready**	*3 studies all with weak designs and positive effect*
Type 2b (training service providers and actions in the clinic, and involvment of other sectors) ***No Type 2b***	Moderate			*No studies*		Steady	*No studies*		*No studies*		**Steady**	*No studies*
Type 2c (training service providers and actions in the clinic,with interventions in the community and involvment of other sectors)	Moderate	Weak	Ready	*8 studies, 6 with weak evidence of increased use of services, 1 RCT with strong evidence of increased use, 1 before/after with no difference*	Weak: positive effect	Ready	*Less studies but still a positive effect*	Weak: positive effect	*5 studies, all cross-sectional or before/after, showing mostly positive results but no statistical test for 3 of 5 studies*	Weak: positive effect	**Ready**	*11 studies all with weak designs and positive effect*

5. Interventions in geographically-defined communities

Community involvement, participation and engagement has great potential for improving health.[46] Community level interventions have the potential to change established norms, values and traditions that may impede HIV prevention and care. In addition, community-based interventions may increase the support young people need, and increase access to necessary information and services. In this section of the review, we have restricted our focus to geographically-defined communities; in other words everyone living within a defined geographical location. We have not considered socially-defined communities; in other words, people with common social attributes.[47] Despite their potential, community interventions face a number of challenges, including the inherent difficulty in changing established norms, community diversity, sustainability, and difficulty with monitoring and evaluation of these interventions.

Interventions in geographically-defined communities in the first SRG review were classified according to the following typology:

- *Type 1* interventions focus on providing information, skills building and behaviour change targeting young people. They affiliate with existing groups and organisations working with young people to deliver the intervention.
- *Type 2* interventions focus on providing information, skills building and behaviour change targeting young people. They create their own mechanism or infrastructure to deliver the intervention.
- *Type 3* interventions target the entire community. They utilize traditional kinship networks to deliver the intervention, and interventions therefore use one-on-one discussion, or small groups of people to disseminate the message.
- *Type 4* interventions target the entire community. They use large-scale community activities to deliver the intervention.

In order to facilitate comparison with the first SRG review, for this review we have used a similar typology. The various Types of community interventions were adjudged by the SRG review authors to require a moderate to high threshold of evidence, as shown in Table 5.1.[48]

5.1 Evidence from the first *Steady, Ready, Go!* review of interventions in communities

Twenty-two studies in communities were identified in the first SRG review, of which 15 took place in sub-Saharan Africa. Using peers to deliver the intervention was common, with 17 of the 22 interventions involving peers either with or without adults, and four more interventions used peers informally as educators or role models. Only one community intervention exclusively used trained adult community members to deliver the intervention.

Table 5.1: Threshold of evidence needed to recommend widespread implementation of interventions in geographically-defined communities in sub-Saharan Africa

	Attributes of the intervention							
Intervention type	**Feasible**	**Low cost**	**Low risk of adverse outcomes**	**Acceptable**	**Large potential size of effect**	**Other health or social benefits**	**Overall threshold**	**Comments**
Type 1 (targeting youth and delivered using existing organisations or events)	+++	++	--	+++	++	++	Moderate	Requires an existing organisation that is accepted by community, with infrastructure to support programme; effect size depends on reach of the organisation or centre.
Type 2 (targeting youth and creating own system and structure for delivery)	+	+	-	+	+	+	High	Must create a system of delivery acceptable to community, and that penetrates target population.
Type 3 (community-wide intervention delivered through traditional networks)	++	++	-	++	+	+++	Moderate	Must address social norms associated with communicating about sexual matters within the identified networks.
Type 4 (community-wide intervention delivered through community-wide activities)	+++	+	-	++	++	++	Moderate	Community activities provide wide reach if approach is acceptable and meaningful to community; little or no attention paid to the individual.

Degree of desirability is indicated with a maximum of 3 '+' signs. Degree of undesireability is indicated with a maximum of 3 '-' signs.

A number of outcomes were measured, including community norms, attitudes and values, skills, HIV incidence, sexual activity and condom use. None of the interventions resulted in strong evidence of a positive effect. Furthermore studies generally were poorly designed or had sub-optimal data analysis. Less than half the studies had an experimental design, few stratified by gender, and many did not control for potential confounding. As a result, none of the studies from the first SRG review resulted in a "Go!" recommendation. Five of the ten Type 1 studies that evaluated the impact of the interventions on knowledge, skills, sexual debut or condom use showed significant gains, and Type 1 studies were therefore awarded a "Ready" recommendation. All other intervention Types in geographically-defined communities were allocated to the "Steady" category. A summary of the results from the first SRG review are shown in Table 5.2.

5.2 Evidence from this review of interventions in communities

We identified 11 interventions in geographically-defined communities in sub-Saharan Africa that were reported between 2005 and 2008 that met our criteria for inclusion in this update of the SRG review.[21, 23, 37-39, 49-61] Three were in South Africa (Studies C, D and W), two in Uganda (Studies U and P), and there was one intervention each in Cameroon (Study S), Ghana (Study N), Guinea (Study T), Tanzania (Study Q), Zambia (Study V) and Zimbabwe (Study B). Four of the eleven studies in geographically-defined communities were multi-component interventions (Studies B, N, O and P). Table 5.3 and 5.4 summarize the studies included in this review and their impact on relevant reproductive health outcomes. Most studies measured a number of variables, for which only a small number were significant. To avoid reporting bias, results for knowledge, skills, attitudes and norms, and sexual activity and condom use are presented here, and results for all variables measured are presented in the expanded study descriptions

in Appendix C. In some studies, multiple waves of data were collected. Unless otherwise noted, results are presented for the last data collection point.

Table 5.2: Summary of evidence of effectiveness of interventions in geographically-defined communities, in sub-Saharan Africa only, in the first SRG review

Evaluation Design	Positive Effect		No significant Effect	Negative Effect		Strength of evidence	SRG recommendation
	Statistically Significant	Statistical Significance Not Known		Statistically Significant	Statistical Significance Not Known		
Type 1 (targeting youth and delivered using existing organisations or events)						**Equivocal**	**Ready**
Anecdotal	-	1	-	-	-		
Qualitative Only	-	2	-	-	-		
Before-After (no comparison group)	2	-	-	1	-		
Quasi-experimental (≥1 comparison group)	3	-	3	-	-		
RCT (≥6 clusters)	2	-	2	-	-		
Type 2 (targeting youth and creating own system and structure for delivery)						**Weak**	**Steady (or do not go)**
Anecdotal	-	1	-	-	-		
Qualitative Only	-	3	-	-	-		
Before-After (no comparison group)	1	-	-	-	-		
Quasi-experimental (≥1 comparison group)	1	-	-	-	-		
Type 3 (community-wide intervention delivered through traditional networks)						**Weak**	**Steady**
Anecdotal	-	-	-	-	-		
Qualitative Only	-	1	-	-	-		
Quasi-experimental (≥1 comparison group)	2	-	1	-	-		
Type 4 (community-wide intervention delivered through community-wide activities)						**Weak**	**Steady**
Qualitative Only	-	1	-	-	-		

Note: Where interventions are classified in more than one column it is because they had mixed results

5.2.1 Quality of the evidence

Three studies (Studies B, C, and W) were experimental, community-randomised controlled trials. One (Study U) was a quasi-experimental controlled trial. There were four interventions which only had post-test evaluations, though each attempted to identify a suitable control population, as well as attempting to control for potential confounding factors (Studies T, N, O and P). The final three interventions used cross-sectional population-based surveys to evaluate their impact, two using a single post-intervention survey (Studies D and V) and the other using multiple rounds of survey data (Study S). All but one intervention stratified results by gender.

Eight of the eleven interventions explicitly reported a theoretical basis for the intervention. A number of different theories, or combinations of theories were employed, including social learning theory, theory of reasoned action, ecological theory, diffusion of innovations, health belief model, adult education theory, Freirian models of critical reflection and social cognition. Some studies discussed the assumptions that were made as a basis for the intervention, such as the assumption that change in knowledge and support structures (Study T) or technical skills (Study U) will lead to positive behaviour change. However there were no evaluations that specifically tested these assumptions. Peers were used to educate youth, promote activities and services, and/or distribute condoms in 9 of the 11 community interventions (Studies B, C, N, O, P, S, T U and V). None of these studies specifically related the theory that they used in designing their intervention to how peers would influence each other.

Table 5.3: Descriptions of interventions in geographically-defined communities, by study

Study, location and programme	Target population and primary objectives	Description
Type 1 (targeting youth and delivered using existing organisations or events)		
T - Guinea, Youth campaign [49]	* Youth aged 15-24 years in rural and urban areas * Targeted sexual initiation, condom use, reproductive health communication	* Behaviour change communication campaign to prevent STI/HIV and unwanted pregnancy * Condom use demonstrations conducted by peer educators, tailors, hair dressers and health providers * Dissemination of posters and brochures, along with community campaign events such as theatre and soccer matches * Peer educators trained to reach and refer youth to ASRH information * Advocay meetings with community, government, religious and youth leaders
U - Uganda, condom promotion [55]	* Youth aged 18-30 (75% 18-24 years) in peri-urban areas * Targeted barriers to condom use	* Intervention participants attended at least one 3-hour session condom use skills workshop * All participants were given coupons for free condom redeemable from volunteer distributors in the community
Type 2 (targeting youth and creating own system and structure for delivery)		
D - South Africa, loveLife [54,57]	* Youth aged 15-25 years in rural and urban areas * Targeted sexual initiation, condom use, number of partners, gender and social norms	* Promotion of HIV risk reduction and positive lifestyle through media programmes including billboards, television, radio and printed materials * Comprehensive, interactive educational programmes for youth, parents, organisations and communities
S - Cameroon, 100% Jeune [56,58]	* Youth aged 15-24 years in urban areas * Targeted safer sex, promoting community dialogue about adolescent reproductive health	* Multi-faceted media and interpersonal communications campaign to promote adolescent reproductive health * Peers targeted in- and out-of-school youth with informative shows conducted at schools and youth hang-outs * Campaign themes were encouraged by radio shows, billboards, brochures and print ads, as well as a monthly magazine * Also implemented a network of youth-friendly condom outlets
V - Zambia, peer education [61]	* Youth aged 15-24 years in rural and urban areas * Targeted sexual initiation, number of sexual partners, condom use, knowledge, stigma against PLWHA, treatment and care of HIV/STIs	* Peer targeted in- and out-of-school youth using focus group discussions, dramas, counseling, sensitization programs, videos, debates, quizzes, media programs, and printed materials * Work at clinics providing referrals for youth at youth-friendly corners * Community participation an essential component * Peer educators had clear objectives and workplan, but activities varied across sites
Type 3 (community-wide intervention delivered through traditional networks)		
B - Zimbabwe, Regai Dzive Shiri [21,23]	* Youth with mean age 15 years in rural areas * Community objectives: Raise issues related to adolescent sexuality among adults, improve communication between parents and youth, improve community safety for young people, enable adults to support youth to reduce risk * Multi-component intervention	* Two modules of eleven 3-hour session each delivered to community members by trained and supported community facilitator * Sessions were participatory, designed to maximise ownership of learning points, encouraging development of life skills and attitude change * In year 4 a 24-session out-of-school youth programme was implemented * Also included interventions to increase the youth-friendliness of local government health services and a curriculum-based in-school peer-led HIV intervention programme

Table 5.3 (continued): Descriptions of interventions in geographically-defined communities, by study

Study, location and programme	Target population and primary objectives	Description
Type 4 (community-wide intervention delivered through community-wide activities)		
C - South Africa, Stepping Stones [51,52,53]	* Youth aged 15-26 years in rural areas * Targeted condom use, number of partners, number of casual and transactional partners, intimate partner violence, drinking and drug use	* Peer-led sessions for in- and out-of-school youth * Peer group meetings * One community-wide meeting
W - South Africa, IMAGE [50,59,60]	* Youth aged 14-24 years in rural areas * Targeted sexual initiation, condom use, number of partners, gender and social norms, communication of reproductive health, HIV testing	* Microfinance for establishment of small businesses among older women (not targeted to youth) * Gender and HIV training curriculum * Community mobilization to engage young people and men * Clinic health workers received training in HIV testing, care and support
N - Ghana, African Youth Alliance (AYA) [39]	* Youth aged 17-22 years * Community objectives: sexual initiation, condom use, number of sex partners *Multi-component intervention	* Multi-faceted media and interpersonal communications campaign to promote adolescent reproductive health, including television, radio and a youth magazine * life skills palnning and enter education activities such as poetry, sports, drama and clubs * Also made health services more youth-friendly, and peer-educators provided information at health facilities, in the community and in 'youth talks' * Included policy and advocay component and institutional capacity building
O - Tanzania, African Youth Alliance (AYA) [37]	* Youth aged 17-22 years * Community objectives: sexual initiation, condom use, number of sex partners *Multi-component intervention	* Multi-faceted media and interpersonal communications campaign to promote adolescent reproductive health, including television, radio and a youth magazine * life skills palnning and enter education activities such as poetry, sports, drama and clubs * Also made health services more youth-friendly, and peer-educators provided information at health facilities, in the community and in 'youth talks' * Included policy and advocay component and institutional capacity building
P - Uganda, African Youth Alliance (AYA) [38]	* Youth aged 17-22 years * Community objectives: sexual initiation, condom use, number of sex partners *Multi-component intervention	* Multi-faceted media and interpersonal communications campaign to promote adolescent reproductive health, including television, radio and a youth magazine * life skills palnning and enter education activities such as poetry, sports, drama and clubs * Also made health services more youth-friendly, and peer-educators provided information at health facilities, in the community and in 'youth talks' * Included policy and advocay component and institutional capacity building

Most of the interventions reviewed here described the model of delivery in some detail. Three studies (Studies N, O and P) described collaboration through strengthening and expanding work conducted by existing organisations, and provided links to health services. Study U conducted education and skills-building workshops, and used peer-educators to distribute condoms to men in the community. Studies D, T, S and V conducted extensive communications campaigns to promote behaviour change, using peer educators, posters, brochures, magazines, mass media and/or community events to disseminate their

message, with Studies D and V creating links to health services. Study T also facilitated skills-building by training peer educators, hairdressers and tailors to demonstrate correct condom use. Studies B and C provided detailed descriptions of their programme delivery models, which included training leaders and delivering structured, participatory learning modules which provided information, skills and encouragement for change in attitude and community norms. Again, Study B linked community activities to youth-friendly health services. Study A also included a community-wide intervention component, but since this was much more limited in scope and intensity than the other components of the intervention, this study has not been reviewed here.

5.2.2 Outcomes

There were two Type 1 interventions (Studies T and U), three Type 2 (Studies D, S and V), one Type 3 intervention (Study B), and five Type 4 interventions (Studies C, N, O, P and W). The objective of most interventions was to increase knowledge and build skills to promote positive sexual and reproductive health behaviour change. A number of studies attempted to increase condom use through overcoming barriers to their use. Some studies also attempted to strengthen youth support systems within the community, as a means to facilitate self-efficacy and positive decision-making, and several additionally had the objective of raising community awareness and changing community norms. One study (Study W) used a microfinance and education programme for women as a structural approach to reducing HIV incidence and improving mediating factors among the individual participants, their households and their communities.

Table 5.4: Descriptions of outcome evaluations in geographically-defined communities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 1 (targeting youth and delivered using existing organisations or events)						
T [49]	Design: Cross-section survey Sample size: 1008 * 9 health districts * Post-intervention survey only 12 months after start of intervention, with DHS data from 15 enumeration areas acting as proxy baseline data	Ever used condom: Condom use at last sex: Knows how to use condoms: Willing to use condoms: Advocate for condoms: Knows at least one mode of HIV transmission: Knows how to prevent HIV: Perception of community's willingness to discuss RH:		+ + + + + 0 + +	+ + + + + 0 + +	Strengths: Relatively large sample size Limitations: No randomized assignment of intervention; differences in intervention and control groups at baseline; proxy baseline data not necessarily representative
U [55]	Design: Quasi-experimental (randomized by community) Sample size: 498 baseline, 378 follow up * 2 communities * Surveys at baseline and 6 months after start of intervention	Abstinence: Consistent condom use: Consistent condom use with casual partner: Abstaining from any casual partner: Unprotected sex with a casual partner: Overall number of partners: Reduction in casual partners: Number of unprotected casual sex partners: Distribution of condoms: Proportion of men redeeming condoms:		0 0 0 0 0 - 0 0 + 0		Limitations: Small sample size; short term follow up

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 5.4 (continued): Descriptions of outcome evaluations in geographically-defined communities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 2 (targeting youth and creating own system and structure for delivery)						
D [54,57]	Design: Cross-sectional survey (no comparison group) Sample size: 11,904 with analysis among 7691 sexually experienced * Nationally representative population-based survey 4 years after start of intervention	HIV prevalence: Participated in a loveLife program Participated in a youth group in the past month		+ +	+ 0	Strengths: Large sample size; use of biological outcome. Limitations: Cross-sectional survey design; those exposed to intervention could be fundamentally different from unexposed
S [56,58]	Design: Cross-sectional multi-stage population-based survey (no comparison group) Sample size: 2097 at baseline, restricted to 1956 unmarried; 3627 at last follow up, restricted to 3370 unmarried * 12 neighborhoods at baseline and 20 neighborhoods at 18- and 36-months after start of intervention	Had sex in the past year: At 18 and 36 months 2 or more partners in past year: At 18 and 36 months Ever using condoms: At 18 and 36 months Condom use at last sex with regular partner: At 18 and 36 months Condoms effective for FP: At 18 and 36 months Condoms prevent HIV: At 18 and 36 months Knows correct condom use: At 18 and 36 months Friends support youth condom use: At 18 and 36 months Parents support youth condom use: At 18 and 36 months Discussed STI/AIDS with friends in past year: At 18 and 36 months Discussed STI/AIDS with others in past year: At 18 and 36 months		0 0 0 0 + + + + + + 0 + 0 + + + 0 + + + + + - 0	0 0 - 0 + + + + + + 0 + 0 + + + + + + + + + - +	Strengths: Large sample size; long term follow up Limitations: No control population (though dose-response analysis conducted); evidence that other on-going programmes also contributed to outcomes
V [61]	Design: Cross-sectional survey, post-test only Sample size: 1695 * Nationally representative population-based survey ~1 year after start of intervention	Age of sexual debut: Ever had sex: Number of sexual partners in last 4 weeks: Condom use at last sex: Always uses condom with most recent partner: Ever had an HIV test: Knowledge: Intention to use condoms: Stigma against PLWHA:	0 0 0* + + 0* + + +			Strengths: Fairly large sample size; cost-effectiveness analysis Limitations: Post-intervention survey only; not a randomized trial; no dose-response evaluation; results not stratified by gender

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 5.4 (continued): Descriptions of outcome evaluations in geographically-defined communities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 3 (community-wide intervention delivered through traditional networks)						
B [21,23]	Design: Experimental (randomized by community) Sample size: 6791 baseline, 4672 at last follow up *15 intervention communities and 15 control communities * Cohort design, baseline and interim surveys, cross sectional surveys at 36 and 48 months *Baseline, 36 and 48 months follow up	Sexual initiation during follow-up: At 48 months		0	0	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Due to excessive out-migration the original cohort was not followed for 48 months, rather a population-based survey was conducted
		Two or more partners in last 12 months: At 48 months		0	0	
		Two or more lifetime partners: At 48 months		0	0	
		No condom use at last sex: At 48 months		0	0	
		No pregnancy prevention with last partner: At 48 months		0	0	
		Knowledge of HIV acquisition: At 48 months		0	0	
		Knowledge of STD acquisition: At 48 months		+	+	
		Knowledge of pregnancy prevention: At 48 months		+	+	
		Condom self-efficacy: At 48 months		0	+	
Type 4 (community-wide intervention delivered through community-wide activities)						
C [51,52,53]	Design: Experimental (randomized by community) Sample size: 2776 baseline, 2058 at last follow up *35 intervention communities and 35 control communities * Cohort design, pre, 12 and 24 months post test surveys *Baseline, 12 and 24 months follow up	HIV incidence: At 24 months		0	0	Strengths: Rigorously evaluated RCT with large sample size, medium term follow-up; use of biological outcomes.
		HSV2 incidence: At 24 months		+	+	
		Number of partners in past year: At 12 & 24 months		0 0	0 0	
		Any transactional sex with a casual partner: At 12 & 24 months		+ 0	- 0	
		Pregnancy (or impregnated, for men): At 12 & 24 months		0 0	0 0	
		Correct condom use at last sex: At 12 & 24 months		0 0	0 0	
		Any casual partner: At 12 & 24 months		0 0	0 0	
W [50,59,60]	Design: Experimental (randomized by community) Sample size: 647 in cohort 2, 1303 in cohort 3 *8 intervention communities and 8 control communities *3 cohorts in each community, at the (1) individual - did not target young people, (2) household and (3) community levels *Baseline and survey at 2 years follow up in cohort 2 and 3 years in cohort 3	HIV incidence: cohort 2/cohort 3	0 0			Strengths: Rigorously evaluated RCT, medium term follow-up; use of biological outcomes. Limitations: Low power to detect changes in HIV incidence in subset of young people, direct programme participants (cohort 1) were not young people, not powered to stratify by gender in this subgroup analysis
		Sexual debut: Cohort 2/Cohort 3	0 0			
		> 1 sexual partner in last 12 months: Cohort 2/Cohort 3	0 0			
		Unprotected sex with non-spousal partner in last 12 months: Cohort 2/Cohort 3	0 0			
		HIV incidence: Cohort 2/Cohort 3	0 0			
		Communication with household members about sex in past 12 months: Cohort 2/Cohort 3	0 0			
		Comfortable discussing sex in the home: Cohort 2/Cohort 3	0 0			
		Knowledge that healthy-looking person can be HIV+: Cohort 2/Cohort 3	0 0			
		Have had an HIV test: Cohort 2/Cohort 3	0 0			
		Participation in collective action against HIV/AIDS: Cohort 2/Cohort 3	0 0			

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Table 5.4 (continued): Descriptions of outcome evaluations in geographically-defined communities, by study

Study	Design and sample size	Evaluation results[a]	All	Males	Females	Factors affecting strength of evidence
Type 4 (community-wide intervention delivered through community-wide activities)						
N [39]	Design: Cross-sectional survey Sample size: 3416 * Post-evaluation survey only 2-3 years after start of intervention * 65 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation	Had delay of sexual debut: Abstains from sex: Had fewer than two sex partners during past 12 months: Had condom use at first sex: Had condom use at last sex: Ever used condom with current partner: Always uses condom with current partner: Has HIV/AIDS knowledge: (spontaneous/prompted response) Knows condom is protective against HIV/AIDS: Has positive attitude toward condom users: Is confident could put on condom correctly:		0 - 0 0 0 0 0 +0 0 + +	+ + + + + + + +0 0 - -	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
O [37]	Design: Cross-sectional survey Sample size: 1900 * Post-evaluation survey only 2-3 years after start of intervention * 58 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation	Had delay of sexual debut: Abstains from sex: Had fewer than two sex partners: during past 12 months: Had condom use at first sex: Had condom use at last sex: Ever used condom with current partner: Always uses condom with current partner: Has HIV/AIDS knowledge: (spontaneous/prompted response) Knows condom is protective against HIV/AIDS: Has positive attitude toward condom users: Is confident could put on condom correctly:		0 0 0 + 0 0 + 00 0 + 0	0 - 0 + + + + +0 0 + +	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only
P [38]	Design: Cross-sectional survey Sample size: 3176 * Post-evaluation survey only 2-3 years after start of intervention * 96 health facilities in total * Purposefully selected intervention and matched control sites, based on level of AYA implementation	Had delay of sexual debut: Abstains from sex: Had fewer than two sex partners during past 12 months: Had condom use at first sex: Had condom use at last sex: Ever used condom with current partner: Always uses condom with current partner: Has HIV/AIDS knowledge: (spontaneous/prompted response) Has positive attitude toward condom users: Is confident could put on condom correctly:		0 0 0 0 0 0 0 +0 0 0	0 - 0 + + + + +0 0 0	Strengths: Large sample size; uptake of health services measured through clinic records Limitations: Non-random assignment; post-evaluation data only

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

5.2.3 Knowledge

Eight of the eleven interventions, representing all four Types of interventions, measured gains in knowledge about HIV (general knowledge of HIV, or knowledge about transmission or of HIV acquisition specifically), STI acquisition, pregnancy prevention, and/or condom use (Studies B, N, O, P, S, T, V and W). Seven of the eight interventions showed at least some gains in knowledge (Study W did not). Specific gains in knowledge were reported in general HIV knowledge, STI acquisition, pregnancy prevention, condom effectiveness for family planning and HIV prevention, and knowing where to acquire condoms.

5.2.4 Skills

Seven interventions evaluated reported skill, in correct condom use, with varying results (Studies B, C, N, O, P, S and T). One Type 1 (Study T) and one Type 2 (Study S) evaluated reported knowledge of correct condom use, and both demonstrated an increase in reported ability to correctly use condoms in both males and females. The Type 3 intervention (Study B) measured reported condom self-efficacy and showed an increase in females but not males. There were four Type 4 interventions (Studies C, N, O and P) that measured reported confidence in correct condom use. Two resulted in no increase in either males or females (Studies C and P), one demonstrated an increase in females but not males (Study O), and one showed an increase in males and a decrease in females (Study N).

One Type 2 (Study S) and one Type 3 (Study W) intervention measured communication skills. The Type 2 evaluation found increased discussion with friends about family planning and STI/HIV in both males and females. Discussion with others increased in females but not in males. The Type e evaluation showed no increase in either discussion with household members about sex, or in comfort with discussing sexual issues at home.

5.2.5 Attitudes, intentions and norms

Seven studies measured change in attitudes and community norms. One Type 1 study (Study T) found an increase in both males in females in their perception of community willingness to discuss reproductive health. One Type 2 study (Study S) found increases in males and females who reported that both friends and parents support youth condom use, and another (Study V) noted a reduction in stigma towards people living with HIV/AIDS. Attitude toward condom use was reported in five studies, one of which was Type 1 (Study T), one Type 2 (Study V) and three were Type 4 (Studies N, O and P). The Type 1 study demonstrated an increase in both males' and females' willingness to use condoms and to advocate for condom use. The Type 2 study reported an increase in intention to use condoms. Of the Type 4 interventions, one showed no impact on attitude toward condom use, one demonstrated a positive impact in both men and women, and one found a positive impact on males and a negative impact in females.

5.2.6 Sexual activity and condom use

As per our inclusion criteria, all interventions included some measurement of sexual activity. As previously reported, four interventions included biological measurements of HIV, including Types 2, 3 and 4. The Type 2 intervention (Study D) demonstrated a statistically significant impact on HIV prevalence. The Type 3 intervention (Studies B) did not demonstrate an impact on HIV. Neither Type 4

intervention (Studies C and W) demonstrated a statistically significant reduction in HIV, but Study C did impact HSV2 among those exposed to the intervention (see Section 3.1 for more information). Ten studies evaluated other measures of sexual activity, including reported abstinence, number of sexual partners and condom use. Three interventions of Types 3 and 4 (Studies B, C and W), showed no impact on any measure of sexual behaviour, and one Type 1 intervention (Study U) demonstrated a negative impact overall on reported number of sexual partners (this study was only among males). The remaining six studies demonstrated at least one significantly beneficial outcome. A Type 1 study (Study T) showed significant positive impacts on reported ever use of condoms and condom use at last sex in males and females. A Type 2 study (Study S) showed no impact on reported sex in the past year or number of sexual partners, but demonstrated significant positive impact on ever use of condoms, condom use at last sex, and always use of condoms in males and females. Another Type 2 study (Study V) did not impact sexual debut or number of partners, but showed a positive impact on condom use at last sex, and always use of condoms with most recent partner. Three Type 4 studies (Studies N, O and P) showed mixed results. In one there was a positive impact among females on reported abstinence and number of sexual partners. In the other two there was no impact on reported abstinence and number of sexual partners among males, and a negative impact in females. Reported condom use at first sex, last sex, ever use and always use with current partner increased in females in all three of these Type 4 studies. Among males, reported condom use at first sex, and always using condoms with current partner increased in males in one study, but there was no impact on any condom use variables among males in the other studies.

5.2.7 Cost-effectiveness

Two interventions in geographically-defined communities presented data on cost-effectiveness (Studies D and V). In Study V they performed a comparative analysis of cost between the five sites where the programme was implemented. They found a strong correlation between programme cost and quality, with higher quality programming being more expensive. Those that were more costly to implement had greater exposure and more referrals to services than the less costly sites. Study D, the national loveLife programme in South Africa, had the most comprehensive analysis of its potential epidemic and economic impact among the studies in this review.[54] They assessed the potential cost-effectiveness of loveLife by estimating HIV infections averted, program costs, and averted medical costs. They concluded that loveLife would avert between 270,000 and 363,000 HIV infections over 10 years. At the programme level, it was estimated that loveLife net savings would be between $2.1 billion and $3.0 billion for the infections averted over ten years.

5.3 Summary

A summary of the evidence from this review of interventions in geographically-defined communities is shown in Table 5.5. The number of studies in each Type of intervention was limited, and due to their study design most studies did not provide strong evidence on effectiveness. Interventions often lacked appropriate control populations, some lacked adequate baseline information, and few appropriately evaluated a dose-response relationship. None-the-less, overall there was some evidence that interventions in geographically–defined communities can have the potential to positively impact a number of reproductive health outcomes in young people.

They typology for interventions in geographically-defined communities was more general than in other settings, due to the variety of possible approaches to HIV prevention in this setting. Furthermore some interventions, for example Study W, did not fit as well within the pre-defined typology as others. The typology used in this setting is not the only way that interventions in geographically-defined could be distinguished, and we acknowledge that it may have some limitations. However this typology does create a reasonable framework for evaluating interventions in this setting, and retaining it allows us to combine results from this review with the first SRG review.

Interestingly, the AYA intervention (Studies N, O and P) was conducted in three countries, and though the study design was similar in each country, the results were not. This implies that the effectiveness of a single intervention may vary substantially in different contexts, or that the same Types of interventions were implemented with differing quality or coverage in the different AYA programmes. A thorough evaluation of the context in terms of epidemiology and the socio-cultural context will be important in informing programme choices and research design.

Several of these interventions were multi-component, but even those that were single-component interventions generally conducted a number of different types of activities. As such it is difficult to disentangle how the various components work together and which aspect or aspects of these interventions were most effective. Furthermore, there was little attempt to evaluate any mechanism of action in the interventions reviewed, and cost-effectiveness analysis was only addressed in Studies B (see Section 3.2.4), D and V. Future research would benefit from addressing these facets of community interventions in more detail.

Table 5.5: Strength of evidence for each type of intervention in geographically-defined communities

	Knowledge		Skills			Attitudes/Norms			Sexual behaviour/Condom use			
Evaluation design	Positive effect	No effect	Positive effect	No effect	Negative effect	Positive effect	No effect	Negative effect	Positive effect	No effect	Negative effect	Strength of evidence (for biological and/or reported sexual behaviour data)
Type 1 (targeting youth and delivered using existing organisations or events)												Weak: positive effect
Cross-sectional	T	-	T	-	-	T	-	-	T	-	-	
Quasi-experimental	-	-	-	-	-	-	-	-	-	U	U***	
Type 2 (targeting youth and creating own system and structure for delivery)												Moderate: positive effect
Cross-sectional (no comparison group)	V	-	-	-	-	V	-	-	D (HIV), V	-	-	
Before-after (no comparison group)	S	-	S	-	-	S	-	-	S	-	-	
Type 3 (community-wide intervention delivered through traditional networks)												Moderate: positive effect
RCT (≥6 clusters)	B	-	B	-	-	-	-	-	B (reported pregnancy)	-	-	
Type 4 (community-wide intervention delivered through community-wide activities)												Moderate: mostly positive effect
Cross-sectional	N, O, P	-	N, O	P	N*	N, O	P	N**	N, O, P	-	N, O, P****	
RCT (≥6 clusters)	-	W	-	-	-	-	W	-	C (HSV2)	C, W	-	

Note: An intervention was considered as having an effect (positive or negative) if ≥1 significant results were found from among all of the relevant outcomes measured

Note: Where interventions are classified in more than one column it is because they had mixed results, see Table 5.4 for details

* Females were less confident they could put on a condom correctly

** Females had a less positive attitude towards condom users

*** This intervention among males demonstrated an increase in overall number of partners

5.4 Overall recommendations for interventions in geographically-defined communities

Table 5.6 shows the strength of evidence from all interventions in the first SRG review, and limited to studies with biological and/or reported sexual behaviour outcomes in sub-Saharan Africa only. The table then shows overall recommendations for intervention in geographically-defined communities in sub-Saharan Africa, based biological and reported sexual behaviour results from this and the first SRG review. Interventions in geographically-defined communities are generally the most difficult to evaluate. As compared to the studies available to the first SRG review, more recent reports of evaluations of interventions in geographically-defined communities added in this review were generally of higher quality. Unlike the first review, most identified a theoretical basis for the intervention, provided ample description of the models of programme delivery, and analysed outcomes stratified by gender. Due primarily to the limited number of interventions identified, none of the intervention types were awarded a 'Go!' recommendation. Type 1 and 2 interventions target youth, with Type 1 using existing organisations to deliver the intervention and Type 2 creating their own mechanism and infrastructure for delivery. There were just two Type 1 studies in this review, neither with strong study designs. While one demonstrated positive results for a number of mediating factors, the other had no effect or a negative effect. In the first SRG review, there were five studies of this type conducted in sub-Saharan Africa with weak study designs and largely positive outcomes. Type 1 interventions were given a 'Steady' recommendation overall. There were two studies of Type 2 conducted in sub-Saharan Africa in the first SRG review, which had weak study designs. We identified only three Type 2 studies, all having weak to moderate study designs and positive outcomes and a recommendation of 'Steady' was given overall. Type 3 and 4 interventions target the community as a whole, either using traditional networks (Type 3) or large-scale community activities (Type 4) to deliver the intervention. Type 3 interventions, while they can be culturally acceptable, are typically more labour intensive as the intervention is transmitted to one individual or family at a time. Type 4 interventions benefit from a broad reach and uniform message, though there is little attention paid to the individual. Both Types 3 and 4 interventions in the first SRG review were given a 'Steady' recommendation. We identified one strong Type 3 study with a positive impact, and therefore was recommended as 'Ready' overall.

Type 4 interventions had mixed results in this review, however there was one community randomised Type 4 intervention (Study C) which showed a statistically significant reduction in incident HSV2. Therefore overall Type 4 interventions garnered a 'Ready' recommendation.

Most of the recommendations from this review differed from those in the first SRG review, highlighting the difficulty in disentangling the important elements of community-based interventions. We also now have a fair number of new trials, of higher quality, so the evidence level is higher. Our update of the evidence for effectiveness of community interventions highlighted intervention types which target the community as a whole, rather than just young people, as being more effective at improving reported sexual behaviour and impacting biological outcomes. This evidence complements that found in social science research conducted in the MEMA kwa Vijana study (Study A), which suggested that it may be important to explore interventions to change the social and sexual norms within the wider community.

Table 5.6: Overall recommendation for interventions in geographically-defined communities

Evaluation design	Threshold of evidence required	First SRG review			First SRG review: interventions with behavioural/biological outcomes in sub-Saharan Africa only			Current SRG review		Overall SRG		
		Strength of evidence	SRG recommendation	Explanation	Strength of evidence	SRG recommendation	Explanation	Strength of evidence	Explanation	Strength of evidence	Overall Recommendation	Explanation
Type 1 (targeting youth and delivered using existing organisations or events)	Moderate	Equivocal	Ready	*5/10 evaluated with design to produce plausibility or probability evidence sufficient to meet moderate threshold. There was high diversity within this type of intervention and lack of adequate monitoring or process data*	Weak: positive effect	Steady	*Only 5 studies remain, weak study designs*	Weak: positive effect	*2 studies, 1 cross-sect with positive effect and 1 quasi-experimental with no effect/negative results*	Weak: positive effect	**Steady**	*7 studies all with weak designs and positive effect*
Type 2 (targeting youth and creating own system and structure for delivery)	High	Weak	Steady (or do not go)	*All 6 evaluations had weak designs, mostly positive results*	Weak: positive effect	Steady	*2 studies with positive results but no statistical tests*	Moderate: positive effect	*3 studies, 2 cross-sectional, 1 before-after, weak to moderate study design, mostly positive results. One cross-sectional study showing decrease in biologically measured HIV*	Moderate: positive effect	**Steady**	*5 studies with positive effect, weak to moderate study designs, one impacting biologically measured HIV*
Type 3 (community-wide intervention delivered through traditional networks)	Moderate	Weak	Steady	*Only 3 interventions, mixed results*	Weak: mixed effect	Steady	*No change*	Moderate: positive effect	*1 strong RCT study with positive impact on one reported outcome*	Moderate: positive effect	**Ready**	*1 well-designed RCT with positive effect, and weaker studies with mixed effect*
Type 4 (community-wide intervention delivered through community-wide activities)	Moderate	Weak	Steady	*Only 2 studies, weak design, mostly positive results*	Weak: positive effect	Steady	*1 study with no statistical test*	Moderate: mostly positive effect	*5 studies, 2 RCT one with positive effect on biologically measured HSV2, 3 cross-sectional studies with mixed pos/neg result*	Moderate: mostly positive effect	**Ready**	*7 studies with primarily moderate study designs and positive effect*

6. Interventions with biological outcomes

Since the first SRG review was completed in 2005, there have been five studies of interventions in one or more of the three settings that have reported the impact on HIV prevalence and other biological outcomes. Because the primary outcome of reducing HIV prevalence in young people has been measured directly as opposed to using proxy measures such as reported sexual behaviour, knowledge, reported attitudes or self-efficacy, more weight is placed on the strength of evidence from these studies. This section reviews only the evidence from these studies and only considers the impact on the biological outcomes within those studies. The impact on other outcomes measured in these same studies has been reported in the relevant sections according to study setting and type.

We identified five studies meeting the inclusion criteria that measured HIV and other biological outcomes.[19, 21, 23, 27, 50-54, 57, 59, 60] Three studies were multi-component interventions (Studies A, B and D), and two were community-based (Studies C and W). Descriptions of the interventions and the outcome evaluation are presented in Tables 6.1 and 6.2. Four studies used an experimental, cluster randomized design, had large sample sizes with medium to long term follow up, and were rigorously implemented and evaluated (Studies A, B, C and W). The fifth study (D) was a nationally-representative cross-sectional survey to identify risk factors for HIV, which included exposure to a national community-based intervention.

6.1 Description of interventions

The MEMA kwa Vijana trial (Study A) evaluated a multi-component, adolescent sexual and reproductive health programme, working in schools, health facilities and communities in Mwanza Region, Tanzania within a cluster randomized trial. It had long-term follow-up, with an evaluation after 36 months of intervention within a cohort of young people (results included in the SRG review) and a cross-sectional evaluation in 2007-8 after an average of 96 months. This study is unique in that the very long follow-up period allowed the possibility of detecting any cumulative effects of intervention exposure to several consecutive cohorts of young people. Here we evaluate the long-term results from the survey conducted in 2007-8, 8.5 to 9.5 years after the start of the interventions in the intervention communities. Serum was collected for HIV and HSV2 antibody testing using ELISA, and syphilis testing using the *Treponema pallidum* particle agglutination (TPPA) test with rapid plasma reagin (RPR) testing of all TPPA-reactive specimens to identify whether the syphilis was active or not. Urine specimens were tested for *Chlamydia trachomatis* and *Neisseria gonorrheae* using PCR. The Regai Dzive Shiri Trial (Study B), evaluated a multi-component adolescent reproductive health programme aimed at preventing HIV, sexually transmitted infections and unintended pregnancy among young people in and out of school in rural Zimbabwe within a cluster randomized trial. In addition to in- and out-of-school health education programmes, this intervention also implemented interventions to increase the youth-friendliness of local government health services and a community awareness-raising component. Impact was evaluated in a cross-sectional survey of young people aged 18-22 years approximately 48 months after the start of the interventions. Blood was collected as dried blood spots and tested for HIV and HSV2 antibodies using ELISA. Urine was collected from females for hCG pregnancy testing.

Table 6.1: Description of interventions with biological outcomes, by study

Study, location and programme	Target population and primary objectives	Description
A - United Republic of Tanzania, MEMA kwa Vijana [19,22,24,25,27]	* Youth aged 12-19 years in rural areas * Targeted sexual initiation, condom use, number of partners, use of health services	* In-school programme was teacher-led and peer-assisted * Interventions to increase the youth-friendliness of local government health services * Community-based condom distribution for and by youth * Community awareness-raising through health weeks and STI/HIV video screenings
B - Zimbabwe, Regai Dzive Shiri [21,23]	* Youth with mean age 15 years in rural areas * Targeted sexual initiation, condom use, number of partners, use of health services	* In-school programme led by older, highly trained peers * Peer-led community groups for out-of-school youth * Interventions to increase the youth-friendliness of local government health services * Community awareness-raising sessions for parents and adults
C - South Africa, Stepping Stones [51,52,53]	* Youth aged 15-26 years in rural areas * Targeted condom use, number of partners, number of casual and transactional partners, intimate partner violence, drinking and drug use	* Peer-led sessions for in- and out-of-school youth * Peer group meetings * One community-wide meeting
D - South Africa, loveLife [54,57]	* Youth aged 15-25 years in rural and urban areas * Targeted sexual initiation, condom use, number of partners, gender and social norms	* Promotion of HIV risk reduction and positive lifestyle through media programmes including billboards, television, radio and printed materials * Comprehensive, interactive educational programmes for youth, parents, organisations and communities
W - South Africa, IMAGE [50,59,60]	* Youth aged 14-24 years in rural areas * Targeted sexual initiation, condom use, number of partners, gender and social norms, communication of reproductive health, HIV testing	* Microfinance for establishment of small businesses among older women (not targeted to youth) * Gender and HIV training curriculum * Community mobilization to engage young people and men * Clinic health workers received training in HIV testing, care and support

The primary objective of Study D was not to evaluate a specific intervention, but rather to identify factors associated with HIV in a nationally representative survey of sexually experienced young people in South Africa. One of the exposure variables measured in this survey was exposure to the national HIV prevention and sexual and reproductive health programme, *loveLife*. *loveLife* is a multi-component intervention, including a multi-media awareness and education campaign, community outreach, youth centres, and youth-friendly clinics. Study D evaluated HIV prevalence by reported participation in a *loveLife* community programme.

The Stepping Stones trial (Study C) evaluated a community-based intervention targeting in- and out-of-school youth, with the aim of reducing HIV and promoting safer sexual behaviour in young people in rural South Africa within a cluster randomized trial. Study C measured impact at 12 and 24 months after initiation of the intervention. Biological outcomes measured included HIV and HSV2. A blood sample was tested for HIV using rapid tests, with ELISA for confirmation of positive results, and for HSV2 by ELISA.

The IMAGE study (Study W) was a cluster randomized trial in rural South Africa, evaluating an individual and community-level, structural approach to HIV prevention and reduction of intimate partner violence. Based on the theory that poverty and gender inequity contribute to increasing HIV prevalence in this

area, IMAGE intervened through a microfinance program for women, coupled with a curriculum on gender and HIV education. Notably, this intervention did demonstrate a reduction in intimate partner violence among recipients of the intervention. Though young people were not the direct recipients of the intervention, the impact of the intervention was assessed among household members of participants (cohort 2) and people in the communities of participants at large (cohort 3). A blood sample was tested to measure HIV incidence in cohorts 2 and 3 using ELISA. A sub-group analysis was conducted among young people in cohorts 2 and 3, the results of which are presented here.

6.2 Impact on biological outcomes

Table 6.2 summarizes the impact of these studies on biological outcomes. Only Study D demonstrated a significant impact on HIV, in sexually experienced males and females. As Study D was a cross-sectional survey, it is not possible to determine the causal sequence of events, and furthermore it is possible that young people exposed to *loveLife* would have been systematically different from those unexposed with regard to their HIV risk profile even without *loveLife*. None-the-less, this survey did control for a number of potential confounding factors, and these results are consistent with the hyposthesis that *loveLife* is affecting HIV risk in this population. It is important to note that Study C evaluated the impact of the Stepping Stones intervention in small groups of volunteers who self-selected themselves to be involved in an intensive intervention. They were likely therefore to be individuals who were particularly motivated to learn about sexual risks and perhaps to change their own risk behaviours. Of note, Study C was not adequately powered to detect changes in HIV incidence, and assumptions of likely HIV incidence in this population that were used to calculate sample size at the trial design were overestimated. Study W was also not powered to detect changed in HIV incidence among this subgroup of young people. Studies A and B had better power. However, Study B suffered from high participant mobility, and ultimately the intervention was assessed in the wider community rather than among intervention recipients only, which is likely to have diluted any true effect of the intervention if it occurred. Study A also experienced some out-migration of participants, and these mobile populations are typically at higher risk for HIV and other STIs. The intervention also targeted those who had completed at least four years of school. These factors likely resulted in an evaluation population at lower risk than the average rural population in the area.

Three studies - A, B and C - measured HSV2. There was no significant impact on HSV2 acquisition in Studies A or B, however study C showed a significant reduction in HSV2 incidence at 24 months in both males and females. This finding is important in that while HSV2 arguably may not be a good proxy for HIV,[62] it is an important co-factor for HIV transmission and therefore could impact HIV incidence in the longer term.[63] Study A measured syphilis, *C. trachomatis* and *N. gonorrhea*, but did not demonstrate a significant difference in prevalence of these outcomes in either males or females. Of note, Study A demonstrated a significant increase in prevalence of *N. gonorrheae* at 36 months in females in the intervention arm, but this was not seen at the 96 month survey and may well have been a chance finding. Pregnancy was measured in females at 48 months in Study B and no significant impact was found, however there was a significant reduction in reported pregnancy in this study.

Table 6.2: Description of outcome evaluations, by study

Study	Design and sample size	Evaluation results[a]		Males	Females	Factors affecting strength of evidence
A [19,22, 24,25, 27]	Design: Experimental (randomized by community) Sample size: 9645 baseline, 13,814 at last follow up *10 intervention communities and 10 control communities * Baseline and follow-up survey at 36 months in cohort and cross-sectional final survey at 8.5-9.5 years after start of intervention *Baseline, 36 and 96 months	HIV prevalence: At 36 & 96 months HSV2 prevalence: At 36 & 96 months Syphilis prevalence: At 36 & 96 months Chlamydia prevalence: At 36 & 96 months Gonorrhoea prevalence: At 36 & 96 months		0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 - 0	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Restricted to young people who had reached primary school year 5; high out-migration so study population likely to be lower risk
B [21,23]	Design: Experimental (randomized by community) Sample size: 6791 baseline, 4672 at last follow up *15 intervention communities and 15 control communities * Cohort design, baseline and interim surveys, cross sectional surveys at 36 and 48 months *Baseline, 36 and 48 months follow up	HIV prevalence: At 48 months HSV2 (genital herpes) prevalence: At 48 months Pregnancy prevalence: At 48 months Reported pregnancy during follow-up: At 48 months		0 0 0	0 0 0 +	Strengths: Rigorously evaluated RCT with large sample size, long term follow-up; use of biological outcomes. Limitations: Due to excessive out-migration the original cohort was not followed for 48 months, rather a population-based survey was conducted
C [51,52, 53]	Design: Experimental (randomized by community) Sample size: 2776 baseline, 2058 at last follow up *35 intervention communities and 35 control communities * Cohort design, pre, 12 and 24 months post test surveys *Baseline, 12 and 24 months follow up	HIV incidence: At 24 months HSV2 incidence: At 24 months		0 +	0 +	Strengths: Rigorously evaluated RCT with large sample size, medium term follow-up; use of biological outcomes. Limitations: Low power to detect changes in HIV incidence
D [54,57]	Design: Cross-sectional survey (no comparison group) Sample size: 11,904 with analysis among 7691 sexually experienced * Nationally representative population-based survey 4 years after start of intervention	HIV prevalence: Participated in a loveLife programme		+	+	Strengths: Large sample size; use of biological outcome. Limitations: Cross-sectional survey design; those exposed to intervention could be fundamentally different from unexposed
W [50,59, 60]	Design: Experimental (randomized by community) Sample size: 647 in cohort 2, 1303 in cohort 3 *8 intervention communities and 8 control communities *3 cohorts in each community, at the (1) individual - did not target young people, (2) household and (3) community levels *Baseline and survey at 2 years follow up in cohort 2 and 3 years in cohort 3	HIV incidence: cohort 2/cohort 3	0 0			Strengths: Rigorously evaluated RCT, medium term follow-up; use of biological outcomes. Limitations: Low power to detect changes in HIV incidence in subset of young people, direct programme participants (cohort 1) were not young people, not powered to stratify by gender in this subgroup analysis

[a] Results categorised as: "0" for no significant change, "+" for significant desirable change, "-" for significant undesirable change

Though these were large studies, the lack of a measurable impact on the majority of biological outcomes may be testament to the fact that knowledge alone is not enough to reduce HIV and STIs in young people, and that other social and economic vulnerabilities may pose challenges that outweigh the desire for positive behaviour change. Changes in the sexual norms and attitudes in the wider adult community as a whole may be required if we are to achieve a reduction HIV in young people.

Studies have demonstrated that reporting of sexual behaviour is problematic and potentially unreliable/invalid, particularly among young people, and that reported sexual behaviour results may be biased towards suggesting intervention benefit due to social desirability bias.[11-13] For example, despite evidence that in-school sexual education programmes can improve knowledge and reported sexual behaviour,[5] neither of the rigorously implemented and evaluated in-school interventions reviewed here that measured biological outcomes detected a significant effect on any biological outcomes measured. It is therefore recommended that in future research, whenever possible, HIV or other biological markers of sexual activity be measured.

7. Conclusions

Due to social, cultural, economic and biological reasons, young people are particularly vulnerable to HIV and AIDS. They often lack the necessary tools, including knowledge, life skills, financial autonomy, adult mentoring, access to health care and others to help protect themselves against early sexual debut, sexual coercion, and unprotected sex leading to high rates of both acquisition and transmission of HIV. They are at the centre of the HIV epidemic, yet have historically been only peripherally included in the response. Global goals to reduce vulnerability and prevent HIV in young people highlight the growing attention and urgency of this problem.

Young people have been acknowledged as a special risk population and both the Millennium Development Goals[7] and global goals endorsed by the UN General Assembly Special Session on HIV/AIDS[8] have explicitly addressed their unique vulnerability. These goals include reducing HIV prevalence in young people, and ensuring access to the necessary information, skills and services required by young people to reduce their vulnerability to HIV. Encouragingly, interventions in this review, in addition to addressing reported behavioural and/or biological outcomes, have largely addressed these global goals, in terms of overall objectives and outcomes measured. Key findings from this review are presented in Box 5.

This systematic review of HIV prevention interventions for young people has a number of distinct strengths. The review applies a standard and transparent methodology across settings. This methodology relies on grading interventions for their strength of evidence, to systematically review interventions alongside each other in order to determine overall effectiveness for each type of intervention within a given setting. The review takes a public health perspective with the major focus of the review being the implications of results for policy and programming. While more weight is placed on evidence from experimental trials, we have also included non-randomised interventions where appropriate. Finally, as we have used a similar typology and methodology to the first SRG review, we are able to directly add the newly-reported studies to the ones already reviewed in the first SRG review.

This allows overall recommendations to be made for interventions in sub-Saharan Africa in schools, health services and geographically-bound communities based on evidence from 1990-2008.

Box 5: Key findings

A systematic review of evidence (1990-2008) on the effectiveness of interventions in sub-Saharan Africa to reduce risky sexual behaviours and pregnancy, HIV and other STIs among youth found that, despite 19 years of research, there is still insufficient evidence to recommend widescale implementation of the majority of the types of interventions that have been considered.
Go - sufficient evidence exists to recommend widespread large-scale implementation of in-school interventions that are adult-led and curriculum based.
Ready - evidence exists to suggest that the following interventions are effective, but large scale implementation must be accompanied by further monitoring and evaluation: Interventions in health facility that train service providers train service providers and take actions to make the facility more youth-friendly, coupled with activities in the community with or without involvement of other sectors to link or refer young people to health services; Community interventions targeting the whole community, using either traditional networks or community-wide activities for intervention delivery.
Steady - More research and development is still needed for in-school inteventions that are peer-led and non-curriculum based , health facility interventions that do not also involve actions in the clinic and activities in the community and community interventions that target youth only.
The number of evaluations has increased over the last 4 years, especially evaluations of community interventions, however the quality of evaluations remains weak overall. We recommend planning the intervention evaluations early in the intervention development and implementation process, with an emphasis on the use of high quality evaluation designs.
Multi-component interventions may be the most effective, especially those which include targeting of the wider community. Operational research should focus on attempting to disentangle the relative importance of the various components of multi-component interventions in order to inform programming decisions related to what aspects are essential and most cost-effective.
Reported behaviour outcomes are subject to biased reporting and we recommend that HIV or other biological markers of sexual activity are measured, wherever possible.
Cost and cost-effectiveness data is lacking in most intervention evaluations and we recommend that this be collected wherever possible, as it is essential for guiding programming, particularly in resource-poor settings.

A major limitation is that too few studies measured biological outcomes. As such, evidence for effectiveness depended primarily, in schools and in geographically-bound communities, on reported sexual behaviours. In health services evidence for effectiveness depended on utilisation or reported utilisation of services. It should be noted that even for interventions with a recommendation of 'Go!' this applies. Studies with biological outcomes, especially HIV itself, are important because HIV prevention is typically the primary objective, so it is important to evaluate that as a primary outcome. It is widely believed that knowledge alone is not enough to facilitate behaviour change, and additionally, many studies have demonstrated that reported sexual behaviour is potentially unreliable/invalid, especially among young people.[11-13] For example, despite evidence that in-school sexual education programmes can improve knowledge and reported sexual behaviour,[5] neither of the rigorously implemented and evaluated in-school interventions reviewed here that measured biological outcomes detected a significant effect on any biological outcomes measured. It is therefore recommended that in future research, whenever possible, HIV or other biological markers of sexual activity be measured.

One limitation to the Steady, Ready, Go! methodology used is this review is that it prioritises the UNGASS goals and hence measures success according to intervention impact on knowledge and reported behaviours as the measure of success. Reported behaviour is problematic and measuring intervention impact on biological outcomes would have been more objective and more in keeping with the ultimate goal of reducing HIV and other STI. However, too few studies measured biological outcomes. As such, evidence for effectiveness depended primarily, in schools and in geographically-bound communities, on reported sexual behaviours. In health services, evidence for effectiveness depended on utilisation or reported utilisation of services and not the effectiveness of the services on

health outcomes. It should be noted that even for interventions with a recommendation of 'Go!' this applies. Interventions in this review were considered as having an effect if an impact was seen on just one of the biological or reported behavioural outcomes measured. This is a limitation as often an intervention shows an impact on only one of its many outcomes and saying that there was an overall impact tends to make an intervention appear more (or less) effective than it may actually be.

Data on cost-effectiveness from these interventions is unfortunately limited, and doesn't provide adequate opportunity for comparison or generalisability. Cost-effectiveness data is essential for guiding programming, particularly in resource-poor settings. Another limitation is the omission of mass media interventions, and interventions among young people most at-risk.

There were 23 interventions identified in total that met our inclusion criteria for this review. The large number of studies, published in the span of just three years, reflects an increasing recognition of the importance of HIV prevention among young people, and the need for studies to assess the effectiveness of interventions that aim to achieve that. However, the relative dearth of randomised controlled trials (a total of just 5/23) reflects the fact that many of the evaluations have either been conducted by programme implementers or have been a late addition to the programme design.

Overall the quality of studies included here were generally higher than the first SRG review, however this review is still hindered by poor study design and lack of analytical rigour in some evaluations. Appropriate evaluation is critical to forming a sound evidence-base for HIV prevention interventions. Many evaluations of interventions included in this review were sub-par and/or an afterthought. The strength of evidence is only as good as the evaluation, and future research should plan for a reasonable evaluation process.

Five of the twenty-three interventions reviewed here were multi-component interventions, attempting to address a number of potential vulnerabilities at one time. There is a growing consensus that to achieve HIV prevention in young people it is necessary to provide a range of tools and address a number of barriers, including changing broad community attitudes and norms. To accomplish this, it is necessary to implement interventions in different settings simultaneously, and thus have the capacity to promote change using different approaches on a number of levels. With evaluations of multi-component interventions, however, it is difficult, often impossible, to disentangle the relative contribution of the various components on the measured outcomes. Likewise, for interventions with a range of activities, such as many of the community-based interventions evaluated in this review, it is equally difficult to determine how the various components work together (synergistically or perhaps even antagonistically) and which aspect(s) of these interventions are most effective.

There are a number of factors which may mediate behaviour change in young people. In order to frame where we may and may not have the potential to make an impact, it is important to first consider what factors make young people vulnerable to HIV, i.e. lack of knowledge about disease, lack of parental protection or mentoring, poor life skills, lack of financial autonomy, biological vulnerability, etc. These factors may vary depending on the setting, and importantly the relative importance of each of these and the ability to impact each will likely vary considerably from place to place. As such, a one-size-fits-all

intervention is unlikely, and careful evaluation of the unique risk factors and context is necessary to determine the optimal intervention.

Finally, however, the disappointing results of the two recently-reported community randomised trials which evaluated the impact of multi-component interventions in schools, health facilities and communities on HIV and other biological outcomes (Study A and Study B) suggest that interventions in these settings may not be sufficient to reduce HIV incidence among young people. This does not necessarily mean that they should be given low priority, but emphasises the need for intervention designers to explore ways of supplementing such interventions with additional interventions. Social science research conducted alongside the MEMA kwa Vijana trial suggests that one important avenue to explore might be on interventions to change the social and sexual norms within the wider community, as has been suggested in other research.[64-66] Other areas might include interventions that aim to increase the resilience and self-worth of young people.

It will be imperative that researchers work closely with intervention designers to rigorously evaluate the impact of these interventions and differing combinations of "traditional" interventions in schools, health services and geographically-defined communities along side other interventions such as those mentioned above, and that these evaluations include biological outcomes including HIV, wherever possible.

Meanwhile, policy makers and programme designers do not have the luxury of sitting back and waiting for the results of such studies. The moral and public health imperative of doing everything we can to give current and future generations of young people the chance of avoiding HIV infection and of accessing effective treatment, care and support if they do become infected means that policy makers and programme managers must weigh up the existing evidence related to the effectiveness of interventions among young people and invest in those interventions with the best evidence of effectiveness, while being aware that they may need to adjust or even change their programmes as new evidence becomes available. In this regard, this review has shown that:

- There is now compelling evidence that well-designed and implemented, curriculum-based interventions in schools that are led by adults, with or without the involvement of peers can have an impact on reducing self-reported sexual risk behaviours, though there is increasing concern that this apparent impact on behaviours may actually be due to reporting bias fuelled by the young people's improved knowledge of what they would need to do to reduce their risk, rather than reflecting substantial changes in actual behaviours.
- Several components of the sexual and reproductive health services that can be provided by health facilities (such as male circumcision and male and female condoms) have been shown to be effective in reducing HIV.[67-72] There is increasing evidence that interventions which train service providers and take actions to make the facility more youth-friendly, coupled with activities in the community with or without involvement of other sectors to link or refer young people to health services can increase the accessibility and acceptability of these health services.

- The evidence for interventions in geographically-defined communities has led to the recommendation that interventions targeting the community, using either traditional networks or community-wide activities for intervention delivery are effective in improving both reported risky sexual behaviour and some biological outcomes.

The findings from the SRG review indicate that these types of interventions in schools, health facilities and geographically-defined communities should still be serious contenders for HIV prevention investment.

Acknowledgements

The authors would like to thank Doug Kirby for permission to reproduce his characteristics of effective curriculum-based programmes in schools, found in Appendix B, and the use of his template for summarizing studies, found in Appendix C. We would also like to acknowledge all the authors who contributed to the first SRG review, for laying the foundation for the methodology used here, as well as for use of certain tables which have been adapted or replicated in this review.

Contributors

AD developed the search strategy, and conducted the initial search for relevant citations based on title, abstract and/or key words for relevance. SNM reviewed 10% of all citations from this initial search, as a quality control measure. Search of additional electronic resources, and review of references from select citations was conducted by SNM. A full-text review of relevant citations was conducted by SNM, DR and AD, who jointly determined studies for final inclusion. SNM wrote the first draft of the paper. All three co-authors have revised the paper.

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List of Appendices

Appendix A: Recommendations from the first *Steady, Ready, Go!* review

Appendix B: Characteristics of effective curriculum-based programs in schools

Appendix C: Expanded study descriptions (Note: these have been sent to authors for review and verification. Not all authors have provided feedback, and in such cases this has been noted)

Appendix A: Recommendations from the first SRG review

Interventions recommended for Go! (Widespread implementation now)

Setting	Intervention
Schools	Curriculum-based schools interventions, with characteristics that have been found to be effective in developed country settings, and were adult-led
Health services	Interventions with service providers and changes to either the structure or functioning of the facilities themselves, linked to interventions in the community to promote the health services for young people
Geographically defined communities	None
Young People most at risk	None
Mass media	Mass media interventions with messages delivered through the radio and through other media except television (eg. print media) Mass media interventions with messages delivered through the radio, television and through other media (eg. print media)

Interventions recommended for Ready (Large-scale implementation must be accompanied by further evaluation and operations research)

Setting	Intervention
Schools	None
Health services	Interventions with service providers, in facility, in community & with other sectors
Geographically defined communities	Targeting youth using existing youth-serving organizations
Young People most at risk	Facility only - information and services Outreach & facility - information & services
Mass media	None

Interventions recommended for Steady (Further intervention development, pilot testing and evaluation are needed before large scale implementation could be recommended)

Setting	Intervention
Schools	Curriculum based; with characteristics that have been found to be effective in developed country settings; peer-led Curriculum based; *without* the characteristics that have been found to be effective in developed country settings; adult-led Curriculum based; *without* the characteristics that have been found to be effective in developed country settings; peer-led *Non*-curriculum based; with characteristics that have been found to be effective in developed country settings; adult-led *Non*-curriculum based; with characteristics that have been found to be effective in developed country settings; peer-led
Health services	Interventions with service providers & in community Interventions with service providers & with other sectors Interventions with service providers, in facility & with other sectors Interventions with service providers, in community & with other sectors
Geographically defined communities	Targeting youth through new structures Targeting the entire community through traditional networks Targeting the entire community through community events
Young People most at risk	Outreach only - information and services
Mass Media	Radio only

Appendix B: Characteristics of Effective In-School, Curriculum-Based Programs

The Process of Developing the Curriculum	The Contents of the Curriculum Itself	The Implementation of the Curriculum
1. Involved multiple people with different backgrounds in theory, research and sex/HIV education to develop the curriculum 2. Assessed relevant needs and assets of target group 3. Used a logic model approach to develop the curriculum that specified the health goals, the behaviors affecting those health goals, the risk and protective factors affecting those behaviors, and the activities addressing those risk and protective factors 4. Designed activities consistent with community values and available resources (e.g., staff time, staff skills, facility space, and supplies) 5. Pilot-tested the program	**Curriculum Goals and Objectives** 1. Focused on clear health goals – the prevention of STD/HIV and/or pregnancy 2. Focused narrowly on specific behaviors leading to these health goals (e.g., abstaining from sex or using condoms or other contraceptives), gave clear messages about these behaviors, and addressed situations that might lead to them and how to avoid them 3. Addressed multiple sexual psychosocial risk and protective factors affecting sexual behaviors (e.g., knowledge, perceived risks, values, attitudes, perceived norms, and self-efficacy) **Activities and Teaching Methodologies** 4. Created a safe social environment for youth to participate 5. Included multiple activities to change each of the targeted risk and protective factors 6. Employed instructionally sound teaching methods that actively involved the participants, that helped participants personalize the information, and that were designed to change each group of risk and protective factors 7. Employed activities, instructional methods and behavioral messages that were appropriate to the youths' culture, developmental age, and sexual experience 8. Covered topics in a logical sequence	1. Secured at least minimal support from appropriate authorities such as ministries of health, school districts or community organizations 2. Selected educators with desired characteristics (whenever possible), trained them and provided monitoring, supervision and support 3. If needed, implemented activities to recruit and retain youth and overcome barriers to their involvement, e.g., publicized the program, offered food, or obtained consent 4. Implemented virtually all activities with reasonable fidelity

*Kirby D, Laris BA, and Rolleri L. The Impact of Sex and HIV Education Programs in Schools and Communities on Sexual Behaviors among Young Adults. Washington DC: Family Health International, 2006

Appendix C: Expanded study descriptions

We did not received feedback on the expanded study descriptions from authors of the following interventions: C, K, N, O, P, Q, S, T, and V

Study A

Study Information

Program name:
MEMA kwa Vijana (Good Things for Young People)

Reference:
Ross
2008, 2003

Doyle
2009 (submitted)

Contact person:
David Ross
London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E7HT, UK
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Community/ Sample Characteristics

Country:
Tanzania

Location in country:
Mwanza

Rural/urban:
Rural

Income level:
NR

Pregnancy Risk level:
High

STD/HIV Risk level:
Mixed

Age:
12-19 years

Grade level: Years 5, 6, and 7 of primary school

Gender:
M=55%
F=45%

Race/ethnicity:
>99% Black African
Sukuma 73%
Non-Sukuma 17%

Total sample at baseline:
N=9645

Matched baseline-18 months sample:
NR

Matched baseline-36 months sample:
N=7040

96 months sample (cross sectional):
N=13,814

Program Description

Setting: 58 primary schools and 18 health facilities

Structure: There were four components: in-school sexual and reproductive health education; youth friendly health services; community-based condom distribution; and community activities.

Behaviors targeted: Delayed initiation of sex, condom use, reduced number of sex partners, increased use of sexual health services

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Think about the consequences of your behavior.

Theoretical basis: Social learning theory

Topics covered: Refusal skills, self-efficacy, self-esteem, information on STI/HIV, sexuality, and contraception, abstinence, access to reproductive health care, moral behavior and social values regarding sex, respecting individual rights, gender issues, access to contraceptives

Methods: The in-school education was teacher-led and peer-assisted using participatory methods including the use of drama, stories, and games. Reproductive health services focused on meeting the specific needs of youth and becoming more youth friendly. The condom distribution was for and by youth; STD/HIV videos were shown in the communities. There was a week of intensive community-wide activities each year in each community – including inter-school competitions.

Development of curriculum/program: Conducted a needs assessment initially. Collaborative effort to develop and pretest training and supervision guides and materials.

Educators and their training: Over 150 teachers, 2000 peer educators, 62 head teachers, 14 ward education coordinators, 10 district school inspectors, and 70 health workers were trained.

Implementation: In intervention communities, program in 58 primary schools and 18 health facilities. During each of the 3 years, 80% of scheduled in-school sessions were taught, 3000 condoms distributed per year 2000-02.

Study Design and Analytic Methods

Type of design: Experimental. Twenty communities were randomly assigned to receive the intervention immediately, or at the end of the trial.

Cohort design: Matched pre and posttest surveys; cross sectional for last follow up.

Timing of surveys: Questionnaire, clinical and biological data were collected at baseline, 18- and 36- months post-intervention. Long term follow up of students who had been exposed to the intervention between 1999-2002 was conducted in 2007/08 (96 months post intervention)

Comparison intervention: The comparison communities received the routine government SRH interventions and services throughout the trial.

Sample size for sexually inexperienced at baseline: N=5747

Sample size for sexually experienced at last follow-up: 2879 reported sexual debut during the follow-up

Retention Rate: 73% at 36 months. 40% of original MkV cohort interviewed at 96 months

Statistical analysis: Multiple regression or multiple logistic regression were used to measure impact of the intervention using a cluster-based analysis.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Sexual initiation during follow-up: At 36 & 96 months	0 0	0 0
More than 1 partner in last 12 months: At 36 & 96 months	+ 0	0 0
First used condom during follow-up: At 36 months	+	+
Condom use at last sex: At 36 & 96 months	+ 0	0 0
Condom use at last sex with non-regular partner: At 96 months	0	+
HIV incidence: At 36 & 96 months	0 0	0 0
HSV2 (genital herpes) prevalence: At 36 & 96 months	0 0	0 0
Syphilis prevalence: At 36 & 96 months	0 0	0 0
Chlamydia prevalence: At 36 & 96 months	0 0	0 0
Gonorrhoea prevalence: At 36 & 96 months	0 0	- 0
Trichomonas prevalence: At 36 months		0
Pregnancy prevalence: At 36 months		0 0
Reported first pregnancy during follow-up: At 36 months		0
Impact on mediating factors:		
Went to clinic for STI symptoms and family planning services: At 36 & 96 months	0 0	0 0
Knowledge of HIV acquisition: At 36 & 96 months	+ 0	+ 0
Knowledge of STD acquisition: At 36 & 96 months	+ +	+ 0
Knowledge of pregnancy prevention: At 36 & 96 months	+ +	+ +
Attitudes to sex: At 36 & 96 months	+ 0	+ 0

Additional Comments

This was a very rigorous evaluation with random assignment, long term follow-up, and the use of biological outcomes.

Among males, initiation of sex approached significance.

The intervention appeared to have a greater impact on males than females and also on those youth who received more of the in-school component.

The 20 communities were stratified to low, medium and high risk of HIV based on HIV prevalence in 15-19 year olds, Chlamydia prevalence and community type. Communities were then randomized to intervention or comparison, using restricted randomization to ensure balance on HIV prevalence and geographical district.

The power of the study to detect changes in HIV incidence was low.

The risk of pregnancy is identified as high because the proportion pregnant was 0.8% overall at recruitment ; 46% reported they had been pregnant at final follow-up; and 18-19% were pregnant by urine HCG test at final follow-up.

For a detailed account of STD rates, see Obasi et al. Prevalence of HIV and Chlamydia trachomatis infection in 15 to 19 year olds in rural Tanzania. Trop Med Internat Hlth 2001.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study B

Study Information

Program name:
Regai Dzive Shiri Project

Reference:
Cowan
2009 (submitted)
2008

Contact person:
Frances Cowan
University College London, Centre for Sexual Health and HIV Research, Mortimer Market Centre, off Capper Street, London WC1E 6AU
Francemcowan@yahoo.co.uk

Community/ Sample Characteristics

Country:
Zimbabwe

Location in country:
South-eastern Zimbabwe

Rural/urban:
Rural

Income level:
Low

Pregnancy Risk level:
NR

STD/HIV Risk level:
Low/Medium

Age:
Mean 15 years

Grade level:
Secondary school Form 2 (9th year)

Gender:
M=52%
F=48%

Race/ethnicity:
>99% Black African

Total sample at baseline:
N=6791

Matched interim survey 36 months sample: N=1495

48 months sample (cross sectional):
N=4672

Program Description

Setting: 30 communities in 7 districts, 82 secondary schools

Structure: There were four components: in-school sexual and reproductive health education; Sexual and reproductive health education for out-of-school delivered through community groups, youth friendly health services; community awareness raising sessions for parents and adults.

Behaviors targeted: Delayed initiation of sex, condom use, reduced number of sex partners, increased use of sexual health services

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Think about the consequences of your behavior.

Theoretical basis: Social learning theory and stages of change model

Topics covered: Refusal skills, self-efficacy, self-esteem, information on STI/HIV, sexuality, and contraception, abstinence, access to reproductive health care, moral behavior and social values regarding sex, respecting individual rights, gender issues, access to contraceptives

Methods: The in- and out-of-school education was conducted by professional peer educators (PPE) using well-structured and highly participatory methods. Reproductive health services focused on training health workers in order to improve clinic accessibility to youth. The community programme was a 22-session intervention aimed to improve knowledge and communication between adults and youth about reproductive health.

Development of curriculum/program: Focus group discussions helped identify needs. Collaborative effort to develop and pretest training and supervision guides and materials.

Educators and their training: Young people in the year between leaving school and starting university were carefully selected, trained and supported to deliver the intervention to youth and assist with community intervention. New PPEs were recruited annually.

Implementation: PPE lived for 8-10 months in the 15 intervention communities in which they worked. Intervention delivered to everyone, not just those enrolled in RDS. Intervention delivered by RDS staff in years 3 and 4. Community intervention was 22 sessions.

Study Design and Analytic Methods

Type of design:
Experimental. Thirty communities were randomly assigned to receive the intervention immediately, or at the end of the trial.

Cohort design: Matched baseline and 36 months interim surveys; cross sectional population-based survey last follow up at 48 months.

Timing of surveys:
Questionnaire and biological data were collected at baseline, 36 and 48 months post-intervention.

Comparison intervention:
The comparison communities received standard HIV prevention activities administered through government and non-governmental organizations.

Sample size for sexually inexperienced at baseline: N=6179

Sample size for sexually experienced at last follow-up: N=844

Retention Rate: 54% at 36 months.

Statistical analysis:
Multivariate analysis using GEE, and Cox regression used to measure age of sexual debut by intervention status accounting for clustered design.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Sexual initiation during follow-up: At 48 months	0	0
Two or more partners in last 12 months: At 48 months	0	0
Two or more lifetime partners: At 48 months	0	0
Sexual debut at 17 or younger: At 48 months	0	0
No condom use at last sex; At 48 months	0	0
No pregnancy prevention with first partner: At 48 months	0	0
No pregnancy prevention with last partner: At 48 months	0	0
No pregnancy prevention with any partner: At 48 months	0	0
HIV incidence: At 48 months	0	0
HSV2 (genital herpes) prevalence: At 48 months	0	0
Prevalence of any STD symptom: At 48 months	0	0
Pregnancy prevalence: At 48 months		0
Reported pregnancy during follow-up: At 48 months		+
Impact on mediating factors:		
Went to clinic in last 12 months: At 48 months	0	0
Sought treatment for STD symptom: At 48 months	0	0
Knowledge of HIV acquisition: At 48 months	0	0
Knowledge of STD acquisition: At 48 months	+	+
Knowledge of pregnancy prevention: At 48 months	+	+
Condom self-efficacy: At 48 months	0	+
Sexual refusal self-efficacy At 48 months	0	+
HIV testing self-efficacy At 48 months	0	+

Additional Comments

This was a rigorous evaluation with random assignment, long term follow-up, and the use of biological outcomes.

Data collected through audio-assisted survey instruments (AASI) and audio computer-assisted self-interview (ACASI) for collection of sensitive data.

The intervention appeared to have a greater impact on females than males in terms of mediating factors.

The 30 communities were randomized using restricted randomization. Each community comprised a rural health clinic, its catchment population and its secondary schools.

Due to excessive out-migration, the original study cohort was not followed for 4 years, but rather at 36 and 48 months two population-based cross-sectional surveys were conducted in trial communities.

The power of the study to detect changes in HIV incidence was fairly low, however the power to detect change in prevalence was >80% to detect a 30% reduction.

There was likely a dilution effect of the intervention, as only 41% of participants in the final survey had received the intervention.

For a detailed account of baseline results see Cowan et al. Trop Med Internat Hlth 2008.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study C

Study Information

Program name:
Stepping Stones

Reference:
Jewkes
2008, 2006

Contact person:
Rachel Jewkes
Gender and Health Research Unit, Medical Research Council, Private Bag X385, Pretoria 0001, South Africa
rjewkes@mrc.ac.za

Community/ Sample Characteristics

Country:
South Africa

Location in country:
Eastern Cape Province

Rural/urban:
Rural

Income level:
NR

Pregnancy Risk level:
N/D

STD/HIV Risk level:
N/D

Age:
15-26 years

Grade level: N/A

Gender:
M=49%
F=51%

Race/ethnicity:
>99% Black African

Total sample at baseline:
N=2776

Matched baseline-12 months sample:
N=2135

Matched baseline-24 months sample:
N=2058

Program Description

Setting: 70 clusters with 64 villages and 6 townships

Structure: 13 3-hour sessions for in- and out-of-school young people, 3 peer group meetings and a final community meeting.

Behaviors targeted: Condom use, reduced number of sexual partners, reduced casual and transactional sex partners, reduced IPV, reduced drinking and drug use

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Improve sexual health through knowledge, communication and critical reflection.

Theoretical basis: Adult education theory, Freirian models of critical reflection, use of theatre, techniques from assertiveness training, empirical findings from experiential learning

Topics covered: How we act and what shapes our actions, sex and love, conception and contraception, HIV and STIs, safer sex and condoms, gender based violence, communications skills.

Methods: 20 men and 20 women volunteers were recruited from each cluster to participate in the study. Peer-led by trained staff, single sex groups run in parallel. Intervention consists of 13 3-hour sessions, complemented by 3 meetings of peer groups and a final community meeting. The programme spanned 50 hours over 6-8 weeks. Sessions held on school premises after school hours.

Development of curriculum/program: Originally developed for use in Uganda, and has been used in over 40 countries, adapted for 17 settings including South Africa and used with hundreds of thousands of individuals. Participatory HIV prevention programme aimed to improve sexual health through stronger more equitable relationships.

Educators and their training: Intervention administered by 11 paid staff of the same gender and similar age as participants, after training and supervision. Four additional staff administered the control intervention.

Implementation: In intervention communities, 16.8% of men and 12.5% of women did not attend any sessions. 60.7% of men and 59.1% of women attended 75% of sessions or more. 27.5% and 25.4% of men and women attended all sessions.

Study Design and Analytic Methods

Type of design:
Experimental. Seventy communities were randomly assigned to receive the intervention, or a 3-hour HIV information session. Clusters grouped into 7 strata.

Cohort design: Matched baseline, 12 month and 24 month surveys.

Timing of surveys:
Questionnaire and biological data were collected at baseline, 12- and 24- months.

Comparison intervention:
The comparison schools received a single 3-hour intervention on HIV and safer sex.

Sample size for sexually inexperienced at baseline: N=210

Sample size for sexually experienced at last follow-up: N/D (>90% at baseline)

Retention Rate: 75.8% and 75.3% for women, 75.1% and 71.8% for men in intervention and control at 12 months. 73.1% and 76.0% for women, 69.5% and 69.2% for men in intervention and control at 24 months.

Statistical analysis:
Primary analysis by fitting generalized linear mixed models (GLMMs). GEE models used to test robustness of GLMMs. Cluster level analysis also carried out, stratified by gender.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Boys**	**Girls**
Number of partners in past year: At 12 & 24 months	0 0	0 0
Any transactional sex with a casual partner: At 12 & 24 months	+ 0	- 0
>1 incident of IPV: At 12 & 24 months	0 +	0 0
Rape or attempted rape: At 12 & 24 months	0 0	
Pregnancy (or impregnated, for men): At 12 & 24 months	0 0	0 0
Correct condom use at last sex: At 12 & 24 months	0 0	0 0
Any casual partner: At 12 & 24 months	0 0	0 0
HIV incidence: At 24 months	0	0
HSV2 (genital herpes) incidence: At 24 months	+	+
Impact on mediating factors:		
Depression: At 12 & 24 months	0 0	0 0
Problem drinking: At 12 & 24 months	+ 0	0 0
Ever misused drugs: At 12 & 24 months	0 0	0 0

Additional Comments

This was a very rigorous evaluation with random assignment, medium to long term follow-up, and the use of biological outcomes.

Among males, there was some evidence of reduced IPV at 12 months, and some evidence of a reduction in rape/attempted rape at 12 months. There was some evidence of a reduction in problem drinking at month 12, reduced depression at month 24 and lower proportion of drug misuse between 12 and 24 months.

There was a suggestion of more unwanted pregnancies in women at month 24.

The 70 clusters were stratified into 7 by type of community and proximity to certain roads. Communities also stratified by incidence of HIV and HSV by sex.

The power of the study to detect changes in HIV incidence was low (85% power to detect 50% difference). Assumptions of HIV incidence was overestimated (12% cumulative).

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study D

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
Program name: loveLife and other National HIV Prevention Programmes **Reference:** Pettifor 2005 **Contact person:** Audrey Pettifor Department of Epidemiology, CB #7435, McGavran-Greenberg Bldg., University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7435, USA apettif@email.unc.edu	**Country:** South Africa **Location in country:** All 9 provinces **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** NR **STD/HIV Risk level:** Mixed **Age:** 15-24 years **Grade level:** N/A **Gender:** M=55% F=45% **Race/ethnicity:** 82% Black African **Total sample:** N=11,904 (7691 sexually experienced)	**Setting:** All 9 provinces of South Africa **Structure:** Population-based survey to determine HIV prevalence and the impact of national HIV prevention programmes for youth, in particular loveLife. LoveLife is a sustained multi-media awareness and education campaign with nationwide youth friendly sexual health and outreach services. **Behaviors targeted:** Sexual behaviour , condom use, limiting number of partners, gender norms, social norms **Mediating factors targeted:** N/A **Basic message:** Self-empowerment **Theoretical basis:** Cultural theory of risk; Diffusion of innovations, ecological theory and the theory of reasoned action. **Topics covered:** Refusal skills, self-efficacy, self-esteem, information on STI/HIV, sexuality, and contraception, abstinence, access to reproductive health care, social norms, respecting individual rights, gender issues, access to contraceptives **Methods**: loveLife's activities operate at multiple levels: the individual, peer group, family and community, and nationally at a societal/cultural level. Media programmes, including billboards, television, radio and printed materials, promote HIV risk reduction and the concept of a positive lifestyle. Provides factual information, challenging social norms and stimulating public debate around issues relevant to HIV risk, such as condom use, multiple partners and gender norms. loveLife also offers comprehensive, interactive educational programmes to youth, parents, organisations and communities. Finally, loveLife provides youth-friendly SRH services. **Development of curriculum/program:** NR, but involved participation from all levels including government, community and youth, and derived from several theoretical bases. **Educators and their training:** NR **Implementation:** 84% of males and 85% of females had heard of or seen the loveLife campaign. 34% of males and 35% of females had participated in at least one program, 68% and 44% had participated in a youth group in the past month.	**Type of design:** Cross-sectional nationally representative population-based survey. **Cohort design:** Cross-sectional population-based survey. **Timing of surveys:** Questionnaire and biological data were collected at one survey time. **Comparison intervention:** N/A, all participants may have been exposed to the interventions, to varying degrees. **Sample size for sexually inexperienced at baseline:** N/A **Sample size for sexually experienced at last follow-up:** 100% **Retention Rate:** N/A, but 77% of enumerated youth participated **Statistical analysis:** Chi2 and multivariable logistic regression analysis to determine risk factors for HIV, restricted to sexually experienced youth and weighted for differential sampling probabilities.	**Impact on sexual behaviors:** HIV prevalence: Participated in a loveLife program	**Sample Subgroups** **Male** +	**Female** +	This was a rigorous analysis of risk factors for HIV in a nationally representative survey, taking into account exposure to loveLife and youth groups, 4 years post interventions, and with the use of biological outcomes. Those who were exposed to loveLife and other interventions might have been systematically different in terms of outcomes from those who were not exposed. A dose-response analysis was conducted in Pettifor 2007 referenced below, which indicated that youth participating in 2 or more loveLife programmes compared to no programmes were less likely to be HIV-infected and use condoms, compared to participation in1 versus no programmes. HIV was the only outcome variable. Other indicators of sexual behavior or mediating factors were not measured. It is not possible to determine a causal role of loveLife or other programmes due to the cross-sectional study design An evaluation of the economic impact of loveLife indicates a net savings of between $2.1-3 billion for infections averted over ten years. For a detailed account of the loveLife programme, see http://www.lovelife.org.za/ and Pettifor, et al. 'Challenge of evaluating a national HIV prevention programme: the case of loveLife, South Africa.' Sex Transm Infect. 83 Suppl 1:i70-74. 2007.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study E

Study Information

Program name: Voluntary Counseling and Testing and School Health Education (VCT and SHE)

Reference: Dente 2005

Contact person: Silvia Declich National Centre for Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanita, Viale Regina Elena, 299, 00161 Rome, Italy silvia.declich@iss.it

Community/ Sample Characteristics

Country: Uganda

Location in country: Gulu municipality and surrounding areas, northern Uganda

Rural/urban: Rural

Income level: NR

Pregnancy Risk level: NR

STD/HIV Risk level: NR

Age: <16-19 years

Grade level: S3 and S4 (3rd and 4th year of secondary school)

Gender:
Group 1
M=36%
F=64%
Group 2
M=50%
F=50%
Group 3
M=65%
F=35%

Race/ethnicity: NR

Total sample: N=1312

Program Description

Setting: 22 secondary schools in northern Uganda

Structure: Secondary schools received either VCT and SHE, SHE only, or neither intervention.

Behaviors targeted: Knowledge, behaviours and risk perceptions

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Adopt safer sexual behaviours

Theoretical basis: NR

Topics covered: Not explicitly reported. Seems to be knowledge of HIV/AIDS, sexual behaviours and knowledge and access to condoms.

Methods: The 432 students from group 1 were involved in an open cohort study which began in 1994 to evaluate HIV prevalence, incidence and risk factors, and received VCT services at enrolment and 2 FU visits at 6 mos intervals. They also received SHE. Teachers were trained and supported to deliver SHE incorporated into the school health education curriculum. Teacher aids were provided and there were organized activities with student participation for 2 1-hour head education sessions and a school art competition each year. SHE was expanded to 10 other secondary schools (N=431) in 1997. The 449 control group students were from school similar to intervention schools with respect to location and type of school.

Development of curriculum/program: Questionnaires were pre-tested to ensure understanding by students.

Educators and their training: Teachers were trained and supported to deliver SHE, in collaboration with the National Teacher Training Programme.

Implementation: NR

Study Design and Analytic Methods

Type of design: Quasi-experimental. Post-test only control group to evaluate the effect of 2 interventions, among twenty-two secondary schools.

Cohort design: The 449 control group students were from school similar to intervention schools with respect to location and type of school.

Timing of surveys: Self-administered questionnaire data was collected in June-July 2000 in group 1, and an expanded questionnaire administered in Sept 2000 to groups 2 and 3.

Comparison intervention: The comparison schools received the routine government school health education curriculum.

Sample size for sexually inexperienced at baseline: Group 1 N=266; Group 2 N=178; Group 3 N=163

Sample size for sexually experienced at last follow-up: NA

Retention Rate: NA

Statistical analysis: Distribution of variables analyzed by study group and estimated differences evaluated by multivariate logistic regression. Continuous variables described with median values and interquartile ranges, difference evaluated using non-parametric test H and Kruskal-Wallis.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**VCT & SHE**	**SHE only**
Ever had sex	+	0
Age at first sex	NA	+
Lifetime partners	+	0
Partners in the past year	0	0
% casual partners in the past year	+	+
Always use condom with regular partner	0	0
Always use condom with casual partner	0	0
Impact on mediating factors:		
Knowledge of condoms	0	+
Condoms prevent STDs	+	+
Condoms prevent AIDS	+	+
Know where to get condoms	+	0
Feel at risk for HIV	NA	+

Additional Comments

This evaluation had only post-intervention assessment and no randomization scheme was used to assign intervention.

Data relied on reported sexual behavior.

Groups 1 and 2 reported less risky sexual behavior.

Nearly 80% of students reported they did not perceive themselves to be at risk.

More students in Group 1 reported abstinence as the most important way of preventing HIV. More students in Group 2 reported condoms for HIV prevention.

Students in all groups showed good knowledge of HIV prevention and transmission. This implies that knowledge alone does not lead to safe behavior.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study F

t

Study Information

Program name: Life skills education

Reference: Magnani et al., 2005

Contact person: Kate Macintyre Department of International Health & Development, School of Public Health & Tropical Medicine, Tulane University Health Sciences Center, 1440 Canal Street, Suite 2200, New Orleans, LA 70112 kmacint@tulane.edu

Community/ Sample Characteristics

Country: South Africa

Location in country: Kwa-Zulu Natal

Rural/urban: Rural and Urban

Income level: NR

Pregnancy Risk level: ND

STD/HIV Risk level: ND

Age: 14-24 years

Grade level: All students in Middle and Secondary school, grades 8-12

Gender: M=55% F=45%

Race/ethnicity: 75.5% Black African 16.3% Indian 8.2% Other

Total sample at baseline: N=3052

Wave 2 24 months sample: N=4185

Program Description

Setting: Probability sampling of 1974 households with a resident 14-22 years in 2 Districts in wave 1, 2447 households in wave 2.

Structure: Variable structure, based on the formalized teaching of life skills/HIV curriculum

Behaviors targeted: Sexual debut, secondary abstinence, number of sex partners, condom use.

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Skills for surviving, living with others and succeeding in a complex society.

Theoretical basis: Classic cognitive/social learning theory

Topics covered: Information on STI/HIV, identify/access community sources of assistance, refusal skills and self-efficacy, critically evaluate reasons and methods for protected sex, living HIV-positively, care and compassion for PLWHA, coping with death

Methods: The South African government mandated life skills/HIV training, developed in 1998 and intended for full implementation by 2005. A national curriculum was developed but each province designed its own program. Implementation has been at varying speeds and intensities. This study measures the dose-response relationship between exposure to the teacher-led life skills curriculum and outcomes of interest. Probability sampling of households with a 14-22 year old resident and face-to-face interviewing.

Development of curriculum/program: Department of Education formed the National Coordinating Committee for Life Skills and HIV/AIDS, who established the curriculum after a government mandate to implement life skills/HIV education in schools.

Educators and their training: ND, teachers were trained to varying degrees.

Implementation: Principles reported some form of life skills program implemented by 60% of schools in wave 1, 93% in wave 2. Proportion reporting presence of trained teacher was 76% and 94% in waves 1 and 2, respectively. 15% of schools had fully adopted the curriculum and trained teachers by end of wave 2. Students reported increase in life skills teaching over the 2 years, but somewhat lower coverage (60-70%) than reported by principles.

Study Design and Analytic Methods

Type of design: Quasi-experimental. Stratified, multi-stage cluster sampling approach.

Cohort design: Multipurpose panel survey, with 2 waves.

Timing of surveys: Questionnaire data were collected at baseline in 1999 and again in 2001.

Comparison intervention: There was no explicit comparison arm, but rather a dose-response evaluation of the government Life Skills curriculum.

Sample size for sexually inexperienced at baseline: N=1364

Sample size for sexually experienced at last follow-up: N=2796

Retention Rate: 27.2% overall, though considerable variation between subgroups

Statistical analysis: To avoid bias and inconsistencies due to unobserved factors also associated with the outcomes, a fixed-effects estimator was used to estimate changes in life skills education over time. For continuous outcomes ordinary least squares fixed-effects models were used to estimate effect of program exposure. For dichotomous outcomes logit models were used. Discrete hazard models were estimated for censored behavioural outcomes.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Sexual initiation:	+ +	+ 0
Overall change/Exposure effect		
Secondary abstinence:	+ 0	+ 0
Overall change/Exposure effect		
>1 partner in last month:	0 0	0 0
Overall change/Exposure effect		
>2 partners in last year:	+ 0	0 0
Overall change/Exposure effect		
Used condom during first sex:	0 +	+ +
Overall change/Exposure effect		
Always use condoms:	+ 0	0 +
Overall change/Exposure effect		
Condom use at last sex:	+ 0	0 +
Overall change/Exposure effect		
Impact on mediating factors:		
Correct knowledge score for-		
HIV/AIDS transmission:	+ +	+ +
Overall change/Exposure effect		
Sexual intercourse:	+	+
Mother to child transmission:	+	+
Blood transfusion/contact with infected blood:	0	+
HIV/AIDS prevention:	0	+
Abstain from sex:	+	+
Always use condom:	0	+
Limit number of sex partners:	0	0
Have only one sex partner:	0	0
Ways to protect against STIs:	+ +	+ 0
Overall change/Exposure effect		
Percentage heard of STIs other than HIV/AIDS:	+ +	+ +
Overall change/Exposure effect		
Number of women's STI symptoms recalled:	+ +	+ 0
Overall change/Exposure effect		
Number of men's STI symptoms recalled:	+ 0	+ 0
Overall change/Exposure effect		
A girl can get pregnant if had sex only once:	+ +	+ +
Overall change/Exposure effect		
Number of modern contraceptives recalled:	+ +	+ 0
Overall change/Exposure effect		
Knows where to get condoms:	+ 0	+ +
Overall change/Exposure effect		
Percent very confident in getting condoms when needed:	0 0	+ +
Overall change/Exposure effect		
Percent very confident in using condom effectively:	+ +	+ +
Overall change/Exposure effect		

Additional Comments

Because the intervention was introduced in all schools it was not possible to have a matched controlled trial and youth were not exposed to life skills at random.

Medium term follow up, no use of biological outcomes.

There was no identified control group, but rather analysis was dose-response.

Two econometric methods based on different assumptions (to control for non-random exposure) produced similar results, but not identical results (data shown for only one).

Because of the study design, external validity/generalizability is limited.

No evaluation of quality of training or teaching reported, but quantity of teaching was assessed.

Data was also stratified by age and race.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study G

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
Program name: Department of Education Life Skills program **Reference:** James 2006 Reddy 2005 **Contact person:** Shamagoman James Medical Research Council, Health Promotion R&D Group, PO Box 19070,Tygerberg 7505, South Africa shegs.james@mrc.ac.za	**Country:** South Africa **Location in country:** KwaZulu-Natal **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** N/D **STD/HIV Risk level:** N/D **Age:** 12-21 years **Grade level:** Grade 9 secondary school **Gender:** M=49% F=51% **Race/ethnicity:** 84% Zulu 16%Other/Unknown **Total sample at baseline:** N=1141 **Matched baseline-6 months sample:** N=844 **Matched baseline-10 months sample:** N=768	**Setting:** 22 secondary schools, 2 grade 9 classes from each school **Structure:** Department of Education Life Skills Program implemented at least 1/week over 2 school terms (20 weeks). **Behaviors targeted:** Reported sexual behavior and reported condom use **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Develop life skills for safe sexual behavior and care and support for PLWHA. **Theoretical basis:** Social cognitive theory **Topics covered:** Eleven topics including facts about HIV/AIDS, modes of transmission, immune system and disease progression, and how to avoid infection. Also life skills related to HIV/AIDS prevention. Focus on knowledge about HIV/AIDS, attitude to condom use and people living with AIDS, gender norms and perceptions about sexual behavior. **Methods**: In-school education, teacher-led, and included didactic and interactive teaching, group work and role-play. Intervention was at least one session per week over 20 weeks, or 2 terms. The program addressed a range of topics about HIV/AIDS knowledge, sexual behavior, gender roles, and attitudes and perceptions about condoms, PLWHA and sexual behavior. **Development of curriculum/program:** Curriculum developed for implementation by the Ministry of Education **Educators and their training:** The program included a training program for teachers, who were selected by their schools. Training included topic-related and implementation-related areas such as life skills, care and support of PLWHA, skills in teaching methods, project management and monitoring and evaluation. **Implementation:** Varying extent to which intervention was implemented. 7 schools (320 students) reported full implementation, working on all 11 topics, while 4 schools (185 students) reported partial implementation omitting at least 4 topics.	**Type of design:** Quasi-experimental case-controlled. Twenty-two schools were randomly assigned to receive the intervention immediately, or at the end of the trial. Two randomly selected classes from within each selected school participated. All students present on the day of the survey were included. **Cohort design:** Pretest and multiple posttest cross-sectional surveys. **Timing of surveys:** Questionnaire data was collected at baseline, 6- and 10- months post-intervention. **Comparison intervention:** The comparison schools received odd lessons on HIV/AIDS in a non-structured format, and in some cases celebrated awareness days on the topic. **Sample size for sexually inexperienced at baseline:** N/D **Sample size for sexually experienced at last follow-up:** N/D **Retention Rate:** N/D, survey was carried out among all students in attendance on day of survey **Statistical analysis:** Analysis of variance and logistic regression used to compare full intervention implementation, partial implementation and control schools.	**Impact on sexual behaviors:** **All** Reported sexually active: 0 At 6 & 10 months 0 Reported condom use: At 6 & 10 months **Impact on mediating factors:** Knowledge about HIV: + At 6 & 10 months + Attitude towards condoms: At 6 & 10 months 0 Attitude towards people living with AIDS: At 6 & 10 months 0 Attitude towards people living with AIDS: At 6 & 10 months 0 Perceived social support: At 6 & 10 months 0 Confidence to assert one's self: At 6 & 10 months 0 Perception of sexual behavior: At 6 & 10 months 0 Communication about HIV: At 6 & 10 months 0	Not rigorously evaluated. Random assignment, medium-length follow-up. No biological outcomes. Data collected through multiple cross-sectional surveys of those present in class at a given day. Evaluation of knowledge of HIV was measured through the combination of 18 moderately reliable indices. The intervention was not fully implemented in 4 of 11 schools Data was not stratified by gender It does not appear that multivariate analysis was done, but rather a univariate comparison of mean scores of composite variables. No data is presented on outcomes of intervention among students unless a statistically significant finding was achieved.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study H

Study Information

Program name:
HealthWise Program

Reference:
Smith
2008

Contact person:
E. A. Smith
Pennsylvania State University
S-109 Henderson Building, University Park, PA 16802, USA
eas8@psu.edu

Community/ Sample Characteristics

Country:
South Africa

Location in country:
Mitchell Plains, near Cape Town

Rural/urban:
urban

Income level:
Low-income

Pregnancy Risk level:
ND

STD/HIV Risk level:
ND

Age:
Mean age 14 years

Grade level:
Grades 8 and 9

Gender:
M=49%
F=51%

Race/ethnicity:
86% mixed race
9% black African
4% white
1% Indian or other

Total sample at baseline:
N=2383

Matched baseline-first wave sample:
N=2176

Matched baseline-fifth wave sample:
N=1350

Program Description

Setting: 9 schools in the Mitchell Plains area near Cape Town.

Structure: In-school teacher-led sexual health and substance use programme.

Behaviors targeted: Delayed sexual initiation, reduced rates of sexual activity, increased condom use, lower rate of lifetime sexual partners and reduced rate of multiple substance use

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Increase activities conducive to healthy development.

Theoretical basis: NR

Topics covered: Social-emotional skills, positive use of free time, attitudes knowledge and skills around substance use and sexual risk.

Methods: The programme consists of 12 lessons in Grade 8 and 6 booster lessons in Grade 9. Lessons are taught by teachers and each lesson takes 2-3 class periods to deliver. Two Youth Development Specialists were also hired to act as liaisons between the schools and communities. Self-administered questionnaires were completed near the beginning and end of each school year.

Development of curriculum/program: 3-years of pilot work and extensive process evaluation.

Educators and their training: N/A

Implementation: N/A On-going process evaluation indicated that the programme was well-received by all parties.

Study Design and Analytic Methods

Type of design: Quasi-experimental. Four schools were assigned to the intervention and 5 schools acted as controls.

Cohort design: Data collected in 5 waves approximately 6 months apart. Matched pre and posttest surveys;

Timing of surveys: Questionnaire data were collected at baseline, and at 5 waves approximately 6 months apart.

Comparison intervention: The comparison schools received the routine Life Orientation curriculum, which was neither systematic or extensive.

Sample size for sexually inexperienced at baseline: N=1923

Sample size for sexually experienced at last follow-up: 21% of controls and 22% of intervention initiated sex, from among those previously sexually inactive

Retention Rate: ~10% of cohort lost to attrition at each wave

Statistical analysis: Logistic regression of multiple imputed data at wave 5, controlling for baseline scores and race, stratified by gender. In subgroup analyses of sexually active a prevalence difference approach was employed.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Sexual intercourse in lifetime:	0	0
Sex in the past month:	0	0
Always used condom during sex:	0	0
Impact on mediating factors:		
Can get condoms	+	+
Alcohol use in lifetime	0	0
Alcohol use in past month	+	+
Heavy alcohol use	+	+
Cigarette use in lifetime	0	+
Cigarette use in past month	0	+
Marijuana use in lifetime	-	+
Marijuana use in past month	0	0

Additional Comments

This was not a very rigorous intervention, with no biological outcomes and a quasi-experimental design (schools were not selected in completely random manner).

Randomization was not adequately achieved, as control and intervention groups differed by race and sexual initiation.

There seemed to be ample pilot work of the intervention, but no report of a process evaluation once it was implemented. Also no report of who was trained or the type of training implementers received.

The intervention seemed to show some effect on reduction of smoking and alcohol use, but no effect on sexual behavior.

There was some evidence that sexual onset was delayed among men, but accelerated among women in the intervention arm.

Sample size did not allow for investigation of differences based on race.

There was no accounting for school-level clustering.

These results represent preliminary findings. Results of further evaluation are anticipated in August 2010.

For a detailed account of pilot process evaluation of HealthWise, see Wegner et al. 2007.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study I

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
Program name: US alcohol/HIV prevention curriculum adapted for South Africa **Reference:** Karnell 2006 **Contact person:** Aaron P. Karnell U.S Agency for International Development 2140 Dar es Salaam Place, Dulles, VA 20189-2140 akarnell@usaid.gov	**Country:** South Africa **Location in country:** Pietermaritzburg, Kwa-Zulu Natal **Rural/urban:** Rural **Income level:** NR **Pregnancy Risk level:** ND **STD/HIV Risk level:** ND **Age:** Median 16 years **Grade level:** Grade 9 **Gender:** M=49% F=51% **Race/ethnicity:** >99% Black African 94% Zulu **Total sample at baseline:** N=661 **Matched baseline-5 months sample:** N=535	**Setting:** Two townships, 5 township schools **Structure:** There were two components to the in-school curriculum: discussion and group work related to 4 monologues, and 10 units of 30 minutes each of teacher-led curriculum. **Behaviors targeted:** Delayed initiation of sex, condom use, alcohol use with concurrent sex, frequency of alcohol use, quantity of alcohol use, alcohol-related problems **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Gain knowledge and understand the consequences of your actions. **Theoretical basis:** Based on three interrelated theories: social learning, social inoculation, cognitive behaviour **Topics covered:** Facts about HIV and alcohol, understanding of consequences of drinking and unprotected sex, techniques for resisting peer pressure and how to avoid risky situations. **Methods**: The in-school education was teacher and peer-led using a series of 4 monologues delivered by fictitious teenage township characters. These served as the basis for discussion and group assignments. Peer leaders led discussion and helped with assignments. The final curriculum was 10 units of 30 minutes each over 8 weeks. **Development of curriculum/program:** Alcohol component of the intervention was adapted from Project Northland curriculum developed by University of Minnesota, Cheryl Perry and colleagues. Sexual behavior component adapted from Reducing the Risk, developed by Kirby and colleagues. **Educators and their training:** Each participating class elected 4 peer leaders, 50 in total, who received 2 days training on the material. Teachers received 2 days of curriculum training. A final half day was a joint training session between teachers and peer leaders. **Implementation:** The research team observed the program being taught 3-4 times at each school. Teachers also completed forms recorded time spent on different lessons. All teachers delivered thee full curriculum in the prescribed time.	**Type of design:** Quasi-experimental. Five schools randomly assigned, 3 to intervention and 2 to control. **Cohort design:** Matched pre and posttest surveys. **Timing of surveys:** Questionnaire data was collected at baseline (June) and at 5 months, 8 weeks after conclusion of curriculum. **Comparison intervention:** The comparison schools received standard Life Orientation instruction, which features few modules on alcohol or HIV. **Sample size for sexually inexperienced at baseline:** N=430 **Sample size for sexually experienced at last follow-up:** ND **Retention Rate:** 81% **Statistical analysis:** Analysis of variance conducted using posttest measure as dependent variable and controlling for differences at pretest and effects of gender and age. Binary logistic regression used for dichotomous variables.		**Sample Subgroups**		This was a short-term evaluation without biological outcomes. There was some effect on sexual refusal self-efficacy and intention to use a condom during sex. Final survey was within 8 weeks of the conclusion of the curriculum. For detailed information on Project Northland, see Perry et al. 1996. For detailed information on Reducing the Risk, see Kirby et al. 1991; 1994.
				Impact on sexual behaviors:	**Male**	**Female**	
				Condom use at last sex: Sex at pretest/no sex at pretest	0 0	0 0	
				Alcohol use concurrent with sex: Sex at pretest/no sex at pretest	0 +	0 +	
				Impact on mediating factors: Every drunk alcohol:	0	0	
				Frequency of alcohol use in last 14 days:	0	0	
				Quantity of alcohol use:	0	0	
				Alcohol-related problems:	0	0	
				Alcohol refusal self-efficacy:	0	0	
				HIV/STI prevention knowledge:	0	0	
				Intention to have sex in next 3 months: Sex at pretest/no sex at pretest	0 0	0 0	
				Intention to use condom every time in next 3 months: Sex at pretest/no sex at pretest	+ 0	+ 0	
				Positive attitudes toward condom use: Sex at pretest/no sex at pretest	0 0	0 0	
				Sex refusal self-efficacy:	0	+	
				Condom use self-efficacy:	0	0	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study J

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
					Sample Subgroups		
				Impact on sexual behaviors:	**Male**	**Female**	
Program name: Kenya national primary school HIV education **Reference:** Maticka-Tyndale 2007 **Contact person:** Eleanor Maticka-Tyndale Department of Sociology and Anthropology, University of Windsor, 401 Sunset Avenue, Windsor, Ontario, Canada N9B 3P4 maticka@uwindsor.ca	**Country:** Kenya **Location in country:** Nyanza Province **Rural/urban:** NR **Income level:** NR **Pregnancy Risk level:** ND **STD/HIV Risk level:** ND **Age:** 11-16 years **Grade level:** Upper primary school, standard 6 and 7 **Gender:** M=49% F=51% **Race/ethnicity:** >99% Black African **Total sample at baseline:** N=3452 **18 months sample (cross-sectional):** N=3940	**Setting:** 80 primary schools **Structure:** In-school sexual and reproductive health education as part of an on-going part of school curriculum, as well as school health clubs and activities. **Behaviors targeted:** Delayed initiation of sex, decreased sexual activity, increased condom use. **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Gain knowledge and develop critical thinking skills to enhance self-efficacy related to sexual encounters. **Theoretical basis:** Social learning theory **Topics covered:** HIV transmission, preventions and progression, strategies and skills building for resisting the social, cultural and interpersonal pressures to engage in sex, combating stigmatization of PLWHA and care of people with AIDS. **Methods**: Primary School Action for Better Health (PSABH) is a teacher-led, peer-supported intervention designed to reach all upper primary school pupils. Used role modeling, practice of desired behaviors and activities to build self-efficacy, along with didactic instruction. There was also development of school health clubs, information corners and anonymous question boxes, as well as other school activities. Intervention was designed to be an on-going part of the school curriculum and not just for limited time periods. Evaluation data was collected in self-completed surveys and focus group discussions with standard 6 and 7 pupils. **Development of curriculum/program:** Developed in Kenya based on field experience, baseline research and principles of social learning and scripting theories. Information on scripting of sexual encounters, cultural beliefs and gender and social relationships obtained through pre-program focus group discussion with youth, and interviews with teachers and community leaders. Designed for delivery using local resources and infrastructure, to fit within national guidelines on HIV/AIDS education. MoEST mandated teaching of one AIDS lesson per week and HIV/AIDS questions added to primary school examination. The PSABH curriculum filled a void of lack of national curriculum or pedagogy. **Educators and their training:** Used MoEST infrastructure for teacher training and program	**Type of design:** Quasi-experimental. Forty pairs of schools were matched for school district and academic standing, with one school in each pair randomly assigned to receive the intervention. **Cohort design:** Cross-sectional pre and posttest surveys. **Timing of surveys:** Questionnaire data was collected at baseline and 18-months after first training session. **Comparison intervention:** The comparison schools received the MoEST guidelines for HIV/AIDS education but had no PSABH trained teachers or peer supporters until after the 18-month evaluation period. **Sample size for sexually inexperienced at baseline:** N=1676 **Sample size for sexually experienced at last follow-up:** N=1928 **Retention Rate:** N/A evaluation was 2 cross-sectional surveys **Statistical analysis:** Logistic regression for each outcome indicator, and controlled with the program effect reported as an adjusted odds ratio. Analysis conducted separately for males and females with and without sexual experience prior to intervention. Also analysed by program effect (intervention or control) and high or low exposure effect (Low=HIV/AIDS teaching in <6/12 possible courses or activities as reported by pupil)	Sexual debut during program – program effect: PPV*	+	+	The program implementation was rigorously evaluated, medium-length follow up, no biological outcomes. Survey was based on cross-sectional data. In year 2 of the intervention there was an influx of previously out of school youth with limited or no prior education. There was some impact on reported sexual behavior. There seemed to be shortcomings in meeting the needs of sexually experienced girls who reported no increase in communication with teachers and a decreased perception that condoms should be used and in condom self-efficacy. There was no change in sexually activity. There was variable response based on gender. The intervention did not encounter some of the concerns and challenges to delivery that have been seen in other studies, in that there was rapid up-take and enthusiasm. This is likely influenced bythe MoEST mandate for AIDS education. The students from the 80 schools were stratified to 'pre-program virgin' or not, and also by gender. Analysis was conducted by intervention versus control arm and also by level of program exposure. For full PSABH curriculum go to www.psabh.info
				Sexual debut during program – exposure effect: PPV	+	0	
				Sexual intercourse in past 3 months – program effect: PPV and NVPP*	0 0	+ 0	
				Sexual intercourse in past 3 months – exposure effect: PPV and NVPP	0 0	0 0	
				Condom use at last sex– program effect: PPV and NVPP	0 0	0 0	
				Condom use at last sex – exposure effect: PPV and NVPP	+ +	0 0	
				Impact on mediating factors:			
				Over 50% correct on knowledge scale – program effect: PPV and NVPP	+ 0	0 0	
				Over 50% correct on knowledge scale – exposure effect: PPV and NVPP	+ 0	0 0	
				Asked a teacher a question about HIV/AIDS – program effect: PPV and NVPP	+ 0	+ 0	
				Asked a teacher a question about HIV/AIDS – exposure effect: PPV and NVPP	+ +	+ 0	
				Talked to a parent about HIV/AIDS – program effect: PPV and NVPP	0 0	+ +	
				Talked to a parent about HIV/AIDS – exposure effect: PPV and NVPP	+ +	+ 0	
				Can say no to sex – program effect: PPV and NVPP	0 0	0 +	
				Can say no to sex – exposure effect: PPV and NVPP	0 0	+ 0	
				Can have a BF/GF and not have sex – program effect: PPV and NVPP	0 0	0 +	
				Can have a BF/GF and not have sex – exposure effect: PPV and NVPP	0 +	0 0	
				If you have sex you should use a condom – program effect: PPV and NVPP	0 0	0 +	
				If you have sex you should use a condom – exposure effect: PPV and NVPP	+ 0	+ 0	
				Can tell BF/GF about using	0 0	0 +	

1 Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.
* PPV = pre-program virgin; NVPP = non virgin pre-program

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
		delivery. Provided in-service teacher training and pupil peer supporters. Began in region of highest HIV prevalence and expanded to areas of lower prevalence. After community sensitization, a senior classroom teacher and one community representative from each school were trained in 2 week-long residential sessions separated by a school term. 4 peer supporters and another teacher participated in a final week-long training session. **Implementation:** Over 80% of teachers in both control and intervention schools reported the presence of at least one AIDS lesson per week at 10 months. At 18 months only 49% of teachers in control schools reported weekly lessons, but there was an increase in weekly lessons in intervention schools. At least half of the program activities were operating in 81% and 86% of intervention schools at 4 and 16 months, respectively, compared to 24% and 28% in control schools.		condoms – program effect: PPV and NVPP Can tell BF/GF about using condoms – exposure effect: PPV and NVPP Can make sure we use condoms – program effect: PPV and NVPP Can make sure we use condoms – exposure effect: PPV and NVPP	 + + 0 0 + 0	 + 0 0 0 + 0	

1 Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.
* PPV = pre-program virgin; NVPP = non virgin pre-program

Study K

Study Information

Program name: Education and HIV/AIDS Prevention

Reference: Duflo 2006

Contact person: Esther Duflo Department of Economics and Poverty Action Lab, MIT eduflo@mit.edu

Community/ Sample Characteristics

Country: Kenya

Location in country: Bungoma and Butere-Mumias districts, Western Kenya

Rural/urban: Rural

Income level: NR

Pregnancy Risk level: NR

STD/HIV Risk level: ND

Age: NR

Grade level: Primary school grades 6-8.

Gender: M=50% F=50%

Race/ethnicity: NR

Total sample at baseline: N=74,000

Follow up sample: N=

Program Description

Setting: 328 primary schools

Structure: Randomized evaluation of three different school-based interventions: Training teachers in the government HIV/AIDS education curriculum for primary schools; encouraging debate among students on role of condoms and to write essays on HIV/AIDS prevention; reduce the cost of education. Also informing teenagers about variation in HIV rates by age and gender at one fifth of schools in each intervention group.

Behaviors targeted: Unprotected sex

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Gain knowledge and critical thinking skills to prevent pregnancy and unsafe sex

Theoretical basis: NR

Topics covered: Information on STI/HIV, caring for PLWHA, pregnancy and STI prevention.

Methods: All schools received the Kenyan national HIV/AIDS education program, but the quality and degree of implementation of this program varied. 163 randomly chosen schools in 3 districts received teacher training for HIV/AIDS education, which was teacher-led, following a curriculum and facilitator's handbook. Teachers were advised to set up health clubs. 82 of the teacher training schools were randomly selected to receive training for establishing the condom debates and essay competition. A debate topic was disseminated and all 7 and 8th grade students were supposed to attend. Following the debate was an essay competition with a standardized topic. Students from 71 schools (36 with no teacher training and 35 with teacher training) received intervention on informing students about the profile of HIV by age and sex for students in grade 8. The intervention also included a 10-minute video. Education is free in Kenya but there is a cost associated with the required uniform, so uniforms were distributed to students in grade 6 in 163 randomly selected schools, and again the following year if they were still in school.

Development of curriculum/program: Teacher-led curriculum developed by government of Kenya with help from UNICEF. Informing students of HIV prevalence by age and sex developed by Dupas et al (2005).

Educators and their training: For the teacher

Study Design and Analytic Methods

Type of design: Experimental. 328 primary schools randomly assigned to receive 1 of 6 possible combinations of 4 interventions.

Cohort design: Two cross-sectional surveys

Timing of surveys: Questionnaire data was collected at baseline, childbearing and marital information collected through group questioning of upper level pupils. Follow up survey conducted over 2 years after teacher training and after 2 rounds of uniform distribution, but only a few months after condom debates and essay competitions.

Comparison intervention: All schools received the Kenyan national HIV/AIDS education program and information on profile of HIV incidence by age and sex, and the study interventions were randomly allocated into 6 intervention groups

Sample size for sexually inexperienced at baseline: NR

Sample size for sexually experienced at last follow-up: NR

Retention Rate: N/A

Statistical analysis: Regression analysis, run with and without individual and school control variables and interaction terms.

Results[1]

Impact on sexual behaviors:	**Sample Subgroups**	
	Male	**Female**
Teacher Training		
Has ever had sex:	0	0
Has had more than one partner:	0	0
Has ever used a condom:	+	0
Used condom at last sex:	0	0
Has started childbearing:	0	0
If started childbearing, is married:	0	+
Reducing cost of education		
Has ever had sex:	0	+
Has had more than one partner:	0	0
Has ever used a condom:	0	0
Used condom at last sex:	0	0
Has started childbearing:	0	+
If started childbearing, is married:	0	0
Condom debate/essay		
Has ever had sex:	0	0
Has had more than one partner:	0	0
Has ever used a condom:	0	0
Used condom at last sex:	+	0
Impact on mediating factors:		
Teacher Training		
Mentions abstinence as way to protect oneself from HIV)	+	0
Mentions condom use as way to protect oneself from HIV:	0	0
Correct condom use prevents pregnancy:	0	0
Correct condom use prevents HIV:	0	0
It's ok to use condoms before marriage if cannot abstain:	0	0
It's ok to remain a virgin while a teenager:	0	0
It's not difficult to abstain:	0	0
Confident to say no to sex:	0	0
Confident will never get HIV:	0	0
Has dropped out before completing primary school:	0	0
Is married:	0	0
Reducing cost of education		
Mentions abstinence as way to protect oneself from HIV:	0	0
Mentions condom use as way to protect oneself from HIV:	0	0
Correct condom use prevents pregnancy:	+	0
Correct condom use prevents HIV:	0	0
It's ok to use condoms before marriage if cannot abstain:	0	0
It's ok to remain a virgin while a teenager:	0	0
It's not difficult to abstain:	0	0
Confident to say no to sex:	0	+

Additional Comments

This was an evaluation with random assignment, medium length of follow up, and no biological outcomes.

Random assignment of interventions to six possible intervention combinations allowed us to evaluate which of the intervention components were most effective for each outcome measured.

Process evaluation and results reported (data not shown).

Sexual behavior was self-reported, though information on pregnancy was collected through group questioning.

Reduced cost of schooling led to reduction in dropout rates as well as teen pregnancies. Teacher training increased the likelihood that teen pregnancy was within marriage. Condom debates and essays led to increased self-reported condom use.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

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		training component the Kenya ministry of Education Science and Technology is providing in-service training courses for HIV/AIDS education, with further funding and support from other organizations. All schools chose 3 upper primary teachers to participate in a 5-day training program. There was 93% attendance at the teacher training. **Implementation:** Health clubs were established in 86% of schools. Debate and essay competitions were organized in 95% of the target schools. 73% of students reported some HIV/AIDS issues mentioned in class, and in teacher training schools this was 20% higher. 68% of students in teacher training schools reported an active health club versus 5% in other schools.		Confident will never get HIV: Has dropped out before completing primary school: Is married: *Condom debate/essay* Mentions abstinence as way to protect oneself from HIV: Mentions condom use as way to protect oneself from HIV: Correct condom use prevents pregnancy: Correct condom use prevents HIV: It's ok to use condoms before marriage if cannot abstain: It's ok to remain a virgin while a teenager: It's not difficult to abstain: Confident to say no to sex: Confident will never get HIV:	+ + + 0 + + 0 0 0 + + 0	0 + + 0 + + + 0 0 0 0 0	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study L

Study Information

Program name:
I Choose Life

Reference:
Miller
2008

Contact person:
Ann Neville Miller
Nicholson School of Communication,
University of Central Florida, Orlando, FL 32826, USA
aemiller@mail.ucf.edu

Community/ Sample Characteristics

Country:
Kenya

Location in country:
Nairobi

Rural/urban:
Urban

Income level:
NR

Pregnancy Risk level:
NR

STD/HIV Risk level:
NR

Age:
NR ~ ≥18 years

Grade level:
University students in 1-4 year of study

Gender:
Baseline
M=62%
F=35%
Follow up
M=51%
F=49%

Race/ethnicity:
NR

Total sample at baseline:
N=632

24 months sample:
N=746

Program Description

Setting: University students selected from Kenyatta University halls of residence

Structure: The I Choose Life campaign includes abstinence messages and purity pledging, as well as encouraging sexual responsibility through faithfulness and condom use. A, B, C message.

Behaviors targeted: Primary or secondary abstinence until marriage, faithfulness and condom use

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Feel affirmed and proud to make choices towards a responsible sexual option

Theoretical basis: Social learning theory

Topics covered: Primary and secondary abstinence until marriage, faithfulness and condom use.

Methods: Sports figures and students considered 'cool' were invited to become peer-educators and participate in a 3-month HIV training, and 10-person mentoring groups. Trainees were paired up in behavior change communication groups'. Overall message was equal weight given to A, B and C. They also participated in group outreach to PLWHA and AIDS orphanages. Peer educators also could choose to enroll in a 4-week life skills course. Mobile VCT clinics were conducted, along with an annual HIV testing day.

Development of curriculum/program: I Choose Life began as an abstinence-only campaign with faith-based orientation, and evolved into supported A, B and C equally.

Educators and their training: 623 students out of a total student body of just over 7000 (~9%) were trained as peer-educators in four different 13-week courses in HIV and in small 10-person mentoring groups. Also had the option of enrolling in a 4-week life skills course.

Implementation: Mobile VCT clinic tested 1,654 students during 2-year intervention. 20% of participants had been involved in at least 1 ICL activity, 11% had attended a peer-education training, and 5% life skills training.

Study Design and Analytic Methods

Type of design: Before-after survey. Students selected randomly from halls of residence, first room and every 5th room thereafter

Cohort design: Pre and post intervention cross-sectional surveys

Timing of surveys:
Self-administered questionnaire, at baseline and 24- months

Comparison intervention:
N/A no comparison group, however the majority of students would have been exposed to mass media campaigns, and HIV education at high school.

Sample size for sexually inexperienced at baseline: N=237

Sample size for sexually experienced at last follow-up: N=485

Retention Rate: N/A, two cross-sectional surveys with 98.9% acceptance rate

Statistical analysis:
Familywise adjustment for multiple tests applied according to the Bonferroni rationale for comparison of baseline to endline results. Two-way ANOVA for some outcomes.

Results[1]

	Sample Subgroups		
Impact on sexual behaviors:	**Male**	**Female**	**Both**
Ever had sex:	0	0	
Number of sexual partners in previous 6 months:	0	0	
Ever used condom among those having sex:			+
Frequency of condom use among those having sex:			+
Overall VCT uptake (not individual-level):			+
Impact on mediating factors:			
Change in attitude towards multiple partnering:			+
Would recommend condoms to a friend:			+
Agree that condoms cannot be trusted to protect against HIV:			+

Additional Comments

This evaluation did not have random assignment, and no biological outcomes.

Though we categorized this intervention as a before-after study design, the authors considered the study design to be quasi-experimental using a random assignment pre-experimental one-group pretest-posttest design.

There was no control population but rather 2 cross-sectional surveys, therefore cannot rule out other influences.

Self-completed questionnaires attempted to ascertain the role of the interventions in outcomes by asking what extent knowledge of HIV and related information came from on-campus sources, and their participation in ICL activities.

Not all data divided into subgroup analysis by gender.

Between the A, B and C components of the intervention, only condom use showed an increase, which was small but significant. At both surveys this was slightly higher than the DHS survey. Trend in condom use across Kenya has increased.

Reported multiple partnering was higher than in the DHS survey.

Motivation for reported abstinence was related to religious and personal convictions.

Reporting HIV testing nearly doubled across the two surveys. This may be due to accessible on-campus testing services, but there was also a significant association between involvement with ICL and likelihood of having tested.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study M

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]		Additional Comments
Program name: peer education **Reference:** Visser 2007 **Contact person:** Maretha Visser Department of Psychology, University of Pretoria, Brooklyn, Pretoria 0002, South Africa maretha.visser@up.ac.za	**Country:** South Africa **Location in country:** Gauteng province **Rural/urban:** Urban **Income level:** Low **Pregnancy Risk level:** NR **STD/HIV Risk level:** NR **Age:** 12-20 years **Grade level:** Secondary schools students grade 8-12 **Gender:** M=45% F=55% **Race/ethnicity:** >80% Black African **Total sample at baseline:** N=1386 and 532 controls **18 months sample:** N=1572 and 596 controls	**Setting:** 13 self-selected secondary schools, one from traditionally white, two coloured and 8 traditionally black areas were involved in intervention and 4 schools from the same community acted as controls. **Structure:** Peer-led, non curriculum-based programme to provide a group of adolescents with the skills to provide health-related information, demonstrate communication skills and facilitate discussion on high-risk sexual behaviour, in order to influence peer group norms. **Behaviours targeted:** Delayed initiation of sex, condom use, promote respectful relationships, communicate about sex and HIV **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Promotion of healthy behaviour **Theoretical basis:** Systems theory **Topics covered:** HIV and other health-related information, communication skills, sexual behaviour, gender issues, influencing peer norms. **Methods**: Peer educators were nominated by members of their grade. Peer educators could develop their own programme and activities, and these included plays, guest speakers, awareness days with drama, song and posters, newsletters, peer discussion, and establishing a peer support office. The objective was to raise awareness and knowledge of HIV, mobilized learners to participate in the promotion of healthy behaviour, create contexts to discuss sex, gender issues and values to facilitate change of peer norms, provide informal conversation, support and guidance, and to provide role models. **Development of curriculum/program:** Process of action research allowing for continuous evaluation and adjustment of intervention. Pre-intervention discussion with learners, teachers, department of education and other stakeholders. A management team of one peer educator and one teacher from each school met with coordinators once a month to discuss progress. Two teachers in each school attended a workshop to solicit their input. **Educators and their training:** Postgraduate students were trained to supervise peer educators and assist with the programme in schools. 15-20 peer educators selected from each school and	**Type of design:** Quasi-experimental. 13 schools were assigned to receive the intervention and compared to 4 similar schools from the same area. **Cohort design:** Pre and post-test surveys conducted from one randomly chosen class from each grade at each school **Timing of surveys:** Questionnaire data were collected at baseline and after 18- months of implementation. **Comparison intervention:** The comparison schools did not participate in the peer education activities. **Sample size for sexually inexperienced at baseline:** N=336 **Sample size for sexually experienced at last follow-up:** N=900 **Retention Rate:** NA **Statistical analysis:** Scale scores calculated for well-being, personal control and school climate and pre and post-test scores were compared using Kruskal-Wallis one-way analysis of variance. Risk behaviour calculated using chi-squared, then effect sizes calculated in the form of contingency values.	**Impact on sexual behaviours:**	**All**	This evaluation had medium length follow-up, no biological outcomes. A "randomly selected stratified sample of one class per grade group" was included in the pre and post-test surveys in each school. It was therefore not possible to use a cohort analysis approach. The analysis was not adjusted for the cluster sample design. The write-up of the analysis methods used is complex and not always clear, and may well have been sub-optimal. There were substantial differences between control and intervention schools at baseline, so key analyses were based on differences between pre- and post intervention surveys in intervention schools vs. the equivalent differences in comparison schools. The intervention was implemented to varying degrees in the schools, with no dose-response analysis. There was a significant association between alcohol use in the past month and sex in the past 3 months. Coercive sex was reported by 17% of students. Lower reporting of friends having sex is suggestive of a change in peer norms in the intervention schools.
				Ever had sex	+	
				Had sex in past 3 months	+	
				More than one partner in past 3 months	-	
				Used condom every time had sex in past 3 months	0	
				Impact on mediating factors: Sex without consent	-	
				Most friends are having sex	+	
				Friends practice safe sex	0	
				Current alcohol use	0	
				Excessive alcohol use	0	
				Illicit drug use	+	
				Most friends drink alcohol	+	
				Psychological well-being	0	
				Personal control	0	
				School climate	+	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant ($p<0.05$) desirable change = +; significant ($p<0.05$) undesirable change = -; borderline significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
		interviewed by teachers for suitability. They attended a workshop involving 24 hours of training, then 10 weekly 1-hour sessions during the programme, facilitated by students, to discuss problems and develop skills. **Implementation:** 170 peer educators were trained in all. 6 school plays, nine invited guest speakers, 4 awareness days, 1 mural, 2 schools distributed posters and newsletters, in 7 schools they visited classes to facilitate discussions, 6 schools established peer education offices. 67% (range 24-79%) of learners reported they knew about the peer educators at their school, 24% reported that they had had conversations with them.			

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant ($p<0.05$) desirable change = +; significant ($p<0.05$) undesirable change = -; borderline significant change ($p\leq.1$) = 0*.

Study N

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
Program name: African Youth Alliance (AYA) Ghana **Reference:** 2007 **Contact person:** JSI Research & Training Institute, Inc.	**Country:** Ghana **Location in country:** 20 of 110 total districts **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** NR **STD/HIV Risk level:** NR **Age:** Evaluated 17-22 years (targeted 10-24 years) **Grade level:** N/A **Gender:** M=44% , F=56% control M=48%, F=52% intervention **Race/ethnicity:** >99% Black African **Total sample:** N=3416	**Setting:** 20 districts, 105 intervention and 75 control enumeration areas **Structure:** There were 6 components, (a) policy and advocacy coordination; (b) institutional capacity building; (c) coordination and dissemination; (d) behavior change communication, including life-planning skills and enter-education activities; (e) youth friendly services; and (f) integration of ASRH with livelihood skills training. The evaluation focused on youth exposure to three program components—youth-friendly services, behavior change communication/life-planning skills, and livelihood skills training—in areas where all six program components were implemented simultaneously **Behaviors targeted:** Delayed initiation of sex, abstinence, condom use, reduced number of sex partners, modern contraceptive use **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Provide resources and support to encourage healthy ASRH behaviours **Theoretical basis:** Health belief model, social cognition and other health behavior models **Topics covered:** Create an improved enabling and supportive environment. Increase knowledge, skills, norms, and positive attitudes toward adoption of safer sexual practices. Increase use of youth-friendly ASRH services. **Methods**: Three components focused on developing an enabling environment and local capacity for ASRH programming. The last three components represent program activities that have a direct link to youth. Mass media including television and radio programmes, and a youth magazine. There were enter-education activities including poetry, sports, clubs and drama. Youth friendly clinic services were established or enhanced. Peer-educators provided information at health facilities, in the community, and in 'youth talks'. Life planning skills courses were implemented in schools. **Development of curriculum/program:** Three lead agencies formed a secretariat and assembled implementing partners. AYA focused on implementing and scaling up activities through collaboration with a number of existing implementing partners who were already conducting ASRH activities. The overall approach was to implement all components	**Type of design:** Post-test only evaluation design, looking at intervention and control sites, and exposed an unexposed youth in randomly selected enumeration areas in matched localities. **Cohort design:** Purposefully selected intervention and matched control sites, based on level of AYA implementation. Post-test survey only. **Timing of surveys:** Questionnaire data were collected from unmarried or recently married youth 2-3 years post-intervention. **Comparison intervention:** Mass media campaign only **Sample size for sexually inexperienced at baseline:** NR **Sample size for sexually experienced at last follow-up:** NR **Retention Rate:** N/A **Statistical analysis:** Data conditioned on the intervention-control strategy were analyzed using the propensity score matching. Data conditioned on self-reported exposure were analyzed using both a propensity score matching and an instrumental variable regression approach. Conclusions were then based on the triangulation of findings from those three scenarios.	**Impact on sexual behaviors:**	**Sample Subgroups**		This was a multicomponent evaluation with medium to long term follow-up, and no biological outcomes. Intervention communities were chosen purposefully and were not randomized, and differences between arms were apparent as compared to National Survey data. Baseline survey data was not collected consistently across countries nor did they consistently define actual AYA intervention sites and program strategies. The actual interventions were not described in detail. Partnered with governments, NGOs, community-based groups, and youth-serving groups. The intervention was based on the theory that adolescent development takes place under the influence of overlapping contexts, or ecological systems, within which adolescents live and develop. There was a long gap between end of AYA activities and evaluation. The intervention seemed to have more of an impact on females than males. Dose-response analysis was conducted but created a control arm using unexposed from both the intervention and control arms, thus potentially biasing this analysis. The evaluation does not test the relative effectiveness of any single component of the program, nor try to elucidate causal links between exposures,
					Male	**Female**	
				Had delay of sexual debut	0	+	
				Abstains from sex	-	+	
				Had fewer than two sex partners during past 12 months	0	+	
				Had condom use at first sex	0	+	
				Had condom use at last sex	0	+	
				Ever used condom with current partner	0	+	
				Always uses condom with current partner	0	+	
				Used modern contraceptive at first sex	0	+	
				Used modern contraceptive at last sex	0	+	
				Impact on mediating factors:			
				Has HIV/AIDS knowledge (spontaneous response)	+	+	
				Has HIV/AIDS knowledge (prompted response)	0	0	
				Knows condom is protective against HIV/AIDS	0	0	
				Has positive attitude toward condom users	+	-	
				Is confident could put on condom correctly	+	-	
				Believes he or she could insist that partner use a condom	0	+	
				Is very confident in obtaining condom when needed	0	+	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
		simultaneously, while building capacity and fostering coordination among partners to scale-up ASRH services and to encourage sustainability. **Educators and their training:** NR **Implementation:** 55% of those interviewed had at least some AYA exposure. Almost 30 percent had "high exposure," recalling at least 3 of 10 possible AYA activities. Males were more likely than females to report AYA exposure.			antecedents, and behaviors. Likely some dilution effect of other interventions as well as population mobility.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study O

Study Information

Program name:
African Youth Alliance (AYA) Tanzania

Reference:
2007

Contact person:

JSI Research & Training Institute, Inc.

Community/ Sample Characteristics

Country:
Tanzania

Location in country:
10 districts

Rural/urban:
Rural and urban

Income level:
NR

Pregnancy Risk level:
NR

STD/HIV Risk level:
NR

Age:
Evaluated 17-22 years (targeted 10-24 years)

Grade level: N/A

Gender:
M=40.5% , F=59.5% control
M=37%, F=63% intervention

Race/ethnicity:
>99% Black African

Total sample:
N=1900

Program Description

Setting: 10 districts, 40 intervention and 19 control enumeration areas selected in mostly urban areas.

Structure: There were 6 components, (a) policy and advocacy coordination; (b) institutional capacity building; (c) coordination and dissemination; (d) behavior change communication, including life-planning skills and enter-education activities; (e) youth friendly services; and (f) integration of ASRH with livelihood skills training. The evaluation focused on youth exposure to three program components—youth-friendly services, behavior change communication/life-planning skills, and livelihood skills training—in areas where all six program components were implemented simultaneously

Behaviors targeted: Delayed initiation of sex, abstinence, condom use, reduced number of sex partners, modern contraceptive use

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Provide resources and support to encourage healthy ASRH behaviours

Theoretical basis: Health belief model, social cognition and other health behavior models

Topics covered: Create an improved enabling and supportive environment. Increase knowledge, skills, norms, and positive attitudes toward adoption of safer sexual practices. Increase use of youth-friendly ASRH services.

Methods: Three components focused on developing an enabling environment and local capacity for ASRH programming. The last three components represent program activities that have a direct link to youth. Mass media including television and radio programmes, and a youth magazine. There were enter-education activities including poetry, sports, clubs and drama. Youth friendly clinic services were established or enhanced. Peer-educators provided information at health facilities, in the community, and in 'youth talks'. Life planning skills courses were implemented in schools.

Development of curriculum/program: Three lead agencies formed a secretariat and assembled implementing partners. AYA focused on implementing and scaling up activities through collaboration with a number of existing implementing partners who were already conducting ASRH activities. The overall

Study Design and Analytic Methods

Type of design: Post-test only evaluation design, looking at intervention and control sites, and exposed an unexposed youth in randomly selected enumeration areas in matched localities.

Cohort design:
Purposefully selected intervention and matched control sites, based on level of AYA implementation. Post-test survey only.

Timing of surveys:
Questionnaire data were collected from unmarried or recently married youth 2-3 years post-intervention.

Comparison intervention:
Mass media campaign only

Sample size for sexually inexperienced at baseline: NR

Sample size for sexually experienced at last follow-up: 56% and 48% in intervention and control, respectively

Retention Rate: N/A

Statistical analysis:
Data conditioned on the intervention-control strategy were analyzed using the propensity score matching. Data conditioned on self-reported exposure were analyzed using both a propensity score matching and an instrumental variable regression approach. Conclusions were then based on the triangulation of findings from those three scenarios.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Had delay of sexual debut	0	0
Abstains from sex	0	-
Had fewer than two sex partners during past 12 months	0	0
Had condom use at first sex	+	+
Had condom use at last sex	0	+
Ever used condom with current partner	0	+
Always uses condom with current partner	+	+
Used modern contraceptive at first sex	+	+
Used modern contraceptive at last sex	0	+
Impact on mediating factors:		
Has HIV/AIDS knowledge (spontaneous response)	0	+
Has HIV/AIDS knowledge (prompted response)	0	0
Believes condom is protective against HIV	0	0
Has positive attitude toward condom users	+	+
Very confident in obtaining condom when needed	0	0
Is confident could put on condom correctly	0	+
Believes he or she could insist that partner use a condom	+	+

Additional Comments

This was a multicomponent evaluation with medium to long term follow-up, and no biological outcomes.

Intervention communities were chosen purposefully and were not randomized, and differences between arms were apparent as compared to National Survey data. Baseline survey data was not collected consistently across countries nor did they consistently define actual AYA intervention sites and program strategies.

The actual interventions were not described in detail.

Partnered with governments, NGOs, community-based groups, and youth-serving groups.

The intervention was based on the theory that adolescent development takes place under the influence of overlapping contexts, or ecological systems, within which adolescents live and develop.

There was a long gap between end of AYA activities and evaluation.

The intervention seemed to have more of an impact on females than males.

Dose-response analysis was conducted but created a control arm using unexposed from both the intervention and control arms, thus potentially biasing this analysis.

The evaluation does not test the relative effectiveness of any single component of the program, nor try to elucidate causal links between exposures,

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
		approach was to implement all components simultaneously, while building capacity and fostering coordination among partners to scale-up ASRH services and to encourage sustainability. **Educators and their training:** NR **Implementation:** Exposure to AYA (at least 3 of 12 possible interventions) was 30% in intervention areas and 21% overall. Males were more likely to be exposed. Almost all reported being exposed to at least one enter-education program. Next most frequently reported component was radio programs, followed by peer education, TV and YFS clinics.			antecedents, and behaviors. Likely some dilution effect of other interventions as well as population mobility.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study P

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
Program name: African Youth Alliance (AYA) Uganda **Reference:** 2007 **Contact person:** JSI Research & Training Institute, Inc.	**Country:** Uganda **Location in country:** 20 districts, evaluated in 8 intervention and 6 control districts **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** NR **STD/HIV Risk level:** NR **Age:** Evaluated 17-22 years (targeted 10-24 years) **Grade level:** N/A **Gender:** M=51% , F=49% control M=52%, F=48% intervention **Race/ethnicity:** >99% Black African **Total sample:** N=3176	**Setting:** 20 districts, 86 intervention and 57 control enumeration areas selected from 6 intervention and 6 control districts. **Structure:** There were 6 components, (a) policy and advocacy coordination; (b) institutional capacity building; (c) coordination and dissemination; (d) behavior change communication, including life-planning skills and enter-education activities; (e) youth friendly services; and (f) integration of ASRH with livelihood skills training. The evaluation focused on youth exposure to three program components—youth-friendly services, behavior change communication/life-planning skills, and livelihood skills training—in areas where all six program components were implemented simultaneously **Behaviors targeted:** Delayed initiation of sex, abstinence, condom use, reduced number of sex partners, modern contraceptive use **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Provide resources and support to encourage healthy ASRH behaviours **Theoretical basis:** Health belief model, social cognition and other health behavior models **Topics covered:** Create an improved enabling and supportive environment. Increase knowledge, skills, norms, and positive attitudes toward adoption of safer sexual practices. Increase use of youth-friendly ASRH services. **Methods**: Three components focused on developing an enabling environment and local capacity for ASRH programming. The last three components represent program activities that have a direct link to youth. Mass media including television and radio programmes, and a youth magazine. There were enter-education activities including poetry, sports, clubs and drama. Youth friendly clinic services were established or enhanced. Peer-educators provided information at health facilities, in the community, and in 'youth talks'. Life planning skills courses were implemented in schools. **Development of curriculum/program:** Three lead agencies formed a secretariat and assembled implementing partners. AYA focused on implementing and scaling up activities through collaboration with a number of existing implementing partners who were already conducting ASRH activities. The overall	**Type of design:** Post-test only evaluation design, looking at intervention and control sites, and exposed an unexposed youth in randomly selected enumeration areas in matched localities. **Cohort design:** Purposefully selected intervention and matched control sites, based on level of AYA implementation. Post-test survey only. **Timing of surveys:** Questionnaire data were collected from unmarried or recently married youth 2-3 years post-intervention. **Comparison intervention:** Mass media campaign only **Sample size for sexually inexperienced at baseline:** NR **Sample size for sexually experienced at last follow-up:** 47% intervention, 43% control in females; 56% intervention, 52% control in males **Retention Rate:** N/A **Statistical analysis:** Data conditioned on the intervention-control strategy were analyzed using the propensity score matching. Data conditioned on self-reported exposure were analyzed using both a propensity score matching and an instrumental variable regression approach. Conclusions were then based on the triangulation of findings from those three scenarios.	**Impact on sexual behaviors:** Had delay of sexual debut Abstains from sex Had fewer than two sex partners during past 12 months Had condom use at first sex Had condom use at last sex Ever used condom with current partner Always uses condom with current partner Used modern contraceptive at first sex Used modern contraceptive at last sex **Impact on mediating factors:** Has HIV/AIDS knowledge (spontaneous response) Has HIV/AIDS knowledge (prompted response) Has positive attitude toward condom users Is confident in obtaining condom when needed Is confident could put on condom correctly Believes he or she could insist that partner use a condom	**Sample Subgroups** **Male** 0 0 0 0 0 0 0 0 0 + 0 0 0 0 -	**Female** 0 - 0 + + + + + + + 0 0 + 0 -	This was a multicomponent evaluation with medium to long term follow-up, and no biological outcomes. Intervention communities were chosen purposefully and were not randomized, and differences between arms were apparent as compared to National Survey data. Baseline survey data was not collected consistently across countries nor did they consistently define actual AYA intervention sites and program strategies. The actual interventions were not described in detail. Partnered with governments, NGOs, community-based groups, and youth-serving groups. The intervention was based on the theory that adolescent development takes place under the influence of overlapping contexts, or ecological systems, within which adolescents live and develop. There was a long gap between end of AYA activities and evaluation. The intervention seemed to have more of an impact on females than males. Dose-response analysis was conducted but created a control arm using unexposed from both the intervention and control arms, thus potentially biasing this analysis. The evaluation does not test the relative effectiveness of any single component of the program, nor try to elucidate causal links between exposures,

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
		approach was to implement all components simultaneously, while building capacity and fostering coordination among partners to scale-up ASRH services and to encourage sustainability. **Educators and their training:** NR **Implementation:** 55% of males and 51% of females had at least some AYA exposure. 32% of males and 30%of females had low exposure, 23% and 22%, respectively, had high exposure (recalled at least three AYA activities). High exposure was approximately 37% in intervention area, and12.6% reported no exposure to AYA.			antecedents, and behaviors. Likely some dilution effect of other interventions as well as population mobility.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Q

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]		Additional Comments
Program name: African Youth Alliance (AYA) Botswana **Reference:** 2005 **Contact person:** JSI Research & Training Institute, Inc.	**Country:** Botswana **Location in country:** 4 districts **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** NR **STD/HIV Risk level:** NR **Age:** 10-24 years **Grade level:** N/A **Gender:** NR **Race/ethnicity:** >99% Black African **Total sample:** N=2537 visits	**Setting:** 18 clinics in 4 districts. **Structure:** There were 6 components to the AYA intervention, (a) policy and advocacy coordination; (b) institutional capacity building; (c) coordination and dissemination; (d) behavior change communication, including life-planning skills and enter-education activities; (e) youth friendly services; and (f) integration of ASRH with livelihood skills training. This evaluation focused on youth exposure to youth-friendly services, **Behaviors targeted:** Use of clinic services **Mediating factors targeted:** N/A **Basic message:** Provide resources and support to encourage healthy ASRH behaviours **Theoretical basis:** Health belief model, social cognition and other health behavior models **Topics covered:** Create an improved enabling and supportive environment. Increase knowledge, skills, norms, and positive attitudes toward adoption of safer sexual practices. Increase use of youth-friendly ASRH services. **Methods**: Youth friendly clinic services were established or enhanced. Peer-educators provided information at health facilities, in the community, and in 'youth talks'. **Development of curriculum/program:** Three lead agencies formed a secretariat and assembled implementing partners. AYA focused on implementing and scaling up activities through collaboration with a number of existing implementing partners who were already conducting ASRH activities. The overall approach was to implement all components simultaneously, while building capacity and fostering coordination among partners to scale-up ASRH services and to encourage sustainability. **Educators and their training:** NR **Implementation:** Implemented to varying degrees in 20 clinics. Evaluated in 18 clinics.	**Type of design:** Post-test only evaluation design, looking at trend in clinic use. **Cohort design:** N/A **Timing of surveys:** Quarterly clinic statistics collected over 7 quarters **Comparison intervention:** N/A **Sample size for sexually inexperienced at baseline:** NR **Sample size for sexually experienced at last follow-up:** NR **Retention Rate:** N/A **Statistical analysis:** Trend analysis conducted based on collection of quarterly statistics to reveal changes following intervention.	**Impact on sexual behaviors:** Non-statistically measured steady increase in clinic attendance	**Sample Subgroups** **Male** **Female**	This was a multicomponent intervention with medium to long term follow-up, and no biological outcomes. One component of the intervention is evaluated here. The actual interventions were not described in detail. Data could not be collected from 2 participating clinics. Only qualitative baseline data was collected. Partnered with governments, NGOs, community-based groups, and youth-serving groups. The evaluation does not test the relative effectiveness of any single component of the program, nor try to elucidate causal links between exposures, antecedents, and behaviors. Likely some dilution effect of other interventions as well as population mobility.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study R

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]		Additional Comments
				Sample Subgroups		
Program name: Top Reseau	**Country:** Madagascar	**Setting:** 4 *Top Reseau* sites in 2003 and 7 sites in 2006	**Type of design:** Two cross-sectional surveys	**Impact on sexual behaviors (among unmarried youth):**	**All**	This evaluation had medium to long term follow up, and no biological outcomes.
Reference: PSI Research Division 2007	**Location in country:** Antananarivo, Antsiranana, Mahajanga, Taolagnaro, Morondava, Toamasina, Antsirabe	**Structure:** Establishment of youth friendly clinics under the name *Top Reseau*, which provide information and reproductive health services. Also used mass media to inform and motivate youth.	**Cohort design:** Random household sampling from 4 sites in 2003 and 7 sites in 2006	Never had sex	+	Impact on mediating factors was only measured at final survey. These included knowledge, social norm, social support, self-efficacy, outcome expectation, subjective norm and threat. Youth were above average in most categories.
Contact person: Rabemanantsoa Andry HI Quantitative Research Department Population Services International Antananarivo, Madagascar andryr@psi.mg	**Rural/urban:** Urban	**Behaviors targeted:** Delayed initiation of sex, condom use, treatment of STIs, contraceptive use	**Timing of surveys:** Questionnaire data were collected at two cross-sectional survey rounds approximately 2 years apart.	Secondary abstinence in past 12 months	+	Very little information given on intervention and no information on training or implementation.
	Income level: NR	**Mediating factors targeted:** See measured mediating variables to the right.	**Comparison intervention:** N/A			Did not measure uptake of youth friendly health services.
	Pregnancy Risk level: NR	**Basic message:** Behaviour change through opportunity, ability and motivation.	**Sample size for sexually inexperienced at baseline:** N=1544			No discussion of other ASRH programmes happening simultaneously which may have biased the results. Difficult to determine if positive effect is due to intervention or other factors, though analysis did control for baseline characteristics.
	STD/HIV Risk level: NR	**Theoretical basis:** Social marketing , Behaviour Change Framework	**Sample size for sexually experienced at last follow-up:** N=4832			
	Age: 15-24 years	**Topics covered:** Improved health status, risk-reducing behaviours, behavior change	**Retention Rate:** N/A			
	Grade level: N/A	**Methods**: Creation of a network of youth friendly services that are affordable, high quality and confidential. Clinics use integrated service delivery and communication for health. Peer education sessions, mobile video unit sessions, televised youth debates and radio and television spots are also used to motivate youth to practice safe behavior.	**Statistical analysis:** Analysis of variance to determine trends over time, controlling for potential confounding. Determinants were measured using Likert scales. Correlation analysis used to detect multi-co linearity and check dimensionality of scales, and item analysis used to assess reliability of scales.			
	Gender: M=50% F=50% at first survey; M=45% F=55% at last survey	**Development of curriculum/program:** Pilot study initially conducted at one site and then expanded to other sites. Questionnaire pre-tested and revised, and factor analysis used to assess dimensionality of scales. Study design guided by PSI's PERForM framework for social marketing for health promotion.				
	Race/ethnicity: NR	**Educators and their training:** NR				
	Total sample at baseline: N=4041	**Implementation:** NR				
	~26 months sample: N=9364					

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study S

Study Information

Program name:
100% Jeune

Reference:
Meekers
2005
Plautz
2007

Contact person:
Dominique Meekers
Department of International Health and Development, Tulane School of Public Health, 1440 Canal Street, Suite 2200, New Orleans, LA 70112
dmeekers@tulane.edu

Community/ Sample Characteristics

Country:
Cameroon

Location in country:
Yaounde, Douala

Rural/urban:
Urban

Income level:
NR

Pregnancy Risk level:
High

STD/HIV Risk level:
NR

Age:
15-24 years

Grade level: NA

Gender:
M=54%
F=46%

Race/ethnicity:
NR

Total sample at baseline:
N=2097, restricted to 1956 unmarried youth

18 months sample:
N=3536, restricted to 3237 unmarried youth

36 months sample:
N=3627, restricted to 3370 unmarried youth

Program Description

Setting: Two largest cities in Cameroon.

Structure: Multi-faceted mass media and interpersonal communications campaign. This included peer education, a monthly magazine, radio drama series, radio call-in show, also integrated television, billboard and radio campaigns, and youth friendly condom outlets.

Behaviors targeted: Practicing safe sex, promoting dialogue about adolescent reproductive health in the community

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Practice healthy sexual behaviour

Theoretical basis: Comprehensive theoretical framework combining elements of the Health Belief Model, Social Learning Theory and Theory of Reasoned Action

Topics covered: Previous sexual history as a risk factor for STI/HIV, need for young girls to take responsibility for their SRH, encourage couples to discuss sensitive issues such as abstinence and condom use

Methods: Peer education and promotion teams (PEP) targeted in- and out-of-school youth with interactive, entertaining shows conducted at schools and youth hangouts. A monthly 12-page magazine aimed to inform youth about reproductive health issues, and was sold through youth clubs and street hawkers. Reader feedback was encouraged by placing letterboxes throughout the cities. An 18-episode radio drama reinforced the main campaign themes and addressed a wide range of SRH issues. The drama was promoted through a campaign of billboards, radio spots, brochures and print ads. A youth-oriented call-in radio show about SRH issues was broadcast weekly. Finally, all of these related methods were reinforced through an integrated television, radio and billboard campaign. A network of branded, youth-friendly condom outlets supplemented the campaign.

Development of curriculum/program: Based on three main behavior change theories, and pre-tested prior to production.

Educators and their training: Over 150 teachers, 2000 peer educators, 62 head teachers, 14 ward education coordinators, 10 district school inspectors, and 70 health workers were trained. A workshop was held for 50 condom vendors, and

Study Design and Analytic Methods

Type of design: Cross sectional population-based surveys using a multi-stage stratified sampling design. 12 neighborhoods for 2000 survey and 20 for 2002 and 2003 surveys, 30 enumeration areas selected within each neighborhood. Households with 15-24 year olds were randomly selected and one eligible person per household was randomly selected for interview.

Cohort design: Three cross sectional surveys

Timing of surveys: Questionnaire data collected at baseline, 18 and 36 months.

Comparison intervention: NA – all participants had the opportunity to be exposed to the intervention

Sample size for sexually inexperienced at baseline: NR

Sample size for sexually experienced at last follow-up: NR

Retention Rate: NA

Statistical analysis: Logistic regression to analyse trends, shown as adjusted proportions controlling for age, city of residence, level of education, school enrollment status, socioeconomic status and number of sexual partners. Stratified by gender. Also conducted a dose-response analysis controlling for same variables, as well as recall of other programs.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Had sex in the past year At 18 and 36 months	0 0	0 0
Two or more partners in the past year At 18 and 36 months	0 0	- 0
Ever using condoms At 18 and 36 months	+ +	+ +
Condom use at last sex with regular partner At 18 and 36 months	+ +	+ +
Always use condom with regular Partner At 18 and 36 months	+ +	+ +
Condom use at last sex with casual partner At 18 and 36 months	+ +	+ +
Always use condom with casual partner At 18 and 36 months	0 +	+ +
Had an STI symptom in past year At 18 and 36 months	+ +	
Impact on mediating factors:		
HIV+ person can survive At 18 and 36 months	- -	- -
AIDS can be cured At 18 and 36 months	0 0	- -
Moderate/high personal risk At 18 and 36 months	0 ↓	↑ ↑
Condoms effective for FP At 18 and 36 months	+ +	0 +
Condoms effective for HIV prevention At 18 and 36 months	0 +	0 +
Condom source within 10 minutes At 18 and 36 months	+ +	+ +
Condoms reduce pleasure At 18 and 36 months	0 +	0 +
Can convince regular partner to use condoms At 18 and 36 months	0 +	0 +
Can convince casual partner to use condoms At 18 and 36 months	0 +	0 0
Not shy to obtain condoms At 18 and 36 months	+ +	+ +
Confident knows correct condom use At 18 and 36 months	+ +	+ +
Friends support youth condom use At 18 and 36 months	0 +	+ +
Parents support youth condom use At 18 and 36 months	+ +	+ +
Discussed FP with friends in past		

Additional Comments

This was an evaluation with medium length follow -up, no biological outcomes. Cross sectional data implies the direction of the causal relationship cannot always be determined.

Though there was no change in reported sexual activity or number of partners, reported condom use increased significantly in both males and females.

A dose-response analysis was conducted, controlling for recall of other SHR programmes. This showed that those with high exposure had lower barriers to condom use among males and females.

Males reporting STI symptoms did not decrease in dose-response evaluation.

Evaluation was done to determine recall of each element of the intervention, as well as the programme as a whole.

There were several other SRH programmes being implemented in Cameroon at the time, with varying degrees of coverage in the communities. Evidence that factors besides 100% jeune contributed decreasing barriers to condom use.

Spontaneous recall of 100% Jeune increased from 1.3% to 26% over 18 months (28% at 36 months), while most other programmes had less than 5% recall.

At 18 months though 32% of youth reported hearing of the youth-friendly condom outlets in the past 3-mos, only 5.5% reported visiting one in that period.

Exposure to 100% Jeune

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]			Additional Comments
		were visited weekly by the PEP teams. **Implementation:** PEP conducted 50-80 shows/month of ~1 hour each. At 12 months over 165,000 youth had attended. 40,000 magazines per month sold out within ~10 days. By month 9 320,000 copies had been sold. Feedback letters increased from 91 in December 2000 to 650 in July 2001. 3 radio stations in the two cities aired the drama. By November 2001 33 condoms outlets were participating. Only 12% of youth were reached through peer education.		year At 18 and 36 months Discussed FP with others in past year At 18 and 36 months Discussed STI/AIDS with friends in past year At 18 and 36 months Discussed STI/AIDS with others in past year At 18 and 36 months	0 + - 0 + + - 0	0 + 0 + + + - +	was associated with increased reported condom use among males. Among females it was associated with increased condom use with a regular partner but not associated with ever using a condom.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study T

Study Information

Program name: Youth Campaign

Reference: Fonseca-Becker 2005

Contact person: Fonseca-Becker Department of Population and Family Health Sciences, Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs ffbecker@jhuccp.org

Community/ Sample Characteristics

Country: Guinea

Location in country: Kankan and Faranah

Rural/urban: Rural and urban

Income level: NR

Pregnancy Risk level: NR

STD/HIV Risk level: NR

Age: 15-24 years (surveyed 16-24 years)

Grade level: N/A

Gender: M=50% F=40% intervention, M=49% F=51% control

Race/ethnicity: NR, >99% Black African

Total sample: N=1008

Program Description

Setting: 9 health districts in 2 administrative regions

Structure: Behaviour change communication campaign to prevent STI/HIV and unwanted pregnancy. Involved radio programming, posters and brochures, campaign events and advocacy meetings with local leaders.

Behaviors targeted: Delayed initiation of sex, condom use, reproductive health communication

Mediating factors targeted: See measured mediating variables to the right.

Basic message: Increase knowledge and support for positive behavior change.

Theoretical basis: Behavior change communication

Topics covered: information on STI/HIV and contraceptive methods, condom use, sexual behavior, interpersonal communication, attitudes and self-efficacy

Methods: Created posters and brochures providing ASRH information and campaign advocacy, disseminated where youth gather. Trained peer educators to reach and refer youth to ASRH information. Condom use demonstrations conducted by peer educators, tailors, hair dressers and health providers. Promotional campaign material (T-shirts, hats, handbags, pens, etc) were distributed at campaign events, such as community theatre, video projections, soccer matches. Radio programming was developed for and by youth. Advocacy meetings with community, government, religious and youth leaders. Partnership with health service providers to provide youth friendly services.

Development of curriculum/program: Part of a 5-year family planning and reproductive health initiative. Preliminary in-depth qualitative analysis of intended audience to understand motivations for safe behavior. This component involvement local leaders at all levels. Data collection instruments were pre-tested.

Educators and their training: Over 100 peer educators trained.

Implementation: 120,000 brochures and 4000 posters produced. 85% males and 63% females reported exposure to one or more campaign activities. 90% males and 80% females heard radio message.

Study Design and Analytic Methods

Type of design: Post-intervention only survey among random sample of youth in intervention areas, and reduced sample in area 300km away as a control.

Cohort design: Post-intervention survey only, with DHS data from 15 enumeration areas acting as proxy baseline data. Randomly selected household survey.

Timing of surveys: Questionnaire data were collected 12-months post-intervention.

Comparison intervention: NR, but no formal intervention

Sample size for sexually inexperienced at baseline: N/A

Sample size for sexually experienced at last follow-up: Intervention M=350 F=241; Control M=25 F=27

Retention Rate: N/A

Statistical analysis: Multivariate analysis of differences in intervention and control. C2 tests for proportions and student T-test for continuous variables to determine effectiveness of exposure.

Results[1]

	Sample Subgroups	
Impact on sexual behaviors:	**Male**	**Female**
Ever used condom	+	+
Condom use at last sex	+	+
Impact on mediating factors:		
Knows where to get condoms	+	+
Knows how to use condoms	+	+
Willing to use condoms	+	+
Advocate for condoms	+	+
Has heard of AIDS	0	0
Knows at least one mode of HIV transmission	0	0
Knows how to prevent HIV	+	+
Knows a healthy-looking person can have HIV	0	0
Perception of personal risk of HIV/AIDS	+	0
Perception of community's willingness to discuss RH	+	+

Additional Comments

This was an intervention without random assignment, medium term follow-up, and no biological outcomes.

DHS data was used as proxy baseline data. DHS caution that data from country sub-samples cannot be considered representative of the region. 15 of 31 EAs surveyed were included in the DHS survey.

Differences in characteristics of control and intervention groups, thus not an ideal comparison.

Males were much more knowledgeable about condoms, and more willing to use and advocate their use than females.

Some evaluation conducted on exposure to campaign and actions directly related to exposure.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study U

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]		Additional Comments
Program name: Condom promotion **Reference:** Kajubi 2005 **Contact person:** Norman Hearst University of California, Box0900, 500Parnassus, MU3E, San Francisco, CA 94143, USA nhearst@hotmail.com	**Country:** Uganda **Location in country:** Kampala **Rural/urban:** Peri-urban **Income level:** Low **Pregnancy Risk level:** ND **STD/HIV Risk level:** ND **Age:** 18-30 years (~75% 18-24 years) **Grade level:** N/A **Gender:** Male **Race/ethnicity:** >99% Black African **Total sample at baseline:** N=498 **Matched baseline-6 months sample:** N=378	**Setting:** 2 communities near Kampala **Structure:** Condom promotion to address 3 barriers to condom use: lack of technical skills, lack of access, and embarrassment in obtaining condoms. **Behaviors targeted:** Increased condom use **Mediating factors targeted:** Increased condom use skills, access and decreased embarrassment in obtaining condoms. See measured mediating variables to the right. **Basic message:** Use condoms **Theoretical basis:** NR **Topics covered:** AIDS in Uganda, demonstration and practice of condom use, condom negotiation, HIV/STI prevention. **Methods**: Young men were recruited by local youth councils to participate. After completing the baseline questionnaire on condom use and sexual behavior participants were given coupons for free condoms redeemable from volunteer distributors in the communities. Intervention participants attended condom use skills workshops. Skills workshops included attending 1 of 8 3-hour sessions over a 3-month period. **Development of curriculum/program:** pilot studies and field tests conducted to evaluate questionnaires, coupon redemption procedures and content of condom skills workshops. **Educators and their training:** 10 resident condom distributors were selected in each community by the local youth council and council chairpersons based on popularity, age and accessibility. They were trained on how to record condom redemption and maintaining confidentiality. **Implementation:** In intervention community 207/213 (97%) attended at least one workshop, and 77.5% who completed the follow up survey had attended a workshop. In some cases men attended more than one workshop. In the intervention community 3 condom distributers distributed 78.8% of condoms. In control 2 distributed 49.3% of condoms, and the rest were spread across 5 distributers.	**Type of design:** Quasi-experimental controlled trial. Two similar communities were randomly assigned to receive the intervention or not. **Cohort design:** Baseline and 6-month surveys of all eligible men in the communities **Timing of surveys:** Questionnaire data were collected at baseline, and 6- months. **Comparison intervention:** The comparison community received a brief informational presentation about AIDS, and coupons for free condoms. **Sample size for sexually inexperienced at baseline:** N=70 **Sample size for sexually experienced at last follow-up:** N/A **Retention Rate:** 75% at 6 months. **Statistical analysis:** Questionnaire data linked to individual participants and compared in control and intervention using the Wilcoxon rank sum test. Proportions were compared using X^2. Multivariate analysis using multiple logistic regression.		**Sample Subgroups** **Males**	This was an evaluation with small sample size, short term follow up and no biological outcomes. Age range of study participants spanned beyond the target population of 'young people'. Approximately 75% were 18-24 years. The study was underpowered t o measure many of the behavioural variables examined. Though condom distribution increased in the intervention community, the proportion of men redeeming coupons did not change and this did not translate into a decrease in unprotected sex. Abstinence decreased in both communities, and to a somewhat lower level in the intervention community. Proportion reporting unprotected sex was unchanged in the intervention community and decreased in the control community. With casual partners, consistent condom use increased in intervention and decreased in control, abstaining from casual partners increased in control but decreased in intervention, and the net result was somewhat more unprotected sex with a casual partner in intervention arm. None was statistically significant. Though both groups reduced number of casual partners, there was a greater reduction in control community, reaching statistical significance.
				Impact on sexual behaviors:		
				Abstinence:	0	
				Consistent condom use:	0	
				Inconsistent condom use:	0	
				Consistent condom use with casual partner:	0	
				Abstaining from any casual partner:	0	
				Unprotected sex with a casual partner:	0	
				Overall number of partners:	-	
				Reduction in casual partners:	0	
				Number of unprotected casual sex partners:	0	
				Impact on mediating factors:		
				Distribution of condoms:	+	
				Proportion of men redeeming condoms:	0	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study V

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]		Additional Comments
Program name: Zambia youth peer education (YPE) **Reference:** Svenson 2008 **Contact person:** Family Health International, YouthNet Program P.O. Box 13950 Research Triangle Park, NC 27709 USA Telephone: 1.919.544.7040 Web site: www.fhi.org	**Country:** Zambia **Location in country:** Lusaka, Livingstone, Mongu **Rural/urban:** Rural and urban **Income level:** NR **Pregnancy Risk level:** NR **STD/HIV Risk level:** NR **Age:** 15-24 years **Grade level:** NA **Gender:** M=44.5% F=55.5% **Race/ethnicity:** NR **Total sample:** N=1695	**Setting:** 5 programmes in 3 sites **Structure:** Varies across site, but not specifically reported. Based on three domains: programme standards, programme cooperation and community participation. Peer educators have a work plan, and clear objectives. There is also programme adults to provide mentoring and supervision. Community participation is an essential component for responsiveness to peer education. **Behaviors targeted:** reduce the rates of early pregnancies, STIs, HIV/AIDS, substance abuse, provide youth-friendly services; provide life skills **Mediating factors targeted:** See measured mediating variables to the right. **Basic message:** Good sexual and reproductive health **Theoretical basis:** NR **Topics covered:** HIV/STIs, pregnancy, life skills, substance use, gender sensitivity, decision making **Methods**: Different methods of recruitment and peer education activities are conducted at each site. Peer educators may be recruited during one-day mobilization workshops held in the communities, they may be nominated by schools and churches, or recruited by existing peer educators. Peer educators use focus group discussions, dramas, one-on-one counseling, sensitization and awareness programs, videos, debates, quizzes, local radio and television programs, and printed materials. They also work at clinics providing referrals for youth at youth-friendly corners. Activity logs measure contact with people, activities conducted, and clinic referrals. **Development of curriculum/program:** A preliminary phase 1 of the intervention was conducted in 2 sites in Zambia and 2 sites in Dominican Republic. Successful aspects of this phase that promoted sustainability and peer retentions were used to take forward in expanded phase 2. **Educators and their training:** Varies across sites, but not specifically reported. **Implementation:** Implementation varied widely across sites. Peer educator participation in activities per day ranged from 0.5%-32.8%.	**Type of design:** Post-test only evaluation design, based on national household survey. **Cohort design:** National population-based household posttest survey, looking at exposure to YPE and reproductive health outcomes. **Timing of surveys:** Questionnaire collected post-intervention. **Comparison intervention:** NA **Sample size for sexually inexperienced:** N=571 **Sample size for sexually experienced at last follow-up:** N=1124 **Retention Rate:** NA **Statistical analysis:** Multiple regression were used to measure impact of the intervention, controlling for propensity score (to control for exposure bias), community efficacy, gender, education, and residence (rural/urban)	**Impact on sexual behaviors:**	**Sample Subgroups** **All**	This was a post-intervention national cross-sectional survey without random assignment, and the use of biological outcomes. The higher rate of STIs were detected in those exposed to peer education, indicating that peer educators are reaching those at highest risk There was substantial variation in the quality, impact and cost of the 5 YPE programmes Over half of the young people attending the 7 study clinics were referred by a peer educator. Lack of randomization and cross-sectional evaluation design leaves room for exposure bias and other biases, though an attempt was made to control for this using (propensity score, for example). Virtually no information on how peer educators were selected, trained, or how they carried out their activities. Cost analysis was conducted to determine expenditure per peer educated by site. Correlation between quality of intervention and dollar spent. Authors indicated that peer education was common in Zambia, and the results from this evaluation cannot necessarily be attributed solely to YPE. Results were not stratified by gender.
				Age of sexual debut:	0	
				Ever had sex:	0	
				Number of sexual partners in last 4 weeks:	0*	
				Condom use at last sex:	+	
				Always uses condom with most recent partner:	+	
				Ever had an HIV test:	0*	
				Impact on mediating factors:		
				Knowledge:	+	
				Intention to use condoms:	+	
				Stigma against PLWHA:	+	

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study W

Study Information

Program name: Intervention with Microfinance for AIDS and Gender Equity (IMAGE)

Reference:
Pronyk
2008, 2006

Contact person:
Paul Pronyk

The Earth Institute and Mailman School of Public Health, Columbia University. 475 Riverside Drive Suite 401, New York, NY 10115
ppronyk@ei.columbia.edu

Community/ Sample Characteristics

Country:
South Africa

Location in country:
Limpopo Province

Rural/urban:
Rural

Income level:
Low

Pregnancy Risk level:
High

STD/HIV Risk level:
Mixed

Age:
14-25 years

Grade level: N/A

Gender:
Cohort 2
Female: 55%
Male: 45%

Cohort 3
Female: 56%
Male: 44%

Race/ethnicity:
Black African

Total sample at baseline:
1037 in cohort 2,
2858 in cohort 3

24 months sample (cohort 2): N= 761

36 months sample (cohort 3): N= 2325

Program Description

Setting: 8 pair-matched villages

Structure: There were two intervention components: group-based microfinance for establishment of small businesses for groups of 5 women, and a gender and HIV training curriculum delivered to these women. The intervention targeted female micro-entrepreneurs. This group – referred to as "cohort 1" in study outputs - had a median age of 42 years and very few were <25 years old. However, the authors hypothesized that they may also see changes among young people aged 14-35 years living in the homes (cohort 2) and communities (cohort 3) of intervention participants. These changes were hypothesized to come about through influences on the household economy and on community level responses to HIV/AIDS and intimate partner violence instigated by intervention participants. Very few members of cohorts 2 and 3 had direct contact with the intervention components. For the purposes of this summary the authors conducted a secondary analysis of their data restricted to the sub-group of individuals in cohorts 2 and 3 aged<25 years at baseline. This analysis had relatively weak statistical power to test hypotheses of change.

Behaviors targeted: HIV knowledge and communication, and sexual risk behavior.

Mediating factors targeted: See measured mediating variables to the right.

Basic message: NR

Theoretical basis: Economic empowerment of women and their households; community mobilization.

Topics covered: Gender roles, cultural beliefs, relationships, communication and IPV, and HIV education and VCT. Also small business and microfinance. These were targeted to cohort 1.

Methods: Poorest individuals actively sought, loans administered for small business development, with groups of 5 women as guarantors for each other's loans. Loan centres of ~40 women met every 2 weeks. Integrated into these meetings was a 12-15 month participatory training curriculum called Sisters for Life (SFL). Training covered 2 phases, phase 1 was gender roles, cultural beliefs, relationships, communication and IPV, and HIV education. Phase 2 encouraged community mobilization to engage young people and men. Clinic health workers also received training in HIV testing, care and support.

Study Design and Analytic Methods

Type of design: Experimental. Eight pair-matched communities were randomly assigned to receive the intervention immediately, or at the end of the trial.

Cohort design: Matched pre and posttest surveys.

Timing of surveys: Questionnaire and biological data were collected at baseline and 24 months (cohort 2) or 36 months (cohort 3).

Comparison intervention: The comparison communities received no intervention until after final evaluation.

Sample size for sexually inexperienced at baseline: 33%

Sample size for sexually experienced at last follow-up: 84%

Retention Rate: NA

Statistical analysis: Analysis of variance using cluster level analysis. Two-stage process for adjusted analysis for analysis among 14-35 - adjusted measure of effect calculated using logistic regression model fitted to individual level data. Standardized village level summaries then entered into ANOVA model. Analysis of 14-24 yrs was unadjusted.

Results[1]

	Sample Subgroups
	All
Impact on sexual behaviors:	
Sexual debut:	
Cohort 2	0
Cohort 3	0
> 1 sexual partner in last 12 months:	
Cohort 2	0
Cohort 3	0
Unprotected sex with non-spousal partner in last 12 months:	
Cohort 2	0
Cohort 3	0
HIV incidence:	
Cohort 2	0
Cohort 3	0
Impact on mediating factors:	
Communication with household members about sex in past 12 months:	
Cohort 2	0
Cohort 3	0
Comfortable discussing sex in the home:	
Cohort 2	0
Cohort 3	0
Knowledge that healthy-looking person can be HIV+:	
Cohort 2	0
Cohort 3	0
Have had an HIV test:	
Cohort 2	0
Cohort 3	0
Participation in collective action against HIV/AIDS:	
Cohort 2	0
Cohort 3	0

Additional Comments

This was a rigorously evaluated cluster-randomized controlled design with multiple interventions, and the use of biological outcomes.

It wasn't possible to examine HIV infection in cohort 1 as the intervention was not targeted towards young people (N=16 under 25 years). The study was unusual in that it delivered a structural intervention with multiple components and hypothesized changes in behaviours and HIV risk among young people as a result of indirect exposure to the downstream effects of the intervention rather than exposure to the intervention package itself which was delivered primarily to older women initiating or strengthening small business through microfinance.

For a detailed account of the intervention see http://hermes.wits.ac.za/www/Health/PublicHealth/Radar/PDF%20files/Intervention_monograph_pics.pdf.pdf.

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.

Study Information	Community/ Sample Characteristics	Program Description	Study Design and Analytic Methods	Results[1]	Additional Comments
		Development of curriculum/program: Microfinance based on the Grameen Bank model. Developed on the basis of participatory learning and action principles. **Educators and their training:** Microfinance services implemented by Small Enterprise Foundation, an experienced and active finance organization. **Implementation:** Reached 10% of poor households, process evaluation suggested high level of participation and retention among loan recipients.			

[1] Change in outcome for group receiving intervention relative to comparison group: no significant change = 0; significant desirable change = +; significant undesirable change = —; marginally significant change ($p \leq .1$) = 0*.