

PREVENTING HIV/AIDS IN YOUNG PEOPLE

A SYSTEMATIC REVIEW OF THE
EVIDENCE FROM DEVELOPING COUNTRIES

UNAIDS Inter-agency Task Team on Young People



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Edited by
David A. Ross, Bruce Dick & Jane Ferguson



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1. Introduction and rationale

Bruce Dick,^a Jane Ferguson,^a & David A. Ross^b

1.1 Background

In 1995, WHO in collaboration with UNFPA and UNICEF convened a study group on programming for adolescent health and development. One of the products of this group was a joint technical report publication on *Programming for adolescent health and development* (1). The report synthesized the evidence for the effectiveness of interventions for adolescent health and development, and it set the direction and provided the conceptual framework for much of the programming for young people's health and development that has taken place since its publication (2–6).

The challenges posed by HIV have progressed inexorably during the past decade, especially for young people in developing countries. (Young people are defined in this report as those aged 10–24 years; this group combines adolescents – aged 10–19 years – and youth – aged 15–24 years). At the same time, many lessons have been learnt about developing and implementing programmes for young people's health and development, including programmes to prevent the spread of HIV. In 2004, the UNAIDS Inter-Agency Task Team on Young People decided that it was time to review the progress that had been made and to look again at the evidence for the effectiveness of interventions, focusing explicitly on interventions to prevent the spread of HIV among young people in developing countries.

This report is an attempt to rise to the challenge by providing systematic reviews of the evidence for policies and programmes to decrease HIV prevalence among young people, as a contribution towards achieving universal access to prevention, treatment and care (7) and attaining the Millennium Development Goal on AIDS (8).

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1.2 Young people, HIV/AIDS and the global goals

During the past 20 years, and despite the continued lack of an effective vaccine, the armamentarium for preventing the transmission and decreasing the impact of HIV and AIDS has slowly grown (9, 10) (see also [chapter 3](#)).

HIV/AIDS has its roots in a range of problems that undermine people's health and human rights, such as inequity and discrimination, poverty, social unrest and migration, exploitation and abuse. Changing these structural and contextual determinants (11) will be fundamental to making the prevention of HIV sustainable. However, there have been growing experiences with a range of shorter-term interventions that have been directed towards encouraging people to avoid the behaviours that underlie the transmission of HIV or to reduce the risk associated with these behaviours (9).

To achieve widespread implementation of these preventive interventions many things will need to be done through many sectors and by many actors. At the same time, it will be important to ensure that the interventions reach those people who are vulnerable and most at risk of becoming infected with HIV, both in terms of where the virus is and where the virus is going, as the pandemic develops and matures.

Young people make up a segment of the population that is particularly vulnerable to HIV. Altogether, 50% of HIV transmission takes place among those aged 15–24, and 5 000–6 000 young people become infected every day (12, 13). The second decade of life is a period of experimentation and risk, and many factors increase young people's vulnerability to HIV during these years of rapid physical and psychosocial development. These factors include a lack of knowledge about HIV/AIDS, lack of education and life skills, poor access to health services and commodities, early sexual debut, early marriage, sexual coercion and violence, trafficking and growing up without parents or other forms of protection from exploitation and abuse.

In recognition of young people's vulnerability to HIV/AIDS, the United Nations General Assembly Special Session on HIV/AIDS (14) (UNGASS on HIV/AIDS) outlined a number of goals and targets focusing on young people aged 15–24. These are based on the core elements of the joint WHO/UNFPA/UNICEF document *Action for adolescent health: towards a common agenda* (2). The goals of UNGASS on HIV/AIDS build on and are reflected in the commitments made at a range of other global fora ([Box 1.1](#)), including the International Conference on Population and Development's programme of action (known as ICPD+5) (15) and the United Nations Special Session on Children (16). The goals and targets endorsed during the UNGASS on HIV/AIDS not only focus on decreasing HIV prevalence among young people but also on promoting the core elements of the programme framework

Highlights of important goals for young people's health and development, with a focus on HIV/AIDS

- The UN General Assembly Special Session on Children (17)
 - Develop and implement national health policies and programmes for adolescents, including goals and indicators, to promote their physical and mental health
- The Millennium Development Goal on HIV/AIDS (7)
 - By 2015 halt and begin to reverse the spread of HIV/AIDS (using the prevalence of HIV among pregnant 15–24 year olds as an indicator)
- The UN General Assembly Special Session on HIV/AIDS (14)
 - By 2005, ensure that at least 90% (and by 2010 that 95%) of young people have access to the information they need to reduce their vulnerability to HIV
 - By 2005, ensure that at least 90% (and by 2010 that 95%) of young people have access to the **skills** they need to reduce their vulnerability to HIV
 - By 2005, ensure that at least 90% (and by 2010 that 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 (15–24 years) reduced by 25% in the most affected countries, and by 2010 reduce prevalence by 25% globally

that was developed during the 1995 study group – that is, they focus on providing access to information, skills and services as well as decreasing vulnerability.

The UNGASS on HIV/AIDS goals and targets help to unpack the prevalence goal, and provide both light and heat for all people working to decrease the transmission and impact of HIV and AIDS among young people. Achieving these goals and targets will make an important contribution towards achieving the goal of universal access to prevention, treatment and care, and this will

be necessary, if not sufficient, to achieve the Millennium Development Goal that aims to halt and begin to reverse the spread of HIV/AIDS.

1.3 **Priorities for action**

Now that there are global goals and targets, and a growing number of interventions that may contribute to their achievement, it is important to synthesize the evidence base for these interventions in ways that assist the decision-making of policy-makers and programme planners. Research findings need to help them decide how to most effectively allocate resources in different epidemic settings and for different groups of young people. With 5 000–6 000 young people becoming infected with HIV every day, these are clearly decisions that need to be taken today, despite the fact that the evidence may be less than complete. We know that there is no magic bullet, and that a range of interventions will need to be implemented. We also know that many things will influence the choices made about which interventions to focus on, including moral opinions and political expediency. But the evidence of effectiveness needs to be one of them.

The decisions that need to be taken are made all the more difficult by the fact that evidence from multiple interventions is needed; the evidence for many interventions is weak; and most evidence comes from developed countries. In addition, it is not always clear what different groups – for example, researchers, programme managers and policy-makers – understand by the term evidence. And it is often not clear what they have used as evidence: randomized controlled trials, quasi-experimental trial designs, recommendations of best practice, or anecdotes. So there is not only a need to be clear about the evidence but also to be more systematic, transparent and consistent about how the available evidence is reviewed and assessed.

There is now wide consensus about the main settings through which young people can be reached with preventive interventions; these include schools, health services, the mass media and through communities and outreach programmes targeting the young people who are most at risk of HIV. Furthermore, although the evidence of the effectiveness of interventions remains incomplete for many of these settings, there is a growing research base from which to draw, and this includes research from developing countries. In addition, the global goals provide a range of outcomes that can be used to review the evidence: decreased prevalence, decreased vulnerability and increased access to relevant information, skills and services.

1.4 Objectives and limitations

1.4.1 Objectives

The various chapters in this report focus on ways of meeting the global goals on young people and HIV. They also emphasize the sense of urgency that should accompany the drive to achieve these goals, as well as the need for a specific emphasis on prevention, and within that, a focus on the young people who remain at the centre of the HIV pandemic. The chapters also explore the need to have a better understanding of the evidence base for making decisions about the allocation of resources, and they particularly focus on developing countries.

This report has three specific objectives:

1. first, to clarify our collective understanding of the term “evidence” in complex areas of programme development and delivery – such as the prevention of HIV among young people – and to develop a transparent methodology for reviewing the effectiveness of different types of interventions in different settings – such as schools, health services, the mass media, within geographically defined communities and for services targeting the young people most at risk of HIV infection;
2. second, to provide a comprehensive review of the evidence on the effectiveness of interventions to prevent HIV among young people in developing countries;
3. third, to inform the choices of policy-makers, people responsible for programme development and delivery, and researchers about interventions to achieve the global goals on HIV and young people that were endorsed during the UNGASS on HIV/AIDS. The report also seeks to provide decision-makers with guidance on which interventions they can support with confidence, which interventions need to be implemented more cautiously along with careful evaluation of their impact on key health outcomes, which interventions require further development and demonstration of effectiveness before they can be recommended for widespread implementation, and which interventions should not be implemented because there is sufficient evidence of their lack of effectiveness.

The chapters in this report are divided into three sections.

- **Chapters 1, 2 and 3** provide an outline of the aims and objectives of the subsequent chapters, a synthesis of the epidemiological data that describe the epidemic among young people and an overview of what is known about the effectiveness of prevention interventions in general.

- Chapters 4, 5, 6, 7, 8 and 9 explain the methods used to review the evidence and provides detailed reviews of the evidence from each of the key settings through which young people can be reached by interventions for the prevention of HIV.
- Chapter 10 contains the overall conclusions from the reviews of the evidence, including recommendations for policy-makers, programme development and delivery staff, and researchers.

1.4.2 **Limitations**

It is hoped that this report will make an important contribution to discussions and decisions about priorities for action, by providing a snapshot of the knowledge base for the effectiveness of different interventions. It is also anticipated that this report will contribute to increasing the transparency of how the evidence for effectiveness is assessed. However, it is important to be clear from the outset about some of the limitations of the scope and aims of this report.

First, in order to limit the scope of each chapter, the authors have focused on interventions that were primarily intended to prevent HIV transmission. They have not dealt with studies that focused on providing treatment, care or support for young people living with HIV and AIDS. This does not in any way imply that treatment is unimportant or that treatment does not have the potential to make important contributions to prevention. Rapidly increasing access to effective HIV treatment is likely to provide many opportunities to strengthen HIV prevention efforts as well as mitigate the impact of AIDS. These chapters have also not dealt with interventions designed to mitigate the impact of HIV, for example interventions with orphans and other young people affected and made vulnerable by HIV and AIDS.

Second, chapters do not review structural interventions that primarily aim to prevent HIV by decreasing young people's vulnerability, for example by decreasing poverty, marginalization, stigma or discrimination. Many young people are vulnerable to HIV as a result of belonging to a group or subculture or living in a particular setting, because of the poor quality and coverage of services and other programmes available to them, or as a result of broader societal and environmental influences, including behavioural norms. But again this is not to imply that interventions that aim to alleviate these vulnerabilities are unimportant. The decision not to focus on these types of interventions was based on preliminary work that indicated that although there have been some successes, such as increasing the enrolment of adolescent girls in school, it is not always clear what can be done to change the determinants of vulnerability, and for those interventions that have been

implemented the mechanisms of action are not clear and the evidence for their effectiveness remains weak.

Third, the chapters have not reviewed evidence for the effectiveness of interventions in all settings where they could possibly be delivered. In particular, they have not reviewed the evidence for the effectiveness of interventions in the political environment – those delivered, for example, through activism, political commitment and policies that create a supportive environment to enable specific interventions to be implemented. Few rigorous studies have looked at the effectiveness of actions to create a favourable environment for intervention delivery. Although a chapter reviewing such interventions was originally foreseen, a preliminary assessment indicated that there were insufficient studies to carry out a review using the methods applied to the other settings included in this report.

Fourth, we have not reviewed the evidence for the effectiveness of interventions among all groups who are particularly at risk of HIV. For example, while there has been an explicit focus on young injecting drug users, young sex workers and young men who have sex with men; young prisoners and young migrant workers have not received specific attention.

Finally, although the primary focus of this report is to examine interventions affecting young people in developing countries, we have had to refer to findings from developed countries in order to place the evidence in a wider context. In some of the chapters, studies have also been included in which the interventions were directed towards populations that included young people but that did not disaggregate data by age.

1.5 Process and methodology

This report has been developed over a 2-year period. The process started in May 2004, when a meeting was organized in Talloires, France. This meeting brought together policy-makers, people who make decisions about programme development and delivery, and researchers who have an interest and expertise in interventions to prevent HIV among young people. At this time, the participants reviewed a set of background papers that had been specially prepared for the meeting, and they made recommendations for improving the papers and the methods used to review the evidence, and for developing additional papers.

Following this meeting the papers were re-drafted and additional papers were developed. An information brief was prepared based on the outcome of the meeting (17), and presentations were made in different fora to assess whether the approach that was being developed was useful to people making decisions about priorities for action. It was clear that the comprehensive

and transparent approach, and the classification of the interventions as “Steady”, “Ready” and “Go”, resonated with policy-makers and programme developers alike.

A second meeting was held in Gex, France, in March 2005. This meeting included the authors of the chapters and selected external advisers who also provided further peer review and suggestions for refining the papers. This was followed in June 2005 by a meeting in Chavannes, Switzerland, which involved the editors of this report and reviewers from different regions who had not previously been involved in the process. These reviewers were invited to provide external review of the papers and to assist with developing the conclusions and recommendations. Final changes were made to the papers during the second half of 2005, prior to the papers going through further external peer review and editorial review processes.

As described in more detail in the first paper in section 2, the authors of [chapters 5 to 9](#) in section 2 were asked to use the following approach to review the evidence for the effectiveness of the interventions in their respective settings.

1. First, the interventions provided through each of the settings were to be classified into different types of interventions based on common characteristics and the choices policy-makers and programme developers need to make in deciding what to do.
2. Second, the authors were asked to assess the strength of evidence (the evidence threshold) needed to recommend the widespread implementation of the different types of interventions.
3. Third, authors were asked to assess the strength of the empirical evidence available from the studies for each of the different types of interventions, in terms of specific outcomes as defined by the UNGASS goals on young people, by grading the evidence using standard criteria.
4. Finally, this evidence was to be compared with the threshold of evidence required to recommend a particular type of intervention for widespread use and a decision made as to whether the threshold had been fully met, partially met, not met but had encouraging characteristics, or if there was evidence of a lack of effectiveness.

Based on the categorizations in point number 4 each type of intervention was classified as “Do not go”, “Steady”, “Ready” and “Go”, as shown in [Box 1.2](#).

For each of the settings, the authors have attempted to review the evidence in relation to the UNGASS goals and targets for young people and HIV/AIDS, to assess whether the interventions are effective in terms of increasing young people’s access to information, skills and services, decreasing their

Categorization of types of interventions

Category	Criteria
Go	Evidence threshold met Sufficient evidence to recommend widespread implementation on large scale now, as long as there is careful monitoring of coverage, quality and cost, and operations research is implemented to better understand the mechanisms of action
Ready	Evidence threshold partially met Evidence suggests interventions are effective but large-scale implementation must be accompanied by further evaluation and operations research to clarify impact and mechanisms of action
Steady	Evidence threshold not met Some of the evidence is promising but further development, pilot-testing and evaluation are needed before it can be determined whether these interventions should move into the “Ready” category or “Do not go”
Do not go	Strong enough evidence of lack of effectiveness or of harm Not the way to go

vulnerability to HIV and decreasing HIV prevalence. In some settings, the outcome that has been the focus of the studies reviewed has been more limited, for example the UNGASS goal on providing access to services for the health services setting. And in some cases, behavioural outcomes, such as delaying sexual debut, decreasing the number of sexual partners, and increasing the consistent and correct use of condoms, have been used as proxy indicators for decreased prevalence. The assumption is that all of these behaviours are important in preventing the spread of HIV and that the balance between them is likely to vary depending on the specific groups of young people under consideration and the contexts in which they live.

1.6 **Scope and limitations of the data**

A number of factors need to be considered when reviewing and interpreting the findings of the chapters in this report. First, in general the findings show that despite the importance of young people in the HIV/AIDS pandemic, surveillance and monitoring data are often unavailable for them; data that are collected are frequently not disaggregated by age; and many important indicators are not routinely collected (18). These issues have their roots in a much

more widespread problem: good research on young people in developing countries remains scarce.

Second, there is wide variability in the research that is available in different settings, with schools, for example, having a much more extensive evidence base than interventions to reach the young people who are most at risk. This reflects a number of factors, from the ease with which research can be carried out in different settings to the priorities of researchers and the people who fund research.

Third, despite extensive efforts by the authors to identify relevant research studies and programme reports, there is never enough time to access all evaluations, particularly those published in the grey literature and in different languages. Linked to this is the much more general problem of reporting bias with which all authors had to contend: negative evaluations are generally much less likely to be published.

Fourth, few studies have included any costing data, and this has important implications for decision-makers as they try to use the evidence to choose interventions. However, attempts have been made to take this into consideration when assessing the threshold of evidence required to categorize the various types of interventions.

Finally, it is clear that much is going on that is not evaluated. So it is important to remember that just because an intervention has not been evaluated scientifically or an evaluation has not been made accessible in the published literature it does not necessarily mean that it is not effective.

1.7 Challenges in interpreting the findings and follow up

This report is timely, especially in view of the attention that is being paid to the challenge of achieving universal access to HIV prevention interventions, treatment and care. While young people are at the centre of the epidemic's transmission and impact, they are certainly not at the centre of the resources, and have been pushed even farther away as a result of the growing focus on treatment.

One of the most important issues that will affect the interpretation and use of the findings in this report is context. Contextual factors are important not only in terms of the transmission and impact of HIV but also in relation to the implementation of interventions, which is affected by the availability of resources and the broader socioeconomic environment. The context is also important because HIV touches on many issues that are sensitive in a range of cultural, religious and political settings. This is particularly an issue for young people because sex is at the heart of most HIV transmission, albeit frequently coerced sex, and because many of the groups who are most

seriously affected are already suffering from marginalization, discrimination and stigma. Young people are not all alike and the epidemic itself is different in different countries, even between different subgroups within a specific country. This is likely to have important repercussions that need to be considered when deciding on the intervention mix.

For all of the settings, it was frequently impossible for authors to find sufficient details of the interventions and the outcomes from published reports of the original studies. These problems were compounded by the challenge of interpreting the findings of interventions that contained a number of different components.

The intention of this report was to focus on HIV. However, HIV and AIDS are associated with other problems that undermine young people's health and development, that grow from common roots and that frequently are linked in terms of cause and effect, for example alcohol and drug use, gender-based violence, sexually transmitted infections and pregnancy. Making the links between the evidence base for interventions to prevent HIV among young people and that from other issues facing young people will clearly be important both in interpreting and building on the findings in this report.

In the *Conclusion and recommendations* chapter there are clear messages for policy-makers, programme developers and researchers about how to move interventions from "Ready" to "Go" and from "Steady" to "Ready" or, depending on the evidence, to "Do not go". However, all of the authors realize that their reviews will not answer all the questions that policy-makers, programme developers and researchers might have after reading the report and that decisions will still be difficult. Challenges that will need to be faced include addressing issues of replicability, adaptation, cost and sustainability; ensuring the quality of the interventions as they are scaled-up; understanding the individual components of complex interventions and how they interact; determining the suitability of different interventions and intervention mixes for different phases of the epidemic; achieving clarity about what is effective "in the laboratory" and what is known about implementing effective interventions in the real world; being able to more clearly define the content of information, skills and services for different groups in different cultures; and knowing more about the "how" of interventions in addition to the "what".

This report provides one perspective on defining priorities for action, and the authors hope that it will contribute to ongoing discussions and debates and will be enriched by other methods of assessing the evidence. If we are to engage the people responsible for policies, programmes, and resource allocation in order to give young people the attention that they warrant and to accelerate action for achieving the global goals, it will be necessary to make

a compelling case for action, be clear about what needs to be done (based on the evidence) and demonstrate that what needs to be done is doable on a reasonable scale in a reasonably sustainable way. This report focuses particularly on the first and second of these issues and has prepared the foundations for the third. The challenge for a report in 2015 will be to demonstrate that what needs to be done, has been done.

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2. Young people: the centre of the HIV epidemic

Roeland Monasch^a & Mary Mahy^b

Objectives This chapter reviews data on the situation of young people and HIV/AIDS. It assesses whether young people have access to the information, skills and services required to reduce their vulnerability and whether there has been any reduction in HIV prevalence among 15–24-year-olds.

Methods We reviewed the data on knowledge, behaviour, life skills, access to services and HIV prevalence among young people from nationally representative household surveys, antenatal care surveillance reports, behavioural surveillance surveys, a global coverage survey and other special studies.

Findings In countries where HIV is concentrated among sex workers, injecting drug users or men who have sex with men, high-risk behaviour commences for most during adolescence, and large proportions of these high-risk populations are younger than 25 years. In countries with generalized epidemics, the epidemic is also driven by young people. Half of all new infections in sub-Saharan Africa occur among this group. Many young people do not have the basic knowledge and skills to prevent themselves from becoming infected with HIV. Young people continue to have insufficient access to information, counselling, testing, condoms, harm-reduction strategies and treatment and care for sexually transmitted infections. Other socioeconomic factors beyond the control of individuals need to be addressed. Countries that have reported a decline in HIV prevalence have recorded the biggest changes in behaviour and prevalence among younger age groups.

Conclusions The epidemic varies greatly in different regions of the world, but in each of these epidemics young people are at the centre, both in terms of new infections as well as being the greatest potential force for change if they can be reached with the right interventions.

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2.1 Introduction

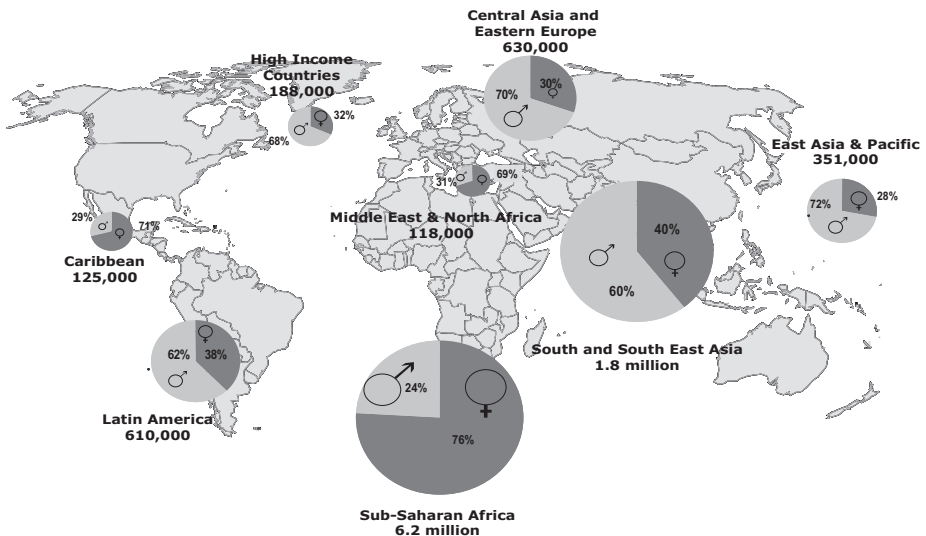
Globally, an estimated 40 million people were living with HIV/AIDS at the end of 2005 (1). More than 10 million of them are young people aged 15–24 years. Half of the 4.2 million new infections in adults in 2005 occurred in this age group. Each day 5 000–6 000 new infections occur among young people. Sub-Saharan Africa contains almost two thirds of all young people living with HIV or AIDS (6.2 million); 76% of them are female (Figure 2.1). The region with the second highest prevalence is Asia, which has an estimated 2.2 million young people who are living with the virus. The regions where young people account for the biggest share of the overall number of infections are eastern Europe and Central Asia, where nearly half of adults living with HIV or AIDS (600 000/1.3 million) are younger than 25 years; most of them are male.

A clear understanding of the situation of young people and their needs is required to design and successfully implement interventions to stem the tide of infections among young people. Without this information, the scale of the response required and the focus and relative urgency of the interventions remain unknown. Governments must strategically target their resources to interventions that respond to the specific situation in each individual country.

This information also allows governments to measure how well they are moving towards reaching the goals that have been agreed as being necessary

Figure 2.1

Worldwide prevalence of HIV among young women and men aged 15–24 years. (The size of the pie chart indicates the size of the population affected)



Source: UNAIDS, UNICEF 2004 (Updated from reference (70))

to slow the epidemic and that were defined in the Millennium Development Goals. During the UN General Assembly Special Session on HIV/AIDS (UNGASS), 189 governments committed themselves to meeting specific goals in the fight against the HIV/AIDS pandemic; these goals included specific targets for young people (2). This paper reviews the data on the situation of young people in relation to the UNGASS goals and looks specifically at whether young people have access to the information, skills and services that they need to reduce their vulnerability and whether there has been any reduction in HIV prevalence among 15–24 year olds.

2.2 Data and methods

Data on knowledge, sexual behaviour and life skills among the general population of young people were tabulated from nationally representative household surveys, such as the Demographic and Health Surveys (3) and the Multiple Indicator Cluster Surveys (4). These surveys use similar methods and instruments to ensure that data are comparable between survey rounds and between countries (5). Data on vulnerable groups with high risk behaviour come mainly from Behavioral Surveillance Surveys and other special studies. Information on access to services comes from a 2003 coverage survey implemented by the Policy Project (6). HIV prevalence data are principally based on information from country surveillance reports and the epidemiological fact sheets available from UNAIDS, WHO and UNICEF (7). In addition, data were used from EuroHIV (8), which collects routinely reported data from countries in Europe and Central Asia, but, because they are based on HIV diagnoses reported through the health system, they may substantially underestimate the true population prevalence.

2.3 Types of epidemics

Young people are exposed to HIV infection in different ways depending on the type of epidemic present in the country in which they live. In this section, the situation of young people living in countries with a low-level epidemic, a concentrated epidemic or a generalized epidemic is reviewed. In low-level epidemics HIV may have been recorded for many years, but prevalence has never consistently exceeded 5% in any subpopulation. In concentrated epidemics, HIV is well established in subpopulations with behaviours known to put them at high risk, such as injecting drug users, sex workers or men who have sex with men. In concentrated epidemics, HIV prevalence consistently exceeds 5% in at least one of these groups, but there is no sign of substantial spread beyond these groups. Countries where HIV has spread to the general population – with more than 1% HIV prevalence among pregnant women – are said to have generalized epidemics (9). These exact values do not precisely delineate where a concentrated epidemic ends and a generalized epidemic

begins. However, these classifications are useful for understanding the transmission routes that drive epidemics and are critical for developing appropriate responses.

2.3.1 **Concentrated epidemics**

2.3.1.1 *Injecting drug users*

Sharing needles and syringes with an infected person is the most efficient means of transmitting HIV. People who share injecting equipment are therefore at high risk of contracting HIV. In eastern Europe and many Asian countries, most of the reported HIV infections are linked to drug injecting. Data on known sources of infection in this region show that more than 55% are the result of intravenous drug use ([Table 2.1](#)). An estimated 60–70% of reported HIV infections in China occur among injecting drug users (10). Injecting drug users also often engage in other high-risk activities that expose them and their partners to an increased risk of heterosexual transmission (1).

There has been a marked growth in the use of injected drugs in eastern Europe since 1990 (11). In the Russian Federation an estimated 1–2% of the adult population injects drugs (12), and the use of injected drugs has become particularly widespread among young people, especially young men. According to the Ministry of Health in Russia, since 1991 the number of teenage drug users has grown 18-fold. A survey of adolescents in Moscow found that 8% of young people overall, and 12% of young males, had injected drugs (13).

Data from a number of countries in eastern Europe and Asia confirm that drug abuse often begins during adolescence (14). A review of studies suggested that at least half of injecting drug users in Russia are aged 25 years or younger and that on average they inject drugs for about 3–4 years. Most studies estimate that the average age at first use of injected drugs is between 18 and 20 years, although some suggest that the average age at first use may be falling (14). In Saint Petersburg, Russia, almost one third of injecting drug users are younger than 19 years. In Ukraine, 20% of injecting drug users are adolescents (15). In a study in five cities in India, 24% of respondents reported that they started injecting drugs before the age of 20 (16). In Indonesia, 70% of injecting drug users were younger than 25 years (17).

The combination of being an injecting drug user and being young potentially increases the risk of becoming infected with HIV. For example, in Kazakhstan, where 54% of injecting drug users are younger than 25, young people were more likely to share needles and inject in a group than older drug users (18). Limited age-specific data on HIV infection among injecting drug users shows that large proportions of young injecting drug users are infected. In the city of Togliatti in Russia, 65% of all injecting drug users were younger

Table 2.1

Percentage of HIV diagnoses among young people aged 15–24 years by risk group, Europe and Central Asia, 1993–2003

Region	Risk group				Total
	Injecting drug users ^a	Homosexual or bisexual	Heterosexual	Other	
Western Europe	19 (19 093)	10 (54 742)	13 (49 628)	10 (53 138)	12 (176 601)
Central Europe	40 (5 740)	14 (2 033)	15 (2 977)	11 (10 355)	19 (21 105)
Central Asia	48 (180 612)	21 (1 176)	33 (26 195)	52 (116 125)	48 (324 108)

Source: Data provided by EuroHIV 2004 (8)

^a Values are percentages (numbers) of infections. Percentages are weighted by the number of infections in the region.

than 20, and 55% of injecting drug users aged 20–24 years were HIV positive (14). In Santos, Brazil, 56% of injecting drug users who were younger than 25 years were HIV positive (19).

Data from Central Asia show that 48% of people diagnosed with HIV and suspected of having become infected through the use of injected drugs were aged 15–24 years. In eastern Europe, 40% of newly diagnosed HIV infections among injecting drug users were estimated to occur among those aged 15–24 years. Young people in Belarus have been particularly affected: 60% of those living with HIV are aged between 15 and 24 years (20). In western Europe this ratio is lower, but still significant at 19% (Table 2.1).

2.3.1.2 Sex workers

Sex workers are at an increased risk of HIV because they engage frequently in sexual acts with multiple partners; and their clients are also at an increased risk. HIV prevalence among female sex workers is therefore much higher than among the general population. In Myanmar, HIV prevalence among sex workers in 2004 was estimated to be 27% compared with 1.8% among pregnant women (21). A study in Ghana found prevalences of HIV among sex workers as high as 40%, while the prevalence among the general population was only 3% (22). And in Ecuador, sex workers had an HIV prevalence of 11%, while among the general population it was estimated to be 0.3% (23).

Data from behavioural surveillance surveys of female sex workers show that a large majority are younger than 25 years of age. For example, in Cambodia

(24), China (10), Lao People's Democratic Republic (25), Myanmar (26), the Russia Federation (27) and Viet Nam (28), between 60% and 70% of sex workers were younger than 25 years of age. Estimates of the absolute number of young people involved in sex work are limited and range widely. In Thailand it is estimated that between 27 500 and 35 000 children (younger than 18) are engaged in sex work (29).

Sex work often starts at an early age. A rapid assessment in 74 establishments in four urban areas in Viet Nam found that 37% were children (< 18 years) at the time of the survey (30). In Jamaica, 50% of female sex workers reported that they had begun sex work by their 18th birthday (31). In Djibouti, 63% of female sex workers reported that they were younger than 20 when they first had sex, with about 14% reporting that they were younger than 16 (32).

Evidence from surveys suggests that these young sex workers are at high risk of acquiring HIV. In Eritrea, a survey found that 12% of female sex workers aged 15–19 years and 24% of those aged 20–24 years were HIV positive (33). In Myanmar, 41% of female sex workers aged 15–19 years and 20–24 years were HIV positive (34). However, evidence from Cambodia suggests that young sex workers may also benefit most rapidly from effective interventions. Cambodia is one of the rare countries where HIV/AIDS prevention efforts have led to a decline in HIV prevalence among both high-risk groups and the general population. HIV prevalence in Cambodia, while still the highest in Asia, has dropped among the general population, from 3% in 1997 to 1.9% in 2003, and among female brothel-based sex workers, from 43% in 1998 to 21% in 2003 (35). HIV prevalences have declined most dramatically among younger sex workers (36). A decline in prevalence among female sex workers has also been reported in Benin and Côte d'Ivoire (37, 38).

Many clients of sex workers are also young. Data from behavioural surveys in India (39) and Nepal (40) show that between 17% and 70% of clients are young people, with the majority aged 20–24 years. In Kosovo, 18% of clients surveyed were younger than 20 years, and 20% were aged 20–24 years (41).

Clients who are younger than 25 are more likely to use condoms consistently (an important factor in reducing the prevalence among sex workers) (42). A study in the Dominican Republic also found that men who were younger than 25 were more likely to consistently use a condom compared with older men (43). The success of Thailand's "100% condom" programme, which mandated the use of condoms in brothels, has been well documented (44). Less well known is the success of the country's efforts to alter long-established norms regarding male patronage of commercial sex businesses. Between 1990 and 1993, the percentage of men who reported having visited brothels during the prior 12 months fell dramatically. The decline was especially notable among young men aged 20–24 years (45).

2.3.1.3 *Men who have sex with men*

Sexual transmission of HIV between men, which occurs principally during anal sex, is an important factor driving the epidemic not only in the industrialized world but also in a number of countries in Latin America and in some countries in Asia. Men who have unprotected anal sex with other men are at increased risk of HIV infection (46). In Argentina 14% of men who had sex with men were HIV positive, and in El Salvador 18% of men who had sex with men were HIV positive compared with 0.7% of the general population (47).

A substantial proportion of men who have sex with men are younger than 25. In behavioural studies among this group in five countries in Central America, carried out at places where men meet other men, such as gay bars, discos and other public areas, 20% of those surveyed were found to be younger than 20, and 34% were aged 20–24 years (48). In a study in Lima, Peru, conducted among men who have sex with men 50% were younger than 25, and 18% of the men (of all ages) were HIV positive. In Central Asia and eastern Europe, 14–20% of new diagnoses attributed to transmission by men having sex with men have been reported to occur among young people aged 15–24 years; in western Europe this proportion was 10% (Table 2.1). Unfortunately, few studies have reported data disaggregated by age, which makes it difficult to compare the behaviour of and prevalence among young men and older men.

Evidence from Cambodia suggests that young men who have sex with men tend to start having sex at an earlier age than young men who have sex with women. In Cambodia the reported mean age at first sexual intercourse was 17.7 years among men having sex with men, whereas the average age among the general population of males in Cambodia was 22 years (49). Additionally, young people may be disproportionately represented among male sex workers. In a study in Moscow, 40% of male commercial sex workers were aged 19 years or younger, with another 45% being between the ages of 20 and 24 (50).

2.3.1.4 *Bridging to the general population*

Transmission of HIV from groups with high prevalence to other groups is likely, and the future occurrence of a generalized epidemic in countries currently experiencing concentrated epidemics cannot be ruled out (51). Young people will be an important bridge between different population groups. For example, young injecting drug users are likely to be sexually active, which may put their partners at increased risk of HIV in addition to the risks posed by the high rates of sexually transmitted infections (STIs) and hepatitis that have been documented among injecting drug users (52). In India, a survey of injecting drug users found that more than one quarter were currently married

and living with their spouse (16). In a study in Cambodia, one fifth of men who said they had had sex with men during the 6 months before the study reported also having had sex with one or more women (49).

A study among male injecting drug users (63% of whom were younger than 25) in three Indonesian cities found that 35% had had unprotected commercial sex and 29% had had sex with a casual female partner in the 12 months prior to the survey (53). In Russia a survey among young female sex workers found that 93% had injected drugs during the past 12 months, with the median age at first use of injecting drugs being 18.7 years; one third of adolescent sex workers were HIV positive. Altogether, 63% of the sex workers were aged 20–24 years (54).

Mobile populations and migrants are important “bridging populations” that take HIV to the general population (55). Studies on highly mobile groups have identified travel and migration as important factors related to infection as the mobile groups come into contact with networks of high-risk groups (56–58). For example, in Kenya a survey showed that men who slept away from their house five or more times in the 12 months prior to the survey had three times the risk of being infected with HIV than did men who did not sleep away from home (59). In one community in Nepal, HIV prevalence was 8 times higher among migrants than non-migrants (60). Young people are often involved in migration because they have the most to gain economically by starting out in a new setting. A study in Myanmar found that the majority of migrants were aged 14 to 18 years, and that most were migrating for economic reasons (61). In Estonia a survey found that 17% of young people (aged 17–27 years) had already worked abroad (62).

2.3.2 ***Generalized epidemics***

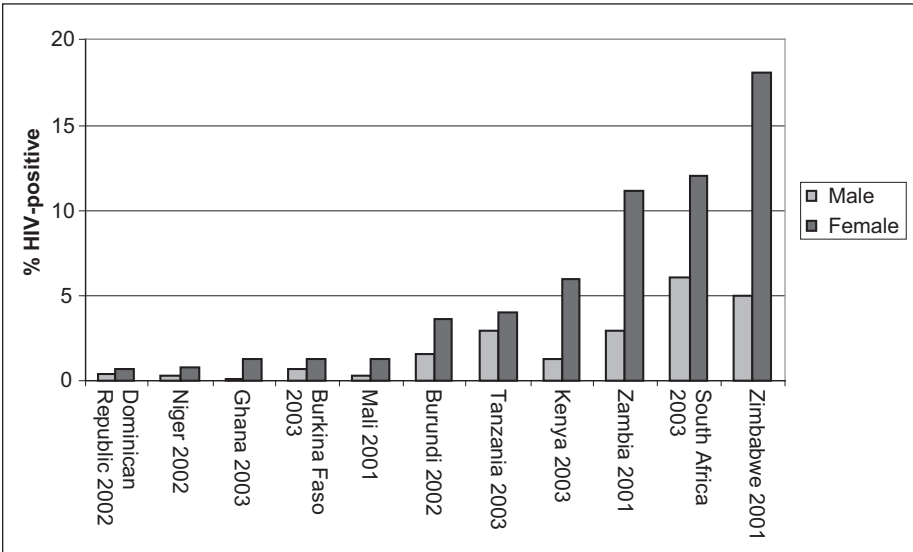
In generalized epidemics the main mode of HIV transmission is through penetrative heterosexual sex in the general population. Such epidemics are currently found mainly in sub-Saharan Africa and in some countries in the Caribbean. Generalized epidemics are also driven by young people: half of all new infections in sub-Saharan Africa are estimated to occur among those between the ages of 15 and 24 years (23). In sub-Saharan Africa HIV prevalence varies considerably across the continent, ranging from less than 1% in Senegal to 40% in Swaziland (among young pregnant women aged 15–24 years attending antenatal clinics). Although political instability in several countries in central Africa makes it difficult to assess their current situation, Cameroon may have the highest HIV prevalence levels in this subregion, reporting a median prevalence of 11.9% among pregnant women aged 15–24 years in 27 sentinel sites. HIV prevalence in western Africa varies from < 1% in countries in the Sahelian belt to 5–6% in Côte d’Ivoire and Nigeria.

Southern Africa is the most seriously affected subregion. In Botswana, Lesotho, South Africa, Swaziland and Zambia, more than 20% of pregnant women aged 15–24 years attending antenatal clinics are HIV positive. Based on data from women attending antenatal clinics in capital cities, the epidemic in eastern Africa seems to be slowly declining. However, the prevalence of HIV infection in most urban antenatal clinics remains between 10% and 15% (63).

A country that has seen well documented reductions in HIV prevalence is Uganda. A declining HIV prevalence over the past 10 to 15 years has been observed, especially among young women aged 15–24 years attending antenatal clinics. For example, at Nsambya hospital in Kampala, HIV infection rates among women aged 15–19 years attending antenatal clinics declined from 29% in 1991 to 9% in 1998 and further to 5% in 2002.

In generalized epidemics, HIV prevalence among young women is considerably higher than among young men. In 11 countries with nationally representative surveys of HIV prevalence, young women aged 15–24 years were between 1.3 times and 12 times more likely to be infected than young men (Figure 2.2). Adolescent girls are especially vulnerable to HIV infection. About two thirds of newly infected young people aged 15–19 years in sub-Saharan Africa are female (63).

Figure 2.2
HIV prevalence among young men and women aged 15–24 years, selected countries, 2001–2003



Source: Demographic and Health Surveys (3) and WHO Regional Office for Africa, 2002 (63)

The social reasons why young women have higher HIV prevalence and incidence than young men include the fact that many women are younger, sometimes considerably younger, than their male sexual partners. Studies from several countries show that the prevalence of HIV among young women who reported having had sex with older men is significantly higher than the prevalence among those who had sex only with partners their own age (64). In a survey among young women aged 15–19 in rural Zimbabwe, the risk of HIV infection was significantly associated with the age of their most recent sexual partner. HIV prevalence among women aged 21–24 whose last partner was less than 5 years older than they were was 16%, whereas among young women with partners 10 or more years older, the prevalence was twice as high (65). In Kisumu, Kenya, similar trends were found: no woman who was younger than 20 and was married to a man less than 4 years older than herself was infected with HIV compared with 38% of those who had husbands 10 or more years older (66). Sexual relationships between young women and older men, whether inside marriage or outside, have the potential to drive the spread of HIV in high-prevalence generalized epidemics.

Other STIs play a large part in the spread of HIV in many populations (67). For example, a study in South Africa showed that young men infected with herpes simplex virus–type 2 (HSV-2) were 5 times more likely to be HIV positive than sexually active people who were not infected with HSV-2. Young women with HSV-2 were 8 times more likely to be infected with HIV (68). WHO estimates that more than 100 million STIs, excluding HIV, occur each year among people younger than 25 (69). Treatment of STIs has proven to be an effective method of preventing HIV (see [chapter 3](#)).

In summary, it is clear that, although there are many different HIV epidemics across the world, young people are at their centre in all cases.

2.4 Progress towards UNGASS commitments

The previous section highlighted the fact that young people in low-level, concentrated and generalized epidemics represent a large proportion of those becoming infected. The Declaration of Commitment signed at the UNGASS dedicated governments to meeting specific goals to fight HIV/AIDS among young people. They agreed to:

ensure that at least 95 per cent of young men and women aged 15 to 24 have access to the information, education, including peer education and youth-specific HIV education, and services necessary to develop the life skills required to reduce their vulnerability to HIV infection by 2010 (2).

This section reviews the response to these goals.

2.4.1 **Information**

An important, but not sufficient, foundation for any prevention effort aimed at young people is to provide them with basic information on how to protect themselves and their partners from acquiring the virus. Although significant progress has been achieved during the past decade, surveys suggest that despite the fact that the majority of young people have heard of AIDS, many still do not know how to prevent transmission. Furthermore, misconceptions about HIV and AIDS are widespread. They vary from one culture to another, and specific rumours gain credibility in some populations, both on how HIV is spread (by mosquito bites or witchcraft, for example) (70) and on how it can be avoided (for example, by eating a certain fish or having sex with a virgin).

In 17 countries surveyed between 1999 and 2003, the average proportion of young people aged 15–24 years deemed to have “sufficient knowledge” about HIV/AIDS was 24% among young women and 29% among young men (5) (Table 2.2). (Sufficient knowledge was defined as the percentage of young men and women aged 15–24 who both correctly identified two ways of preventing the sexual transmission of HIV and rejected three major misconceptions about HIV.)

These surveys showed that, in countries with generalized HIV epidemics, such as Burkina Faso, Haiti, Mozambique and Nigeria, more than 80% of young women aged 15–24 still did not have sufficient knowledge about HIV. (Because the indicator has five components, one might not expect a score of 100% even if knowledge levels were high.) The simple question “Can a healthy looking person have the AIDS virus” has been asked of young women in repeated surveys in more than 25 countries. The data generally show an improvement in knowledge in responses to this question in recent years (Figure 2.3). The most seriously affected countries in southern Africa have reached levels where around 80% of participants respond correctly. However, in nearly all countries one fifth or more of young women in this age group remain uncertain about the response to this question.

2.4.2 **Education**

HIV/AIDS information and life-skills education can be provided to young people in a number of ways, including through peer education or counselling, community activities that include parents, and through the mass media and school-based education programmes. Often, these interventions are dispersed across many organizations and community groups and their effects are difficult to measure and evaluate consistently. However, schools are a key setting for providing information and teaching adolescents the life skills necessary to prevent HIV/AIDS; they have therefore been used as a proxy for

Table 2.2

Knowledge of HIV/AIDS and sexual behaviour among young men and women aged 15–24 years for selected countries, 1999–2003 (3, 4). (Values are percentages)

Country ^a	Females					Males				
	Know that a healthy-looking person can have AIDS	Comprehensive correct knowledge about AIDS	Sex before age 15 ^b	Higher risk sex in the last year	Condom used at last higher risk sex	Know that a healthy-looking person can have AIDS	Comprehensive correct knowledge about AIDS	Sex before age 15 ^b	Higher risk sex in the last year	Condom used at last higher risk sex
Eastern and Southern Africa										
Botswana	81	40	NA ^c	NA	75	79	33	NA	NA	88
Ethiopia	39	NA	14	7	17	54	NA	5	64	30
Kenya	83	34	15	30	25	86	47	31	84	47
Malawi	84	34	17	17	32	89	41	29	71	38
Mozambique	65	20	NA	37	29	82	33	NA	83	33
Namibia	82	31	10	80	48	87	41	31	85	69
Rwanda	64	23	3	10	23	69	20	NA	42	55
United Republic of Tanzania	74	44	10	36	42	78	49	11	81	47
Uganda	76	28	14	22	44	83	40	16	59	62
Zambia	74	31	18	30	33	73	33	27	86	42
Zimbabwe	74	NA	3	20	42	83	NA	6	82	69
West Africa										
Benin	56	8	16	36	19	69	14	24	90	34

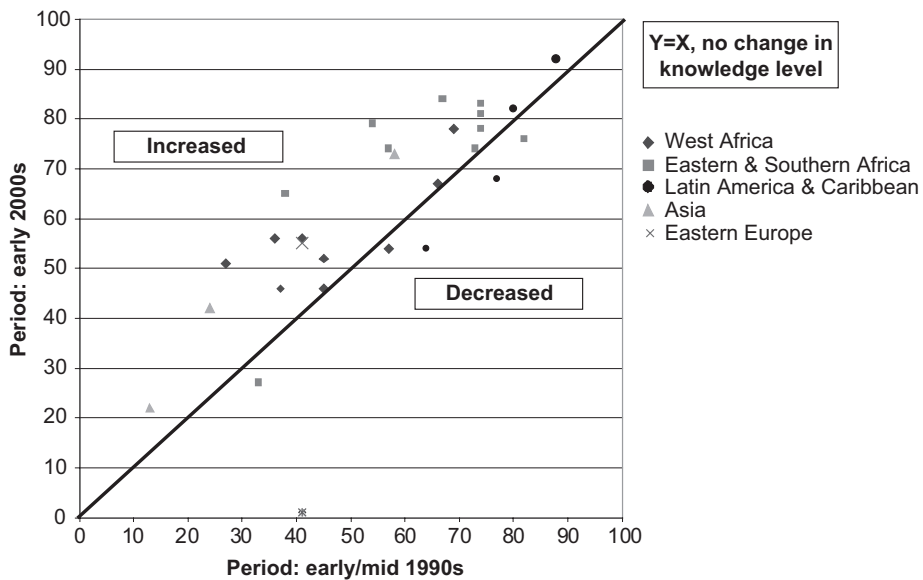
Burkina Faso	56	15	21	23	54	61	23	14	78	67
Ghana	78	38	7	50	33	83	44	4	83	52
Guinea	60	NA	27	23	17	56	NA	20	92	32
Mali	46	9	26	18	14	59	15	11	85	30
Nigeria	52	18	20	29	24	65	21	8	78	46
Caribbean										
Dominican Republic	92	NA	13	29	29	89	NA	18	83	52
Haiti	68	15	12	59	19	78	28	28	93	30
Commonwealth of Independent States										
Armenia	53	7	1	0	NA	48	8	1	69	44
Kazakhstan	63	NA	1	27	32	73	NA	6	78	65
Uzbekistan	55	8	0	1	NA	58	7	NA	45	50
Weighted average	67	23	12	28	33	73	29	16	77	49

^a Countries included in this table are only those for which there are data both for females and males and data collected within the past 5 years.

^b Among young people aged 15–19 years.

^c NA = not available.

Figure 2.3
Proportion of young women aged 15–24 years who know that a healthy looking person can have the AIDS virus, by region with data from early-to-mid 1990s compared with data from early 2000 (3, 4)



educational prevention efforts in some countries. For example, 57% of adolescent boys in Zimbabwe reported that their only source of sex education on HIV/AIDS was school (71). In many countries, especially in west Africa and some parts of Asia, large proportions of children do not attend school (72).

The region where general HIV prevention through school is likely to have the most impact is sub-Saharan Africa. In 2003, 36 countries in sub-Saharan Africa had a generalized epidemic; 30 of these countries reported to the global coverage survey on selected services for HIV/AIDS prevention, care and support; and 11 of these indicated that AIDS education was not part of their curriculum in primary school (6). Additionally, in six countries, AIDS education was not part of the curriculum in secondary school. Overall it was estimated that only 58% of primary school students and 64% of secondary school students were exposed to AIDS-related education through the education system in sub-Saharan Africa. These numbers are likely to overestimate the proportion of students receiving effective AIDS-related education since many teachers either have not learnt the appropriate skills or do not feel comfortable teaching topics related to HIV/AIDS and sexuality (73, 74) (see [chapter 5](#)). Furthermore, the quality of the interventions is also an issue. In a study among students in South Africa, less than one quarter of the respondents

recalled having discussed all eight core life-skills topics of the curriculum during their last year of school (75).

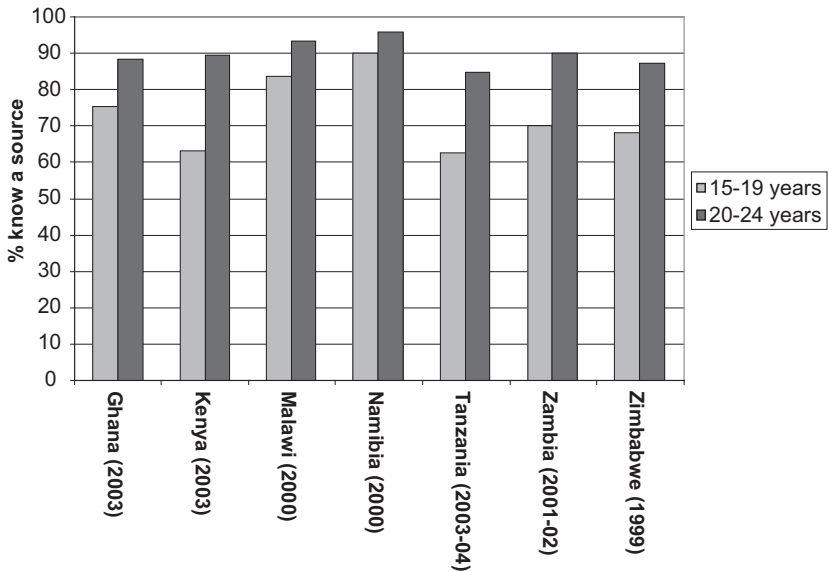
2.4.3 **Services**

Providing access to youth-friendly health services is an integral part of any national prevention programme. The main services necessary to prevent HIV and other STIs include providing access to information, condoms and harm reduction (where injecting drug use is prevalent) and access to diagnosis (testing), treatment and care for STIs and HIV/AIDS. Access to services remains insufficient (76). In most countries, young people’s access to effective health services is lower than older people’s, and this is particularly true for adolescents (70). The types of interventions that have been used in developing countries to try to improve young people’s access to health services, and their effectiveness, are described in [chapter 6](#).

2.4.3.1 *Condoms*

Globally, the number of condoms available has increased (6). However the availability of condoms does not ensure that condoms are used. In addition, there are still significant proportions of young men in countries with generalized epidemics who do not know where to obtain condoms (Figure 2.4).

Figure 2.4
Proportion of young people who knew where to obtain condoms, by age group, selected countries in sub-Saharan Africa, 1999–2004 (3)



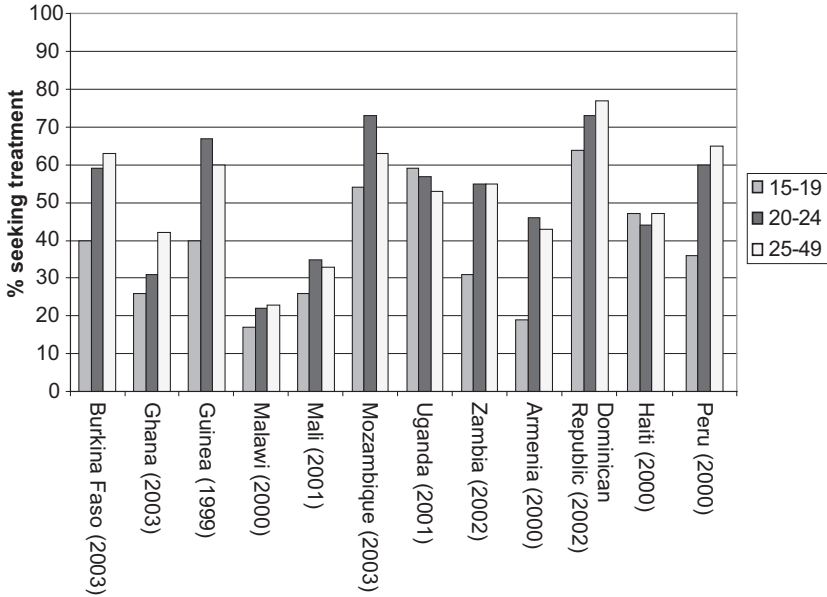
2.4.3.2 *Voluntary counselling and testing*

As antiretroviral therapy becomes more widely available, the demand for counselling and testing will increase. In order for young people to use testing services they need to have access to such services. Many different factors affect access, but knowing where testing and counselling are offered is clearly an essential first step. Surveys have shown that many young people do not know where to obtain these services. In 25 of 39 countries surveyed, less than 50% of young women aged 15–24 knew where they could go to be tested for HIV. Women with higher levels of education were more likely to know where they could go (77).

2.4.3.3 *STI treatment*

Adolescents are less likely to seek treatment for STIs than people aged 20–24 and older adults, despite having higher rates of STIs and the strong association between STIs and HIV (Figure 2.5). Even when adolescents suspect that they have an infection, they often do not seek medical care because they may be too embarrassed or feel too guilty or fear that their privacy will not be respected. Additionally, services may be inaccessible because clinics are far away or have limited or inconvenient opening hours (78). Health providers

Figure 2.5
Proportion of women who reported having a sexually transmitted infection within the past 12 months and sought treatment for it, by age group for selected countries, 1999–2003 (3)



may be reluctant to serve adolescents, and when services are located in maternal and child health centres, they are unlikely to be used by young men (70).

2.4.3.4 *Harm reduction for injecting drug users*

Among the six countries in eastern Europe that reported to the global coverage survey in 2003 on the number of injecting drug users that received needle and syringe exchange services, it is estimated that 70 000 of an estimated 2.5 million injecting drug users (2.8%) were reached (6). In the Middle East, north Africa, and south-east Asia, it was estimated that 4–5% of injecting drug users were reached with harm reduction services. All other regions had lower coverage. Although the information was not disaggregated by age, we can assume from these numbers that the majority of young people are not being reached. While there is relatively little information available about the utilization of health services by the general population of young people, data are more scarce on the extent to which services reach vulnerable young people engaged in behaviours that put them at high risk of acquiring HIV (see [chapter 9](#)).

2.4.3.5 *Special services for sex workers and men who have sex with men*

In 2003, global access to prevention interventions for men who have sex with men was reported to be 11%, and for sex workers it was reported to be 16% (6). The region with the highest coverage for both of these high-risk groups was Latin America and the Caribbean, where 31% of men who have sex with men and 25% of sex workers were estimated to be reached. Again, no information had been disaggregated by age, but since many sex workers and men who have sex with men are aged 15–24 (see above), we can assume that the majority of young people in these two high-risk groups are not being reached.

2.4.4 **Life skills**

Information, education, and access to services should contribute to the development of life skills that can help reduce a young person's vulnerability to HIV infection. However, there is no standardized internationally comparable method for assessing directly whether young people have developed sufficient adaptive and positive behaviours to enable them to deal effectively with the demands of everyday life (79). As a proxy indicator, "reported behaviours" can be used (5). The assumption is that regardless of high levels of knowledge about prevention strategies, young people may engage in unprotected sex because they lack the skills to negotiate abstinence, reduce the number of partners that they have or use condoms. If young people possess adequate life skills, levels of risky behaviour should be lower. (This

assumption obviously ignores the fact that certain risk behaviours may be beyond the control of the individual, such as forced sex.)

Young people may be fearful or embarrassed to talk with a partner about sex or may simply not be aware of their individual risk. Data from Demographic and Health Surveys in Burkina Faso, Nigeria and the United Republic of Tanzania showed that the proportion of young unmarried boys who reported they did not use a condom at last sexual intercourse was substantial. The majority who did not use a condom felt that they were not at risk. In Nigeria, 93% of men aged 15–24 years perceived their risk of getting AIDS to be minimal or non-existent; in Burkina Faso the figure was 77% and in the United Republic of Tanzania the proportion was 53%.

2.4.4.1 *Age at first sex*

Delaying the age at which young people first engage in sexual intercourse can protect them from infection. Adolescents who begin sexual activity early are at a higher risk of becoming infected with HIV; research in different countries has shown that adolescents who start sexual activity early are more likely to have sex with high-risk partners or multiple partners and are less likely to use condoms (80, 81). Sexual activity begins in adolescence for the majority of people, and in some countries it starts for young women before they are 15 years old. [Table 2.2](#) shows that in the 20 countries for which there are recent data, in 10 countries more than 1 in 7 girls aged 15–19 reported having had sex before the age of 15. Among young men aged 15–19 years in Haiti, Kenya, Malawi, Namibia and Zambia, more than one quarter reported having had sex before they were 15 years old.

2.4.4.2 *Condom use*

When young people become sexually active, they must have the skills to practise safe sex. This means either being faithful to one faithful partner or consistently using a condom properly. Data from household surveys show that the proportion of young people using condoms is still quite low even when they have sex with people who are not their regular partner (Table 2.2). In Malawi, where 1 out of 6 people aged 15–49 is infected with HIV, only 32% of young women and 38% of young men reported using a condom the last time they had had sex with a non-cohabiting partner. In many countries, the reported use of a condom is higher among young men than young women. In Zimbabwe, for example, where approximately one quarter of all people are infected, 69% of young men aged 15–24 years reported using a condom during their last episode of sex with a high-risk partner while only 42% of young women reported using a condom during their last episode of sex with a high-risk partner.

2.4.5 *Vulnerability*

A person's ability to avoid HIV infection depends only partly on their own individual knowledge and skills. There are other social and economic factors that are beyond the individual's control and that can put young people at higher or lower risk of infection (82). Such factors include social norms, the status of women in society and the socioeconomic environment (83). These contextual factors often result in young people having less power to reduce their risk of HIV than adults.

2.4.5.1 *Social norms*

There are norms and values in communities that increase or reduce the risk of HIV infection. Parents and other family members have an important role in providing information and skills to their children. However, open communication about sexuality remains a challenge in many cultures and societies. Boys and girls may be embarrassed to discuss issues related to sex; parents may be unwilling to talk about sex or be uncomfortable doing so, both of which may result in young people having limited knowledge and skills about prevention. Demographic and Health Surveys have asked men and women whether they feel that children aged 12–14 years should be taught about using a condom to avoid AIDS. Out of five countries surveyed in eastern and southern Africa, the proportion of respondents who agreed that children should be taught this skill varied from just over 40% among men in Uganda to over 80% among women in Namibia.

Among men having sex with men, social taboos and stigma may increase their risks of contracting HIV. These men may hide their sexuality and consequently not have access to the information or support that they need to reduce risky behaviour.

2.4.5.2 *Gender inequality*

When the status of women within sexual relationships is low they are at an increased risk of contracting HIV (82, 84). For example, for many girls and young women the onset of sexual activity does not occur by choice. In Jamaica 12% of young women aged 15–19 and 10% of this group in South Africa reported they were unwilling or coerced during their first sexual experience (81, 85). In a study among secondary school students in Swaziland, 18% of female students reported being coerced during their first sexual encounter (86). In Zambia, 1 in 8 young women aged 15–19 years reported having been forced to have sex by a man in the 12 months prior to a general population-based survey (87). In Zimbabwe, more than 1 in 5 women aged 15–29 years reported ever having been forced to have sex by a man (71). In many societies people turn a blind eye to sexual abuse against young

women, and to gender-based violence more generally, both of which have important implications for HIV transmission.

2.4.5.3 *Socioeconomic environment*

The socioeconomic situation in which young people live can have both positive and negative impacts on their vulnerability to HIV infection. For example, in the United Republic of Tanzania young women aged 15–24 years in the highest wealth quintile were more likely to engage in higher risk sexual activities (such as having sex with a non-marital non-cohabiting partner) than women in the lowest quintile (48% in the highest quintile versus 30% in the lowest quintile). To a large extent this can be explained by the fact that women in the lowest quintile were more likely to be married. However, the young women in the highest income quintile were more than twice as likely to have used a condom during their last episode of higher risk sexual activity than the young women in the lowest quintile (58% highest quintile versus 23% lowest quintile) (88). Lower socioeconomic status may result in lower educational attainment, which may result in gaining less information and skills to protect oneself from HIV (89). Lower socioeconomic status may also provide a reason for engaging in sexual relationships in exchange for financial compensation or support.

Young people with lower socioeconomic status have been reported to experience more physical abuse and sexual coercion within relationships (82). An increasing number of young people who do not grow up in a protective environment in which they have parental support, as a result of adult mortality from AIDS, may be increasingly vulnerable to infection. A study in rural Zimbabwe found that among women aged 15–18 years, young people whose mother had died and young women with an infected parent had a significantly higher prevalence of HIV than other young women, and they also had more STI symptoms and were more likely to become pregnant (90).

Another example of a socioeconomic situation that is inherently unsafe for young people, provides no protection for them and puts them at an increased risk of HIV, is people trafficking. Children are increasingly being taken from their usual environments by means of threat, force or other abuses of power for the purpose of sexual exploitation. Studies commissioned by the International Labour Organization in eastern Europe, Asia and west Africa found that most young people involved in prostitution have been forced into the work (91–93).

2.5 **Limitations of the data**

Most surveys of young people are targeted at those aged 15 years and older. In many situations, however, a significant proportion of 15-year-olds have

already begun to have sex or are involved in other risky behaviours. There is a need to collect systematically more data from younger adolescents – that is, those aged 10–14 years. However, there remains uncertainty about the appropriateness of questions, the reliability of responses, parental consent and other ethical issues (6). These will need to be addressed before data from this age group will be improved.

Most research among injecting drug users, sex workers and men who have sex with men, analyse data using an epidemiological lens and do not consider the data in terms of HIV prevention programmes. As a result data in reports are rarely disaggregated by the age and sex of the respondent for groups at high risk of becoming infected with HIV. For example, 16-year-old girls who inject drugs and are involved in sex work are likely to have different needs and require a different response from a prevention programme than older injecting drug users who have been injecting for a long time. Behavioral Surveillance Surveys need to be analysed with a stronger focus on their implications for programmes.

A number of the tables and figures in this chapter compare two variables, for example age and knowledge or behaviour. The analysis has been made without controlling for other variables, such as household wealth or the participant's education level. A regression analysis would clarify whether differences are related to the age of the participant or to other variables that might also affect knowledge or behaviour, but it was not possible to conduct such an analysis for this broad review of HIV among young people. The findings in this chapter suggest areas in which further research and analysis are needed.

2.6 Conclusions

This chapter shows that young people are at the centre of the global AIDS epidemic, both in terms of new infections and opportunities for halting the transmission of HIV. The epidemic varies greatly among the different regions of the world, but in each of these epidemics young people are potentially the greatest force for change if they can be reached with the right interventions (as outlined in the UNGASS goals). There is increasing evidence from several countries that where HIV prevalence is decreasing it is young people who are reversing the trends. Young people are much more likely to adopt and maintain safe behaviours, and it is therefore important to implement interventions early.

While there have been a number of efforts to scale-up interventions aimed at young people, large numbers of young people continue to lack the basic information and skills they need to protect themselves. The majority of young people start sexual activity during adolescence, and this review suggests that in all regions large proportions of young people still know little about HIV

transmission and prevention; they continue to have serious misconceptions; and access to effective health services, such as treatment for STIs and voluntary counselling and testing, remains inadequate.

Given that about half of all new infections occur among those aged 15–24, and that young people account for a substantial proportion of the groups who are at particularly high risk of acquiring HIV – such as injecting drug users, sex workers and men who have sex with men – there is a clear need to focus prevention activities on these behaviours and the populations that engage in them and to ensure that those interventions for which there is strong evidence of effectiveness are rapidly and intensively scaled-up. Efforts to increase young people's knowledge, life skills and access to services need to be intensified. These efforts must consider the different needs of young men and young women and the different age groups among those aged 10–24 years. In addition, societal–contextual issues should be addressed to ensure that young people grow up in a safe and protective environment that reduces their vulnerability.

Each year new cohorts will be added to the large numbers of young men and women (115 million) (94) reaching the stage in their life where they will need to be prepared and supported to make the right choices in order to minimize their risk of HIV infection and thus turn the epidemic around. Without this focus on young people, the global HIV-related goals that have been agreed by 189 nations are not likely to be met, and the number of new infections could even increase before 2010.

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3. Overview of effective and promising interventions to prevent HIV infection

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Objective To review the evidence for the effectiveness of a variety of approaches to preventing HIV infection.

Methods We reviewed what is known about the efficacy and effectiveness of a range of prevention approaches that are at various stages of research. These interventions attempt to induce behavioural change, apply technologies or modify social environments. Our intention was not to provide an exhaustive review of all types of HIV prevention strategies but rather to illustrate the landscape of interventions that have been developed and evaluated in different settings and that have the potential for widespread application among both adults and young people.

Findings There is a large quantity of evidence from experimental and observational research as well as from practical real-world experience in both developed and developing countries. This evidence supports the implementation and scale-up of a number of interventions and strategies. At the same time, there is a need to continue to develop new and more effective interventions while attending to a number of behavioural and social issues that cut across virtually all interventions designed to prevent the spread of HIV.

Conclusion We caution against confusing lack of implementation with lack of effectiveness and call for continual improvement in the quality and quantity of evidence. We have also identified a number of important directions for future HIV prevention research.

3.1 Introduction

In the face of increasing rates of HIV infection around the world, there are those who doubt that HIV prevention strategies work, despite extensive evidence of the effectiveness of several interventions (1–4). In large part, this doubt is due either to a lack of understanding that prevention strategies may be working even when HIV infection rates are high or increasing (see

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chapter 2) or to a belief that only certain kinds of data constitute valid evidence of effectiveness (see chapter 4). Perceptions that HIV prevention “doesn’t work” may also be a function of confusing the efficacy of interventions with not having taken effective interventions to scale.

Despite these challenges the field of HIV prevention is alive and well. In the course of the past 20 years, many approaches for stemming the spread of HIV have been developed, tested and evaluated (although relatively few have been evaluated systematically and rigorously) in different populations and settings, and a number have been widely adopted. The following is a brief review of what is known about the effectiveness of a range of interventions at various stages of research that attempt to induce behavioural change, apply technologies or modify social environments in order to prevent the spread of HIV. Some of these interventions have involved young people, and some interventions are more appropriate for young people than are others. Our intention is not to provide an exhaustive review of all types of HIV prevention strategies, nor to systematically evaluate the strength of evidence for them, but rather to illustrate the landscape of interventions that have the potential for widespread application among both adults and young people. Our review includes evidence from experimental studies (including quasi-experimental studies) and observational studies and related analyses that have used a range of designs and evaluation methods. The merits of different study designs, as well as criteria for assessing their quality and evaluating their evidence of effectiveness, are described in detail in chapter 4. Other chapters elaborate on the evidence for particular types of youth-focused interventions implemented in different settings.

3.2 Interventions to change behaviour

The goal of interventions aimed at changing behaviours is to reduce the risk of HIV-related sexual and drug-use behaviours. Behavioural change interventions seek to delay the onset of sexual intercourse, reduce the number of sexual partners a person has and reduce the incidence of unprotected sex by increasing condom use. Behavioural change interventions also target drug use and seek to reduce or eliminate the incidence of drug injecting and the incidence of sharing needles, syringes and other drug-use equipment. True reductions in such behavioural risks would reduce the transmission and acquisition of HIV infection.

Interventions aimed at changing behaviours focus on counselling individuals, couples and small groups (and these interventions sometimes include HIV testing) and running workshops and other programmes that provide information and skills (including, for example, sex education, instructions on how to use condoms and other harm reduction strategies). These interventions may

also aim to change social norms by seeking the involvement of opinion leaders or they may be peer-based, use social networks or be targeted at the community. Additionally, they may include social marketing, communications and mass media campaigns (2–6). These interventions are based on psychological and social science theories that emphasize the importance of knowing about the risks of HIV transmission, instilling motivation to protect oneself and others, changing expectations of outcomes, developing skills for engaging in protective behaviours and the ability to maintain protective behaviours, and providing social support for protective actions (5, 6). Evaluation designs have included experimental and observational studies.

Behavioural change interventions have been tested in a range of social settings, including health-care systems, HIV/AIDS service organizations, schools, churches, community centres, commercial establishments, workplaces, correctional facilities, the military and in homes. Outcomes related to HIV/AIDS that were assessed in these interventions generally fall into three categories:

- psychosocial (such as self-efficacy, perceived risk, personal or interpersonal skills, HIV/AIDS knowledge, intentions to adopt risk-reduction behaviours, communication with partners)
- behavioural (such as the safe use of injected drugs, reducing the incidence of sharing drug paraphernalia, encouraging the use of male or female condoms, reducing the number of partners and frequency of unprotected sexual activity and encouraging HIV testing), and
- biological (such as the incidence or prevalence of HIV or other sexually transmitted infections [STIs], hepatitis and, sometimes, pregnancy, particularly in studies with young people) (5, 6).

In fact, most behavioural interventions target a number of risk reduction outcomes.

Hundreds of studies of behavioural change interventions have been conducted since the early 1980s, both in the developed and the developing world. Until recently, these have almost entirely targeted people who are not infected with HIV, although there is a growing body of studies of interventions focusing on people who are HIV positive (7). Several systematic reviews and meta-analyses have summarized findings from these studies (5–18).

Most meta-analyses have included only experimental studies, and so have only reported on a subset of all studies of behavioural interventions, most of which have been conducted in North America and western Europe. Studies in these meta-analyses and systematic reviews of experimentally designed behavioural interventions have focused on HIV-negative heterosexual adults

and adolescents, injecting drug users and men who have sex with men. They have found that such interventions can result in as little as no reduction in risk behaviours to as much as a 40% reduction in risk behaviours among different population groups and exposure categories over periods that generally have ranged from 3 months to 2 years. Of those interventions that have shown efficacy in reducing risk, most have had small to moderate effect sizes (not all of which are statistically significant) (5, 7–13, 19, 20), although substantial effect sizes were found in some studies included in reviews of interventions among men who have sex with men (14, 18). Within the overall category of behavioural change interventions, those considered to work best in reducing sexual risk include small-group cognitive behavioural interventions, educational interventions and face-to-face counselling and skill-building programmes (for example, teaching proper condom use, negotiation and refusal skills). Those that work best for reducing risks from drug use include outreach programmes, needle exchange activities, addiction treatment programmes and face-to-face counselling (21).

Beyond these meta-analyses, other reviews have provided additional evidence of the efficacy and effectiveness of behavioural interventions in reducing the risk of HIV infection in developing countries among commercial sex workers, adolescents, injecting drug users and men who have sex with men (14–16, 18, 22, 23).

There are some important caveats to meta-analyses and the behavioural interventions they assess. First, most behavioural intervention studies measure multiple outcomes and many report a composite risk-reduction outcome so one would have to tease out the data for each outcome from each study to know exactly what had been achieved, and this has often not been done. Indeed, it is possible that published studies tend to emphasize the one outcome that is significant, leading to reporting bias. Second, behavioural outcomes are not operationalized or measured consistently across studies. For example, condom use is measured as “never, sometimes, always used”, “number of unprotected acts of intercourse” or “condom used at last act of intercourse”, to name just a few. So we cannot be certain that like outcomes have been pooled.

Additionally, most studies of behavioural intervention are population-specific, with the reference group being defined variously by age, sex of the participant, sexual orientation, ethnicity, cultural community, geographical setting or exposure category. Thus, most summary reviews of behavioural interventions are specific to these particular social groups (7, 8, 10–19). Consequently, it takes careful sifting to determine which of the effective interventions ought to and could be replicated and scaled-up for different populations and settings.

But perhaps the most important limitation of studies of behavioural interventions is that virtually all behavioural outcomes are self-reported, which raises questions about their veracity and validity. It is both difficult and often undesirable to directly observe and measure HIV risk and protective behaviours related to sexual intercourse and drug use, so we must rely chiefly on the indirect measures of self-reporting (24–26). Given the sensitivity of these behaviours, there is the possibility that people will consciously or sub-consciously misreport them in ways they consider to be socially desirable. This has been demonstrated by studies that have compared self-reported data and biological markers; and it may be especially severe in studies of adolescents and young people. For example, a study of adolescents in the United Republic of Tanzania found substantial discrepancies in reported behaviour using five different methods of data collection. On self-completed questionnaires or during structured interviews, most young women denied having engaged in any sexual activity but many had biological markers of activity (such as pregnancy or an STI), and during in-depth interviews most admitted to engaging in sexual activity (26). Also, reporting bias may differ between the intervention and control arms of a study or between those exposed or unexposed to the intervention in an observational study, thereby distorting the effects of the intervention. Thus although there have been significant advances in developing techniques to optimize the validity of self-reports (such as through the use of computer-assisted survey instruments and carefully designed questionnaires), questions remain about the validity of study results based exclusively on self-reported behaviours. This has led to the increasing interest in including biological outcomes (such as STI or HIV incidence) in studies of behavioural interventions as complementary measures and sometimes as primary endpoints.

There are only a few published experimental studies testing the effectiveness of an intervention to reduce behavioural risk using both behavioural and biomedical endpoints (incidence of STIs or HIV, or both), and these have found mixed results. For example, two multisite intervention studies among heterosexual men and women in the United States found significant positive effects both on outcomes of behavioural change and STI incidence (27, 28). As a result, one of the protocols (Project RESPECT) has been widely replicated in the United States. But a study in London among men who have sex with men found only modest positive change in reported behaviours and an unexpectedly higher rate of STI acquisition among the intervention group than the control group, although this difference attenuated over time (29). A large multisite behavioural intervention trial in the United States among men who have sex with men, and which included HIV incidence as an outcome measure, found an 18.2% lower rate of HIV infection (15.7% after adjustment for baseline covariates) in the intervention group compared with the control group and a 20.5% lower incidence of unprotected receptive anal intercourse

with partners who were HIV positive or of unknown serostatus in the intervention group compared with the control group. Although the behavioural outcome was statistically significant, the HIV incidence outcome was not (30). A randomized community trial of a multicomponent adolescent sexual health programme in rural Mwanza, United Republic of Tanzania, assessed both behavioural and biological outcomes, including HIV incidence and STI prevalence. The intervention had a significant impact on knowledge about HIV, reported attitudes towards HIV and some reported behaviours, with variations occurring by the sex of the participant, but it did not have a consistent impact in either direction on STI outcomes (31, 32). Finally, in Masaka, Uganda, the effects of a community-wide behavioural intervention, with and without improved STI treatment services, were assessed in a three-arm community-randomized trial. Comparison of the behavioural intervention and control arms showed an increase in condom use with casual partners, but there was no significant impact on HIV incidence, possibly because the trial was carried out at a time when incidence was already falling as a result of larger changes toward safer behaviour in Uganda (33).

In addition to experimental data, surveillance and other observational data provide evidence of behavioural change at the population level that is plausibly related to behavioural interventions, including information and education provided by nongovernmental organizations, social institutions, peers and the media. However, if we look at the observational data from countries and communities that have documented behavioural change, it is difficult to ascertain exactly what produced the change; this is especially true for specific behavioural interventions. This leaves us in a quandary and makes it difficult to determine what really works and how it might be replicated elsewhere. For example, documented declines in HIV prevalence in Uganda have been attributed to the promotion of a strategy known as “ABC”: “abstain” (chiefly aimed at delaying sexual debut among young people); “be faithful” (aimed chiefly at reducing the number of partners); and “use condoms” (chiefly aimed at use with non-regular partners). But the actual interventions (scientifically tested or otherwise) that produced these behavioural changes have not been specified (34). In the absence of clear data, a controversy emerged – and continues – about the relative importance of delayed sexual debut, partner reduction and condom use in influencing the dynamics of the epidemic in Uganda (35). Similarly, a population-based study in Zimbabwe has shown evidence of a decline in HIV prevalence, particularly among young people, that was accompanied by changes in reported sexual behaviour. Again it is not possible to attribute this change to specific interventions (36).

Attribution issues notwithstanding, observational data from these and other countries provide evidence that delaying sexual debut, reducing the number of sexual partners and increasing the use of condoms has been achieved

through the implementation of various behavioural change interventions – both formal and informal – and that these behavioural changes appear to have contributed to 50–90% reductions in HIV incidence and prevalence in a number of populations in the 1990s, as measured by epidemiological surveillance (37–42). Most analysts have concluded that it was the combination of behavioural intervention strategies and involvement by high-level political and community leaders that produced significant behavioural changes and, as a result, reductions in HIV incidence and prevalence in these countries (3, 4, 34, 36, 42).

Some of the observed trends in HIV incidence and prevalence may be due to the natural dynamics of the epidemic, including an “exhaustion of susceptibles” and people modifying their behaviour in the light of knowing others who have AIDS; and behavioural trends may reverse over time, erasing some of the gains made in earlier years. An analysis by researchers leading the Rakai cohort study in Uganda illustrates these possibilities. HIV prevalence, reported age at first sexual intercourse, reported number of sexual partners and condom use had probably all improved in this cohort in the late 1980s and early 1990s, as they had in other areas of southern Uganda. However, although HIV prevalence declined by 6.2% between 1994 and 2003, most of this decline (about 5%) was attributable to HIV-related mortality. In this community, between 1995 and 2002 the age at first sexual intercourse actually dropped among both males and females, and from 1994 to 2003 the proportion of adolescent girls aged 15–19 reporting having had two or more non-marital sexual partners increased significantly. But despite these behavioural changes, HIV incidence remained stable, which the study authors attributed to an increase in condom use with casual partners occurring among both males and females (43).

These observations underscore the need for, and the usefulness of, combining epidemiological and behavioural data for the same time periods. They also emphasize the usefulness of prevalence data for young people, which can be used as a marker of recent change and lead to a better understanding of what is really occurring in terms of HIV transmission and prevention and to what behavioural changes epidemiological outcomes may be attributed (36, 44).

3.2.1 ***Voluntary counselling and testing***

The establishment of voluntary counselling and testing programmes has been a feature of national HIV prevention strategies in a number of countries. The key goals of these programmes are to provide people with the opportunity to learn their HIV status, to counsel people about how to avoid becoming infected or spreading HIV and to refer people to appropriate medical and psychosocial care. A number of studies in developed and developing countries

have been undertaken to determine if, in addition to its diagnostic and referral benefits, voluntary counselling and testing may lead to reductions in risky behaviours and reductions in HIV infection rates (45). Overall, data from randomized controlled trials and observational studies show mixed results in this regard (46). For example, in a randomized trial of an intervention for couples, which was conducted in Kenya, Trinidad and the United Republic of Tanzania, both male and female participants who had counselling and were tested were significantly more likely to report a reduction in the incidence of unprotected intercourse with a non-primary partner than those in the control group, who received only basic health information. Among those in the intervention group, HIV-positive men were more likely than HIV-negative men to report a reduction in the incidence of unprotected intercourse with both primary and non-primary partners (47). (This study also looked at STI endpoints, but it was underpowered and the effect was non-significant.) Other research from sub-Saharan Africa has found that behavioural changes induced by voluntary counselling and testing programmes among couples whose HIV status is discordant (that is, one partner is HIV positive and one is not) varied by the sex of the participant: condom use within these couples was more frequent and consistent when men were the HIV-negative partners (48–50). Thus, it appears that the effectiveness of these programmes in preventing HIV infection is limited to certain individuals and couples.

Additionally, utilization of voluntary counselling and testing remains low in most communities with a high prevalence of HIV, chiefly because access to services is often limited and stigma and discrimination continue to surround HIV infection. To address this situation, a large community-randomized intervention study of voluntary counselling and testing is under way in South Africa, Thailand, the United Republic of Tanzania and Zimbabwe. The intervention aims to increase the availability of services in community settings, to engage communities through outreach and to provide post-test support – all of which are intended to change community norms, mitigate stigma and reduce the risk of HIV infection among all community members regardless of whether they participate directly in the intervention (51).

3.2.2 ***Treatment for drug addiction***

Numerous studies have shown that substance abuse treatment programmes can have a significant effect on HIV transmission among injecting drug users (52, 53), although few of these studies are experimental and most have occurred in the United States. These drug treatment programmes usually involve both opiate substitution (particularly with methadone) and the provision of behavioural counselling; they generally attempt to help injecting drug users decrease the number and frequency of injections or to cease injecting altogether. Reducing drug-related risk behaviours leads to fewer potential

exposures to HIV. Some of the earliest data demonstrating the efficacy of drug treatment programmes to prevent the spread of HIV came from an observational study in the United States of in-treatment and out-of-treatment intravenous opiate users randomly recruited from a methadone maintenance programme and its surrounding neighbourhood in Philadelphia, Pennsylvania. At follow up at 18 months, 3.5% of the methadone maintenance patients who had been in treatment continuously were HIV positive compared with 22% of out-of-treatment injecting drug users, representing a 6-fold difference in the rate of seroconversion (54). Another prospective study showed that at 36 months 8% of injecting drug users in treatment had become infected compared with 30% of those not in treatment (55). Although these data come from observational studies rather than experimental studies, the large differences observed suggest that such interventions can be effective. But the availability of methadone maintenance programmes is limited throughout the world, not least because drug substitution is illegal or highly regulated in many countries, including those with HIV epidemics strongly associated with the use of injected drugs.

3.3 Biomedical interventions: evaluating technologies

Research into biomedical interventions to prevent HIV infection involves testing the effectiveness of physical and chemical technologies to prevent the transmission or acquisition of HIV. The goal of such interventions is to moderate the influence of biological or physiological factors that may increase infectiousness or susceptibility to HIV or to prevent infection from progressing after actual exposure. Some biomedical strategies have been well tested and implemented; others are still at the early stages of development. Although most studies of biomedical interventions assess outcomes at the individual level, some have been designed to effect community-level change.

3.3.1 *Reducing iatrogenic transmission*

As soon as it was understood that AIDS was caused by a bloodborne pathogen, the importance of the health services taking steps to avoid parenteral iatrogenic transmission became apparent. Beginning in the mid-1980s, several strategies were introduced to reduce the likelihood of patients acquiring HIV infection from blood transfusions both in developed and developing countries; these included the widespread use of diagnostic assays for detecting HIV in blood and imposing restrictions on donors known to be at risk of HIV infection (56–59). Other strategies that have been used to reduce iatrogenic transmission include educating the public about the risks of engaging in non-sterile medical practices, such as sharing needles, and demonstrating to patients that the medical care they are receiving is safe by taking a new auto-disable syringe out of a sealed package and using

single-dose phials (60). Although rigorous studies testing the effectiveness of these interventions are lacking, implementing such practices in developed countries has been effective in virtually eliminating HIV transmission through blood donation and medical practices (61, 62). However, some epidemiologists continue to argue that unsafe injection practices account for a greater proportion of HIV transmissions in resource-poor settings than sexual intercourse does (63). But this has been countered by a thorough assessment of the epidemiological data from across sub-Saharan Africa and by a cohort study in rural Zimbabwe both of which unequivocally concluded that sexual interaction and not unsafe injections remains the primary mode of HIV transmission in that region (64, 65). Despite these conflicting perspectives, all agree that there is a need to effectively monitor injection practices at health facilities and to ensure the scale-up of safe procedures.

3.3.2 *Managing STIs*

A large body of evidence accumulated from epidemiological and clinical studies has shown that the risk of sexual transmission of HIV is substantially increased in the presence of other STIs (66). The evidence shows that STIs – particularly those associated with genital ulceration – can enhance the infectiousness of people who are HIV positive as well as the susceptibility of people who are HIV negative. STI prevalence is high in many countries with substantial HIV epidemics, and this is often due at least partly to poor STI treatment services. Therefore, the diagnosis and treatment of STIs have the potential to be effective prevention strategies by reducing STI prevalence in couples whose HIV status is discordant. Three large randomized trials have measured the effects of community-wide STI treatment interventions in different populations living close to Lake Victoria in east Africa. The first, conducted in the Mwanza region of the United Republic of Tanzania, showed that improved STI treatment services, using syndromic management and delivered through government-run primary health-care units, reduced HIV incidence in the general adult population by an estimated 38% (67, 68). The second, conducted in the Rakai district of Uganda, evaluated the effect of periodic mass treatment of STIs. All adults living in intervention communities were treated for STIs at 10-monthly intervals, whether or not they reported STI symptoms. After 20 months of follow up, this intervention showed no significant effect on HIV incidence (69). The third trial, conducted in the Masaka district of Uganda, evaluated whether a combined behavioural and STI syndromic management intervention was more effective than a behavioural intervention alone in reducing HIV transmission; it found no significant difference in HIV incidence between study arms after 3.6 years of follow up (33). All three trials reported some significant reductions in the incidence and prevalence of STIs.

The contrasting results of these studies call for careful analysis and interpretation. A synthesis of data from these trials concluded that differences in the study populations – with respect to sexual risk behaviour and STI rates as well as the stage of the HIV epidemic – and not differences in intervention strategy, were the key determinants of the contrasting HIV outcomes in the three locations (70, 71). The investigators concluded that using STI control measures to prevent the spread of HIV is likely to be most effective in populations with sexually transmitted epidemics that are early and concentrated and in populations with a high prevalence of STIs and sexual risk behaviours. The results of the Mwanza trial have led to widespread implementation of syndromic STI management in many countries.

It has been recognized that infection with herpes simplex virus type 2 (HSV-2) plays a particularly important role in HIV transmission. A systematic review and a meta-analysis summarized evidence from observational studies (72, 73). The more recent review found that prevalent HSV-2 infection was associated with a 3-fold increase in the risk of HIV acquisition both in men and women in studies in the general population; weaker effects were seen in studies of at-risk groups, possibly because such groups also have a high prevalence of other STIs (73). It is likely that HSV-2 infection also increases the infectiousness of people who are HIV positive. Data from a randomized controlled trial of valacyclovir in Burkina Faso showed that suppressive therapy administered during a 3-month period reduced genital shedding of HSV-2 and HIV and also reduced HIV plasma load (74). Based on these observational data, and strengthened by the findings of the study in Burkina Faso, a number of phase III randomized trials are under way in Peru, South Africa, the United Republic of Tanzania, the United States, Zambia and Zimbabwe to measure the effects of episodic or suppressive antiviral therapy in people who are infected with HSV-2 on HIV acquisition or transmission (75).

3.3.3 *Antiretrovirals to prevent HIV infection*

3.3.3.1 *Preventing mother to child transmission*

One of the most significant developments in HIV prevention was the finding that certain antiretroviral drugs could be administered to pregnant women and their newborns in such a way as to significantly reduce the likelihood of HIV being passed from mother to child before, during and after delivery. Three key randomized controlled trials provided the proof. The first, conducted in the United States, involved a three-part regimen of zidovudine given to the mother and her newborn; it reduced HIV transmission by two thirds (76). The second, conducted in Thailand and Côte d'Ivoire, involved a shorter regimen of zidovudine, and it reduced transmission by 44–50% (77, 78). The third

trial, conducted in Uganda, demonstrated that a single dose of nevirapine administered to the mother at the onset of labour and to the infant soon after birth reduced HIV transmission by nearly 50% (79). Together these studies demonstrate that long-course and short-course zidovudine and single-dose nevirapine are effective interventions for reducing mother to child transmission of HIV (80). Several studies are under way in resource-poor settings to assess the effects of using highly active antiretroviral treatment (HAART) during pregnancy (that is, treating the woman for her own infection) on the subsequent incidence of mother to child transmission. Preliminary results from one study conducted in Côte d'Ivoire showed the HIV transmission rate among pregnant women on HAART was 1.45% compared with 3.89% for those on a standard short-course antiretroviral regimen (81).

Interventions to reduce the incidence of HIV transmission that occurs through breastfeeding have also been tested. Where feasible and acceptable, the use of breast-milk substitutes has been shown to significantly reduce infection among infants (82, 83). Where implemented fully, antiretroviral treatment and breastfeeding interventions have had a remarkable effect: in the United States, for example, the number of children who acquired HIV perinatally decreased by 89% between 1992 and 2001 (84).

3.3.3.2 *Antiretrovirals for post-exposure prophylaxis*

In some countries health-care workers and prison officers have had access to treatment with antiretroviral drugs following assumed (chiefly parenteral) exposure to HIV infection in the workplace. A retrospective study of occupational post-exposure prophylaxis concluded that zidovudine monotherapy (administered within 24 hours of exposure and over the course of 28 days) reduced occupational HIV transmission (chiefly through needle-stick injuries) by approximately 81% (85). In more recent years, this approach has been extended to become a medical strategy for coping with non-occupational exposures, such as sexual assault or condom breakage, and it appears to be effective (86, 87). However, studies have not included data on untreated individuals, so these findings should be interpreted with caution. Also, adherence to the full regimen of post-exposure prophylaxis is difficult to achieve but it is likely to be important. In a programme in San Francisco, 40% of all eligible survivors of sexual abuse initiated post-exposure prophylaxis regimens but less than 10% completed them (88). Lack of complete adherence might compromise the effectiveness of using antiretrovirals for post-exposure prevention, as has been shown for incomplete adherence in HIV treatment.

3.3.3.3 *Antiretrovirals for preventing sexual transmission*

A key benefit of using HAART for treatment of HIV disease is that it reduces plasma viral load. Strict adherence to HAART regimens contributes to the sustained suppression of virus. Some data indicate that the risk of HIV transmission is directly associated with the infected individual's viral load (89). These findings have led many experts and laypeople to believe that the widespread use of HAART could have important effects on the sexual transmission of HIV. There are no prospective data yet to prove this, although a multisite randomized controlled trial is under way to determine whether antiretroviral treatment can prevent sexual transmission of HIV-1 in serodiscordant couples (90, 91). The primary data establishing the relationship between lower plasma viral load and reduced sexual transmission of HIV come from a cohort in Rakai, Uganda, who were not taking HAART (92).

It is making a significant leap to assume that the effects of HAART at the individual level will translate into similar effects at the population level. Mathematical models have demonstrated that at the population level the beneficial effect of HAART on reducing sexual transmission of HIV could be offset by an increase in the circulation of drug-resistant strains of HIV and increases in risky sexual behaviour that might occur if people believe HIV transmission is unlikely or if HIV infection becomes less feared because treatment is available (93, 94). Furthermore, because HAART extends survival time, where it is widely used there is a larger pool of HIV-positive individuals who have the potential to spread the infection over a longer period of time. The net effect of all these competing factors is, therefore, difficult to predict. However, an observational study in Taiwan, China, concluded that the estimated HIV transmission rate in the country declined by 53% after the introduction of free access to HAART in 1997, while no significant behavioural change occurred. The researchers were careful to note that the widespread use of HAART can be an effective measure to control HIV epidemics in countries with a low prevalence, but may not be as effective, or may not be effective at all, in settings with an already high prevalence of infection, for a number of reasons having to do with the exponential course of HIV epidemics (95).

Considering these data together – data from studies in animals, of post-exposure prophylaxis, of preventing mother to child transmission and data from Rakai on lower viral loads and lowered rates of transmission – has led to an interest in exploring the possibility of using antiretroviral treatment for pre-exposure prophylaxis. Randomized trials are planned or under way in Botswana, Ghana, Peru, Thailand and the United States to test the hypothesis that administering antiretroviral treatment (specifically tenofovir) to people who are HIV negative but at high risk will reduce HIV acquisition among them (96).

3.3.4 **Male circumcision**

Numerous studies have found evidence that uncircumcised men have higher rates of HIV infection than their circumcised counterparts (97). It has been hypothesized that male circumcision protects against HIV infection chiefly because the foreskin, which contains a high density of HIV-specific cellular targets, has been removed (98). In the Rakai STI trial in Uganda, no HIV-negative male partner of an HIV-positive female acquired HIV if he had been circumcised, even when the female had a high viral load (99). Two meta-analyses of observational studies (reviewing 37 and 25 studies, respectively) found that the prevalence of HIV among circumcised men was about half that of uncircumcised men (100, 101), and this finding has been reinforced by a cohort study in India (98). The association was even stronger in the 15 studies that adjusted for potential confounders; and it was stronger among men at higher risk of HIV infection than those in the general population (100, 101).

Results from the first randomized controlled trial testing the efficacy of male circumcision as an intervention to prevent HIV infection confirmed findings from earlier observational studies. This trial, conducted in Orange Farm, South Africa, involved more than 3 000 uncircumcised, HIV-negative men aged 18–24 years. At interim analysis, results indicated that circumcision (which was performed by physicians under sterile conditions) conferred 70% protection against HIV infection (102). This remarkable result caused the study to be halted and the intervention to be offered to participants in the control group. Additional trials of male circumcision, including one that will assess protection from male-to-female transmission, are ongoing in Kenya and Uganda to determine whether the results from South Africa can be replicated. Meanwhile, discussions of the public health implications of male circumcision interventions already have begun, including the possibilities of circumcision occurring under non-sterile conditions and “risk compensation” (that is, circumcised men may engage in riskier behaviour because they think they are protected against infection) (103).

3.3.5 **Vaccines**

There is general consensus that the HIV prevention strategy with the potential to have the greatest impact would be an HIV vaccine. Unfortunately, no effective vaccine exists, nor is one expected for many years. The complexity of HIV, the multiplicity of its variants, the ability of the virus to mutate, the lack of validated correlates of protection – not to mention the costs and logistics of mounting large-scale clinical trials – have made it extremely difficult to develop and test candidate vaccines. Moreover, there is little expectation that any vaccine that emerges in the near future will be close to 100% effective. More than 30 products or combinations of products have

been tested in more than 50 phase I and phase II trials, but only one product (AIDSVAX gp120) so far has completed phase III testing – in the Netherlands, Thailand and the United States – and it showed no efficacy (104). Another phase III trial is under way at several sites in Thailand; it is testing two vaccine candidates, ALVAC-HIV vCP1521 and AIDSVAX gp120 B/E (105).

3.3.6 **Microbicides**

A microbicide is a chemical compound designed to block the sexual transmission of HIV by killing or inactivating the virus, blocking the entry of the virus into target cells or interrupting the viral life cycle once it has entered target cells. Microbicides are being developed chiefly for vaginal use, although research on products for rectal use is also under way. The drive behind microbicide development is the urge to provide women with an HIV prevention technology that does not depend on male cooperation to the same extent as the male, or even the female, condom. The earliest randomized trials were conducted with nonoxynol-9, which has been used as a spermicide but has also shown anti-HIV activity in vitro. Altogether there were five rigorous randomized controlled trials conducted in a number of countries, chiefly among female commercial sex workers; these studies found no evidence that nonoxynol-9 protects against vaginal acquisition of HIV infection (106, 107). There was some evidence that it may, in fact, cause harm by increasing genital lesions. For example, the large multisite study of COL-1492 vaginal gel, which contains nonoxynol-9, found a significant increase in HIV incidence among female sex workers who used the gel compared with those who did not (106, 107).

There are more than 60 products in preclinical and clinical development, targeting a number of different mechanisms of action and different phases of the HIV life-cycle (108). In early 2006, there were about 10 compounds in phase I trials, 6 in phase II trials, and 4 in phase III trials (109). The difficulties of developing and testing microbicides are similar to those of vaccines, including scientific uncertainties, the complexity of trial designs and the costs (3). Also, as in the case of vaccines, it is unlikely that any microbicide will be 100% effective. Yet, it is estimated that the introduction of even a partially effective microbicide could prevent as many as 2.5 million new HIV infections over 3 years (110).

3.3.7 **Cervical barrier methods**

In addition to microbicides, which function as a chemical barrier, interest has grown in examining other female-initiated barrier methods that may offer some physical protection against the transmission and acquisition of HIV

infection. The female condom is a lubricated polyurethane sheath with a ring on either end that is inserted into the vagina before sexual intercourse. It has been studied primarily for its effectiveness in preventing pregnancy and STIs other than HIV. Laboratory studies and clinical trials have shown that the female condom provides an effective barrier to organisms smaller than those that cause most STIs, and it is at least equivalent to male condoms in terms of preventing gonorrhoea, trichomoniasis and chlamydia (*111*). There have been no clinical trials specifically assessing the efficacy or effectiveness of the female condom in preventing HIV infection. However, based on studies in which STI prevention and pregnancy prevention were assessed, it is estimated that the female condom is 94–97% effective in reducing the risk of HIV infection if used correctly and consistently (*111*). The female condom may be a more attractive choice than male condoms for some women because it resists breaks and tears and covers both the internal and external genitals, which are primary sites of STI lesions (*112–114*).

Findings from basic and clinical research indicate that HIV susceptibility may not be equally distributed across the epithelial surfaces in the vagina and that the cervix may be particularly vulnerable to HIV and STI transmission (*115, 116*). This has led to an interest in the risk-reduction potential of cervical barrier methods, such as the diaphragm and cervical cap. These barriers are made of soft latex or silicone and are used with spermicidal cream or jelly and then inserted into the vagina to fit over the cervix. Several observational studies have indicated that when the diaphragm is used in conjunction with spermicide it may offer protection against some STIs and their associated sequelae (*117–121*). As of March 2006, seven clinical trials at various stages (phase I to phase III) were under way to examine the diaphragm's effectiveness in preventing STIs (*122*). Of these studies, the furthest along is the Methods for Improving Reproductive Health in Africa Trial, a phase III trial that will measure the effectiveness of the diaphragm when used with Replens lubricant gel in preventing heterosexual acquisition of HIV infection among women in South Africa and Zimbabwe (*123*).

3.3.8 **Summary**

There are a number of biomedical technologies under development that show promise for preventing the spread of HIV. Unfortunately, for some of these interventions, the scientific, logistical and ethical complexities inherent in running large-scale trials of effectiveness mean that it may be many years before this promise is realized.

3.4 **Social interventions**

Social arrangements, institutions, laws, policies and customs can influence greatly the ability of individuals to engage in protective behaviours and to

use biomedical technologies to avoid becoming infected with HIV. In recent years, increased attention has been paid to the possibilities of modifying social arrangements that affect HIV prevention. Whether they are called “social strategies” (2), “structural interventions” (124–127) or “environmental interventions” (125), efforts to create social conditions that facilitate health promotion and risk reduction have proven to be effective in a number of locales, although there are few examples of rigorously tested approaches.

3.4.1 **100% condom use**

Perhaps the most notable example of a social intervention aimed at preventing the spread of HIV is the Thai “100% condom” use programme, which made condom use mandatory in all brothels, even while prostitution remained technically illegal. The promotion of condom use was coupled with an emphasis on decreasing visits to sex workers and other non-regular partners, particularly among Thai military recruits. But the Thai national response, like that in Uganda, also included national sentinel surveillance, mass media campaigns, community mobilization and interaction between nongovernmental organizations, community-based organizations and industry, as well as strong public statements and resource commitments made by political leaders at the highest levels (128). As a result of this comprehensive social strategy, the rate of Thai military recruits having sex with commercial sex workers decreased from 57.1% in 1991 to 23.8% in 1995; of those who continued to have sex with commercial sex workers, the proportion that used condoms increased from 61% in 1991 to 92.6% in 1995. Between 1991 and 1993 the rate of HIV incidence among military conscripts fell from 3/100 person-years to 0.3/100 person-years (42, 129, 130).

A cohort study of repeat blood donors in the northern provinces in Thailand found similar results: HIV incidence decreased from 1.7/100 person-years in 1989 to 0.5/100 person-years in 1994 (42). As a result of the success of the Thai programme, a number of other Asian nations have implemented similar programmes, which have involved making policy changes in order to work around the continued illegality of prostitution. Data from these countries indicate that there have been increases in the use of condoms and decreases in the incidence of STIs (131). In Cambodia, declining HIV rates between 1996 and 2000 have been attributed to the 100% condom use programme and improvements in STI care (131).

3.4.2 **Access to syringes**

Perhaps the most studied social intervention is that of increasing access to sterile syringes for those who use injected drugs. Although such drug use is illegal nearly everywhere in the world, many countries have adopted harm

reduction policies that allow, if not provide, for access to sterile injecting equipment for those who continue to inject. The implementation of needle/syringe-exchange programmes, in particular, has resulted in decreased needle-sharing and related practices, and reduced HIV incidence and prevalence in numerous locales (124, 132–136). A review of data from 81 cities across Europe, Asia, and North America with and without syringe-exchange programmes found that, on average, HIV prevalence among injecting drug users increased by 5.9% per year in the 52 cities without exchange programmes and decreased by 5.8% per year in the 29 cities with exchange programmes. Thus the average annual change in prevalence was 11% lower in cities with exchange programmes (132). But political resistance to strategies that may be construed as condoning drug use has prevented many countries and cities from implementing exchange programmes and other harm reduction interventions.

3.4.3 ***Economic empowerment interventions for women***

The increasingly disproportionate impact of HIV and AIDS on women and girls throughout the world (see [chapter 2](#)) has implicated gender inequity as a driver of the epidemic. The cultural construction and social organization of gender have disempowered women and girls in many settings, making them particularly vulnerable to HIV infection and its consequences. These social factors operate in a number of ways, including through low educational attainment, early marriage, fertility expectations and sexual violence and also through economic inequities, such as lower wages and unpaid care work and a lack of property and inheritance rights. As a result of such arrangements, many women and girls do not have basic information about their bodies, sex or sexuality, and do not know how to prevent HIV and other STIs; they cannot demand that male partners use condoms; they cannot refuse sex; they are often forced to sell sex; and if they inject drugs they often are given a dirty needle to use after their male partner.

In response to these situations, interest has been growing in implementing income-generation interventions, such as microfinance projects – another form of social or structural intervention – as a means of empowering women in their relationships and reducing their material dependence on men. Several studies of micro-credit interventions targeting women and their fertility outcomes (pregnancy rates and contraceptive use) indicated that economic empowerment translated into increased self-esteem, improved social networks, increased control over household decision-making, increased bargaining power and increased contraceptive use (137). Micro-financing has only recently been applied to HIV prevention, so few empirical examples of interventions exist. One large-scale community-level randomized controlled trial in South Africa of an integrated, comprehensive intervention that

simultaneously provided micro-credit to women and HIV/AIDS education to the whole community has been completed. The study assessed intermediate attitudinal and behavioural outcomes and HIV incidence (138). In this structural intervention, eight communities were matched and randomly allocated to receive the intervention at onset of the study or after 3 years. There was no evidence of an effect on community-level HIV incidence or risky sexual behaviour in the short-term, although there was a significant reduction in physical and sexual abuse among intervention participants (139).

Although the need for more social interventions has been recognized, there are a number of obstacles to evaluating their effectiveness. Chief among these is the fact that it can be exceedingly difficult to fit social-level analysis and interventions into an experimental study design (127). Essentially, the problem is that complex social phenomena – such as gender, poverty, economic inequality and violence – cannot be reduced to a few variables that can easily be modified or controlled for testing in experimental designs; and the attribution of effects to such interventions is often difficult without suitable comparison groups.

3.5 Behavioural and social issues in developing and implementing interventions

There are a number of interrelated issues that cut across virtually all interventions designed to prevent the spread of HIV, and these must be attended to in developing and implementing such interventions. Space limitations do not allow us to discuss these in detail, but they are important to mention.

3.5.1 *Recruitment to and retention in studies*

The requirements of rigorous randomized controlled trials, the range and number of HIV prevention technologies under study, and HIV incidence levels necessary to enable researchers to detect true effects from an intervention mean that large numbers of people must be recruited and retained in multisite studies over many years. This is logistically challenging and also expensive (127, 140, 141).

3.5.2 *Adherence to prevention protocol*

Once recruited and retained, it is essential that study participants adhere to the prevention protocol if the full effectiveness of the intervention is to be captured. For some technologies and in some social and familial circumstances, this may prove impossible for study participants. If significant numbers of participants have less than optimal adherence, the study and its outcomes may be compromised. Counselling about the importance of

adherence is an essential but labour-intensive and costly component of HIV prevention trials (142, 143).

3.5.3 ***Behavioural disinhibition (risk compensation)***

As discussed in the context of circumcision and pre-exposure prophylaxis, it is possible that when people perceive that a particular HIV prevention method is effective (even if it is only partially effective), they may stray from using other methods that are already known to be equally or more effective (for example, using male condoms, delaying their first experience of sexual intercourse and reducing their number of sexual partners). Such behavioural disinhibition (or risk compensation) may slow the progress of new interventions in reducing HIV infection rates at the individual level and the population level (43, 144). This concern is relevant to all prevention modalities – behavioural, biomedical and social – and for those who are participating in studies and those who are not (145). However, we must not let fears over disinhibition impede efforts to develop and implement interventions because we need as many effective tools as possible to tackle the HIV/AIDS epidemic. It is essential that service providers diligently promote behavioural change and communicate the need to continue to engage in risk reduction or avoidance even as new prevention methods emerge.

3.5.4 ***Partial efficacy and partial effectiveness***

No single prevention method is 100% effective. Even sexual abstinence, which may be theoretically effective, is imperfectly practised. The most effective prevention technology is the male latex condom, which has an estimated 80–90% level of expected risk reduction with correct and consistent use. Based on the outcomes of the first randomized controlled trial of male circumcision, that intervention appears to have the next highest level of efficacy, at 65–70% for a single procedure (102). Additional methods under study (such as vaccines, microbicides, pre-exposure antiretroviral prophylaxis) are estimated to have only a 25–50% level of effectiveness using current study-design calculations and are methods that require repeated administration (145, 146). This means that researchers, service providers, programme managers, policy-makers and community advocates must not promise too much for any particular method; they must be clear about the need to use a combined approach to preventing the spread of HIV; and they must emphasize the importance of adherence to behavioural changes.

3.5.5 ***Engaging communities in research***

The question of how best to facilitate the involvement of affected communities in research has been present since the beginning of the epidemic. Much

has been written about culture clashes between scientists and community advocates. Recently, this conflict has affected the inauguration of HIV prevention trials, particularly pre-exposure antiretroviral prophylaxis trials (using tenofovir), in a number of developing countries (147, 148).

Although researchers may feel they are abiding by ethical standards in the conduct of trials and consulting with community leaders and representatives, community advocates continue to raise questions about the adequacy of HIV prevention counselling, informed consent, provision of treatment for people who acquire HIV infection during the time they are participating in studies and the limited involvement of communities in designing studies. These tensions must be resolved because most researchers and advocates believe that HIV prevention studies should go forward as long as they are ethically conducted and are done with, rather than on, communities (147, 148).

3.6 Conclusion

This review of the landscape of HIV prevention strategies tells us a number of things. First, we have a great deal of evidence from research studies – both experimental and observational – and from practical real-world experience to make the case for the effectiveness – and potential effectiveness – of a number of interventions to prevent the spread of HIV. (See [Table 3.1](#) for a summary of the evidence reviewed in this chapter.) Although not all research has been rigorous, and not all interventions have shown significant results, we do know that reductions in risk and rates of HIV infection can be achieved through behavioural, biomedical and social strategies, particularly when they occur together. Principles derived from infectious disease epidemiology and behavioural and social theory can be incorporated into rigorous intervention designs and real-world practices that are relevant and appropriate in different settings. These may yield different effects as a result of such things as having to vary the intervention to fit different contexts (including local culture and social structure), variations in the quality of implementation, and variations in underlying HIV and STI epidemiology (as in the case of the STI management trials in Rakai and Masaka in Uganda and Mwanza in the United Republic of Tanzania, described above). No intervention will be 100% effective, but implementing many that have been shown to work, and doing so in different combinations in different places as befits the local situation, will yield important prevention outcomes at a population level.

Table 3.1

Summary of evidence and key references for behavioural, biomedical and social interventions to prevent HIV infection

Type of intervention	Comments on the evidence	Key references
Behavioural		
Interventions aimed at reducing sexual risks and risks associated with injecting drug use that involve counselling for individuals, couples or small groups; workshops; skill-building programmes; use of popular opinion leaders, peer-based, networks, community member; mass media interventions	• Much evidence from many RCTs^a in developed and developing countries • Numerous systematic reviews and meta-analyses • Generally indicate small to moderate effect sizes over limited follow-up periods • Targeted at specific populations or groups • Behavioural outcomes are chiefly self-reported; some STI^b and HIV outcomes • Some observational evidence for impact of behaviour change on HIV incidence and prevalence at country level	5–21, 27–32
Systematic reviews and meta-analyses conducted among:		
Heterosexuals	• Weak to moderate effects for reductions in sexual risk and STI outcomes	8–10
Injecting drug users	• Moderate effects on sexual risk reduction; weak to strong effects on reduction of risks associated with drug use and HIV outcomes	13, 17, 19
Men who have sex with men	• Moderate to strong effects on sexual risk reduction; weak to strong effects on STI and HIV outcomes	11, 14, 18
Young people	• Weak to moderate effects on sexual risk reduction	12, 15, 16
HIV-positive people	• Moderate to strong effects on sexual risk reduction and STI outcomes	7

Voluntary counselling and testing	• Few RCTs and observational studies in developed and developing countries • 1 systematic review • Mixed results for sexual risk behaviours and HIV incidence • Effects of interventions varied by sex of participant and serostatus	45–47
Treatment for drug addiction (methadone maintenance)	• Observational studies in developed countries suggest significant effectiveness in reducing HIV incidence (3.7-fold to 6-fold difference in seroconversion between those in treatment and those out of treatment)	52, 54, 55
Biomedical		
Iatrogenic transmission	• Few rigorous studies either in developed or developing countries • Restricting blood donors and reducing unsafe injecting practices have been effective in reducing iatrogenic transmission	56–60 61, 62
Management of STIs	• Few RCTs in developed and developing countries. Trials found mixed results for reducing STD and HIV incidence. Effects of intervention varied by study populations with respect to sexual risk behaviour, STI rates and stage of HIV epidemic	67–71
Community trials	• 2 meta-analyses assessing correlation between HSV-2 and prevalence of HIV • 1 RCT completed and others under way measuring effects of suppressive HSV-2 therapy on HIV transmission or acquisition	72, 73 74, 75
HSV-2 ^c infection		

Type of intervention	Comments on the evidence	Key references
Antiretrovirals for preventing HIV infection Preventing mother to child transmission	• RCTs and systematic review in developed and developing countries show strong efficacy of antiretroviral therapy before, during and after delivery for preventing mother to child transmission	76–81
Post-exposure prophylaxis	• RCTs show efficacy of breastfeeding interventions • Observational studies in developed and developing countries indicate efficacy of post-exposure prophylaxis	82 85–88
Antiretrovirals for preventing sexual transmission	• No RCTs completed but one under way in both developing and developed countries to examine relationship between lower plasma viral load due to HAART^d and reduced sexual transmission of HIV • 1 observational study indicated decline in HIV transmission rate at country level since introduction of HAART • RCTs under way in developed and developing countries to examine using antiretroviral therapy as pre-exposure prophylaxis among uninfected people	90 95 96, 147
Male circumcision	• Observational data from developing countries suggest protective effect of circumcision against male acquisition of HIV infection from females • 1 RCT in developing country confirms findings from observational studies; shows strong efficacy (65–70% reduction in risk) • Additional RCTs under way in developing countries to confirm • Only 1 completed phase III RCT in developed and developing countries; showed no efficacy • Second phase III RCT in developing country under way	100, 101 102 103 104 105
Vaccines		

Microbicides

- RCTs in developing countries of nonoxynol-9 products showed no efficacy and possible harm 106, 107

- 4 candidates targeting different mechanisms of action in phase III trials 109

Cervical barrier methods

- Based on STI and pregnancy data, female condoms are estimated to be 94% to 97% effective in reducing risk of HIV infection 111
- 7 RCTs under way to examine effectiveness of diaphragm in preventing HIV and STI 122

Social

100% condom use programme

- Observational data show decreased visits to sex workers, increased condom use and decreased HIV incidence among Thai male military conscripts in 4- year period 129–130

Syringe access, including needle or syringe exchange

- Observational data from developed countries showed strong evidence of effectiveness of syringe access programmes in terms of decreased needle sharing and other unsafe drug use practices as well as positive effects on HIV incidence and prevalence 132–135

Economic empowerment interventions targeting women

- Evidence from 1 RCT of microcredit programme in developing country indicates no effect on community-level HIV incidence or reduction in sexual risk but significant reduction in physical and sexual abuse 138, 139

^a RCTs = randomized controlled trials.

^b STI = sexually transmitted infection.

^c HSV-2 = herpes simplex virus-type 2.

^d HAART = highly active antiretroviral therapy.

Second, we must not confuse a lack of implementation with a lack of effectiveness. Those who quickly dismiss HIV prevention interventions as “not working” usually do not take into account the fact that most interventions with proven effectiveness have not been implemented on a large scale nor made available to a high proportion of the people in need of them, even among the populations where they have been implemented. Based on data from UNAIDS, the Global HIV Prevention Working Group estimates that the proportion of individuals at risk of acquiring or transmitting HIV infection and who have access to selected key prevention interventions is as follows: 5% have access to care to prevent mother to child transmission; 12% have access to voluntary counselling and testing; 19% to harm reduction strategies; 24% to AIDS education; and 42% to condoms (149).

Of course, providing access to interventions is not the same as ensuring the quality of the intervention, so scale-up must include a quality assurance component. Moreover, where financial, political, social and individual commitments to HIV prevention wane, we can expect to see the erosion of prevention success, as appears to be the case in such places as Thailand and Uganda. Prevention only works if it is sustained over time by individuals practising risk reduction or avoidance and by societies making commitments of human and financial resources to facilitate and support prevention efforts for the long haul.

Third, given that there is no perfect method for ascertaining the true effectiveness of interventions, we should accept different levels and types of evidence (as described in [chapter 4](#)) that taken together are appropriate for guiding public health policy and practice. This means that for cases in which we do not have sufficient evidence from rigorous experimental studies, we must use observational data; and our interpretation of the strength of evidence must take into account the methodological strengths and weaknesses of different data sources. Yet, as we commit to implementing and scaling-up those interventions that we know work, we must also continually strive to improve the quality and quantity of evidence on the effectiveness of HIV prevention strategies, which means we must continue to push for more rigorous research.

In this regard we can identify a number of important directions for HIV prevention research. First, we must develop and test more behavioural interventions that target people who are HIV positive since the psychosocial bases of these interventions may be slightly different from those directed at people who are HIV negative. And we must develop and test more social interventions to address many of the factors underlying vulnerability to HIV infection among specific groups of people. Second, we can improve and expand our research methods. This should include developing more rigorously conducted intervention trials and observational (plausibility) studies, making better use

of observational data, recording and analysing data on time trends in behaviour and infection rates in settings with different mixes and intensities of interventions, using statistical modelling with study results and other data to gain a better understanding of interventions' effects and determining appropriate outcome indicators for social-level interventions. Third, we must collect and provide more data on the costs, as well as the effectiveness, of interventions in order to make a more compelling case to policy-makers. Fourth, we must continue to invest in the prevention technologies that have the greatest potential for bringing about population-level effects. Finally, we must be more explicit and specific with the public and with policy-makers about HIV prevention successes (and failures) and the evidence behind them.

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4. The weight of evidence: a method for assessing the strength of evidence on the effectiveness of HIV prevention interventions among young people

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Objectives To design a method for assessing the strength of evidence on the effectiveness of different interventions to prevent the spread of HIV that will be the basis for the reviews in this series.

Methods The literature on the evaluation of public health interventions was reviewed, and a method was developed in consultation with colleagues involved in this series of reviews and others.

Findings The method involves the following steps. First, define the key types of intervention that policy-makers need to choose between in the population setting under consideration. Second, define the strength of evidence that would be needed to justify widespread implementation of the intervention. Third, develop explicit inclusion and exclusion criteria for the studies under review. Fourth, critically review all eligible studies and their findings, by intervention type. Fifth, summarize the strength of the evidence on the effectiveness of each type of intervention. Sixth, compare the strength of the evidence provided by the studies against the threshold of evidence that would be needed to recommend widespread implementation. Seventh, from this comparison, derive evidence-based recommendations related to the implementation of each type of intervention in the setting or population group.

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Conclusions The method proposed here provides a systematic, rigorous and transparent approach to reviewing evidence on the effectiveness of interventions of different types and in different population settings in order to generate recommendations for policy-makers.

4.1 Introduction

The AIDS epidemic is a major public health emergency, and young people are bearing the main brunt of new infections worldwide. There is an urgent need to work towards a consensus on what should be done in order to meet the internationally accepted goals for the prevention of HIV among young people that were defined at the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) in 2001 (*1*). These global goals are presented and discussed in [chapter 1](#), but in sum they give specific targets for improving access to information, skills and services; reducing vulnerability; and reducing HIV prevalence.

In an area as important as preventing the spread of HIV among young people in developing countries, difficult choices have to be made by policy-makers and programme developers irrespective of whether the evidence that is available to guide these decisions is weak or strong. Although evidence on the effectiveness of interventions will be only one of the factors that policy-makers use when deciding in which programmes to invest, a systematic review of the evidence related to all the options will be more useful to them than piecemeal reviews using different criteria and weights for different types of evidence. As in most areas of social policy, gaining consensus on the relative weights that should be given to different types of evidence has been difficult, but for policy decisions to be rational and transparent, reaching such consensus is crucially important. Furthermore, the lack of any explicit policy or programme is in fact a policy decision. And, finally, because of the complexity of the interventions, the evidence for and against any intervention strategy is likely also to be complex, requiring the synthesis of multiple types of evidence of varying quality and weight. Evaluation researchers should provide evidence that is as valid as possible to policy-makers and ensure that it is synthesized and presented in a way that will make it relevant, accessible and easy to interpret and act on.

While recognizing that there are major obstacles to rational evidence-based decision-making in this field, this chapter aims to indicate a way forward by presenting a structure within which researchers, advisers and policy-makers can assess the strength of the evidence for each of the interventions discussed in subsequent chapters in this series. In this chapter we are concerned with the broad principles involved in assessing the evidence. Later chapters in the series will address how these principles apply to specific interventions. The

criteria that we propose for assessing the evidence draw on recent debates on the relative merits and limitations of randomized controlled trials (2–7), and suggestions for approaches to the evaluation of evidence on public health interventions (6, 8–10), and to the presentation and systematic review of study results (11–15).

4.2 Types of interventions and evidence on effectiveness

Most of the programmes that have been introduced or advocated to reduce the prevalence of HIV among adolescents are complex, often comprising combinations of components, such as:

- in-school teacher-led sex and/or life skills education;
- in-school peer education and/or mentoring or counselling;
- specific interventions (such as peer education) for out-of-school youths (including those who would be expected to be in school but are not), for specific groups of youths (for example, groups affiliated with religious organizations) and for groups at high risk of HIV (such as intravenous drug users, commercial sex workers or men who have sex with men);
- condom promotion and improved access to condoms (for example, through social marketing, health-worker training, providing supplies or reorganizing clinical services);
- youth-friendly health services;
- access to counselling and voluntary HIV testing;
- access to care, support and treatment for people who are HIV positive;
- community development approaches to modifying sexual and social norms;
- mass media approaches to changing social values, norms and behaviours;
- legislative changes.

These components may be targeted at different levels, including the individual (for example, by providing life skills training), the family (for example, by improving intrafamily communication about sexuality) and the community (for example, by providing access to youth-friendly health services, mass media campaigns aimed at changing norms in society regarding gender roles or interventions directed towards men to decrease girls' vulnerability). Furthermore, many of these specific components are, in themselves, complex interventions. To be effective, most would involve bringing about profound social and behavioural changes among both the implementers (for example, who

must respect confidences and understand and empathize with young people's concerns) and the potential target groups; however, evaluating such outcomes is notoriously difficult. Finally, when a programme is made up of several interventions, often with a different emphasis given to each, it is difficult to assess the relative effectiveness of each component.

The key policy questions are:

- which interventions should be selected?
- in which contexts are they appropriate?
- what proportion of the available resources should be allocated to each?

The complexity of the interventions and the inadequacy of evaluations of them mean that policy decisions will often need to be based only on partial or imperfect evidence. Some of the reasons for this imperfect evidence are summarised in Box 4.1.

Box 4.1

Obstacles to obtaining perfect evidence

HIV prevention interventions are complex

- There are numerous interventions and strategies to choose from.
- The content and quality of interventions may differ substantially from one another, and interventions may be implemented in different ways by different people. For example, two life-skills programmes in secondary schools that have different content and theoretical bases and are delivered in different ways are likely to have different impacts.
- The interventions needed to address the five UNGASS goals (see [chapter 1](#)) will be social interventions of varying and often substantial degrees of complexity. This will necessarily complicate their evaluation.
 - The mechanisms by which these strategies are meant to work are diverse, complex and poorly understood. In contrast to the biological mechanisms by which therapeutic drugs work, there is far less consensus on the workings of the social world in and through which behavioural interventions operate (16).
 - Lack of understanding of the mechanisms raises the added problem that purported intermediate outcomes may or may not be valid. For example, an increase in the skills needed to avoid HIV infection may not necessarily result in a reduction in HIV prevalence among adolescents.

- Specific interventions may be synergistic or even antagonistic, and yet most programmes will combine several intervention strategies, making evaluation of the effects of specific interventions or components within the programme package difficult or impossible to disentangle.

Evaluating interventions targeting young people is difficult

- Measuring the ultimate goal of reducing HIV prevalence among young people requires that substantial numbers of young people are followed up for several years at considerable cost.
- The validity of surrogate outcome measures, such as reported sexual behaviour, may be particularly problematic among young people because of the effects of social desirability biases, age differences between researchers and respondents, etc. (17).
- This age group is particularly mobile and therefore difficult to follow through longitudinal research.

Evaluation strategies cannot be standardized

- It is intrinsically easier to evaluate the effectiveness of some interventions (such as those targeted at individuals) than others (such as those targeted at whole communities or nations).
- The timescales in which the various interventions might work vary widely. For example, condom promotion and supply or treatment of other sexually transmitted infections may produce measurable outcomes in a relatively short time, while other approaches, such as changing the socioeconomic status of women, may be expected to have a substantial impact on HIV prevalence among adolescents only in the longer term. Furthermore, some interventions may have longer lasting effects than others.

Evaluation results are not always generalizable

- The impact of an intervention may vary substantially according to the setting in which it is delivered and the broader context. For instance, the effectiveness of a life-skills programme may differ according to the degree of control young women have over their sexuality in that culture.
- Furthermore, the impact of an intervention within a tightly controlled evaluation setting may be different from that within a routine programme.

The contested nature of evidence itself

- Different people accord different weight to different types of evidence. This often reflects their disciplinary background, and sterile debates between “positivists” and “interpretivists” or “relativists” have been at least as common as constructive discussions in this field (18).

The need to make decisions using imperfect evidence is the norm when formulating social policy. In fact, within the field of HIV prevention, the evidence available to enable us to make rational policy decisions, and the consensus among researchers and policy-makers, may be greater than it is in many other areas of social policy (19). One reason for this relative consensus has been the fact that explicit theoretical models for how interventions are postulated to work exist for most, if not all, of the major interventions that have been proposed for inclusion in programmes to reduce HIV prevalence in adolescents. These models are often imperfect, and empirical evidence for the causal chain within any given model is often weak and sometimes missing, but plausible models usually do exist, often based on social or psychological theory, though also occasionally on biological theory (such as the potential effectiveness of condoms if used correctly).

4.3 **Thresholds for strength of evidence needed for widespread implementation**

Some types of interventions need stronger evidence than others in order to be recommended for widespread implementation. The strength of the evidence needed depends on their feasibility (including cost), potential for adverse outcomes, acceptability, potential size of effect and potential for other health or social benefits.

- The more **feasible** the intervention, the lower the threshold of evidence needed. Key areas in this domain include the logistics, cost and human resources required for its implementation. The question is: can it be implemented on a large scale in a way that will be sustainable?
- The lower the **potential for adverse outcomes**, the lower the threshold of evidence needed. For example, is there any evidence that the intervention could actually lead to increased HIV incidence or to violations of human rights (20) or could it put individuals at an increased risk of domestic violence? Ideally, the assessment of potential adverse outcomes should not be limited to short-term outcomes among the specific individuals targeted but should also include longer-term outcomes within the wider community. For example, in evaluating male circumcision, the assessment should not restrict itself to the impact on the young men who are circumcised. It should also consider the possibility that encouraging male circumcision might lead to more circumcisions being performed in informal non-sterile circumstances, that appearing to endorse “circumcision” might lead to increased female genital cutting, and that it might increase sexual risk-taking because those circumcised may think they are “immune” from HIV and other sexually transmitted infections.

- The more **acceptable** the intervention, the lower the threshold of evidence of effectiveness required. The intervention's acceptability needs to be assessed not only among the target group but also among implementers, politicians, donors, religious and other community leaders, and within the wider community. A controversial intervention will require stronger evidence than a well accepted intervention simply because of the greater reluctance that policy-makers will have to introduce it because of the risk of opposition or protest from key stakeholders. For example, in most contexts policy-makers are likely to be reluctant to introduce active condom promotion and provision within primary schools and more likely to allow the provision of basic information about what HIV is and how it is spread.
- The greater the **potential size of the effect**, the lower the required evidence threshold. Not surprisingly, given the complexity described above, most interventions do not have empirical evidence of their impact on key outcomes such as HIV prevalence. In the absence of this, however, it might be possible to make a plausible assessment of maximum potential impact based on theoretical grounds, process evaluation data or data on intermediate outcomes. Policy-makers might be more willing to gamble on an intervention that has the potential to bring about a major beneficial impact (as long as its cost and potential for adverse outcomes are low and its acceptability and potential sustainability are high) than on another intervention that may have only a marginally beneficial impact. A related issue is the time required to achieve a measurable effect: the longer the time needed, the higher the evidence threshold.
- Some interventions, such as increased access to schooling for girls, may receive additional justification because they are associated with **other health or social benefits**. If so, policy-makers might reasonably have a lower threshold for the strength of evidence of the intervention's impact on HIV risk.

Subsequent papers in this series review the evidence on interventions in five different “settings”: schools, health services, geographically defined communities, specific population groups at high risk of HIV infection, and interventions delivered through the mass media. The grid in [Box 4.2](#) has been used in the “settings” papers in this series to decide what threshold of evidence a particular type of intervention requires in order for it to be recommended for widespread implementation in developing countries. The decision on the strength of evidence needed for widespread implementation should be taken prior to considering the actual evidence that is available for a particular type of intervention. The examples in [Box 4.3](#) illustrate why some interventions require stronger evidence (that is, have a higher evidence threshold) than others.

Box 4.2

Threshold of evidence needed to recommend widespread implementation in a developing country, based on five key attributes of the intervention

Threshold of evidence needed	Attributes of the intervention				
	Feasible	Low risk of adverse outcomes	Acceptable (to target population, practitioners, gatekeepers)	Large potential effect size	Other health or social benefits
Low	✓	✓	✓	D	D
Medium	D	✓	✓	D	D
High	X	X	X	X	X
Key					
✓ = necessary					
D = desirable					
X = not necessary					

Box 4.3

Examples of interventions and thresholds of evidence needed to recommend widespread implementation

Intervention	Feasible	Low risk of adverse outcomes	Acceptable (to target population, practitioners, gatekeepers)	Large potential effect size	Other health or social benefits	Threshold of evidence
Information ^a	Yes	Yes	Yes	Probably not	Yes (contraception may be used, prevalence of STIs ^c may be reduced)	Low
Condoms in schools ^b	Yes	Perceived potential to increase promiscuity (although there is evidence that this rarely, if ever, occurs)	No (especially among teachers and gatekeepers)	Yes	Yes (provides contraception, prevalence of STIs may be reduced)	High

^a For example, provision of basic information on the cause of AIDS, how it can be transmitted, and how it can be avoided, especially early in an epidemic.

^b For example, promotion of the use of condoms and provision of condoms within schools.

^c STIs = sexually transmitted infections.

For each type of intervention, the recommendations relating to whether a particular intervention should be implemented depend on the pre-defined threshold of evidence needed and the degree to which the evidence meets that threshold. Four kinds of recommendation are found in the papers: widespread implementation now (categorized as “Go”), widespread implementation with careful evaluation in terms both of outcomes and processes (“Ready”), implementation within specific evaluation studies but not yet in large-scale routine intervention programmes (“Steady”), or do not implement because there is strong evidence of a lack of effectiveness or there is evidence of harmful effects (“Do not go”) (see also [chapter 1](#)). In this series of papers, the guidelines in [Box 4.4](#) were developed to assist authors in reaching decisions about which recommendation should be made for each intervention.

4.4 What information do policy-makers need?

Ideally, detailed and clear information is needed on all of the following aspects of any intervention under consideration:

- a **detailed description** of the characteristics of the most promising approaches or strategies for implementing a particular intervention, including its content, delivery setting, intensity of implementation (for example, the number of hours of training or education involved) and the human, financial and other resource requirements;
- the **theoretical mechanism** by which the intervention is postulated to lead to a reduction in HIV prevalence in young people. Ideally, as well as there being a plausible mechanism, there should also be empirical evidence that the intervention actually works through this mechanism and evidence that relevant changes can occur through this mechanism. As will be discussed in the next section, this evidence need not necessarily come from the specific field of HIV prevention in young people or even HIV prevention at all. It could equally well be drawn from evaluations of interventions using the same mechanism to achieve other outcomes. For example, evidence of the effectiveness of mass media as a mechanism for influencing behaviour could come from interventions related to, for instance, drug abuse, healthier eating, safer driving or the use of seat-belts (18, 19);
- the **feasibility and cost** of its implementation, including its sustainability and acceptability to different stakeholders. For instance, there is little value in implementing an intervention that would be too expensive to disseminate widely, would require skills or knowledge that the implementers do not have or could be trained in readily, or that is resisted by the professionals that are meant to implement it. Clearly, taking practitioners’ views into account is likely to be critical in assessing feasibility;

Box 4.4

Guidelines for making recommendations of “Steady”, “Ready”, “Go” or “Do not go”

Minimum criteria to recommend		Interventions needing a high threshold of evidence to be reached				Interventions needing at least a low threshold of evidence to be reached			
		Go	Ready	Steady	Do not go	Go	Ready	Steady	Do not go
Quality of intervention									
Identified mechanism of action		✓	NN	NN ^a	NA	✓	NN	NN ^a	NA
Experiential base		✓	✓	✓	✓	✓	✓	✓	✓
Adequate intensity, duration and completeness		✓	✓	NN ^a	✓	✓	✓	NN ^a	✓
Quality of evidence for positive outcomes									
Careful pilot or informed judgement		NA	NA	✓	(Neg)	NA	NA	✓	(Neg)
Evidence of associations		NA	NA	NN ^a	(Neg)	NA	✓	NN ^a	(Neg)
Plausibility evidence ^b		NA	✓	NN ^a	Neg	✓	NN ^a	NN	(Neg)
Probability evidence ^c		✓	NN ^a	NN	Neg	NN	NN	NN	Neg
Evidence									
Probable size of positive effect ^d		≥M	≥S ^a	NA	Neg	≥S ^a	≥S ^a	≥S	Neg
Positive effect is in the cultural context being proposed		✓	NN ^a	NN ^a	Neg	✓	NN ^a	NN ^a	Neg
Consistency of findings in > 1 study		✓	✓	NN ^a	Neg	✓	✓	NN ^a	Neg

^a Areas where further research should concentrate.

^b Cases in which other potential explanations have been largely discounted.

^c Evidence from randomized controlled trials.

^d This is based on the statistical effect size plus the “reach” of the intervention.

✓ = necessary condition

NN = not a necessary condition

NA = not applicable

Neg = negative (harmful) effect is sufficient condition for “Do not go”

(Neg) = sufficient condition to recommend “Do not go” if lack of effectiveness or harmful effects found in several studies for this type of intervention

≥S = probable size of beneficial effect is at least small

≥M = probable size of beneficial effect is at least moderate.

- in evaluating the strength of evidence provided by a particular study, it is essential to have detailed evidence on the actual **process** of delivery of the intervention that establishes the extent and quality of delivery as well as evidence on intermediate indicators that support the theoretical mechanism of the intervention (16). For example, for an intervention based on in-school teaching sessions, process information might include data on the number and quality of sessions taught, attendance rates at these sessions and a qualitative assessment by the participants of the sessions' usefulness, appropriateness and relevance. The evidence collected by implementers or practitioners in their daily work can be valuable in offering insights into the daily operations of an intervention and into the kinds of evidence practitioners draw on in their work. Evidence and evaluations at the level of daily practice or through "learning by doing" are often needed to frame future policy. Yet evaluators sometimes do not take into account the key fact that – to be effective when it is scaled-up from a pilot project to the national scale – interventions are likely to need further modifications. Additionally, issues such as political commitment, feasibility, cost and acceptability to implementers and gatekeepers will increase in importance;
- the degree to which the intervention's effectiveness is dependent on the specific **context** in which it is being implemented, for instance the setting, the local and national sociocultural contexts and the specific time period or specific group involved. Information on the context will elucidate factors that may have been necessary preconditions for the intervention to have had the effects observed. Conversely, such evidence will help policy-makers decide on its likely generalizability to other settings or populations. If an intervention has been shown to be highly effective in multiple different, but relevant, contexts, this increases the likelihood that it may also be effective in a new context (21);
- the **effectiveness** of the intervention in achieving each of the five key UNGASS goals (1) described in the introductory chapter using appropriate outcomes. These goals are:
 - Goal 1 – provide appropriate information to young people and evidence of improvements in their resulting knowledge.
 - Goal 2 – provide appropriate skills training to young people and evidence of their ability to demonstrate these skills, and, if possible, evidence that they have actually used these skills to decrease their risk of becoming infected.
 - Goal 3 – provide appropriate skills-based training, equipment and supplies to health-workers and evidence of this resulting in increased delivery of effective, high quality health services to young people. In this context, the health services that are particularly important include

providing advice, counselling on the sexual health (and other concerns) of young people, condoms, treatment for sexually transmitted infections, HIV counselling and testing, and family planning. Clean needles, and other medical instruments and uninfected blood products are essential (see [chapter 6](#)).

- Goal 4 – provide evidence of decreased vulnerability to HIV among young people, such as changes in the attitudes and behaviours of adult community members, fewer girls having to resort to “survival sex”, and reductions in HIV prevalence among young people’s potential sexual partners.
- Goal 5 – provide evidence of a reduction in HIV prevalence among young people that can be attributed to the intervention.

Policy-makers will also need to know many other things: the scale, trends and likely future course of the epidemic in their region, country or district and within specific subgroups of the population (for example, among young people as a whole – that is, those aged 10–24 years, adolescents – those aged 10–19 years – and youths – aged 15–24 years, married and unmarried young people, rural and urban young people, injecting drug users, commercial sex workers and men who have sex with men). Furthermore, policy-makers are likely to put much more weight on some outcomes, such as a decrease in incidence or prevalence of HIV, than on other outcomes, such as those related to the global goals on knowledge, skills, services and vulnerability.

4.5 Assessing the quality of an intervention

Results from a high quality evaluation of a poor quality intervention (that is, an intervention that is badly conceived or badly implemented) merit less weight than those from a high quality evaluation of a good quality intervention. For example, only low weight should be given to the outcome results of a rigorous evaluation of an intervention in schools in which only 20% of the sessions were actually taught. On the other hand, a process evaluation that seeks to explain why this intervention was not delivered effectively in this particular context might be of great value for future attempts to develop an effective delivery strategy for this intervention.

Some criteria that may be used to assess the quality and appropriateness of an intervention are listed below.

- **Relevance:** How relevant is the intervention to HIV prevention among young people? Are the main objectives relevant? Is the intervention relevant to this context? For example, in contexts where most HIV infection is transmitted through injecting drug use, an intervention that ignores this mode of transmission will be of only limited relevance.

- **Experiential base:** To what extent was the intervention developed in the light of existing experience with similar interventions either by drawing on the literature or practitioners' experience?
- **Theoretical basis:** Is there an explicit and plausible theoretical mechanism by which the intervention is postulated to contribute to a reduction in HIV prevalence among young people? Added weight should be given to this criterion if there is evidence that a particular mechanism has worked in other contexts or for other outcomes. For example, if the intervention involves peer education, what is the evidence that peer education has worked in other contexts, such as among older adults or in high-income countries, or for other outcomes, for example programmes directed at preventing domestic violence or decreasing the consumption of alcohol, tobacco and other drugs?
- **Careful pilot testing:** Has the intervention undergone successful pilot testing in the relevant target group? Has it been appropriately evaluated and modified?
- **Feasibility:** Is the intervention logistically viable, acceptable to the relevant stakeholders, and can it be widely disseminated and sustained given existing and projected funds and human resources?
- **Quality and completeness of implementation:** Has the intervention been implemented to a high standard?

Other chapters in this series will address the extent to which specific interventions to achieve the global UNGASS goals meet these criteria.

4.6 **Types of evidence and their relative weight**

There is a wide array of types of evidence that can be used to guide policy. These range from informed judgements based on experience without any objective evidence of impact on the indicators of the five UNGASS goals through to evidence that is based on more rigorous qualitative and quantitative evaluations of the processes, implementation and outcomes of interventions. One can distinguish between criteria by which to assess the methodological quality or soundness of evidence in its own right and criteria by which more or less weight might be given to findings from different types of evaluation research of equally high quality.

4.6.1 ***Assessing the methodological quality of evidence***

The criteria for good evaluation evidence are largely the same as those for research evidence in general, and they can be found in numerous research

methodology textbooks (22, 23). Some of the main criteria that apply to both qualitative and quantitative research are summarized below.

- **Transparency:** How clear are all aspects of the research design, the theoretical framework for the study and the literature base? Are the aims and objectives explicit? Is there a clear description of the data collection methods and how the data were analysed? Is the completeness of the data clear (such as, refusals to participate, partial participation, losses to follow-up)? Are possible biases of the researchers made explicit?
- **Representativeness of the data:** Can the findings be assumed to apply to the whole population or group that they are purported to apply to?
- **Data presentation:** Are sufficient data included to mediate between the data and the interpretation?
- **Analysis:** Does the analysis take account of all relevant data?
- **Validity:** Is there an objective assessment of the internal and external validity of the indicators used?
- **Plausibility:** Is a plausible argument made as to why alternative potential explanations for the findings are unlikely or at least less likely than that the findings were due to the intervention itself?

4.6.2 *Criteria for attaching weight to different kinds of evidence*

Given interventions (section 4.5) and evaluations of equally high quality (section 4.6), policy-makers should place different values or weights on different types of evidence. Criteria that can be used to assess the weight that should be placed on evidence include the repeatability of the findings in similar and/or different contexts. Also, evidence based on multiple evaluations with consistent findings should receive more weight than evidence from a single evaluation. If a programme is to be implemented in a similar context to where the evaluations were done, the key issue will be the repeatability of the results from evaluations done in that context. However, for a new or different context, the key issues will be the repeatability of the results from evaluations done in as many different contexts as possible.

In terms of evidence related to the impact of interventions on health and social outcomes, a useful framework for categorising evidence from summative evaluations has been proposed by Victora, Habicht and colleagues (8, 9). This framework proposes three levels of evidence:

- adequacy evidence. (This is the term used by Victora, Habicht and colleagues (8, 9) though “supportive” might be a better term). For this level

of evidence, all that needs to be shown is that an intervention was implemented and the expected changes occurred;

- plausibility evidence. Here, in addition to the expected changes occurring, it needs to be shown that the effects related to the programme were greater than could be explained by any other external influences;
- probability evidence. In addition to plausibility evidence, it needs to be shown there was only a small statistical probability that the programme's observed effects would have occurred by chance. This type of evidence can come only from randomized controlled trials.

It is important to note that plausibility evaluations must include an adequacy component, and that probability evaluations benefit from assessing adequacy and plausibility at the same time (for example, through careful process evaluation and through comparisons of the effects among those who actually received the intervention, sometimes known as “compliers”, versus those in the group that was allocated to the intervention but did not receive it, sometimes known as “non-compliers”).

This hierarchical typology of evaluation evidence is demonstrated by the example given in [Box 4.5](#). In this framework, evidence may come either from experimental studies (randomized controlled trials or quasi-experimental studies) or from observational studies, such as cross-sectional, case-control or cohort studies. Quasi-experimental studies are those in which individuals or groups are deliberately and prospectively allocated to intervention or comparison groups, but this allocation is not done randomly. The advantages and disadvantages of randomized controlled trials for evaluating behavioural interventions have been discussed in detail elsewhere (2–9, 24). Assuming that both the design and implementation of the intervention and evaluation are of high quality, and that there is evidence of ethical practice and generalizability, the hierarchy of evidence used in this series of papers will be as follows. The greatest weight will be put on evidence from “probability evaluations” (that is, randomized controlled trials) that potentially provide very strong evidence. Next in the hierarchy will be quasi-experimental evaluations that have one or more contemporaneous comparison groups that potentially provide strong evidence. These will be followed by before-and-after or time-series evaluation studies in individuals or groups of individuals (all of whom receive the intervention) that potentially provide weak-to-moderate evidence depending on the degree to which other potential causes of any observed effects have been ruled out. The least weight will be given to reports of anecdotal or experiential evidence or informed judgement, which potentially provide very weak to weak evidence depending on the degree to which other potential causes of any observed effects have been ruled out.

Examples of evaluations providing supportive (adequacy), plausibility, and probability evidence

Example: A condom promotion programme is initiated among young people throughout a developing country using mass media and social marketing approaches.

Key outcome evaluated: Use of condoms

Supportive (adequacy) evaluation: The number of condoms recorded as having been distributed to young people and the proportion of sexually active young people who reported having used a condom during their last sexual intercourse were substantial after the introduction of the intervention.

Plausibility evaluation: In addition to supportive (adequacy) evidence, there is well documented evidence that both the condoms distributed and the proportion of young people using condoms were substantially greater than before the programme was launched. This could be demonstrated from before–after or time-series studies. There is also evidence that the impact was proportional to the intensity of the intervention in various geographical areas or among various population groups, and the impact was substantially greater in areas that received the intervention when compared with areas that did not. This is best demonstrated through quasi-experimental methods using a control group that is similar to the intervention group. Finally, there is documented evidence that no other activities or background (secular) changes could explain the effects seen. It is therefore plausible that the programme was responsible for the increases that were observed.

Probability evaluation: In addition to plausibility evidence, a sufficient number of individuals (or, where relevant, clusters of individuals) were randomly allocated to receive the new programme. For example, the programme was phased in and during the initial evaluation phase 12 regions were randomly allocated to receive the programme immediately, while the other 12 received the programme after the probability evaluation (randomized controlled trial) period.

Two important caveats should be emphasized. First, there is an important distinction between evaluations of efficacy and effectiveness. Efficacy studies aim to measure the impact of an intervention when delivered in a manner that is as close as possible to the ideal; effectiveness studies measure impact when the intervention is delivered through routine real-life channels. Usually the efficacy of an intervention will be greater than its effectiveness when implemented on a large scale through routine channels. The second caveat is the importance of considering context (for example, delivery setting, culture, country or timing) in evaluating all such evidence. The fact that there may be strong evidence from a well conducted plausibility or probability evaluation that a particular intervention has the intended effects, does not necessarily mean that it will bring similar benefits if implemented in a different context. For instance, bar-based HIV peer education for gay men was effective in the United States of America in the early 1990s (25) but not in Scotland a decade later, probably because of different cultural norms and the fact that the intervention was implemented at a different stage in the epidemic (26). It is important, therefore, to include at least an adequacy or plausibility evaluation when an intervention that has been found to be efficacious or effective in one context is implemented in a substantially different context.

For simplicity, in this series the policy recommendations (“Do not go”, “Steady”, “Ready” or “Go”) will be made for developing countries as a whole. However, policy-makers should review these in the light of local contexts to ensure that the interventions are important and relevant to their context. For example, the priority given to interventions among intravenous drug users will obviously depend on the frequency of intravenous drug use; equally well the likely effectiveness of interventions in schools will depend on, among other things, the proportion of young people in the relevant age group who attend school.

Information that comes from informed judgment – that is, the considered assessments, decisions and opinions of experienced practitioners or key informants – constitutes a different kind of evidence. This might ordinarily be thought of as being less objective in scientific terms and may not always fit directly into the three-part model discussed above. Nevertheless, such evidence can offer important guidance to policy-makers in the absence of evidence of adequacy, plausibility or probability from formal evaluations of a programme’s impact. It can also be useful for triangulation with other data to provide extra certainty in terms of indicators of a programme’s operations and effects when aspects of programmes are not documented in ways that are easily accessed by other methods of data collection. Informed judgement and expert-generated evidence (sometimes called evidence of best practice) can be gathered by methods such as interviewing key informants and Delphi scans (27). Each of these methods may have different levels of theoretical

sophistication and methodological rigour depending on the design and resources deployed. Such techniques gain strength with repetition over time (for example, repeated interviews with key informants used as a part of a process evaluation) and can be particularly valuable in contextualizing interventions.

Ideally all the different types and sources of evidence for and against the likely effectiveness of an intervention should be appraised in the assessment of whether that intervention should be adopted. The decision should be taken after careful appraisal of the quality of the intervention (see 4.5), the quality of each piece of evidence (see 4.6.1), assignment of weights based on both the evidence threshold for that type of intervention (see 4.3) and the strength of the evidence available (see 4.6.2). To some extent this follows Tones' argument for the use of a "judicial review" in deciding on interventions (28) but, unlike us, he avoids weighting one kind of evidence over another and simply calls for triangulation.

Common situations faced by policy-makers include that of having different types of evidence for different interventions or a situation in which the evidence for one intervention is more comprehensive than that for another. In these situations it will be important to carefully assess the evidence and be explicit about what weight is assigned to the different types of evidence. This can be illustrated by comparing the evidence available for the "Stepping Stones" community-wide intervention in the Gambia (29) with the evidence available from a recent trial of a complex package of interventions largely targeted directly at young people within the "MEMA kwa Vijana" project in the United Republic of Tanzania (30). Put simplistically, there is now a lot of evidence from relatively small-scale programmes that the Stepping Stones approach is feasible to implement (if expensive per person involved) and is associated with changes in knowledge, reported attitudes and reported sexual behaviours (31). However, no evaluation has yet reported on the impact of the Stepping Stones community-wide interventions on HIV incidence or prevalence or on other biological markers of sexual behaviour. The relatively large-scale MEMA kwa Vijana project showed that the package of interventions tested within this rigorous community-based randomized trial resulted in substantial improvements in knowledge, reported attitudes and some reported sexual behaviours. However, this trial also evaluated the impact on HIV and other biological markers of sexual risk behaviour, and showed that, at least within a 3-year follow-up period, there was no consistent impact on these biological outcomes (32, 33). Policy-makers may be tempted to choose the Stepping Stones intervention because there is no discouraging, short-term biological outcome data but this would be illogical.

Policy-makers must beware of equating evidence from high quality, rigorous evaluations with evidence from less rigorous evaluations. Although a recent systematic review comparing effect sizes in randomized and non-randomized studies did not find a consistent difference (34), for interventions of equal quality and effectiveness, the less rigorous the evaluation the more likely it is to give encouraging results (35, 36). This has been demonstrated in a review of pregnancy prevention among adolescents (37) and presents a real threat to evidence-based decision-making when rigorous evaluations are not available.

4.7 Conclusion

This chapter has proposed a method for reviewing evidence on the effectiveness of interventions that aim to contribute towards achieving the global goals related to HIV prevention among young people in developing countries (improving access to information, skills and services; reducing vulnerability; and reducing HIV prevalence). This method has been used in the five chapters that follow, each of which reviews the evidence for the effectiveness of interventions in a key prevention setting or population group (in schools, health services, geographically-defined communities or groups at high risk of HIV, and through the mass media).

The method involves the following key steps.

1. Define the key types of intervention that policy-makers need to choose between in the population setting under consideration (for example, schools).
2. Define the strength of evidence that would be needed to justify the widespread implementation of this type of intervention (“the evidence threshold”).
3. Describe explicit inclusion and exclusion criteria for the studies that will be reviewed.
4. Critically review all studies that meet the inclusion criteria and their findings, by type of intervention. This review should include a critical appraisal of:
 - the quality of the intervention. In particular, is it feasible and does it have a clearly identified mechanism by which it operates in order for it to be effective?
 - the data on the process of implementation. Is there evidence that intermediate outcomes predicted by the theoretical mechanism of action are achievable?
 - the context. Is the context in which the evaluation evidence was generated relevant to the context in which the intervention is now proposed?

- the quality. What was the quality of the outcome evaluations, and what were their findings?
5. Summarize the strength of the evidence for the effectiveness of each type of intervention in making progress towards each of the global goals.
 6. Compare the strength of the evidence provided by the studies against the threshold of evidence needed to recommend widespread implementation.
 7. From this comparison, derive evidence-based recommendations related to implementation of each type of intervention in this setting or population group, putting each type of intervention into one of the “Do not go”, “Steady”, “Ready” or “Go” categories.

It is important not to be misguided by positive results from poor research. We argue that it is preferable to roll-out a well evaluated programme with good evidence of modest impact than to roll-out a poorly evaluated programme with weak evidence of a larger impact.

The evidence on which we have to make decisions about interventions to prevent the spread of HIV is extremely complex, being about different kinds of interventions, most of which are themselves complex, and arising from diverse evaluation methods. Furthermore, the evidence is imperfect, particularly due to the scarcity of rigorous evaluations of outcomes. Another complication in assessing the evidence is that the very existence of evidence for some interventions and not for others does not occur for reasons that are neutral, but is often the result of past policy preferences, the intrinsic ease of conducting either the intervention or its evaluation, or because the intervention has been seen as controversial. In spite of these difficulties, policy-makers must strive to apply rigour and logic to the selection of intervention strategies, resisting political and other pressures that fly in the face of the evidence.

Finally, even if the evidence that is available leads policy-makers to invest in a particular intervention, this does not mean that there is sufficient evidence about that intervention. Rather, we should always be building on and refining the evidence in the course of implementing public health interventions. Furthermore, evaluators should strive to provide as much detail as possible about the actual intervention, process indicators of the coverage and quality of its implementation, and its costs and effectiveness.

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5. The effectiveness of sex education and HIV education interventions in schools in developing countries

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Objective To review the impact of sex education and HIV education interventions in schools in developing countries on both risk behaviours for HIV and the psychosocial factors that affect them.

Methods We conducted a systematic review. Searches identified studies in developing countries that evaluated interventions using either experimental or strong quasi-experimental designs and measured the impact of the intervention on sexual risk behaviours. Each study was summarized and coded, and the results were tabulated by type of intervention.

Findings Twenty-two intervention evaluations met the inclusion criteria: 17 were based on a curriculum and 5 were not, and 19 were implemented primarily by adults and 3 by peers. These 22 interventions significantly improved 21 out of 55 sexual behaviours measured. Only one of the interventions (a non-curriculum-based peer-led intervention) increased any measure of reported sexual intercourse; 7 interventions delayed the reported onset of sex; 3 reduced the reported number of sexual partners; and 1 reduced the reported frequency of sexual activity. Furthermore, 16 of the 22 interventions significantly delayed sex, reduced the frequency of sex, decreased the number of sexual partners, increased the use of condoms or contraceptives or reduced the incidence of unprotected sex. Of the 17 curriculum-based interventions, 13 had most of the characteristics believed to be important according to research in developed and developing countries and were taught by adults. Of these 13 studies, 11 significantly improved one or more reported sexual behaviours, and the remaining 2 showed non-significant improvements in reported sexual behaviour. Among these 13 studies, interventions led by both teachers and other adults had strong evidence of positive impact on reported behaviour. Of the 5 non-curriculum-based interventions, 2 of 4 adult-led and the 1 peer-led intervention improved one or more sexual behaviours.

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Conclusions A large majority of school-based sex education and HIV education interventions reduced reported risky sexual behaviours in developing countries. The curriculum-based interventions having the characteristics of effective interventions in the developed and developing world should be implemented more widely. All types of school-based interventions need additional rigorous evaluation, and more rigorous evaluations of peer-led and non-curriculum-based interventions are necessary before they can be widely recommended.

5.1 Introduction and background

In many respects, schools are well placed to achieve the ultimate goal of decreasing HIV prevalence among youths. In many societies they are the one institution that is regularly attended by most young people. Of those youths who attend school, most do so before they begin having sexual intercourse, and many are enrolled in school when they actually initiate sex. Thus, schools provide an opportunity for interventions to achieve high coverage of young people before or around the time they become sexually active; they also offer the opportunity to encourage young people to delay the onset of sexual activity and increase their use of condoms and contraceptives after sexual initiation. Of course, school-based interventions are less useful where many or most adolescents are no longer in school.

This chapter will examine school-based interventions in relation to the global goals of the United Nations General Assembly Special Session on HIV/AIDS for young people (UNGASS) (1). Briefly, these goals are to provide young people with access to information (goal 1), with skills to avoid becoming infected with HIV (goal 2), with access to services (goal 3) and to decrease their vulnerability to infection (goal 4) as well as decrease the prevalence of HIV among young people (goal 5).

Numerous, well-conducted studies have demonstrated the effectiveness of school-based programmes in producing improvements in knowledge about how to avoid HIV infection in developing countries (2–4). However, the evidence is much less clear about the effectiveness of schools in meeting the remaining goals. This is partly due to difficulty in formulating and measuring outcomes such as skills, vulnerability and HIV prevalence (5). It may also be because refusal, negotiation and condom-use skills require teaching techniques or cultures that are often unfamiliar to school environments in the developing world (6–9). However, in order to truly affect HIV prevalence, schools in the developing world must move beyond making an impact on knowledge alone to demonstrating significant and sustained improvements in sexual risk behaviours and addressing the more complex affective factors

influencing them, such as the values, attitudes and perceived norms about sex and condom use (8, 10).

There have been a few reviews of studies that examined school-based interventions in the developing world and that examined their impact on behaviour. However, they have been limited by a focus on a particular geographical area (2) or by the strengths of the evaluations, and they have not examined the characteristics of interventions in developing countries worldwide (4, 11, 12).

One review has identified key characteristics of curriculum-based interventions shown to be effective in changing behaviours in both developed and developing countries in the settings of schools, clinics and other community organizations (12). However, similar analyses are needed of all school-based programmes in developing countries if schools are to fulfil their potential for combating HIV among youths.

5.1.1 **Objectives**

This article reviews the literature on the effects of school-based sex education and HIV education interventions on sexual risk behaviours among young people in all developing countries. This review builds on previous work (2–4, 7, 8, 11–14) by (i) focusing specifically on studies that examine an intervention's impact on sexual behaviour, (ii) including more intervention studies that measure the impact on behaviour than previous reviews, (iii) assessing the strength of the evaluation design of different study strategies and (iv) assessing the characteristics of effective interventions.

5.1.2 **Schools and their interventions**

For the purposes of this review, schools are defined as any formal educational establishment providing training or education to youths who are younger than 25 years of age. As the field of HIV prevention evolves, schools are increasingly being included as part of multicomponent HIV interventions. This review evaluates such interventions only if the specific impact of the school intervention has been separately evaluated or if the school component represents the major part of the overall intervention and a substantial part of the overall impact of the intervention could be attributed to the school intervention.

A large number of sex education and HIV education interventions are being implemented in schools worldwide. They vary widely in terms of objectives, structure, length, content, implementation strategy and other characteristics (4, 12, 13). In practice, however, the choice and implementation of interventions in schools in developing countries is constrained by the availability of

teachers and curricular materials as well as teacher training; access to other financial, material and technical resources; and the culture and norms of both the local communities and the schools themselves (9, 15). Inadequate levels of training and the prevalence of didactic teaching methods may mean that teachers are sometimes unable to use the participatory, student-centred techniques that are often necessary for effective skill building (6, 9). Furthermore, in many societies, resistance among teachers to discussing sexual behaviour with adolescents or issues such as age, sex and status differentials may mean that pupils or teachers, or both, feel uncomfortable discussing sexual matters in the classroom (8, 16). Resistance to discussing the use of condoms is particularly widespread in schools (2, 9); authors have reported that sometimes, where discussions of condoms are included in an intervention, the information communicated to pupils about condoms has been mostly negative in order to discourage condom use and encourage abstinence (17).

In order to overcome some of these obstacles to school-based interventions, programme developers and staff have provided structured curricula to guide activities, have trained teachers, and have involved trained individuals other than teachers in delivering the interventions. Curriculum is defined here as an organized set of activities or exercises designed to convey specific knowledge, skills or experiences in an ordered or incremental fashion. Such activities may be implemented either in the classroom during the school day or after school.

5.1.3 ***Categories of interventions***

School-based interventions can be categorized according to at least three different dimensions. These are described below. (In reviews of school-based interventions, whether the school was primary, secondary or post-secondary might be considered important. However, in this review, all of the studies of interventions in primary schools were conducted in Africa and the age range of the youths who participated – 10 to 18 years – was within the age range of youths in secondary schools in other developing countries – 10 to 25 years. Thus, studies were not grouped by school level in this review.)

5.1.3.1 *Curriculum-based versus non-curriculum-based*

Curriculum-based interventions are often more intensive and more structured than non-curriculum-based interventions. In addition, curriculum-based interventions are more likely to be based on theory and previous research and may have been extensively pilot-tested and sanctioned by the appropriate authorities. The curricula serve to guide and inform the educators, and their use may overcome or ameliorate some of the educators' personal prejudices

or limitations in teaching skills. These characteristics may enhance the effectiveness of these interventions.

Non-curriculum-based interventions include a variety of activities such as one-on-one spontaneous or opportunistic counselling about sexual activity and HIV while the student is on school grounds, school health fairs, dramas that present stories about HIV during school assemblies, the use of posters or leaflets, or combinations of these. Some of these activities may be easier to implement in schools, at least initially, because they may not require that teachers be trained. In addition, some people have argued that spontaneous one-on-one interaction between educators and youths may be more effective, given the personal nature of sexual behaviour. However, such interactions require a degree of sensitivity, skill and empathy that may be beyond the scope of many implementers or may necessitate a high level of training.

5.1.3.2 *Interventions with and without characteristics of effective curriculum-based interventions*

There are a variety of other characteristics of interventions, especially curriculum-based interventions, that may affect their effectiveness (for example, the focus of the activities, the information provided and the instructional methods implemented).

In developed countries, there have been at least 65 evaluations of curriculum-based sex education and HIV education interventions, and there have also been additional studies of non-curriculum-based interventions. Reviews of these studies have identified some of the characteristics of interventions believed to be important in producing behavioural change (12, 14, 17–21).

While these characteristics of effective interventions have not been derived from interventions used primarily in developing countries, they nevertheless provide a potential set of guidelines that can be used to assess these interventions in developing countries. The most recent set of characteristics identified by Kirby et al. (12) is based on the greatest number of studies and includes some studies from developing countries. That review identified 17 characteristics that appear to distinguish effective programmes and that describe programme development, the curricula and programme implementation. These characteristics are described in [Box 5.1](#).

Box 5.1

Characteristics of effective curriculum-based programmes

Developing the curriculum		Content	Implementation
1. Involve multiple people with different backgrounds in theory, research and sex/HIV education. 2. Assess relevant needs and assets of target group. 3. Use a logic model approach to develop the curriculum that specifies the health goals, the behaviours affecting those health goals, the risk and protective factors affecting those behaviours, and the activities addressing those risk and protective factors. 4. Design activities consistent with community values and available resources (such as staff time, staff skills, facility space and supplies).	Curriculum goals and objectives 1. Focus on clear health goals, such as the prevention of STIs^a and HIV and/or pregnancy. 2. Focus narrowly on specific behaviours leading to these health goals (such as abstaining from sex or using condoms or other contraceptives); give clear messages about these behaviours; and address situations that might lead to them and how to avoid them. 3. Address multiple sexual–psychosocial risk and protective factors affecting sexual behaviours (such as knowledge, perceived risks, values, attitudes, perceived norms and self-efficacy).	1. Secure at least minimal support from appropriate authorities, such as ministries of health, school districts or community organizations. 2. Select educators with desired characteristics, train them and provide monitoring, supervision and support.	
		Activities and teaching methods 4. Create a safe social environment in which youths can participate.	3. If needed, implement activities to recruit and retain youths and overcome barriers to their involvement (for example, publicize the programme, offer food or obtain consent from youths or parents). 4. Implement virtually all activities as designed.

5. Pilot-test the program.	5. Include multiple activities to change each of the targeted risk and protective factors. 6. Use instructionally sound teaching methods that actively involve participants, that help participants personalize the information and that are designed to change each group of risk and protective factors. 7. Use activities, instructional methods and behavioural messages that are appropriate to the culture, developmental age and sexual experience of the participants. 8. Cover topics in a logical sequence.
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Source: Kirby D, Laris BA, Roller 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.

^a STIs = sexually transmitted infections.

5.1.3.3 *Adult-led versus peer-led interventions*

The choice of educator also represents a balance among pedagogy, prevailing culture and infrastructure capacity. Adults most commonly implement curriculum-based interventions because typically they have more of the experience, knowledge and skills needed. The adults who implement a particular curriculum may include both schoolteachers and others, such as health-workers.

Teacher-led interventions are logistically the easiest to implement in schools once teachers have been adequately trained. Such interventions are also highly replicable. However these benefits may be offset by the limitations of teachers discussed above, including their status in relation to pupils or their discomfort in using interactive teaching methods and discussing sensitive topics such as adolescents' sexual behaviour.

Because of these limitations, people in some communities favour using health-workers or other local experts to teach these curricula. These experts may be more knowledgeable about the sexual topics covered, more comfortable discussing these topics and more comfortable using interactive learning methods. In addition, using health-workers or other trained adults to discuss sensitive matters, such as condoms, in schools may help teachers avoid the internal conflicts mentioned above and may allay fears of community censure. However, limited infrastructure, transportation, time and other resources may prevent health-workers from teaching intensive and lengthy curricula to many students in many schools.

Peer educators have been widely advocated as alternatives or adjuncts to teachers or other adults (22). Many believe that peer educators may be able to relate more closely to other young adults than older adults can. However, peers are less likely to be knowledgeable about these topics and less likely to have the skills needed to teach curriculum activities (23). Furthermore, the inevitable annual student turnover and subsequent requirements for recurring training and supervision raise doubts about the sustainability and cost effectiveness of using peer educators (11).

In order to provide a discussion that is helpful to programme developers, we have categorized all 22 interventions studied according to whether they are based on a curriculum, whether they incorporate most of the characteristics in [Box 5.1](#) and whether they are taught by adults or peers. These three dimensions produced the following six categories with one or more studies per category:

- curriculum-based interventions that incorporate most of the 17 characteristics and are led by adults;

- curriculum-based interventions that incorporate most of the 17 characteristics and are led by peers;
- curriculum-based interventions that lack several of the 17 characteristics and are led by adults;
- curriculum-based interventions that lack several of the 17 characteristics and are led by peers;
- non-curriculum-based interventions that incorporate several of the 17 characteristics and are led by adults;
- non-curriculum-based interventions that lack several of the 17 characteristics and are led by peers.

5.2 Methods

5.2.1 *Identification of studies*

For this review, we sought to identify and retrieve studies meeting the criteria in [Table 5.1](#). For the most part, the review is limited to studies that measured an intervention's impact on behaviour for two reasons: first, because it is well established that school-based sex education and HIV education interventions can increase knowledge (all studies that measured impact on knowledge found a positive impact) and second because changes in knowledge, skills and other mediating factors will not lead to a decrease in HIV prevalence unless behaviour also changes.

In order to identify and retrieve as many of the studies from developing countries as possible we:

1. reviewed the results of a previous search for studies undertaken by ETR Associates and the University of Minnesota and identified those studies meeting the criteria specified above;
2. reviewed studies already summarized in previous reviews of these interventions;
3. reviewed multiple computerized list-serves for studies meeting the criteria (including PubMed, PsycINFO, POPLINE, Sociological Abstracts, Psychological Abstracts, Bireme, Dissertation Abstracts Online, ERIC, Combined Health Information Database – CHID, and Biological Abstracts);
4. contacted researchers in the process of completing studies and obtained results (sometimes preliminary) whenever appropriate and possible;
5. attended professional meetings, scanned abstracts, spoke with authors and obtained studies whenever possible;

Table 5.1
Inclusion and exclusion criteria used to identify studies for review

Inclusion criteria	Exclusion criteria
Characteristics of the programme	
Programme was implemented in a developing country	Programme was implemented in developed country
Programme implemented in primary, secondary or post-secondary schools (for example, night schools or universities)	
Focused on young people aged ≤ 24 years	Focused on a cross-section of age groups that included some young people but did not include a sample with at least 80% of participants aged < 25 years
Characteristics of the study	
Was published in English	
Used a reasonably strong experimental or quasi-experimental design with both intervention and comparison groups and baseline and follow-up data	Lacked a comparison group or baseline and follow-up data
Had a minimum sample size of 100	
Measured the impact of the programme on one or more reported sexual behaviours (initiation of sexual intercourse, frequency of sexual intercourse or number of sexual partners), reported use of condoms or contraception, pregnancy rates, birth rates and STI ^a rates	Measured impact only on knowledge, values, attitudes or intentions and not behaviour
Was completed or published between January 1990 and June 2005	

^a STI = sexually transmitted infection.

6. scanned each issue from 1990 to 2005 of 12 journals in which relevant studies might appear;
7. reviewed reports of intervention development, training materials, and process evaluation reports.

5.2.2 **Threshold of evidence needed for widespread implementation**

Overall, because of the potential ability of school-based interventions to be implemented broadly and to reach large proportions of young people, these interventions should require low-to-moderate thresholds of evidence before being recommended for widespread implementation. However, because the discussion of sexual activity, especially condom use, in schools may be controversial, the threshold varies somewhat according to the community, the

grade level in which the intervention is designed to take place and the intervention's content, targeted behaviour and implementer. Conclusions made in this review are based on the consideration of these issues and thresholds (Table 5.2).

5.2.3 *Review of studies*

All studies were summarized in a template by one of this review's authors (BL) and then reviewed by a second author (DK). The summaries were then sent to the author of the original study for verification. Changes were made as appropriate. The complete version of these summaries is available on the web (www.who.int/child-adolescent-health/).

For this review, all reported outcomes (for example, effects on behaviour) were considered significant if they were statistically significant at the 0.05 level and this significance was based either on the total sample or a subsample that was roughly one third of the total sample or larger (for example, either males or females, youths younger or older than a certain age, or sexually experienced or sexually inexperienced youths). Some studies found significant effects for important subgroups but not for the entire sample.

Studies sometimes reported results for multiple measures of each behaviour, for different time periods, for different subgroups or for combinations of these. Thus, some studies reported only one or a small number of significant positive effects on behaviour as well as a large majority of results that were not significant. To avoid presenting only the positive results and to provide a more balanced overview, the following rules for summarizing results were adopted. First, for different measures of the same outcome behaviour: all measures across all the studies were rank-ordered according to their probable impact on prevalence. For example, the use of condoms over a long period of time was ranked higher than condom use at first sexual intercourse. Only the results from the highest ranked measure reported in each study were included in the tables. Second, because short-term effects on behaviour would have little impact on HIV prevalence, only those results reported for periods of 3 months or longer were included in the tables. In addition, because studies were not likely to have sufficient statistical power to measure the impact on those behaviours or outcomes that change slowly (that is, initiation of sex, pregnancy rates or rates of sexually transmitted infections [STIs]), only those results measuring impact on these outcomes for at least 6 months were included.

Table 5.2

Threshold of evidence needed to recommend widespread implementation of each type of intervention

Intervention type	Criterion ^a				Overall Threshold	Comments
	Feasibility	Lack of potential for adverse outcomes	Acceptability	Potential size of effect	Other health or social benefits	
By broad intervention type						
Curriculum-based	++	+	+	+++	+	Low
Curriculum-based interventions provide considerable guidance to the educator about implementing the intervention and may have been previously evaluated. Thus, they have less potential for adverse outcomes and a greater potential effect size than interventions that are not curriculum-based.						
Not curriculum-based	+++	-	+	+	+	Low
Interventions that are not curriculum-based may be easier to implement and may not require as much classroom time or as much training of as many educators as curriculum-based interventions.						
By characteristics of the intervention^b						
With characteristics of effective interventions	+	++	+	+++	+	Low
Characteristics of effective interventions require that the intervention focus on HIV, other STIs ^c and pregnancy, the risk and protective behaviours affecting them and that they use interactive activities to change behaviours. These characteristics might make the intervention more difficult to implement and less acceptable to those who prefer not to focus on sexual behaviour. However, they greatly increase the potential size of the effect.						
Without characteristics of effective interventions	++	++	++	+	+	Low
Interventions without effective characteristics may be easier to implement and more acceptable. However, their estimated effect size is smaller.						

By type of educator							
Adult-led (teacher)	++	-	+	++	+	Low	Teachers may have to be trained both to discuss sexual topics and to use interactive teaching methods. Once trained, they can implement the intervention during school at relatively little cost. There is the possibility of male teachers taking advantage of discussions of sexuality to pressure female students to have sexual relations.
Adult-led (other adult)	++	+	++	++	+	Low	Other adults (such as community health personnel) may be more accustomed to discussing sexual topics and may have learnt how to use interactive teaching methods. However, ongoing resources are needed to allow them to travel to schools and implement interventions.
Peer-led	+	+	+	++	++	Low	Peers may require considerable training before they have the knowledge and skills to implement an intervention. They may require resources to travel to the schools, and they will mature and cease being peers after a few years thereby creating a need for ongoing recruitment and training.
By school level							
Primary school	++	-	-	+	+	Moderate	Peers may learn important skills as peer educators.
							The possibility of male teachers taking advantage of their power and the discussion of sexuality to pressure female students to have sexual relations is most likely in primary school or secondary school. The discussion of condoms in primary school may be less acceptable initially to some adults in the community. Abstinence-only interventions may be more acceptable, but may have less impact (or a negative impact) on condom use.
							Interventions may have a greater impact on delaying sexual relations among primary and secondary school students, at a time before most young people have sexual relations, than in post-secondary school when most students have already had sexual relations.

Intervention type	Criterion ^a					Overall Threshold	Comments
	Feasibility	Lack of potential for adverse outcomes	Acceptability	Potential size of effect	Other health or social benefits		
Secondary school	++	-	+	++	+	Moderate	The possibility of male teachers taking advantage of their power and the discussion of sexuality to pressure female students to have sexual relations is most likely in primary school or secondary school. Interventions may have a greater impact on delaying sexual relations among primary and secondary school students, at a time before most young people have sexual relations, than in post-secondary school when most students have already had sexual relations.
Post secondary schools	++	+	++	+	+	Low	Interventions may have a greater impact on delaying sexual relations among primary and secondary school students at a time before most young people have sexual relations than in post-secondary school when most students have already had sexual relations but intervention in post secondary school may still have an impact on condom use.

^a Degree of desirability is indicated with a maximum of 3 "+" signs. Degree of undesirability is indicated with a maximum of 3 "-" signs.

^b See [Box 5.1](#) and the text for full description of these characteristics.

^c STIs = sexually transmitted infections.

Even these rules for summarizing the results may have provided a more positive picture than an analysis of all the results from all studies. However, this probable positive bias was offset by a different negative bias: many results presented in the studies were based on samples with insufficient power. Thus, interventions may have produced programmatically meaningful results that were found to be not significant. (Insufficient statistical power is further discussed in the section below.)

5.3 Findings

Our search identified 22 studies (16, 17, 24–44) meeting the inclusion criteria. The characteristics of the 22 interventions and their respective evaluations are summarized in [Table 5.3](#) and [Table 5.4](#), respectively. The impact of all these interventions on specified behaviours is summarized in [Table 5.5](#) as well as in [Table 5.4a](#) and [Table 5.4b](#).

5.3.1 *Characteristics of interventions*

Of the 22 studies and respective interventions, 17 were curriculum-based and 5 were non-curriculum based. Of the 17 curriculum-based interventions, 14 incorporated at least four fifths of the characteristics described in [Box 5.1](#). Altogether, 15 of the 17 were taught primarily by adults and 2 were taught solely by peers. Of the 15 taught by adults, 10 were taught by the schools' teachers and the remaining 5 were taught by other adults, such as health-workers, trained counsellors and facilitators, and young adult volunteers. However, of the 15 interventions led by adults, 2 also involved peer educators in significant ways. Of the five non-curriculum-based interventions, four were primarily led by teachers or other adults and one by peers.

A total of 16 of the interventions evaluated had been implemented in secondary schools; five had been implemented in primary schools; and three had been implemented in night schools or teacher-training colleges. (The sum exceeds 22 because one intervention was implemented in both primary and secondary schools and another in both secondary and night schools.)

Finally, only three of the interventions were abstinence-only interventions; the remainder of the interventions encouraged abstinence but also discussed or promoted the use of condoms or contraception for young people who chose to be sexually active.

5.3.2 *Characteristics of the studies*

Eight of these studies used an experimental design, while the remaining 14 used a quasi-experimental design. In order to be included in the review, all

Table 5.3

Descriptions of the interventions by study

Study, location and programme	Target population and primary objectives	Description
Curriculum-based interventions with characteristics of effective programmes		
Adult-led (teachers)		
A – Thailand, Teens on Smart Sex (16)	• Youths aged 18–21 years in urban areas • Targeted sexual initiation, number of partners and condom use	• 16 hours • Addressed issues of love, attitudes toward HIV and sexuality, living with HIV/AIDS, HIV and pregnancy prevention, health services • Practiced negotiating skills
B – Chile, Teen Star (24)	• Youths aged 15–16 years in urban areas • Pregnancy prevention	• Minimum 10.5 hours involving participants in group discussions, brainstorming • Tackled issues such as gender, prejudice, anatomy, puberty, fertility, emotions, media, self-assurance, decision-making, marriage and family, family planning methods, pregnancy and birth • Used class discussions, fertility awareness activities, role-playing and homework
C – United Republic of Tanzania, “Ngao” (25)	• Youths aged 10–16 years in urban and rural areas • Targeted sexual initiation	• 20 hours over 2–3 months • Covered transmission of AIDS, personal HIV risk, refusal skills, communication with parents and community • Used lectures, posters, songwriting, discussion, role-playing, etc. • Tackled issues such as abstinence, condom use, school planning, guidance, transmission and prevention of STIs,^a HIV and AIDS; life skills; health, sexuality, HIV management • Used participatory methods • Set up school health clubs
D – Kenya, Primary school action for better health (17)	• Youths aged 11–17 years in urban and rural areas • Targeted sexual initiation	
E – Mexico, Planeado tu Vida (26)	• Youths with mean age 14.4 years • Targeted sexual initiation and contraceptive use	• Discussed relationships, sexuality, anatomy, physiology, reproduction, STIs, contraception, decision-making, consequences, self-esteem, values, communication, assertiveness • Used role-plays and writing exercises

F – South Africa, Life skills (27, 28)	- Youths aged 12–21 years in urban and rural areas - Targeted frequency of sexual activity, condom use, number of partners	16 hours - Covered HIV/AIDS, immune system, self-esteem, self-awareness, relationships, values, sexuality, abstinence, condom use, rape/abuse, decision-making, conflict resolution, etc. - Used interactive and didactic methods, including group work and role-plays
G – United Republic of Tanzania, MEMA kwa Vijana (Good things for young people) (29)	- Youths aged 12–19 years in rural areas - Targeted sexual initiation, condom use, number of partners, STIs, pregnancy	- In-school programme was teacher-led, also peer-assisted - Covered refusal, self-efficacy, self-esteem, STI/HIV, sexuality, contraception, abstinence, access to reproductive care and contraception, social values, respect, gender - Used drama, stories, games - Also developed more youth-friendly health services
H – Chile, Teen STAR campaign (30)	- Youths with mean age 15.8 years in urban areas - Targeted sexual initiation	18 units - Discussed male and female fertility, menstrual cycle, psychosexual development, sexual responsibility, relationships, contraception, STIs - Used experiential learning methods to explore feelings, values and attitudes
Adult-led (other than teachers)		
I – Brazil, Sexuality, Reproduction and AIDS Prevention (31)	- Youths aged 18–25 years in urban areas - Targeted sexual initiation, condom use, frequency of sex, number of partners, type of partners, unprotected sex	12 hours - Covered AIDS symbolism, knowledge and impact of AIDS, risk perception, sexual norms, reproduction and sexual pleasure, condom use negotiation - Used discussions, role-plays, group dynamics, models, demonstrations
Curriculum-based interventions with characteristics of effective programmes		
J – Jamaica, Grade 7 project (32)	- Youths aged 11–14 years in urban and rural areas - Targeted sexual initiation, contraceptive use	27 hours - Covered reproductive anatomy and physiology, STIs, contraceptive methods and myths, risks and consequences of sex and pregnancy, media, norms - Used classroom lectures, visual aids, question and answer sessions, small group discussions

Study, location and programme	Target population and primary objectives	Description
K – Nigeria, School-based AIDS education (33)	• Youths with mean age 17.7 in urban areas • Targeted sexual initiation, contraceptive use, number of partners, STIs	• 12–36 hours • Covered transmission and prevention of AIDS, attitudes towards HIV/AIDS, sexual practices, contraceptive use • Used lectures, films, role-plays, stories, songs, debates, essays, condom use demonstrations
L – Mexico, HIV prevention workshop and condom distribution (34)	• Youths with mean age 17.6 years in urban areas • Targeted sexual initiation, frequency of sexual intercourse, unprotected sex	• 3 hours • Covered HIV attitudes, myths, facts and risk, effects of AIDS, HIV transmission and prevention, living with HIV, condom use and negotiation skills • Used dramas, games, role-plays, videos, HIV-positive speaker, discussions, condom use demonstration
M – Namibia, My future is my choice (35)	• Youths aged 9–11 years in urban and rural areas • Targeted sexual initiation, number of partners, condom use, frequency of sexual activity	• 28 hours • Discussed reproductive biology and HIV/AIDS, risk behaviours, communication skills, framework for decision-making • Used narratives, games, facts, exercises, questions and discussions
Peer-led		
N – Belize, Project Light (36)	• Youths aged 13–17 years in urban areas • Targeted sexual initiation, number of partners, condom use	• 14 hours • Covered HIV transmission and prevention, barriers and solutions to avoiding sex or using condoms, peer pressure, condom use, communication • Used role-plays, exercises, skill-building activities, peer role-model testimonials
Curriculum-based interventions without characteristics of effective programmes		
Adult-led (teachers)		
O – Mexico, A Team Against AIDS (37)	• Youths aged 13–23 years in urban areas • Targeted sexual initiation, condom use	• 25 hours • Covered sexuality, anatomy and physiology, values, HIV/AIDS transmission, myths, prevention, risk perception, safer sex, abstinence, assertiveness, self-esteem, etc.

P – Chile, Adolescence, a time of decision-making (38)	• Urban youths • Targeted sexual initiation, contraceptive use	• Duration of 2 years • Covered relationships, parent–child communication, goals, reproductive physiology, postponing sex, STIs, gender, risk behaviours • Used small group discussions, participatory educational modules
Peer-led		
Q – Zambia, The Zambia Peer Sexual Health Intervention (39)	• Youths aged 14–23 in urban areas • Targeted abstinence, condom use	• 1.75 hours • Covered HIV transmission and prevention, abstinence, condom use, STIs, asymptomatic phases, refusal skills • Used discussion, skits, condom demonstration and a leaflet <i>STI – Why should I worry?</i>
Non-curriculum-based interventions		
Adult-led		
R – South Africa, DramAide (40)	• Youths aged 13–29 years in urban and rural areas • Targeted sexual initiation, number of partners, condom use, STIs	• Covered HIV/AIDS transmission, prevention and misconceptions; personal susceptibility and threat; attitudes towards people with AIDS • Used participatory process of learning and then presenting information using drama
Curriculum-based interventions with characteristics of effective programmes		
S – Zimbabwe, IEC health education (41)	• Youths age 10–19 years in urban and rural areas • Targeted sexual initiation	• Covered reproduction, AIDS/STIs, sexuality, pregnancy prevention, impact of unplanned pregnancy • Used health education, information and counselling; leaflets, posters, and pamphlets
T – Nigeria, STD intervention (42)	• Youths aged 12–21 years in urban areas • Targeted condom use and STIs	• Covered STI prevention and treatment • Used reproductive health clubs and peer educators to provide counselling and referrals
U – Uganda, School health education programme (43)	• Youths aged 9–22 years in urban areas • Targeted sexual initiation, frequency of sexual activity, number of partners	• Covered healthy sexual decision-making, peer interactions, AIDS, sexuality, health • Used highly interactive, child-to-child competition in plays, essays, poems and songs, question box

Study, location and programme	Target population and primary objectives	Description
Peer-led V – Ghana and Nigeria, West African Youth Initiative (44)	• Urban youths • Targeted frequency of sexual activity, contraceptive use	• Covered reproductive health, pregnancy, STIs, HIV, contraception, communication • Used peer leaders to provide information, education and counselling on reproductive health and referrals

^a STIs = sexually transmitted infections.

Table 5.4

Description of outcome evaluations by study

Study	Design and sample size ^a	Evaluation results ^b	All Males	Females	Factors affecting strength of evidence
Curriculum-based interventions with characteristics of effective programmes					
Adult-led programmes (teachers)					
A (16)	Design: quasi-experimental (cohort by school) Sample size: 2450 baseline, 1786 last follow up • 3 intervention, 3 comparison schools • Matched pre-test and post-test surveys • Baseline, 4 and 8 month follow up	All results for follow up at 4 and 8 months • Initiation of sex (4 and 8 month) • Consistent condom use	0 0 0 0 0 0	0 0 + 0 0 0	Strengths: large sample size Limitations: biased by high refusal rate; control group significantly younger and more likely to be living with family; analysis did not compare change over time between groups
B (24)	Design: experimental (cohort by class) Sample size: 1259 baseline, 1259 at last follow up • One school with intervention and control groups • Matched clinical data • Baseline, 4 year follow up	• Births/spontaneous abortion		+	Strengths: large sample size; long-term follow up; large effect size Limitations: reporting of pregnancy unclear; one school only

Study	Design and sample size ^a	Evaluation results ^b	All	Males	Females	Factors affecting strength of evidence
C (25)	Design: quasi-experimental (cohort by school) Sample size: 2026 baseline, 814 at last follow up • 6 intervention , 12 comparison schools • Cross-sectional surveys • Baseline, 6, and 12 month follow up	• Initiation of sexual relations	0	0	0	Strengths: large sample size; well conducted community trial; all schools included Limitations: Baseline sample of sexually inexperienced youth underpowered Note: large desired effect size; 17 vs 7% initiated but $P = 0.19$.
D (17)	Design: quasi-experimental (cohort by school) Sample size: 9036 baseline, 13441 at last follow up • 120 intervention, 100 comparison schools • Cross-sectional surveys • Baseline, 24 (or 15) months	• Initiation of sexual relations • Condom used at last sex	+	+	+	Strengths: very strong trial with a large sample size and long-term follow up Note: various interventions in comparison schools
E (26)	Design: experimental (cohort by classroom) Sample size: 491 baseline, 416 at last follow up • 6 schools with intervention and control groups • Matched pre-test and post-test surveys • Baseline, 6 weeks, 4 and 8 months follow up	• Sexual intercourse • Contraceptive use at first sexual intercourse	0	+	+	Limitations: moderate sample size; short follow up

F (27, 28)	Design: quasi-experimental (cohort by school) Sample size: 1141 baseline, 646 at last follow up • 11 intervention and 11 comparison schools • Matched pre-test and post-test surveys • Baseline, 6 and 10 month follow up	• Initiation of sexual intercourse • Frequency of sexual intercourse • Condom use • Number of sexual partners	0	0	0	Limitations: non-random assignment of schools; short follow up; high losses to follow up; analysis did not compare the change over time between trial groups
G (29)	Design: experimental (cohort by community) Sample size: 9645 baseline, 7040 at last follow up • 10 intervention communities with 62 schools and 10 control communities with 63 schools • Matched pre-test and post-test surveys • Baseline, 18, and 36 months follow up	• Initiation of sexual intercourse • > 1 partner in past 12 months • Condom use: at last sexual intercourse/ever • STI^d	0	+	0	Strengths: very strong RCT^c evaluation with a large sample size and long-term follow-up; use of biological outcomes
H (30)	Design: quasi-experimental (cohort by classrooms) Sample size: 305 baseline, 243 at last follow up • 5 schools with intervention and control groups • Matched pre-test and post-test surveys • Baseline and 12 months follow up	• Initiation of sexual intercourse	+			Limitations: biased by teacher selection of study groups; small sample size

Study	Design and sample size ^a	Evaluation results ^b	All	Males	Females	Factors affecting strength of evidence
Adult-led programmes (other than teachers)						
I (31)	Design: experimental (cohort by school) Sample size: 394 baseline, 198 at last follow up • 2 intervention and 2 control schools • Matched pre-test and post-test surveys • Baseline, 6, and 12 months follow up	• Initiation of sexual intercourse/sexual activity during past 6 months • Condom use • Unprotected sexual intercourse with steady partner • Unprotected sexual intercourse with casual/non-monogamous partner	0/0	0/0	0/0	Limitations: small sample size; high drop-out rate by 12 months despite tracking attempts
J (32)	Design: quasi-experimental (cohort by school) Sample size: 945 baseline, 718 at last follow up • 5 intervention and 5 comparison schools • Matched pre-test and post-test surveys • Baseline, 9, and 21 months follow up	All results for follow up at 9 and 21 months • Initiation of sexual intercourse • Contraception use at first sexual intercourse	0 0	0 0	0 0	Strengths: schools selected to be representative; large sample size; long-term follow up Limitations: comparison schools received varied curricula
K (33)	Design: experimental (cohort by school) Sample size: 450 baseline, 433 at last follow up • 2 intervention and 2 control schools • Cross-sectional surveys • Baseline and 6 months follow up	• Initiation of sex • Number of sexual partners • Condom: use at last sex/consistent use • STI	+	+	0	Limitations: moderate sample size; change scores over time for each experimental group were not calculated and compared

L (34)	Design: both experimental and quasi-experimental Sample size: 320 baseline, 309 at last follow up • 4 schools had classrooms randomly assigned to intervention and control groups; at two schools condoms were distributed through kiosks • Matched pre-test and post-test surveys • Baseline, 3 and 6 months follow up	All results for follow up at 3 and 6 months • Initiation of sexual intercourse • Sexual intercourse in past 3 months • Unprotected sexual intercourse in past 3 months	+ +	NA ^e +	NA +	Strengths: 4-way condition analysis Limitations: small sample size
			0 0	NA 0	NA 0	
M (35)	Design: experimental (cohort by student) Sample size: 515 baseline, 359 at last follow up • 10 schools with intervention and control groups • Matched pre-test and post-test surveys • Baseline, 2, 6, and 12 months follow up	• Initiation of sexual intercourse/frequency of sexual intercourse (at 6 months) • Number of partners (at 6 and 12 months) • Abstinence among virgins at baseline (and at 6 and 12 months) • Abstinence among sexually experienced at baseline (and at 6 and 12 months) • Condom use among all (at 6 and 12 months)	0/0	0/0	0/0	Strengths: strong evaluation design with random assignment and long-term follow up Limitations: moderate sample size
			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	

Study	Design and sample size ^a	Evaluation results ^b	All	Males	Females	Factors affecting strength of evidence
Peer-led programmes						
N (36)	Design: quasi-experimental (cohort) Sample size: 150 baseline, 150 at last follow up • 3 intervention and 3 comparison schools • Matched pre-test and post-test surveys • Baseline and 4 month follow up	• Condom use				Limitations: biased school selection; small sample size; short follow up
Curriculum-based interventions without characteristics of effective programmes						
Adult-led (teachers)						
O (37)	Design: quasi-experimental (cohort by school) Sample size: 2064 baseline, 946 at last follow up • 2 intervention and 2 comparison schools • Matched pre-test and post-test surveys • Baseline, 4, and 10 month follow up	• Initiation of sexual intercourse • Condom use	0	0		Limitations: change scores over time for each experimental group were not calculated and compared
P (38)	Design: quasi-experimental (cohort by school) sample size: 4238 baseline, 4135 at last follow up • 2 intervention and 3 comparison schools	• Initiation of sexual intercourse • Contraceptive use, ever • Contraceptive use, last sexual intercourse		+	+	Strengths: large sample size; long term follow up Limitations: non-random assignment of schools; adjustment for exposure to intervention may overestimate effect

- Matched pre-test and post-test surveys
- Baseline, 8, 20, and 32 month follow up

Peer-led programmes

Q (39) Design: experimental (cohort by school) • Multiple regular partners 0 Limitations: moderate sample size; differences between intervention and control groups likely to favour intervention

- 3 intervention and 2 comparison schools
- Matched pre-test and post-test surveys
- Baseline and 6 month follow up
- Discuss condom use/abstain with regular partner
- Condom use with regular partner: ever/last time
- Casual partner 0

Non-curriculum-based interventions without characteristics of effective programmes

Adult-led

R (40) Design: experimental (cohort by school) using adults not affiliated with the school • Initiation of sexual intercourse 0 Strengths: large-scale evaluation in a representative sample; long-term follow up

- Sample size: 1080 baseline, 699 at last follow up
- 10 intervention and 10 control schools
- Matched pre-test and post-test surveys
- Baseline and 18 month follow up
- Condom use 0
- Number of partners 0
- STI in past 6 months 0

Limitations: high drop-out rate; number of schools not reported

Study	Design and sample size ^a	Evaluation results ^b	All	Males	Females	Factors affecting strength of evidence
S (41)	Design: experimental (cohort by school); teacher-led Sample size: 1689 baseline, 1605 at last follow up • Intervention schools: not reported and 3 control schools • Matched pre-test and post-test surveys • Baseline and 5 month follow up	• Initiation of sexual intercourse	0			Strengths: large-scale representative sample Limitations: limited information about the statistical analysis; short follow up
T (42)	Design: quasi-experimental (cohort by school); peer-led with health worker Sample size: 1886 baseline, 1801 at follow up • 4 intervention and 8 comparison schools • Cross-sectional surveys • Baseline and 11 month follow up	• Condom use • STI	+	0	+	Strengths: large sample size
U (43)	Design: quasi-experimental (cohort by school and student); improved school health instruction Sample size: 400 - baseline, 400 at follow up • 38 intervention schools and comparison schools • Cross-sectional surveys • Baseline and 32 month follow up	• Initiation of sexual intercourse • Sexual intercourse in the past month • Lifetime number of partners	+	+	+	Strengths: long-term follow up Limitations: reported sexual activity among males different at baseline

Peer-led programmes

V (44)	Design: quasi-experimental (cohort by school and community) Sample size: 1784 baseline, 1801 at last follow up • 6 intervention schools and 2 intervention communities, comparison communities not reported • Cross-sectional surveys • Baseline and 18-26 month follow up • Ever had sexual intercourse • Use modern contraceptives	–	–	Strengths: large-scale in multiple settings; long-term follow up Limitations: non-random assignment; lack of multivariate statistical data for behavioural outcomes
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^a Experimental is defined as randomized allocation of participants, schools or communities into intervention or control groups.

^b Results reported are for last follow up unless otherwise indicated. Results categorized as: "0" for no significant change, "+", "–" for significant desirable change, "+", "–" for significant undesirable change.

^c RCT = randomized controlled trial.

^d STI = sexually transmitted infection.

^e NA = not applicable.

Table 5.4a
Summary of effects of school-based interventions¹

Type of intervention	N	Initiation of sex		Frequency of sex		Number of partners		Condom use		Birth control use		Unprotected sex		Any behavior							
		-	NS	+	-	NS	+	-	NS	+	-	NS	+	-	NS	+					
Curriculum-based																					
With characteristics of effective programmes																					
Adult-led	13	0	7	5	0	3	1	0	2	2	0	5	3	0	1	1	0	2	11		
Peer-led only	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		
Without characteristics of effective programmes																					
Adult-led	2	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1		
Peer-led only	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0		
Non-curriculum-based																					
Without characteristics of effective programmes																					
Adult-led	4	0	2	1	0	1	0	0	2	0	0	1	1	0	0	0	0	2	2		
Peer-led only	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1		
Total	22	1	10	7	0	4	1	0	5	3	0	8	6	0	1	3	0	1	0	6	16

¹ "+" means an increase in risk in terms of HIV, e.g., a hastening of the initiation of sex, more sexual partners or less condom use.
 "NS" means not significant.
 "+" means a reduction in risk in terms of HIV, e.g., a delay in the initiation of sex, fewer sexual partners, or greater condom use.

Table 5.4b

Summary of effects for adult-led curriculum-based school interventions²

	<i>N</i>	Initiation of sex			Number of partners			Frequency of sex			Condom use			Birth control use			Unprotected sex			Any behavior		
		-	NS	+	-	NS	+	-	NS	+	-	NS	+	-	NS	+	-	NS	+	-	NS	+
Total	13	0	8	4	0	2	2	0	3	2	0	4	3	0	1	1	0	1	1	1	1	11
School setting																						
Primary ³	3	0	2	1	0	0	1	na	na	na	0	0	2	na	na	na	na	na	na	0	1	2
Secondary ²	8	0	4	3	0	1	1	0	2	1	0	4	0	0	1	1	0	1	0	0	1	7
College/Night school	3	0	2	1	0	1	0	0	1	0	0	1	1	na	na	na	0	0	1	0	0	3
Program educators																						
Teachers	8	0	5	2	0	2	1	0	0	1	0	1	3	0	0	1	na	na	na	0	1	7
Other Adults	5	0	2	3	0	0	1	0	3	0	0	4	0	0	1	0	0	1	1	0	1	4
Participants sex⁴																						
Males	6	0	5	1	0	1	1	0	2	0	0	4	1	0	0	0	0	1	0	0	4	2
Females	6	0	4	2	0	2	0	0	2	0	0	2	3	0	0	0	0	1	0	0	2	4
Type of evaluation design																						
Quasi-experimental	6	0	3	3	0	3	0	0	1	1	0	2	2	0	1	0	0	1	0	0	1	5
Experimental	7	0	4	2	0	0	2	0	2	0	0	3	1	0	0	1	0	0	1	0	1	6

² This is the group of interventions given a "Go" recommendation.³ "na" means an increase in risk in terms of HIV, e.g., a hastening of the initiation of sex, more sexual partners or less condom or contraceptive use.⁴ "NS" means not significant.⁵ "+" means a reduction in risk in terms of HIV, e.g., a delay in the initiation of sex, fewer sexual partners, or greater condom use.⁶ "na" means no study in this group measured this outcome.⁷ One study included both primary and secondary schools and its results are included in both categories.⁸ Only 6 of the 13 studies provided separate results for each sex. These 6 studies provided results for both males and females.

Table 5.5

Strength of evidence of effectiveness for each intervention type and recommendations for programmes

Evaluation design	Positive effect	No significant effect	Negative effect	Strength of evidence and recommendation
Curriculum-based interventions				
With characteristics of effective programmes				
Adult-led				
Quasi-experimental	A, D, F, H	J		Very strong
RCT ^a (< 6 clusters per group)	I, K			Go
RCT (≥ 6 clusters per group)	B, E, G, L, M	C		
Peer-led				Weak
Quasi-experimental	N			Steady
Without characteristics of effective programmes				
Adult-led				
Quasi-experimental	P	O		Weak
Peer-led				Steady
RCT (< 6 clusters per group)		Q		Weak
RCT (< 6 clusters per group)				Steady
Non-curriculum-based interventions				
Without characteristics of effective programmes				
Adult-led				
Quasi-experimental	T, U			Weak
RCT (< 6 clusters per group)		R, S		Steady
Peer-led ^b				
Quasi-experimental	V		V	Equivocal
				Steady

^a RCT = randomized controlled trial.

^b There was only one study of a non-curriculum-based only peer-led programme. It had a statistically significant negative impact on initiation of sex and statistically significant positive effects on the number of sexual partners and the use of condoms and contraceptives. Thus, it is counted twice in the table, both as having a negative impact and a positive impact.

quasi-experimental designs had to have both intervention and comparison groups and both pre-test and follow-up data.

Of the 22 studies, nine clearly lacked sufficient statistical power to detect programmatically meaningful effects on behaviour. For example, if an intervention reduced the percentage of young people who initiated sexual activity (or who had sexual intercourse without a condom) from 30% to 20%, this reduction would be programmatically meaningful. However, to have an 80% chance of finding an absolute change of 10 percentage points in a dichotomous outcome and to achieve significance at the 0.05 level, a completed pre-test follow-up sample size of close to 600 would be needed. The smallest matched baseline and follow-up sample was 150. This study and eight others clearly lacked statistical power.

However, the problem of insufficient power was greatly aggravated by the fact that studies typically had to divide their samples into sexually inexperienced youths at baseline in order to measure initiation of sex and sexually experienced youths at follow up to measure impact on condom and contraceptive use among those who did have sex. Some studies further divided their sample into males and females because prior studies had found that results sometimes differed according to the sex of the participant. This further increased the problem of statistical power.

Although many studies lacked sufficient statistical power, they are included in the results because some of them produced statistically significant results. Nevertheless, their inclusion biases the results and may suggest that interventions were less effective than they actually were. This may offset some of the positive biases discussed above. When two studies produced large programmatically important results that were not significant, they were coded in the tables as not having an impact but their possible impact is noted in the text.

The statistical analyses in the studies ranged from marginally acceptable to rigorous. For example, a few studies compared whether the intervention and comparison groups were statistically different at baseline and then also used a separate test to determine whether they were significantly different at follow up instead of comparing the change over time in the intervention group with the change over time in the comparison group. Some failed to statistically control for background characteristics that may have been related to outcome behaviours. And still others assigned entire schools to intervention groups but failed to control for clustering. It is difficult to assess the net impact of these limitations in the statistical analyses. Fortunately, a few studies used rigorous statistical analyses.

5.3.3 *Impact on prevalence and sexual behaviours*

5.3.3.1 *STI/HIV prevalence*

Ideally, these studies would have measured the intervention's impact on the incidence or prevalence of STIs or, preferably, HIV. However, only one study, the study with the largest sample size, measured impact on STI and HIV prevalence and even it was underpowered for some of these tests.

That one study was the randomized trial in Mwanza, United Republic of Tanzania (study G) (45). It found that the “MEMA kwa Vijana” (“Good things for young people”) intervention did not have a significant impact on the prevalence of genital herpes, syphilis or chlamydia among either boys or girls. Furthermore, it did not have a significant impact on prevalence of trichomoniasis among girls (it was not measured among boys) nor on gonorrhoea among boys. However, it found a slight but significant negative impact on prevalence of gonorrhoea among girls.

This study was one of only two to attempt to measure an intervention's impact on pregnancy or childbearing. It did not demonstrate an effect, but the other study, a teacher-led curriculum-based intervention in Chile (study B) (24), demonstrated a marked decrease in reported births or miscarriages over a 4-year follow-up period. However, the authors noted that this outcome was not a true marker of pregnancy because of the likely bias caused by the illegal status of abortion in Chile.

5.3.3.2 *Impact on behaviours*

Because of the criteria used to select these studies, all of them measured impact on one or more reported sexual behaviours, which logically would affect STI or HIV incidence or prevalence in the long term. Thus, those results are also presented.

Because the patterns of results are quite similar regardless of the type of intervention or the type of evaluation design, they are first discussed as a whole and then the results for the group of interventions with the strongest evidence are further discussed.

5.3.3.3 *Sexual activity*

These studies present strong evidence that sex education and HIV education interventions do not increase sexual behaviour and that a substantial percentage of interventions significantly decrease one or more types of sexual activity.

One important measure of sexual activity is the initiation of sex (having sexual intercourse for the first time). This was measured in 18 of the studies. Importantly, only one of these studies found a significantly greater increase in the reported initiation of sex among the intervention group than among the comparison group (study V) (44). That intervention was a non-curriculum-based peer-led programme. (It should be noted that when 14 or more studies are reviewed, there is a greater than even chance that one or more outcomes will be found to be statistically significant by chance alone.) More importantly, none of the remaining 17 interventions hastened the reported initiation of sex, and 7 significantly delayed reported initiation.

A second common measure of sexual activity is the reported frequency of engaging in sex. This measure includes both the number of acts of sexual intercourse during a specified number of months prior to the survey and whether respondents had sexual intercourse at all during that period: it thus measures the possible return to secondary abstinence. This measure is important for the prevention of pregnancy and STIs and HIV. Only eight studies measured the programmatic impact on the reported frequency of sexual activity. None of them found an increase, and three of them found a decrease in frequency.

A third measure of sexual activity is the reported number of sexual partners. This measure is especially important for preventing the transmission of STIs and HIV. Again, there were no increases in the reported number of sexual partners, and 3 out of 8 interventions reported decreases in the number of partners.

5.3.3.4 *Impact on use of condoms and contraceptives*

Fourteen studies measured the impact on reported use of condoms; none of them found a decrease, and six found a significant increase in use. Although contraceptives other than condoms do not markedly affect the transmission of STIs or HIV, some of these interventions were sex education interventions that encouraged contraceptive use to prevent teen pregnancy as well as condom use to prevent STIs and HIV. Four studies measured the impact on reported contraceptive use, and three of them found significantly increased reports of their use.

Two studies examined the impact on measures of unprotected sex that involved both the reported frequency of sexual activity or numbers of partners and condom use. One of these two studies found a positive impact.

5.3.3.5 *Impact on one or more behaviours*

Of the 22 interventions, 16 had a positive impact on one or more of the reported behaviours, and five had a positive impact on two or more behaviours. Only six had no significant impact on any reported behaviour. Overall, these 22 interventions were found to have significantly improved 21 of 55 measures of reported sexual behaviour across the studies.

5.3.4 *Summary of behavioural effects*

In sum, these studies present strong evidence that school-based sex education and HIV education interventions did not increase sexual activity and some had positive effects on each of the reported sexual and protective behaviours measured. It is possible for some school-based interventions to delay participants' reported sexual activity, reduce their number of sexual partners, reduce their frequency reported of sexual activity or increase their use of condoms or their use of contraception and thereby reduce their unprotected sex.

In addition, in all three categories of adult-led interventions at least half of the interventions had a positive impact on at least one of the reported sexual or protective behaviours. In addition, two of the three peer-led interventions had a positive impact on one or more behaviours. These overall results demonstrate that there is no single type of intervention that is effective: most have the potential to be effective in some situations.

However, it is also true that there are more studies and much stronger evidence showing that curriculum-based interventions that incorporated at least four fifths of the characteristics described in [Box 5.1](#) can change behaviour. These interventions are discussed more fully below.

5.3.5 *Impact on psychosocial factors affecting behaviour*

5.3.5.1 *Knowledge*

Altogether, 10 of the 22 studies measured the intervention's impact on knowledge, and all found that their respective interventions increased knowledge about one or more topics including STIs or HIV/AIDS and their prevention. The interventions did not always increase knowledge about every item measured, perhaps because a particular curriculum may not have focused on those specific facts. However, all of the interventions increased knowledge about one or more facts and increased overall knowledge.

This finding is consistent with 10 different studies from developing countries that did not measure an intervention's impact on behaviour but did measure the impact on knowledge (46–55). All of these studies found that their respective interventions significantly increased knowledge. This finding is also

consistent with findings from developed countries that have repeatedly shown that school-based sex education and HIV education interventions can increase knowledge about sexuality, just as classes can increase knowledge about maths, science and other topics. Sometimes they may be even more effective in increasing students' knowledge about various aspects of sexual behaviour because this is a topic that is often of greater interest and relevance to students' lives.

5.3.5.2 *Reported values, attitudes, peer norms, skills, intentions and other risk and protective behaviours*

Skills, as identified in UNGASS goal 2, are one of a number of psychosocial factors necessary to effectively change behaviour. Nineteen studies measured intervention impact on sexual and psychosocial factors (such as personal values and perceptions of peer norms) or other behaviours (such as communication about sex and condoms or use of alcohol) that are known to be related to sexual risk and protective behaviours. The results were not nearly as consistent as they were for knowledge.

The results indicate that interventions consistently did not negatively affect these factors, and roughly half had positive effects. More specifically, one or more studies found that their respective interventions improved reported values about sex, values about pressuring someone to have sex, attitudes towards condoms, attitudes towards people living with AIDS, perceptions of peer norms regarding condoms, self-efficacy to refuse to have sex, self-efficacy to obtain condoms and to use condoms, and intentions to discuss condom use or to use a condom. None of the three studies that measured intentions to abstain from sex or restrict the number of sexual partners found that the interventions increased these intentions. One study found that its intervention decreased the use of alcohol or drugs; one study found the intervention helped youths avoid situations that might lead to sex; and a final study found that its intervention increased the percentage of youths who reported having obtained condoms.

The results from these 22 studies measuring impact on reported behaviour are also supported by results from other studies that measured impacts on values, attitudes and norms but did not measure impact on behaviour. Six such studies found that school-based interventions improved one or more of these reported values, attitudes, norms or intentions (46–48, 51, 54, 55).

5.3.6 ***Strength of evidence for curriculum-based adult-led interventions with the characteristics in Box 5.1***

The behavioural results for all six intervention types are summarized in [Table 5.5](#), as well as [Table 5.4a](#) and [Table 5.4b](#). Although at least half of the studies

in five of the six intervention types reported positive behavioural results, one intervention type has particularly strong evidence for its impact on behaviour. Curriculum-based interventions that incorporated most of the characteristics in [Box 5.1](#) and that were led by adults have particularly strong evidence for their impact on behaviour. That evidence is strong for three reasons: there are a large number of studies within that category; the strength of the evidence for some of the individual studies is stronger than for the studies in other categories; and the interventions more consistently had a positive impact on behaviour.

Among the 13 interventions in that type:

- 5 out of 12 were successful in encouraging participants to delay the reported initiation of sex;
- 2 out of 4 were successful in terms of participants reducing the reported number of sexual partners;
- 1 out of 4 were able to encourage participants to reduce the reported frequency of sexual relations;
- 3 out of 8 reported an increase in reported condom use;
- 1 out of 2 reported an increase in the reported use of contraceptives;
- 1 out of 2 reduced the reported frequency of unprotected sex as measured in other ways; and
- 11 out of 13 significantly improved one or more reported sexual or protective behaviours.

Notably, only 2 of the 13 interventions did not produce significant behavioural changes. However, in the first of those two interventions, 17% of the control group initiated sex while only 7% of the intervention group did so (study C) (25). While this would have been programmatically meaningful, it was not statistically significant. Similarly, in the second study that did not report significant results, the odds ratio for contraceptive use was 2.25 ($P = 0.08$) (study J) (32). Thus, the only two studies that failed to report statistically significant benefits may have produced programmatically meaningful results but they lacked statistical power.

While the positive effects of some interventions lasted only a few months, the effects of other interventions lasted for years. For example, the MEMA kwa Vijana intervention found positive effects on reported behaviours over a 36-month period (study G) (45).

The positive effects of these interventions were remarkably robust ([Table 5.4b](#)). In particular, roughly equal proportions of interventions were found to

be effective regardless of whether they were implemented in primary or secondary school or college or night school. Similar proportions of these curriculum-based interventions were effective regardless of whether they were taught by teachers or other adults. They were also effective for both male and female students. It is encouraging that interventions may increase reports of condom use even among females who have less direct control over their use. And the interventions were equally likely to be effective regardless of whether they were evaluated with experimental or quasi-experimental designs.

In general, these patterns of findings are remarkably similar to those from the United States and other developed countries (12). Those studies also demonstrated that school-based interventions encouraging abstinence and condom use do not increase sexual behaviour, and sometimes they delay participants' sexual activity, reduce participants' frequency of sexual relations, reduce their number of sexual partners and increase their use of condoms or contraceptives. Those studies also demonstrate that the positive effects of such interventions are quite robust (12, 14). This is encouraging and suggests that these interventions may be effective regardless of the level of economic development and prevalence of HIV.

5.3.6.1 *Characteristics of curriculum-based adult-led interventions that changed behaviour*

As discussed above, this review coded each study according to the characteristics of interventions that have been found to be effective anywhere in the world. This raises the important question: what are the characteristics of effective school-based programmes in developing countries?

The results of coding revealed that these interventions had the same characteristics as effective curricula evaluated anywhere in the world. That is, most of the effective programmes incorporated at least four-fifths of the characteristics described in [Box 5.1](#). However, in part because of the limitations of the studies, we could not determine whether three particular characteristics had been included. In particular, it was often difficult to determine whether programme developers used a logic model to develop programmes, whether curriculum activities had been pilot-tested before implementation or whether educators created a safe environment for group discussions in the classrooms.

5.3.7 **Health services**

Schools in the developing world may have an important role in achieving the UNGASS goal of improving access to health services for youths. However, full assessment of this question is beyond the scope of this chapter.

5.3.8 ***Vulnerability***

Schools in the developing world potentially also have a key role in addressing vulnerability among youths at several levels, for example, at the individual level, by improving their life chances through education and at the societal level, by addressing adverse gender norms and contributing to incremental changes in norms and values. However, it is also true that schools themselves may contribute to adolescent vulnerability by subjecting young girls to sexual abuse by teachers (9, 56, 57) and by reinforcing adverse gender norms. However, a review of all of these effects is also beyond the scope of this chapter.

5.4 **Discussion and recommendations**

Despite limitations in the documentation of interventions and in research results, we reviewed school-based studies that were divided into six different categories, summarized the strength of evidence for each category and made recommendations about each category (Table 5.5).

The recommendations used in this review are the same as those used in the introduction and methods sections (chapter 1 and chapter 4) and elsewhere in this report, namely:

- “Go” – the evidence threshold has been met and there is sufficient evidence to recommend widespread implementation on a large scale now with careful monitoring of coverage, quality and costs;
- “Ready” – the evidence threshold has been partially met and the evidence suggests these interventions are effective but large-scale implementation must be accompanied by further evaluation to clarify their impact and mechanisms;
- “Steady” – there is some encouraging evidence of effectiveness but this evidence is still weak and further development, pilot testing and evaluation are urgently needed before they can move into the “Ready” category;
- “Do not go” – there is strong enough evidence of a lack of effectiveness or of harm to indicate that this is not the type of intervention to pursue.

5.4.1 ***Knowledge***

Given that these school-based interventions have a low-to-moderate threshold for evidence, given that all the studies that measured impact on knowledge found a positive impact on knowledge, and given that innumerable studies of school-based interventions in developed countries have also found that these interventions increase knowledge, these interventions are clearly a “Go” for knowledge.

5.4.2 *Behaviour*

Curriculum-based interventions incorporating most of the characteristics in [Box 5.1](#) and led by adults had been evaluated by the greatest number of studies, had the strongest evidence, and had the most consistent results demonstrating positive reports of behavioural change. These results are all based on reported behaviour with all of the limitations of self-reported sexual behaviour, which include the potential for presentation bias, that may occur, especially within the context of interventions promoting specific behaviours. Thus, positive effects on actual STI or HIV prevalence are more credible. Nevertheless, the consistency of these positive results on reported sexual behaviours is encouraging. Thus, these results warrant a “Go” for this type of intervention. This does not mean that these interventions should not continually be evaluated and improved, for they clearly should be, and their important characteristics should be further refined.

Curriculum-based adult-led interventions without most of the characteristics in [Box 5.1](#) did not increase any measure of sexual risk behaviour but there is little evidence that they decreased sexual risk behaviour. Studies of these interventions included only one with a quasi-experimental design that showed a positive impact and one study with the same design that showed no impact. Thus, this group of interventions warrants a “Steady” rating.

Some curricula are called “life-skills interventions”. These are quite popular throughout the world but they constitute a heterogeneous group of interventions. Calling them “life skills” is not very descriptive. Some of these interventions focus on sexual behaviour and incorporate many or all of the characteristics in [Box 5.1](#). These should be classified accordingly.

On the other hand, other life-skills interventions not studied in this review teach only general social skills, life-planning skills or other skills and do not focus on sexual behaviour, do not provide a clear message about sexual behaviour and do not incorporate some of the other characteristics described in [Box 5.1](#). Few of these interventions have been evaluated. Thus, without much information about them, these interventions would have to be classified “Steady”.

Only two curriculum-based interventions were implemented primarily by peers. One of these incorporated many of the characteristics in [Box 5.1](#) and increased the use of condoms among participants, while the other did not incorporate these characteristics and did not significantly change any behaviour. Thus, both of these types of peer-led interventions should also be classified as “Steady”.

Results for non-curriculum-based interventions were not clear. Four out of five were adult-led and two of the four had a positive effect on one or more

behaviours, while two did not. Of the four adult-led interventions, only one was evaluated in a randomized trial and it failed to find an impact. Thus, this type must be given a “Steady” rating both because of the small number of studies and the mixed results.

The fifth non-curriculum-based intervention was led by peers. While the results indicate that it had important positive behavioural effects (fewer sexual partners, increased condom use and increased use of contraception), the results also include the only negative behavioural results, namely a hastening of the initiation of sexual activity. Thus, this type must also be given a “Steady” rating.

All of these recommended ratings are affected by positive biases (as is the case in the reporting of many results) and negative biases (for example, insufficient statistical power). They are limited by far too many weak evaluation designs that could either obscure or enhance effects and by reliance on reported behaviour instead of actual behaviour or measurement of STD or HIV rates. Finally, they are limited by inadequate descriptions of interventions, a few of which were only a couple of sentences long. This undoubtedly added error to the categorization and coding of interventions.

5.4.3 *HIV prevalence*

Only one of the 22 interventions increased any measure of reported sexual behaviour; the remaining 21 either had no impact on sexual behaviour or delayed the onset of sexual activity, reduced the frequency of sexual activity or decreased the number of sexual partners. These results provide strong evidence that interventions focusing on sexual behaviour and its consequences do not lead to an increase in reported sexual behaviour. This conclusion is especially strong and consistent for interventions taught by adults. Furthermore, the majority of these interventions led to reductions in sexual activity, increased condom use or increases in contraceptive use. Given these changes in sexual behaviour, one could expect a reduction in both pregnancy and STIs.

However, only one study measured an intervention’s impact on STI rates and it did not find positive significant effects (study G) (45). This may be in part because sample sizes were too small to detect programmatically meaningful effects on HIV and bacterial STIs. However, the study was sufficiently well powered to estimate the effect of the intervention on rates of infection with herpes simplex virus–type 2 and pregnancy. Despite having strong evidence for effects on reported sexual behaviours, this intervention had no impact on these biomedical outcomes. Thus, greater understanding of this disarticulation between reported effects on behaviour and a lack of biomedical impact is clearly critical, and more studies need to measure an intervention’s impact on rates of STIs and pregnancy.

5.4.4 *Cost effectiveness*

None of these studies included any cost–effectiveness analyses. This is an important omission. Nevertheless, general experience in developing and implementing these types of programmes can provide some guidance.

If programmes are effective at reducing risky sexual behaviour, they have the potential to be cost effective. Initially, effective curricula must be developed and teachers trained. This can be costly. Moreover, once teachers are trained, they must spend time in the classroom implementing programmes and this classroom time carries a cost. On the other hand, once effective curricula have been designed, training may be incorporated into the training of all new teachers. Furthermore, the length of these curricula is not long (28 hours is the longest and most are much shorter) and thus the cost of classroom time is relatively modest. Finally, relatively few materials are needed to implement the programmes.

5.4.5 *Conclusion*

In terms of effectiveness in increasing knowledge, our review suggests a “Go” for most school-based sex education and HIV education interventions. In terms of changes in reported behaviour, our review suggests a “Go” for curriculum-based interventions incorporating the characteristics described in [Box 5.1](#) and led by adults. In part because of the limited number of studies, all other types warrant a “Steady” rating for reported behavioural change. These conclusions suggest a series of recommendations for different groups ([Box 5.2](#)).

It is encouraging that patterns of results were similar across both developing and developed countries. In general, interventions were just as likely to be effective in developing countries as in developed countries (12). They were effective for different age groups and for both males and females. Thus, they appear quite robust.

While studies have not yet demonstrated that these interventions in the developing world significantly reduced the rates of STIs and HIV, many studies demonstrated that their intervention produced positive behavioural changes that logically should lead to reductions in STIs and HIV. Thus, they may be an important component of larger, more comprehensive initiatives and should be implemented more widely.

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Recommendations for interventions in schools

For policy-makers

There is a sufficiently strong evidence base to support widespread implementation of school-based interventions that incorporate the characteristics of effective programmes that have been found to be potentially important throughout the world (Box 5.1) and that are led by adults.

There is strong evidence that these programmes reduce sexual risk behaviour.

Nearly all school-based programmes have strong evidence for increasing knowledge.

For programme development and delivery staff

To increase the chances of reducing sexual risk behaviour, school-based programmes should include as many of the characteristics of effective programmes as possible because these have been found to be potentially important throughout the world (Box 5.1).

For researchers

More well designed studies of school-based programmes need to be completed, particularly in rural areas in developing countries. If possible, these studies should use randomized designs, have sufficiently large sample sizes and measure the impact on rates of sexually transmitted infections, HIV and pregnancy.

Studies also need to examine more thoroughly the impact of programmes on important mediating factors.

Improvements also need to be made in documenting and evaluating intervention processes.

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6. Review of the evidence for interventions to increase young people's use of health services in developing countries

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Objective This chapter reviews the evidence base for interventions that aim to increase young people's use of health services in developing countries.

Methods We identified published and unpublished studies and reports from developing countries that provided information about interventions designed to increase young people's use of health services. The studies were classified into six different types based on whether they included some or all of the following characteristics: training for service providers and clinic staff; making efforts to improve the quality of the facilities; implementing community activities to generate demand and support for the services; and involving other sectors, notably schools and the media. The levels of evidence required to make decisions about policies and programmes were defined for each of these types.

Findings Despite the lack of detailed descriptions of interventions in the studies and difficulties interpreting the data reported in the evaluations, the studies provided evidence of increased use of health services by young people for those types of interventions that included training for service providers, making improvements to clinic facilities and implementing activities in the community, with or without the involvement of other sectors.

Conclusion The evidence for the effectiveness of interventions to increase young people's use of health services was sufficient to recommend that interventions that include training for service providers, making improvements

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to clinics and using activities in the community should be widely implemented with careful monitoring of quality and coverage and that those that additionally involve other sectors should also be widely but cautiously implemented, provided they include a strong evaluation component. Operations research is also required to better understand the content of the interventions and their mechanisms of action.

6.1 Introduction

During the past 10–15 years there has been growing awareness of the need to make health services more responsive to the specific needs of young people (1, 2). The HIV/AIDS epidemic has contributed to this increasing attention, and the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS includes an explicit target related to ensuring young people's access to health services (3, 4). Governments attending the special session agreed that by 2005, 90% of young people aged 15–24 years – and by 2010, 95% of this age group – should have access to the services that they need to decrease their vulnerability to HIV.

In 2003, WHO and its partners organized a technical consultation in Montreux, Switzerland, to review the evidence base for a set of interventions that could be provided through health services and that would contribute to the prevention and care of HIV infection among young people (5). The package of services included providing reproductive health information and counselling; reducing risk by encouraging the use of condoms among sexually active young people and the use of sterile injecting equipment and other harm reduction interventions by young injecting drug users; and providing services to diagnose, treat and care for young people with sexually transmitted infections (STIs) and HIV/AIDS. The evidence base for these and other interventions provided through health services is further elaborated in [chapter 3](#).

The evidence-based package of interventions developed at Montreux needs to form the basis for the goal for services endorsed during UNGASS. Unfortunately, the data available to monitor these health service targets are generally weak. Some data have been provided in [chapter 2](#), and a major effort is being initiated by the Futures Group, Policy Project, using the triangulation of information obtained from interviews with key informants (6). Methods that use community surveys and health facility statistics are also being developed (7). Although the data are scarce, what little data there are indicate that we are far from achieving the global target on providing access to services, either for the general population of young people or for those who are most at risk from HIV (8). (The evidence for interventions targeted towards young people most at risk of HIV is reviewed in [chapter 9](#).)

The purpose of this paper is to review the evidence for interventions that aim to increase young people's use of health services and to determine what it is that needs to be done if we are to achieve the global goals on increasing young people's access to services.

6.2 Methods

This review has adopted a similar process to the other papers in this series in terms of assessing the evidence in a systematic and transparent way ([chapter 4](#)).

6.2.1 *Inclusion and exclusion criteria*

Details of the inclusion and exclusion criteria for the studies in this review are outlined in [Table 6.1](#). Several points require clarification.

First, it should be noted that the UNGASS target refers to young people's access to services. This review focuses on studies that have attempted to increase young people's use of health services, which goes beyond merely increasing availability and includes elements of accessibility and acceptability. There was no attempt to explore "effectiveness coverage", which not only answers the question "were the services used" but also "did the services that were used make a difference?" (9). With one exception, a study from Nigeria (10), the data from studies included in this review were not sufficiently detailed to answer the second of these questions.

Second, studies were selected based on the contribution that the intervention made specifically to the UNGASS target of increasing young people's access to services. Although health services may provide information to young people and help them develop skills, such as learning how to use a condom, the UNGASS targets that relate to information, skills and vulnerability were not included as outcomes in this review. The rationale for this was that generally those studies that include data on changes in knowledge, skills, attitudes and behaviour are multicomponent interventions, and it is difficult to tease out the relative contribution of the health services' component to any changes that are reported. Those studies that include such data are indicated in the tables, although these data are not included in the analysis.

Third, studies were included if they had as their primary focus interventions involving interactions between a young person (aged 10–24 years) and a health-care worker, such as a doctor, a nurse or a clinical officer. Studies were not included if they had as their major focus interactions between adolescents or youth and people who are not health-care workers, such as community-based condom distributors, peer educators, counsellors and other individuals and groups who provide information, education, counselling or supplies to young people.

Table 6.1

Inclusion and exclusion criteria used to identify studies for review

Inclusion criteria	Exclusion criteria
Intervention studies and programmes or projects carried out in developing countries and where sufficient details given to allow the reader to know (at least in outline) of what the intervention consisted.	Intervention studies carried out in developed countries or where insufficient details given to allow the reader to be able to know (at least in outline) of what the intervention consisted.
Intervention studies and programmes or projects that attempted to increase utilization of health services by adolescents (aged 10–19 years), young people (10–24 years) or youths (15–24 years) and that also tracked or documented utilization. Interventions that showed an increase in young people's behaviours that are related to service utilization (such as condom use) were also included.	Intervention studies and programmes or projects that did not gather data showing utilization of health services by adolescents, young people or youths.
Intervention studies and programmes or projects that provided health services for HIV prevention (including sexual and reproductive health), such as information, counselling, condom distribution, STI ^a management and voluntary counselling and testing in the context of an interaction between a health-service provider and a young person.	Intervention studies and programmes or projects that provided information, counselling or condoms outside the context of an interaction between a health-service provider and a young person.
Intervention studies using the following designs: • randomized controlled trials • quasi-experimental study designs • data collected before and after the study (without data from comparison sites) • time-series data on service utilization after the start of the intervention • Cross-sectional (that is, "after-only") survey data where service utilization data for young people were presented either by their level of exposure to the interventions or compared with other clinics or services that were not exposed to the intervention.	Intervention studies that did not use designs that would enable the reader to evaluate the impact of the intervention or to make inferences based on statistical tests.
Reports with interpretable quantitative data on the use of health services by young people.	Reports without interpretable quantitative data on health service use by young people.

^a STI = sexually transmitted infection.

Finally, studies were included if one of their primary aims was to increase young people's use of health facilities, including government clinics, private clinics, stand-alone youth clinics or clinics that are included as a component of multipurpose youth centres. Studies were not included if they did not have a health facility component, for example, if they focused primarily on other facilities where information and commodities are provided to young people, such as kiosks, pharmacies and youth centres that do not include a health facility (11, 12).

6.2.2 Identification of studies and reports

Studies were identified through different processes. This paper built on literature reviews of adolescent-friendly health services that had been carried out for previous WHO meetings that took place in 1995 (13), 2001 (14) and 2002 (15). An additional search was undertaken for published papers using electronic reference databases (Medline, PubMed, EMBASE) and the Internet. In order to identify unpublished reports and evaluations, contact was also made with 24 agencies known to support programmes and projects in developing countries that aim to make health services more responsive to the needs of adolescents and young people. A WHO collection of papers and reports on adolescent-friendly health services was also reviewed. The literature review focused primarily on articles and reports written in English.

Twenty one studies and projects were initially identified that met the inclusion criteria. However, this number decreased to 16 following a more in-depth analysis of the quality of the information provided in the studies in terms of clarity about the interventions, the evaluation methods and results. The nine studies that did not fully meet the inclusion criteria either had insufficient data to allow an adequate assessment of the interventions or the evaluation data were inadequate. Some of these excluded studies are referred to in the discussion. In this paper the word "studies" has been used to describe both studies that were explicitly designed to explore the effectiveness of an intervention and projects where there were sufficient evaluation data to meet the inclusion and exclusion criteria.

6.2.3 Typology of studies

Once the studies had been identified, they were grouped into different types based on the specific activities that had been implemented. Strategies to increase young people's use of services have generally included some combination of the following: improving the knowledge and skills of service providers and other clinic staff; making facilities more responsive to the specific needs of young people, for example by changing the physical environment or opening hours; reaching out from the facility into the community

to provide information, generate demand and create community support; and involving other sectors, such as schools and the media, to provide information and mobilize community support.

The typology for this review was based on a combination of these different components, resulting in a 2 by 3 matrix of six types, as outlined in [Box 6.1](#).

Type 1, type 3 and type 5 interventions (those included in the first row) explicitly provided training to service providers, and sometimes other staff in the health facility, on how to respond more appropriately to the health needs of young people. This training included improving their knowledge, skills and attitudes in order to increase their capacity to provide information and treat young people effectively, in a respectful and confidential manner.

Type 2, type 4 and type 6 interventions (those in the second row) included training for service providers and other clinic staff and additionally contained explicit actions that aimed to improve specific aspects of the health facility, such as changing the opening hours, decreasing the amount paid by young people for services or commodities, changing the layout or other aspects of the physical environment to make it more appealing or to increase privacy, introducing recreational opportunities and involving peer educators in the facility. Interventions were not placed in this row if a health facility had been included in a multipurpose youth centre without some additional focus on the areas outlined above. Interventions were placed in this row only if there was an indication that significant efforts had been made to improve the facility, so merely providing information materials in the facility would not have warranted inclusion in this row.

Interventions allocated to the first column (types 1 and 2) included a range of activities that were conducted within the community. For example, these activities included having health-workers provide information outside the health facility, having young people provide information and counselling in the community, holding meetings with gatekeepers and community leaders and providing information about the need for and availability of services, including putting up posters and distributing information materials, placing advertisements in local newspapers and showing videos at community gatherings.

Interventions allocated to the second column (types 3 and 4) involved other sectors, such as education or the media. Interventions were included in this type if there were curriculum-based interventions, peer educators, health clubs that linked or referred pupils to health services, or other activities that required significant investment on the part of the education sector. For media interventions to be included, there had to be significant involvement of the print, radio or television media in terms of providing information or

Box 6.1

Typology of interventions implemented to increase young people’s use of health services

Interventions in the health facility	Interventions outside the health facility		
	Interventions in the community ^a	Interventions with other sectors ^b	Interventions in the community and with other sectors
Training service providers and clinic staff only	Type 1	Type 3	Type 5
Training service providers and clinic staff <i>plus</i> interventions in the facility to make it more youth-friendly	Type 2	Type 4	Type 6

^a These may include the use of peer educators working in the community or other forms of information and community sensitization about the availability of services and the needs of adolescents.

^b The focus for these studies was the involvement of schools or the mass media.

“edutainment”, generating debate and dialogue and encouraging young people to use health services.

The interventions were classified based on the information contained in the studies; this information was not always complete. Although every attempt has been made to ensure that decisions about classifying the interventions were open and standardized, there was inevitably some level of interpretation that occurred in allocating studies to the different types because it was not always clear from the papers what had actually been done or with what intensity of effort.

6.2.4 Threshold of evidence required

Once the typology for the interventions had been defined, it was necessary to make a decision about the threshold of evidence that would be required to categorize the different intervention types as “Go”, “Ready”, “Steady” or “Do

not go” (see [chapter 4](#)). [Table 6.2](#) provides an overview of the thresholds of evidence required to recommend widespread implementation of the different types of interventions.

For type 1 interventions (training health-workers and other clinic staff along with activities in the community) and type 2 interventions (training health-workers and other clinic staff along with taking action to improve facilities and implement activities in the community) only weak evidence for effectiveness is considered to be required to recommend interventions for widespread implementation (“Go”). Once other sectors become involved, however, the design and implementation of the intervention is likely to become more complex, and coordination of the programme components and sustainability is likely to become more of a challenge (even if both the impact of the interventions and other possible health and social benefits may increase). It was therefore decided that in order to be able to recommend types 3, 4, 5 and 6 as “Go”, they would require a moderate threshold of evidence.

6.3 Findings

Summaries of the analysis of the 16 papers are found in [Table 6.3](#) and [Tables 6.4a–e](#). [Table 6.3](#) synthesizes information about the interventions from the different studies, and [Tables 6.4a–e](#) summarizes the evaluation methods and results, as well as assessing the strength of the evidence for an increase in the use of services by young people.

6.3.1 *Characteristics of studies*

There were 12 studies from Africa, 3 from Asia and 1 from Latin America. Most studies included here endeavoured to improve existing services, and most frequently these were offered in public facilities. Only one study – in Nigeria (10) – focused exclusively on private providers, although the franchised interventions in Madagascar (12) included both private and public providers. There were three studies that involved the creation of new facilities; these took place in China (19), Ghana (29) and Mongolia (23). Three studies integrated clinical services into multipurpose youth centres; these took place in Ghana (29), Rwanda (12) and Zimbabwe (18). In Uganda (17) recreational activities were added to existing health facilities as a way of attracting young people.

Table 6.2.

Threshold of evidence needed to recommend widespread implementation of each type of intervention^a

Intervention type	Feasibility^b	Lack of potential for adverse outcomes^c	Acceptability for target group^d	Acceptability for community and policy-makers^e	Potential size of effect^f	Other health or social benefits^g	Overall threshold	Comments
1. Interventions with service providers only <i>plus</i> interventions in the community	+++	++	++	++	+	+	Low	This type of intervention is likely to be easiest and most acceptable but to have least impact because it involves only service providers without changes in the facilities
2. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions in the community	++	++	+++	++	++	+	Low	Including a focus on improving facilities is likely to increase the impact without significantly increasing feasibility or decreasing acceptability
3. Interventions with service	+	+	++	+	+	++	Moderate	With the addition of other sectors there

Intervention type	Feasibility ^b	Lack of potential for adverse outcomes ^c	Acceptability for target group ^d	Acceptability for community and policy-makers ^e	Potential size of effect ^f	Other health or social benefits ^g	Overall threshold	Comments
providers only <i>plus</i> interventions with other sectors								are likely to be problems of acceptability by schools and possibly the media, and the debate is likely to be wider in the community, which may have both positive and negative implications
4. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions with other sectors	+	+	+++	+	++	++	Moderate	As above
5. Interventions with service providers <i>plus</i> interventions in the community <i>and</i> with other sectors	+	+	++	+	++	++	Moderate	Involving community outreach and other sectors is likely to increase some of the difficulties but it

	+	+	+++	+	+++	++	Moderate	As above
6. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions in the community <i>and</i> with other sectors								may also increase the impact and other health and social benefits

^a Degree of desirability is indicated with a maximum of 3 “+” signs. Degree of undesirability is indicated with a maximum of 3 “-” signs.

^b Feasibility decreases with increasing activities inside and outside the facility.

^c The potential for adverse outcomes increases with the involvement of other sectors.

^d Acceptability likely to be increased if service providers and facilities are improved; this works similarly as interventions outside the facilities are increased.

^e Involving other sectors is likely to increase community acceptance but at the same time increase challenges for policy-makers.

^f The more comprehensive the interventions, the more likely they are to have an impact.

^g The more other sectors are involved, the more likely it is that providing access to services for young people and their health and development in general will become focuses for advocacy and action.

Table 6.3

Description of the interventions by study. (There were no studies of type 4 interventions.)

Study, location	Target population and primary objectives	Description
Intervention type 1 (with service providers and in the community)		
C – Lusaka, Zambia: 8 clinics at 3 sites (16)	• Overall objective: to improve the health and well-being of youths in Lusaka • Health service objective: to make services more youth friendly, for example, developing attributes to attract youths, meet their needs and retain young clients for follow-up visits • Target group: young people aged 10–24 years • 4-year study	• Project clinics selected from those already providing quality services or receptive to working with young people • Training of health-care providers and peer educators to communicate about adolescent sexual and reproductive health; major difference in project sites was extent to which community was involved; participatory “learning for action” exercises used to sensitize communities about adolescent sexual and reproductive health.
Intervention type 2 (actions in the clinic, with service providers and in the community)		
L – Jinja district, Uganda: 4 health centres with catchment population of 100 000 people (17)	• To evaluate the impact of adolescent friendly health services piloted in Jinja district, Uganda to reduce STD, HIV and unwanted pregnancies. • Target group: adolescents 10–19 years • 17-month study	• Health workers trained to communicate and counsel adolescents (4 health workers/centre, 2 clinical officers, 13 nurses/midwives, 1 dispenser); district health team trained to build capacity for further training and supervision, also trained in adolescent sexual and reproductive health, communication and counselling • Health centres reorganized to cater to adolescents; games and recreational services introduced at health units • Provide basic supplies (STI^a treatment and contraceptives)

	• Games and recreational services introduced at health units • District health team trained to build capacity for further training and supervision. Also trained in adolescent sexual and reproductive health, communication, and counselling • Adolescents involved in design and subsequent stages of project • Building awareness: a wide range of information activities for young people carried out in the intervention community; information provided about sexual and reproductive health and the availability of services • Counselling: a youth health counselling centre set up in the intervention town provided routine and telephone counselling • Training of service providers (building knowledge and skills about adolescent sexual and reproductive health, sensitizing them to interact with young people, teaching them how to assist young people in dealing with sex-related issues) • Distributing free contraceptive supplies • Provide subsidized youth-friendly sexual and reproductive health services (including voluntary counselling and testing for HIV, STI treatment, emergency contraception, pregnancy testing and reproductive health counselling) along with skills-building and social activities within a purpose-built centre;
I – Songjiang district, Shanghai, China: 1 town in Songjiang, 1 clinic and network of local family planning providers (19)	• Objective: to build awareness and offer counselling and services related to sexuality and reproduction to unmarried youths • Specific objectives: to increase contraceptive use (condom use) among unmarried youths through a multifaceted intervention programme providing information, skills, counselling and services • Target group: youths 15–24 years • 20-month intervention
N – Centre Dushishoze, Rwanda: 1 clinic in Butare (12)	• To motivate young people either to use condoms consistently or to not have sex, to learn their HIV status, and to seek treatment for other STIs • Target group: youths 15–24 years • Results after 18 months of implementation of 4-year programme

Study, location	Target population and primary objectives	Description
		services provided by health-workers and full-time paid peer educators; Peer educators and health-workers provided small-group and individual counselling sessions for youths at the centre and also in churches, clubs, schools and rural community centres • Peer educators helped identify and promote youth-friendly condom sellers in rural areas • Raise awareness of reproductive health needs of young people through meetings with community leaders, parents, teachers, etc • Train clinic nurses, develop “youth corners” in clinics, train peer educators to provide information and contraceptives, and establish a recreational youth centre to support the provision of reproductive health services (Ndhlovu Youth Centre)
0 – Gweru, Zimbabwe (18)	• Create a more favourable environment for the provision of reproductive health information and services for youths • Increase utilization of clinical reproductive health services by youths by 20% above baseline • Increase knowledge of selected sexuality and reproductive health issues among young people attending Ndhlovu Youth Centre by 20% • Intervention lasted 11 months	
Intervention type 3 (with service providers and involvement of other sectors)		
J – Bahia state, Brazil: 10 reference clinics paired with secondary schools (5 pairs in Salvador, 5 in interior) (20)	• Overall objective: to reduce high pregnancy rates among adolescents and growing number of new HIV infections among young adults • Health service objective: to integrate school based sexual and reproductive health education with provision in public clinics of reproductive health services appropriate to adolescents • Target group: young people 10–24 years • Initiative was undertaken over a 2-year period	• 300 service providers took part in 19 training sessions in reproductive health services for adolescents over 2 year period • At end of this time, an average of 3.2 service providers per clinic had been trained to provide these services in a manner appropriate for adolescents; no description of content of training • Sexual and reproductive health curriculum introduced in 10 “partner” schools

	• Referrals made to clinics • Contact established between health service and educational staff
Intervention type 5 (with service providers, in the community and involving other sectors)	
D – Zimbabwe: 5 pilot sites (1 urban and 4 growth points), 26 family planning clinics (21)	• Overall objective: to encourage young people to adopt behaviours that reduce the risk of pregnancy and STIs, including HIV • Health service objective: to encourage young people to use services • Target group: young people 10–24 years • Multimedia campaign for 6 months; intervention for 1 year
G – Mwanza region, United Republic of Tanzania: 10 communities in 4 rural districts and 59 intervention schools, 18 government health facilities (22)	• Campaign used a variety of channels including posters, leaflets, newsletters, radio programme, drama, community events and hotlines; some dramas performed in, and print material distributed through, schools but no school-based curriculum. Throughout campaign peer educators, drama groups and print materials referred young people to clinics. • Health services: Family planning providers were trained in 26 designated clinics in communication and counselling skills during a 1-week course; expectation that attendees would train co-workers in counselling • Key health workers in all 18 intervention and 21 comparison health facilities received either an initial 1-week course or 1-week refresher course in the syndromic management of STIs. The same workers from the intervention facilities received a 1-week participatory training workshop focusing on the needs of young people and methods for providing sexual and reproductive health services for them. • All 39 health facilities received 4 supervision visits per year • Additional interventions included

Study, location	Target population and primary objectives	Description
		○ In-school sexual and reproductive health education implemented through a teacher-led, peer-assisted programme of participatory lessons ○ Community-based condom promotion and distribution, for and by youths, using a social marketing approach; more than 3000 condoms per year were distributed by youth condom promoters and distributors ○ Community activities • The cost paper shows that 68.9% of overall implementation costs were for the in-school component, 12.3% for the community-based component, 10.1% for the youth condom promoters and distributors, and 8.8% for the youth-friendly health services component with the health workers and clinics
Intervention type 6 (with service providers, in the community and involving other sectors)		
A – Mongolia: pilot of multisector project (2 rural districts and 3 districts in capital) (23)	• Objective: to increase adolescents' access to quality health services • Target group: adolescents 10–19 years • Assessment conducted after 1 year of the 3-year project	• Standards of quality of care for adolescents were developed • Training staff in adolescent health and development, including teaching new skills in communication and counselling, providing basic equipment and supplies to health facilities (such as scales, contraceptives), making the facilities more attractive to young people, designing information and education materials on health and development issues and distributing these materials to adolescents, and developing policies and procedures on

confidentiality and applying these at participating sites

- Community mobilization at each site involved governors, teachers, health workers, parents and adolescents
- Often it was the health workers who trained others
- Adolescents were part of adolescent boards and involved in design of education materials and advocacy

B – South Africa:
national programme started in 1999 and linked with “loveLife” multimedia programme (24)

- Overall objective: to contribute to reducing prevalence of HIV, STIs and unwanted pregnancies among South African youths
- Health service objectives: catalyse an adolescent-friendly ethos in all government clinics; provide a bridge between prevention and treatment through improved management systems, infrastructure and clinical capacity
- Target group: young people aged 10–24 years, with primary target group aged 12–17 years
- Programme started in 1999

- Clinics willing to join the initiative undergo the following steps:
 - introduced to idea of a Quality Improvement Team from within the clinic staff and select staff to participate;
 - undergo a baseline assessment measured against 10 national standards;
 - develop and implement action plan agreed by Quality Improvement Team;
 - undergo external assessment and receive rating as an adolescent-friendly clinic (rating valid for 2 years);
 - undergo repeated external assessments and rating every 2 years
- Reasonably high proportion of clinics progress to accreditation (via external assessment); by December 2004, 65% of clinics involved for at least 12 months had been accredited

Study, location	Target population and primary objectives	Description
E – northern Senegal: "Frontiers study" (2 intervention arms involving communities, clinics and schools) (25)	• Overall objective: to improve reproductive health of young people aged 10–19 years • Health service objectives: to determine the feasibility, cost and effect of improving youth-friendliness of services and the willingness and ability of service providers to offer quality counselling and services to youth and on the number of youths using these services; to determine whether there is an additional contribution from a school-based intervention on the reproductive health knowledge of youths, their attitudes, sexual behaviour and use of reproductive health services • Target group: adolescents 10–19 years • 15-month intervention	• Training of health-care providers and peer educators in 8 clinics; five school health nurses received the same training • Modification of physical layout of clinics to improve privacy for adolescents (waiting rooms for adolescents and doors to facilitate private adolescent access) • Peer educators conducted classes in the community similar to those at the clinic • Implementation costs totalled about US\$ 100 000 over 2 years; community costs were US\$ 40 000; clinic intervention costs were US\$ 34 000; and school costs were US\$ 26 000 • Most expenditures were for planning and training at beginning of intervention
F – Bangladesh: "Frontiers" study (2 urban intervention arms involving combination of community, clinic and school) (26)	• Overall objective : to determine the feasibility and effectiveness of a systematic intervention to foster a supportive environment to address the problems faced by adolescents by making health services more accessible and providing education to enable them to manage their own reproductive health • Health services objectives: to improve the reproductive health of adolescents by providing information and adolescent-friendly services to out-of-school and in-school adolescents; to assess the effect of an education intervention on adolescents' reproductive health knowledge, attitudes and behaviour, including utilization of services; to	• Health-care providers trained to be welcoming and maintain non-judgemental attitude; offer minimum waiting time, privacy, confidentiality and affordable services • Non-clinical staff trained in providing reproductive health care to adolescents • Adolescents who attended education sessions received a card allowing them to visit a doctor free for 1 year • Clinic staff visited the community and schools to monitor education sessions and inform adolescents about services • Peer educators and teachers referred adolescents to services

determine whether an additional contribution is made from school-based intervention on reproductive health and attitudes and utilization of services • Target group: youths 13–19 years • Duration of intervention: 20 months • 2 year study	H – Mozambique: “Geração Biz” programme (30 clinics in 6 provinces; 8 clinics in Maputo city evaluated) (27) • Overall objective: to improve adolescent sexual and reproductive health services, increase gender awareness, reduce the incidence of unplanned pregnancies and decrease vulnerability to STIs, HIV and unsafe abortion • Health service objectives: to establish a network of quality reproductive health services
• Services provided based on government-defined essential package (family planning, STI, tetanus toxoid vaccination, antenatal and post natal services) • In the community, information was provided through telephone hotline and question and answer columns in local newspaper; letter boxes for responding to adolescents' questions installed outside clinics • Total cost of both intervention sites \$US 41 388; site with school-based intervention twice as costly (major cost was training teachers); costs of community and school interventions about US\$ 12 000 each; financial costs of health service intervention (US\$ 2 353) were lower because used existing structures and staff (although non-financial costs, such as time spent by staff in planning were noted). Training costs low in clinics due to involvement of international agency in study (Population Council)	• 3 specialized adolescent-only clinics in 2 urban (Maputo) centres (1 in hospital, 1 in youth centre, 1 in centre offering vocational skills) • Centre in hospital provided preventive, clinical, counselling and contraception services, including emergency contraception; also provides care for STIs and prenatal and postnatal care; offers post-abortion

Study, location	Target population and primary objectives	Description
	and counselling for adolescents within the public health system and at alternative sites • Target group: young people 10–24 years • Activities started in November 1999, data to 2001	counselling; offers voluntary counselling and testing for HIV • Services free except STI treatment • Clinics refurbished and equipped to make them youth-friendly and to offer privacy • Training curriculum developed; providers trained; specialized personnel recruited, information materials developed; developed management information system for clinic; conducted periodic technical meetings for service providers to exchange information • Peer activists situated in waiting areas to welcome and educate clients
M – Madagascar: 1 province with “franchised” clinics (12)	• Overall objective: to prevent HIV/AIDS and unplanned pregnancies by motivating sexually active youth to be treated for STIs; to encourage them to use condoms consistently or not have sex • Target group: youths aged 15–24 years • Results after 18 months of implementation of 4-year programme	• 13 for-profit and 2 private non-profit clinics “franchised” as a network of youth-friendly clinics; clinics meet minimum standards including having well-trained non-judgemental providers, flexible hours, welcoming decor and discreet physical locations; services are subsidized (price of US\$ 1.45 for STI diagnosis and other reproductive health services) • Sponsoring technical organization provided training, supervision and support to health workers and materials; duration and content of training not specified • Clinics and health promotion activities are advertised through mass media and face-to-face communication provided by paid full-time peer educators who conduct small-group and individual counselling sessions at diverse

	locations and in mobile units. Peer educators received initial training of 4-5 days. • Sessions held with parents and religious leaders to promote adolescent-parent dialogue on reproductive health issues • Trained and carefully supervised peer educators facilitated group discussions to help young people gain confidence and skills to negotiate safer sex; assessed whether clinics were adolescent-friendly;
P – Endo, Nigeria (10)	• Overall objective: to improve treatment of STIs among adolescents • Target group: young people aged 14–20 years attending school • Training given to STI treatment providers (private practitioners, patent medicine dealers, pharmacists identified by adolescents as used by youths in the neighbourhood for STI treatment) • 90% (45) of patent medicine dealers identified by adolescents participated in and completed training as did 81% (29) of pharmacists and 70% (28) of private practitioners; all were given certificate of participation; private practitioners were listed as adolescent-friendly clinics and the list was provided to peer educators • Different categories of health-workers were trained separately (each for 30 hours) in STI diagnosis and treatment using WHO syndromic management guidelines; different algorithms used for each group; • Health-workers trained in advance of implementation of school-based interventions

Study, location	Target population and primary objectives	Description
K – Ghana: “Innovate” programme (29)	• Health clubs set up in each school; health professionals provided information about STI prevention and treatment; distributed information; organized discussions and films • 10 peer educators trained over 4 weeks about STIs; peer educators provided counselling to other in-school adolescents on individual and group basis, during school breaks and after hours	• Planned Parenthood in Ghana created the “Young and Wise Centre”, which included a clinic (providing STI testing and treatment, HIV testing and counselling, pregnancy testing, post-abortion care and family planning), a library and computer centre; it offered a range of educational, artistic and entertainment activities • A multimedia “Be Wise” campaign to promote the centre included television, radio, print and electronic media • Clinic had youth-friendly facilities, including flexible opening hours and privacy policies as well as decor attractive to young people
	• Overall objective: to increase young people’s knowledge about and access to reproductive and sexual health services • Target group: young people aged 10–24 years • Data collected over 8-month period	

^a STI = sexually transmitted infection.

Table 6.4a

Description of outcome evaluations by study for type 1 interventions (with service providers and in the community)

Study	Design and sample size	Evaluation results (data are estimates from graphs) 1995-1999				Strength of evidence	
C (16)	Design: before-after study, service statistics from 8 treatment and 2 control clinics	Quarterly number of family planning clients aged 15-24 years				Increase in use of services but no statistical tests performed to show significance in comparison with control clinics; data do not indicate substantial or consistent differences in increase in utilization between intervention and control clinics	
		Intervention and control groups (No. clinics)	Baseline (first quarter 1995)	Quarter intervention started	End (third quarter 1999)		Time between intervention and end
		1 (2)	250	250	1000		21 months
		2 (3)	0	50	50		15 months
		3 (3)	250	1750	3400		15 months
	Control (2)	250	-	1250	-	Limitations: No statistical tests carried out	
	Quarterly number of clients for STI services aged 15-24 years						
	Intervention and control groups (No. clinics)	Baseline (first quarter 1995)	Quarter intervention started	End (third quarter 1999)	Time between intervention and end		
	1 (2)	2250	500	4000	21 months		
	2 (3)	550	550	600	15 months		
	3 (3)	950	500	2000	15 months	Note: Data collection also included client exit surveys, focus group discussions, in-depth interviews providing data on relationship between service utilization, community acceptance and youth-friendliness of clinics	
	Control (2)	400	-	1600	-		
	Weak evidence of no increased use related to the intervention						

Note: Data collection also included client exit surveys, focus group discussions, in-depth interviews providing data on relationship between service utilization, community acceptance and youth-friendliness of clinics

Table 6.4b

Description of outcome evaluations by study for type 2 interventions (actions in the clinic, with service providers and in the community)

Study	Design and sample size	Evaluation results	Strength of evidence for effect
L (17)	Design: quasi-experimental with non-equivalent control group; knowledge-attitude-practice survey of adolescents ($n = 128$) and health-workers ($n = 42$) in 4 intervention clinics and 4 control clinics; data collection also included service statistics, focus group discussions, in-depth interviews	Knowledge - Adolescents in the intervention sites "had increased knowledge of adolescent health problems, predisposing factors, family planning, HIV and STIs ... all with $P < 0.0001$." (17) - Adolescents using health services over 12 months - Outpatient services: intervention group = 49.3%, control group = 13.1%, $P = 0.0001$ - Family planning services: intervention group = 69.4%, control group = 21.1%, $P = 0.0001$ - STIs services: intervention group = 65.5%, control group = 31.9%, $P = 0.0001$ - Laboratory services: intervention group = 49.8%, control group = 4.4%, $P = 0.0001$ Behaviour - Currently using family planning: intervention group = 65.6%, control group = 46.9%, $P = 0.006$ - Ever used family planning : intervention group = 68.8%, control group = 53.1%, $P = 0.020$	Statistically significant differences in utilization of services among intervention and control sites; but there was a non-equivalent control group and aspects of study design are unclear Limitations: statistical analysis does not take account of clustering; no service statistics on numbers using health units (only "proportion of adolescents seeking health services") Weak evidence for increased use of services related to the intervention
I (19)	Design: quasi-experimental (before-after) with 1 intervention and 1 control community Sample size: intervention group = 1220, control group = 1007 unmarried youths (aged 15–24 years)	Increased "ever contraceptive use", "regular contraceptive use" and "condom use" at intervention sites, $P < .001$ Among those who became sexually active during the study period, there was increased use of contraceptives ($P < 0.0001$) and increased condom use as contraceptive of choice ($P < 0.05$)	Used reported condom use as a proxy for service utilization; statistically significant increase in use of services in intervention sites Limitations: no overall data on service utilization only on reported

	Logistic regression analysis and generalized estimating equations analysis of data from sexually active young people ($n = 644$) indicated that exposure to the intervention was the most powerful correlate of condom use (odds ratio = 14.54, 95% confidence interval = 6.35–33.30, $P > 0.0001$) behaviours (condom use) that could result from service utilization Note: data also available on obstacles to contraceptive use and “joint decision with partner” Moderate evidence for increased use of services	
N (12)	Design: cross-sectional survey of youths after 18 months of intervention, with service use compared by level of exposure to intervention; 2002 household survey Survey sample size: 3109 unmarried young people aged 15–24 years Data not presented on pre-exposure vs post-exposure Dose–response analysis of: Knowledge • Belief in effectiveness of condoms: males with low exposure 73%, males with high exposure 92%; females with low exposure 64%, females with high exposure 81% Skills • Correct condom use: males with low exposure 17%, males, with high exposure 30% • Confidence to buy condoms: females with low exposure 21%, females with high exposure 44% Services • Use of service (HIV test): males with low exposure 2%, males with high exposure 9%; females with low exposure 2%, females with high exposure 7% All differences significant at $P < 0.05$	Data show statistically significant higher utilization with increased exposure to the interventions No data on overall utilization of services by young people. Limitations: Pre-intervention data not presented; no overall data presented for service utilization Weak evidence for increased use of services in those with high exposure to the interventions vs. those with low exposure
O (18)	Design: review of clinic data over 1 year after the start of the intervention Many youths indicated that they had used the Youth Centre, but only 0.2% of them said that this was for reproductive health services	A new service was provided and it was used by young people, although

Study	Design and sample size	Evaluation results	Strength of evidence for effect																				
		A histogram in the report provides the following data on the number of clients who used the services of 4 reproductive health clinics (estimated from histogram) <table><tr><th>Time</th><th>Antenatal services used by females aged 12–18 years</th><th>STI clinic used by males aged 12–24 years</th><th>STI clinic used by females aged 12–24 years</th></tr><tr><td>4th quarter 1998</td><td>0</td><td>2</td><td>3</td></tr><tr><td>1st quarter 1999</td><td>105</td><td>140</td><td>202</td></tr><tr><td>2nd quarter 1999</td><td>65</td><td>102</td><td>130</td></tr><tr><td>3rd quarter 1999</td><td>50</td><td>60</td><td>70</td></tr></table>	Time	Antenatal services used by females aged 12–18 years	STI clinic used by males aged 12–24 years	STI clinic used by females aged 12–24 years	4th quarter 1998	0	2	3	1st quarter 1999	105	140	202	2nd quarter 1999	65	102	130	3rd quarter 1999	50	60	70	increased utilization declined in 2nd and 3rd quarters of follow up Limitations: no comparison or control clinics; no statistical tests; no denominators Note: data also available on the types of services used by young people and on risk and protective factors, knowledge and behaviours from a before and after study that did not include data on service utilization Weak evidence of increased use of services
Time	Antenatal services used by females aged 12–18 years	STI clinic used by males aged 12–24 years	STI clinic used by females aged 12–24 years																				
4th quarter 1998	0	2	3																				
1st quarter 1999	105	140	202																				
2nd quarter 1999	65	102	130																				
3rd quarter 1999	50	60	70																				

^a STI = sexually transmitted infection.

Table 6.4c

Description of outcome evaluations by study for type 3 interventions (with service providers and involvement of other sectors)

Study	Design and sample size	Evaluation results	Strength of evidence for effect
J – (20)	Design: quasi-experimental with control group of schools and clinics in the same area; 3 rounds of knowledge–attitudes–practice surveys in intervention schools and 2 in control schools; service statistics from intervention and control clinics	Average annual number of new adolescent contraceptive users (all methods) at 6 intervention clinics • 1997 (beginning of project): 390 • 1999 (end of project): 500 Average annual number of new adolescent contraceptive users (all methods) at 258 control clinics • 1997 (beginning of project): 110 • 1999 (end of project): 200 No. (%) of students receiving information from health-worker at end of project • Males: project school – 588 (13.7 %), control school – 686 (10.1%), $P < 0.05$ • Females: project school – 1048 (15.3%), control school – 1198 (12.5%), $P < 0.05$	Service statistics indicate no difference among intervention and control sites, but no statistical tests performed Limitations: all data provided as graphs; no statistical tests for service utilization data Note: data also available on quality standards including survey of service providers ($n = 20$, 100% of providers) and adolescent clients ($n = 385$, 89% of clients) in 4 reference clinics (in Salvador) to assess quality standards Weak evidence of no increased use related to the intervention Weak evidence of increased access to information related to the intervention

Table 6.4d

Description of outcome evaluations by study for type 5 interventions (with service providers, in the community and involving other sectors)

Study	Design and sample size	Evaluation results	Strength of evidence for effect
D (21)	Design: quasi-experimental before–after study with control group; community surveys of males and females aged 10–24 years in intervention area and 2 control communities Sample size: 3 month pre-intervention survey = 1426; 1 year post-intervention = 1400.	At end-of-study survey • 28.2% of respondents at intervention sites reported to have sought services at health centre • 9.5% of respondents at control sites reported to have sought services at health centre • $OR^a = 4.7, P < 0.001$ Use of modern contraceptives increased in intervention sites • Intervention group = 56% at baseline, 67% at end of study, $OR = 1.7, P < 0.05$ • No data for control sites Respondents at intervention vs control sites • Respondents at intervention sites more likely to “stick to one partner” than those in control sites ($OR = 26.1, P < 0.001$) • Respondents at intervention sites likely to start to use condoms ($OR = 5.7, P = 0.05$) • Respondents at intervention sites more likely to have “said no to sex” ($OR = 2.5, P = 0.0001$).	Statistically significant difference in increase in service utilization in intervention sites relative to control sites (however there was contamination of control sites); statistically significant increase in contraceptive use at intervention sites at end-of-study survey relative to baseline survey Limitations: contamination at control sites; major intervention in the study was a media intervention; no data from service statistics provided; no baseline data for service use; no account taken of clustering in statistical analysis Weak evidence for increased use of services

G (22)	Design: community-randomized controlled trial with follow-up of a cohort of 12–24-year-olds over 3 years; data from community surveys	Proportion who reported going to a health facility for most recent STI symptoms within the last 12 months	No statistically significant increase in reported use of services
	Survey sample size: Intervention area – 10 communities (males = 2076, females = 1448); control area = 10 communities (males = 2024, females = 1492)	- Adjusted OR (95% confidence interval) for intervention vs control for males = 0.84 (0.50–1.41), for females = 1.02 (0.62–1.70) Proportion who reported using condoms at last sexual intercourse - Adjusted OR (95% confidence interval) for intervention vs control for males = 1.47 (1.12–1.93), for females = 1.12 (0.85–1.48)	Statistically significant increase in condom use only among males but likely to be mainly due to other components of the intervention, such as youth condom promoters and distribution in communities as well as school-based intervention.
			Limitations: based on reported utilization; data on service statistics not yet published
			Moderate evidence of no effect on service utilization

^a OR = odds ratio.

Table 6.4e

Description of outcome evaluations by study for type 6 interventions (with service providers, in the community and involving other sectors)

Study	Design and sample size	Evaluation results				Strength of evidence for effect
A (23)	Design: quasi-experimental design with comparison of service utilization data in intervention sites ($n = 51$, 32 urban, 19 rural) and control sites ($n = 28$, 19 urban, 9 rural)		Males	Females	Total	Statistically significantly greater use of services
		New visits	430	577	1007	Although P values < 0.05 throughout, results are not standardized for differences in catchment populations
		New visits intervention group	296	299	595	
		New visits control group	1.5	1.9	1.7	
		Ratio intervention: control	$P < 0.05$	$P < 0.05$		Limitations: number of attendances compared among intervention and control sites with no attempt to standardize for differences in number of adolescents in catchment areas, despite data indicating that adolescent population was 1.4 times greater in intervention areas than in control areas; no pre-intervention data provided; time-series in intervention clinics only
		Follow-up visits intervention group	257	303	560	
		Follow-up visits control group	180	206	386	
		Ratio intervention: control	1.4	1.5	1.5	Weak evidence for small increase in utilization of services relative to the intervention
			$P < 0.05$	$P < 0.05$		
		Total visits	617	770	1387	

	Use of services increased in the intervention sites • Ratio A:C = 2:1 • Ratio B:C = 10:1 • Ratio B:A = 6:1 Use of condom at last sexual intercourse among unmarried males Intervention site A 2.31 ($P < 0.1$) Intervention site B 2.41 ($P < 0.1$) Control site C 2.0 (NS)	No increase in condom use among unmarried males among intervention and control sites Limitations: population-based surveys carried out in catchment population but did not include information about use of services only attitudes towards services; however information on condom use obtained Note: data also available about types of services used
M (12)	Design: quasi-experimental before–after study of clinic attendance records for youths aged 15–24 over 24-month intervention period in 15 clinics • No. attending clinic January–March 2001 = 138 males, 389 females • No. attending October–December 2002 = 250 males, 1959 females	Weak evidence of increased use of services related to the intervention Service statistics indicated increased utilization by males and females Limitations: no control clinics; no statistical tests
H (27)	Design: before–after comparison of clinic attendance by “youths” over 3 years (1999–2002); intervention began in 2000 Total attendance at the 8 intervention clinics • 1999 = 1 173 • 2000 = 11 726 • 2001 = 18 809	Weak evidence of increased use of services Service data indicate increased use by youth Limitations: no control group; no statistical tests; no denominators; only partial data reported

Study	Design and sample size	Evaluation results	Strength of evidence for effect			
P (10)	Design: randomized controlled trial with STI treatment providers close to schools randomly allocated to intervention sites (4 schools) and 2 control sites (4 schools each); surveys in the schools before and after the interventions	Proportion seeking treatment from a private provider for STIs	Proportion using provider		Change from pre-intervention to post-intervention	Change relative to control
			Before	After		
		Intervention	17.5%	40.7%	OR (95% CI) ^b	OR (95% CI)
		Control 1	19.0%	29.1%	1.75 (1.51–2.03)	1.85 (1.06–3.22)
		Control 2	24.0%	30.4%	1.38 (0.75–2.56)	2.35 (1.03–5.17)
		Reported condom use by males	Some condom use	Some condom use	Note: data also available on knowledge and skills, reported symptoms of STI, notification of partners	
		Intervention	30.8%	40.5%	1.5 (1.38–1.69)	Strong evidence of increased use of services
		Control 1	32.1%	36.1%	1.2 (1.07–1.33)	
					1.32 (0.97–1.79)	
		Weak evidence of increased utilization of services				
Statistically significant increase and difference among intervention and control sites in terms of use of services for both males and females; for females among proxy indicators of use of services (condom use and STI symptom prevalence)						
Limitations: statistical analysis did not take account of clustering						
Note: data also available on knowledge and skills, reported symptoms of STI, notification of partners						
Strong evidence of increased use of services						

Control 2	26.6%	34.3%	1.4	1.08
Reported condom use by females			(1.09–2.32)	(0.60–1.46)
Intervention	30.2%	36.5%	1.3	–
			(1.05–1.72)	
Control 1	32.6%	31.8%	0.9	1.82
			(0.78–1.19)	(1.28–2.60)
Control 2	29.2%	25.4%	0.8	1.96
			(0.44–1.59)	(0.94–4.10)
K (29)	Design: review of clinic statistics over 8-month period after introduction of youth centre	Many young people visited the centre (reported attendance January = 1005, February = 2685, March = 2816, April = 2993, May = 4494, June = 4379, July = 2534, August = 4809) but only 3.3% of those visiting the centre used either the clinic or the counselling services		
		During first 8 months of operation, the centre provided 18 995 male and 2 337 female condoms; served 2,646 clinic clients; and counselled 102 youths, with an additional 600–800 counselled by phone. Unclear where these statistics have been obtained from, and they do not correspond with the statistics in the evaluation. Condoms and counselling provided by other delivery points in the centre in addition to the clinic		
		Difficult to assess trends over the 8 months because data presented sometimes monthly and sometimes 3-monthly. No obvious trends in numbers attending centre as a whole. The report states: “the service statistics indicate the number of people using the clinic overall has increased but actual use of the clinical services available is still limited”.		
		Limitations: no control clinics; it was a new centre so no before–after statistics; not clear how many clients would have attended an alternative clinic if the new centre had not opened; not possible to use data to identify any trends over time; no tests for statistical significance		
		Weak evidence of increased use of services		

^a STI = sexually transmitted infections.

^b OR (95% CI) = odds ratio (95% confidence interval).

Among the studies included in this review, the scale varied considerably. Ten of the studies involved fewer than 10 facilities; these took place in Bangladesh (26), Brazil (20), Ghana (29), Mozambique (27), Rwanda (12), Senegal (25), Uganda (17), Zambia (16) and Zimbabwe (18, 21). The remaining studies looked at interventions occurring in larger numbers of facilities, from 15 facilities in Madagascar (37) to 328 facilities in South Africa (24). Two studies did not use facilities as the unit of analysis. In China (19) the unit was networks of service providers, and in Nigeria (10) it was individual service providers.

By virtue of their inclusion in this review, the health facilities in the studies provided one or several of the packages of services endorsed during the Montreux consultation (5). However, where data were available from the studies, the Montreux package of services was often not the primary reason why young people chose to use the health facilities. For example, in clinics in Gweru, Zimbabwe (18), 60% of adolescents sought curative (non-reproductive) services; in Senegal (25), 51% of services sought were for reasons other than reproductive health; and in 8 clinics in Maputo, Mozambique (27), counselling for unspecified issues was sought by 47% of young clients.

6.3.2 *Results by study*

There was one study of a type 1 intervention, four of type 2 interventions, one of a type 3 intervention, none of a type 4 intervention, two of a type 5 intervention and eight of type 6 interventions. All of the studies included actions in the community, and all of the interventions that had activities aimed at improving health facilities also included training for service providers and, sometimes, other clinic staff.

The one study that examined a type 1 intervention was from Zambia (16); it reviewed baseline, start-up and end-of-study statistics on family planning and outpatient attendances by 15–24-year-olds in eight participating clinics and two control sites. In the intervention clinics, service providers were trained, and peer educators also received training to work in the community served by the clinic. Although there were increases in attendance during the study period, these were not significantly greater than the increases seen in control clinics during the same period.

The four studies of type 2 interventions were conducted in China (19), Rwanda (12), Uganda (17) and Zimbabwe (18). The findings from the Rwanda study were based on a cross-sectional survey that assessed the impact of exposure to the interventions on the use of services by young people (12); this was one of only three studies that explored the dose–response effect

of interventions. There was weak evidence of increased use of services, most notably voluntary counselling and testing, by those with high exposure to the intervention compared with those with low exposure. The Uganda study used a quasi-experimental design with a non-equivalent control group and demonstrated statistically significant increases in service use as a result of the interventions (17). Although both these studies showed statistically significant differences in service utilization, aspects of the study designs were not clear, and they were therefore categorized as showing weak evidence of increased use of services.

The Zimbabwe study reviewed clinic data for a 1-year period following the implementation of the interventions, and was one of several studies that did not include any statistical tests but demonstrated that a service was provided and it was used (18). This was considered to be weak evidence of an increased use of services.

The study from China focused explicitly on increasing young people's use of contraceptives, particularly condoms, which were provided by a range of facilities. It was the only study included in the review that did not explicitly measure young people's use of services, but had condom use as the outcome variable (19). However, it was considered that condom use could be taken as a proxy indicator for service use in terms of how the study had been designed; there was moderate evidence for increased use from the quasi-experimental design that included a before and after component and also included a control site.

There was only one study that examined a type 3 intervention. This was from Brazil (20) and was designed to strengthen links and referrals among schools and health facilities. Although no statistical tests were carried out, the quasi-experimental evaluation showed weak evidence for no increased use of services related to the intervention.

No studies of type 4 interventions were identified.

Two studies looked at the effect of type 5 interventions: one from Zimbabwe (21) and the other from the United Republic of Tanzania (22). The intervention in Zimbabwe was primarily a media campaign that also provided training for service providers in designated clinics in the project area. The quasi-experimental design, which included a control site, showed statistically significant increases in self-reported health service-seeking behaviours that were associated with increased exposure to the intervention. However, there were no baseline data for these findings, and there was contamination of the control site. This study was therefore designated as providing weak evidence for an increased use of services, although in this study reported use of services, rather than actual use, was the outcome measured. The other type 5

study, from the United Republic of Tanzania, was one of two randomized controlled trials identified. The study did not show any statistically significant increase in service provision despite the implementation of health-worker training and interventions in communities and schools. It therefore provided moderate evidence for no increased use of services.

Type 6 interventions were the subject of the largest number of studies; these interventions include training for service providers and activities in facilities, as well as actions in the community and with other sectors. There were eight studies in the following countries: Bangladesh (26), Ghana (29), Madagascar (12), Mongolia (23), Mozambique (37), Nigeria (10), Senegal (25) and South Africa (24). As outlined in [Table 6.4e](#), six of these studies showed weak evidence for an increased use of services. The randomized controlled trial from Nigeria (10) showed strong evidence of an increase in the use of health services; the study from Senegal (25), which used a before and after design and a control site, showed increases in service utilization, but these increases were not statistically different from those at the control sites.

6.3.3 **Results by intervention**

Training health-service providers, and in some cases other clinic staff, was the most frequently implemented intervention used to increase service use by young people. However, descriptions of the content of the training were limited. The most frequently mentioned topics were counselling and communication skills in the studies in China (19), Mongolia (23), Mozambique (27), Uganda (17), Zambia (16) and Zimbabwe (21); clinical knowledge and skills related to STIs in Madagascar (12), Mozambique (27), Nigeria (10), Senegal (25), South Africa (24) and the United Republic of Tanzania (22); clinical knowledge and skills related to contraception in China (19), Senegal (25) and South Africa (24); and health-workers' attitudes, particularly in relation to working with young people and ensuring confidentiality, in Bangladesh (26), China (19) and Mongolia (23). The duration of the training was rarely provided, but where indicated it ranged from 30 hours (Nigeria) to 15 days (Mozambique) or 19 sessions (Brazil). In five studies, mention was made of supervising health-service providers to reinforce the knowledge and skills developed during training; this occurred in the studies in Madagascar, Mozambique, Uganda, South Africa and the United Republic of Tanzania.

Only one study explicitly set out to explore the relationship between different aspects of quality in the facility, actions in the community and service utilization; this was conducted in Zambia (16). The analysis indicated that use of services was more strongly associated with levels of community acceptance than with the "youth friendliness" of the services.

Altogether, 11 of the 16 studies were multicomponent interventions that included involvement with other sectors. This reflects current thinking that a combination of interventions in different settings is likely to have the greatest impact on young people's behaviours and, subsequently, on HIV prevalence. In these multicomponent intervention studies, the aim of increasing young people's use of services was usually one of a number of objectives. Unfortunately, the actions implemented in the health services were often poorly described, both those that were carried out in the health facility and those that were implemented in the community. Only one study – in Brazil (20) – specifically set out to measure the influence of actions in other sectors on the utilization of health services.

In the studies that included actions taken in health facilities mention was made of reducing fees, subsidizing commodities and modifying the physical plant in order to improve privacy or make the facilities more appealing to young people. The most frequently described community activities were holding public meetings and advertising the facilities, for example by distributing posters and pamphlets.

Peer educators had a role in half of the studies, carrying out a range of activities such as stimulating demand, referring young people to the facilities, ensuring that the facilities or services were welcoming, and providing information about sexual and reproductive health in clinics and in the community. This review indicates that merely placing a clinical service in a youth centre does not ensure it will be used. In the studies reviewing interventions in Ghana (29) and Zimbabwe (18) where this was done, only a small proportion of young people who used the centre used the clinics: 3.3% in Ghana and 0.2% in Zimbabwe.

The initiative in South Africa (24) was the most extensive in scale and rigour. It included the setting of national standards for delivering adolescent health services and the development of an accompanying internal quality improvement process that staff could carry out in their facilities, as well as an external assessment that led to accreditation of the services as being adolescent-friendly. In Madagascar, standards for assessing the quality of services provided to adolescents were part of the franchising approach to services that was implemented there (12), although the standards were not described in detail. National standards were also established in Mongolia (23). Elements common to the standards set in Mongolia and South Africa include standards for referral (for example, from schools to health services and from health services to other social services), for improving accessibility (for example by advertising the services), for creating an appealing physical environment in the facilities, for instituting policies and procedures that ensure

confidentiality, for ensuring the technical competence of providers, ensuring adequate equipment and supplies, and generating community involvement.

Establishing standards for service delivery provides clear direction for action and accountability through regular monitoring. Monitoring data were available for South Africa but not for Madagascar. In Mongolia, assessments were made through facility observation and surveys of clients and service providers; these demonstrated that there were improvements in the physical environment of the facilities, service providers' competencies and attitudes, and in client satisfaction. Further analysis of client satisfaction data highlighted the importance of basic amenities, such as toilets, in facilities in terms of adolescents' perceptions of acceptability (30). In South Africa, the majority of the 72 clinics that were members of the National Adolescent Friendly Clinics Initiative that were assessed in 2004 complied with between 80% and 90% of the initiative's standards. In addition, the 11 clinics that were assessed annually showed statistically significant better performance on all but one standard when compared with the control clinics.

Information about the costs of the interventions was provided in five of the studies. Unfortunately the data do not make it possible to estimate the costs of increasing young people's use of services. However, these data are useful in indicating the relative costs of the different components of multisector interventions, including the costs of community engagement. In the studies from Rwanda and Madagascar (12), the total in-country costs for all interventions was US\$ 1.1 million each. In addition, the costs for technical assistance from the international nongovernmental organization supporting these two projects, plus a third project in Cameroon that was excluded from this review (12), was US\$ 1.7 million for the three countries over 4 years. Information from the Mwanza project in the United Republic of Tanzania (22) showed that 68.9% of overall implementation costs were for the in-school component, 12.3% for the community-based component, 10.1% for the condom promoters and distributors, and 8.8% for the youth-friendly health services component.

The studies in Senegal and Bangladesh (25, 26, 31) provided information on the relative costs of making improvements in health services compared with other intervention components. In Senegal, implementation costs totalled approximately US\$ 100 000 over 2 years; the costs were shared between community interventions (US\$ 40 000), clinic interventions (US\$ 34 000) and school interventions (US\$ 26 000). Most of the expenditures were for planning and training at the beginning of the project. In Bangladesh, the total cost for both intervention sites was US\$ 41 388, with the site that included school-based interventions being twice as costly. The major additional cost at this site was for teacher training. The costs of the community interventions

and the school-based interventions were both approximately US\$ 12 000 each. The costs of interventions in the health services were lower, at US\$ 2 353, because they used existing structures and staff (although non-financial costs, such as time spent by staff in planning, were said to be substantial). Another factor that kept clinic costs low was that much of the training was carried out by the international agency involved in the study, and this was not included in the costing.

6.4 Discussion

6.4.1 *General*

Providing young people with health services that will help prevent them becoming infected with HIV and that will care for them if they do become infected is a basic human right's obligation (38), and all governments and communities need to ensure that these services are delivered. Providing these services to young people is also a key programme element for HIV prevention that has been endorsed by governments in a range of international fora during the past decade (1, 3, 4). Policy-makers and programme managers, especially those working in resource-constrained settings, need to know which types of interventions are most likely to increase young people's use of health services.

Despite the fact that the evidence for the most part is weak, the majority of studies identified for inclusion in this review demonstrated an increased use of health services by young people as a result of the interventions. This is also true for the additional studies that were identified but not included in the review as a result of concerns about the details of the interventions or the quality of the data (32–36). This finding is encouraging because when the technical report on programming for adolescent health was published 10 years ago (13), there was little evidence to indicate whether it was possible to increase young people's use of health services, even though a range of service delivery models had been described in the publication. Furthermore, many of the studies included in this review reflect the consensus around good practice that has been developing in discussions between researchers and people responsible for programme development and delivery during the past decade (2, 13, 28).

Table 6.5 summarizes the levels of evidence of effectiveness needed before different types of interventions can be recommended for widespread implementation. The evidence for an increased use of services by young people is either negative or equivocal for all types except types 2 and 6, which include activities that involve service providers and facilities and taking actions in the community with or without the involvement of other sectors. For these

two types there is weak evidence for an increased use of services. Type 2 interventions require a weak level of evidence to recommend them as “Go” (Table 6.2); thus the evidence indicates that interventions that train service providers and other clinic staff, implement changes in clinics to make them more responsive to the needs of young people and organize activities in the community should be taken to scale, with careful monitoring of coverage and quality. For type 6 interventions, with the weak evidence that is available it is possible to recommend them only as “Ready”. This means that they should be implemented widely and cautiously, but only if there is a strong evaluation component linked to implementation. These conclusions are summarized in Table 6.6. Intervention types that did not include components to improve facilities or some type of community activity are categorized as “Steady” or “Do not go”. This emphasizes the importance of going beyond simply training service providers if the aim is to increase service utilization: facilities also need to be improved and there needs to be outreach into the community.

For many of these studies there were a number of unanswered questions about the interventions and their mechanism of action. If interventions are to be implemented, in addition to careful monitoring and evaluation, there is also a need for analytical case descriptions to clarify and document lessons learnt and for operations research to specify and explain the content of the interventions (that is, what is being done and why?) and to help answer some of the “how?” questions.

In general there is an ongoing need for research to tease out the relative importance of the various components of interventions in terms of their contribution to increasing the use of services by young people. For example, none of the studies of type 6 interventions explored the relative contributions of community activities and the involvement of other sectors. Six of the eight type 6 studies were multicomponent interventions that included schools and the media. With one exception – in Brazil (20) – the activities in these sectors had not been primarily developed to increase service utilization, although this was certainly one of their objectives. It will be important to better understand the contributions that the involvement of schools and the media – as well as other sectors not included in this review, such as the workplace – make to increasing the use of health services by young people. The question is: how much do they add to an effective community component? Also, it was clear from reviewing the studies that there was overlap between community activities and actions in other sectors. For example, it was not possible to disentangle the relative contribution made by health-workers providing information in an ad hoc way to young people in schools and the implementation of systematic curriculum-based programmes that provide pupils with relevant information.

Table 6.5

Strength of evidence of effectiveness for each intervention type

Intervention type and study design	Positive effect		No effect		Evidence
	Statistically significant	Statistical significance not known	Statistically significant	Statistical significance not known	
Type 1 (with service providers and in the community)					
Anecdotal					Equivocal
Qualitative only					
Cross-sectional (no comparison group)					
Before—after (no comparison group)					
Quasi-experimental (≥ 1 comparison group)				C	
RCT ^a					
Type 2 (actions in the clinic, with service providers and in the community)					
Anecdotal					Weak
Qualitative Only				O	
Cross-sectional	N				
Before—after					
Quasi-experimental	L, I				
RCT					
Type 3 (with service providers and involvement of other sectors)					
Anecdotal					Equivocal
Qualitative only					
Cross-sectional					
Before—after					
Quasi-experimental				J	
RCT					

Intervention type and study design		Positive effect		No effect		Evidence
		Statistically significant	Statistical significance not known	Statistically significant	Statistical significance not known	
Type 4 (with service providers and in the facility, involving other sectors)						
No studies of this type of intervention						
Type 5 (with service providers, in the community and involving other sectors)						
Anecdotal						Equivocal
Qualitative only						
Cross-sectional						
Before–after						
Quasi-experimental		D				
RCT				G		
Type 6 (with service providers and in the facility, in the community and involving other sectors)						
Anecdotal						Weak
Qualitative only				B, M, K		
Cross-sectional						
Before–after				H,		
Quasi-experimental		A	F			E
RCT		P				

^a RCT = randomized controlled trial.

Table 6.6

Recommendations on the strength of the evidence for effectiveness by intervention type

Intervention type	Key characteristics of effective interventions	Conclusion	Comments
1. Interventions with service providers only <i>plus</i> interventions in the community	• Adequate training of service providers and other clinic staff • Adequate interventions in the community to provide information, generate demand and ensure community support	Steady (or Do not go)	These are likely to be the easiest interventions to implement but are least likely to have an impact; study design was weak and the results are equivocal
2. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions in the community	In addition to comments about type 1 • Clarity about which interventions in the health facilities are most likely to contribute to increased utilization	Go	Although the studies were not strong, they all indicated an increased use of services by young people Greater clarity is required between type 2 and type 6 interventions in terms of the value added by the “other sectors” component
3. Interventions with service providers only <i>plus</i> interventions with other sectors	In addition to comments about type 1 • Clarity about which specific interventions in schools and in the media (and other sectors such as the employment sector) are most likely to contribute to increased utilization of services	Steady (or Do not go)	There was only one study identified of this type of intervention and it showed no increase in use All the types that only focused on training service providers without making changes in the clinic showed variable results

Intervention type	Key characteristics of effective interventions	Conclusion	Comments
4. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions with other sectors		No data	
5. Interventions with service providers <i>plus</i> interventions in the community <i>and</i> with other sectors	In addition to comments about type 3 • Clarity about which combination of training, community and media interventions are most likely to increase utilization of services	Steady (or Do not go)	Data were equivocal, and as with type 1 interventions, increased use of services is unlikely without changes in the facilities
6. Interventions with service providers <i>and</i> in facilities <i>plus</i> interventions in the community <i>and</i> with other sectors	In addition to comments about type 2 • Clarity about which combination of interventions in the clinic, and interventions in the community and with other sectors, are most likely to increase service use by young people	Ready	These interventions are most likely to have an impact, and even though the interventions were not always clear and most of the studies only had weak evidence for a positive effect, all but one of them had a positive effect on service utilization

There are a number of issues that need to be considered when interpreting these data. First, although several studies did not show any evidence for effectiveness, there is likely to be both reporting and publication bias – that is, researchers are more likely to report results and have them published if they have a positive result. There may also have been misclassification bias in terms of the allocation of the studies to specific types of interventions.

Second, a range of studies is included in this review, from randomized controlled trials of specific interventions to reports that merely demonstrated that a service was provided and it was used by young people. The challenge of interpreting data from studies that merely showed an increase in use after providing a service is highlighted by the studies in Zambia (16) and Senegal (25). Both of these studies had a before and after design with a control site. In both of them there was an increase in young people's use of services at the intervention sites but this was not different from the increase noted at the control sites (and there was no indication that there had been contamination of these control sites). Thus for these studies there was weak evidence of no effect on utilization as a result of the intervention. However, if there had been no control clinics in these studies, if they had simply “provided a service that was used”, as was done in Ghana (29) for example, these interventions would have been considered to have shown weak evidence for increased utilization as a result of the interventions.

Third, it needs to be recognized that the levels of evidence – weak, moderate and strong – contain a spectrum of evidence. For some of the studies “very weak” would have been a more appropriate description than “weak” when they were compared with some of the other studies also considered to show weak evidence for effectiveness.

6.4.2 *Inclusion and exclusion criteria*

Despite using detailed inclusion and exclusion criteria for the studies in this review, there was ongoing discussion among the authors about whether to include studies of the “we provided a service and young people used it” type because we recognized that there is a subtle difference between young people using a newly created service (meeting a provision gap) and implementing specific interventions to identify the most effective approaches to increase young people's use of services (evaluation research). An example of a “we provided a service” paper that was excluded due to insufficient data was the report of activities of the African Youth Alliance project in the United Republic of Tanzania (35). In this study, the only service utilization data was a comment that there was a “17% increase in the use of the services” with no denominator or statistics from before the intervention. Thus it is extremely

difficult to know whether there was a statistically significant increase or no increase.

In tightening the inclusion and exclusion criteria, some studies that focused on providing information and commodities in the community may have been excluded both from this paper and from the paper in this series on geographically defined communities ([chapter 8](#)). The social marketing of condoms is an obvious example of an intervention that would have been excluded (11, 12).

6.4.3 *The typology*

Two issues need to be mentioned in relation to the typology used for this review. First, it needs to be recognized that other typologies could have been developed that would also have helped guide the decisions of policy-makers and programmers. For example, interventions could have been classified depending on whether services were provided through government facilities, stand-alone youth clinics or as part of multicomponent youth centres. Several typologies were developed and tried but either there were insufficient details in the papers to make it possible to allocate the studies or there were insufficient studies in the majority of the types.

Even with the typology that was adopted it was still not always easy to allocate studies to the different types, mainly due to the inadequacy of information contained in the studies. For example, the Uganda study (17) did not include an obvious community component but it was clear from the narrative that some efforts took place to make it possible for parents to come and see what was happening in the clinic. This was done because the baseline survey discovered that some parents were concerned about their children using the clinics. The parents who visited the health facilities then acted as advocates for the services in the community.

In placing studies in the different types it was noted that there was a spectrum of “interventions in the facility” and that in some cases the lack of clarity in the descriptions of the interventions made classifying them difficult. For example, cases could be made for classifying the study in Zambia (16) as a type 2 intervention and the study in Uganda (17) as a type 4. These changes would not, however, have made any differences to the conclusions: weak evidence for type 2 and type 6 would remain and the evidence for the other types would remain equivocal.

6.4.4 *Interventions, outcomes and evaluations*

This review has indicated the need for researchers and people responsible for programme development and delivery to be much clearer about what they

do, what the mechanisms of action of the interventions are, what the intended outcomes are and how implementation and outcomes can be measured. In terms of intensity of effort, the studies from Gweru, Zimbabwe (18), and Brazil (20) provide some indication that as the intensity of the intervention waned, there was a decrease in the use of services by young people; this emphasizes the need to focus on interventions that can be realistically sustained over time. Conversely, the analysis of service statistics from both of the studies that explicitly developed and measured standards – in Mongolia (23) and South Africa (24) – showed a statistically significant increase in the use of services as a result of attempts to maintain the quality of the services.

The UNGASS goal specifies that 95% of young people should have access to services by 2010 (3). Planning for a target such as this requires some sense of the need for services, and this need can only be determined through demographic and epidemiological data. None of the studies in our review addressed this issue: at best they provided service statistics (in 9/16 studies) indicative of “contact” coverage (the services were used) but they made no reference to the overall population of young people, the catchment area or other age groups served by the same facilities.

It is encouraging that several of the studies provided information on costs, although few conclusions can be derived. Data about costs are extremely important in terms of the replication and sustainability of interventions, and these are aspects of monitoring and evaluation that require further development. Attention should be paid not only to the relative costs of the various activities in the health services and in other sectors, but also to the establishment of baseline costs of existing services and to the additional costs of improving services (in order for the data to be useful to programme planners).

Finally, the context in which interventions are implemented is likely to be an important consideration, and contextual factors that may have influenced the success or failure of the interventions were mentioned in some of the studies. Again, this has important implications for replication, and contextual factors that may influence outcomes need to be a more central focus in future research.

6.5 Conclusions

What do we know about the contribution that health services can make to preventing HIV transmission among young people? In order to answer this question we need to know the following.

1. Have we identified a set of evidence-based interventions that can be provided through health services?

2. Do we know what to do to increase young people's use of health services (the focus of the UNGASS health services target)?
3. Can we provide young people who use health services with the evidence-based package of interventions that have been defined?
4. And, finally, can we determine whether increasing young people's use of evidence-based interventions makes a difference to HIV prevalence or other health outcomes?

With the completion of this study, and building on the evidence from the Montreux meeting (5), we now have “yes” answers to questions 1 and 2. The third and fourth questions were not the focus of this review. Only one of the studies (10) attempted to answer these questions, and clearly these are the questions for the future as we build the evidence base.

Despite the constraints imposed by the quality of the data from most of the studies included in this review, if countries want to move towards achieving the global goals on HIV and young people, there is sufficient evidence to support widespread implementation of interventions that include elements of training for service providers and other clinic staff, making improvements to facilities, and informing and mobilizing communities to generate demand and community support. These interventions will require careful planning and implementation, and their coverage and quality will need to be monitored. Operations research will also be needed as will a better understanding of the costs.

Interventions that additionally involve other sectors can also be recommended for widespread implementation provided that they are carefully planned, implemented and monitored and include an evaluation component that assesses their impact on service utilization. Again, there is a need for operational research to be undertaken to better understand the mechanisms of action. It will be important to gain a better understanding of the interventions and to be much clearer about the relative merits of actions in the community compared with actions in the community that are implemented along with additional activities in other sectors.

Future research will be required to demonstrate that we not only have a package of evidence-based interventions and know how to increase young people's use of services but that we can also have an impact on young people's behaviours and health through interventions provided through health services in conjunction with interventions in other settings. Achieving the health services access goal that was endorsed during UNGASS will have significant implications for the decisions and resource allocations made by policy-makers, programme managers and researchers. Recommendations for all of these actors, based on the findings of this review, are summarized in [Box 6.2](#).

Recommendations for interventions to increase the use of health services by young people

For policy-makers

- Interventions implemented through health services will be essential for achieving the global goals on HIV and young people, in particular for the target of increasing young people's access to an evidence-based package of services to prevent the spread of HIV.
- The evidence is sufficient to support widespread implementation of interventions to increase young people's use of health services. However, these interventions should be implemented only if they are carefully monitored and evaluated.
- Interventions to increase young people's access to health services should be linked to interventions in other settings that aim to improve young people's knowledge, skills, attitudes and behaviours.

For programme development and delivery staff

- In order to increase young people's use of services it is necessary to train service providers and other clinic staff, make facilities more accessible and acceptable to young people and work in the community to generate demand and community support.
- It will be important to better understand the key components of training programmes for services providers and other clinic staff, the most important improvements to make in health facilities, and the most strategic actions to take in the community. This will require careful monitoring and links with researchers.
- Interventions implemented through health services need to be carefully planned and monitored, and linked to actions in other sectors. In addition, in order to ensure that these interventions have the desired impact, evaluation and operations research should be actively supported.

For researchers

- Evaluation and operations research should be included as core elements of any interventions aimed at increasing young people's use of health services.
- Several research issues have been raised in this review, including the need to better understand the content and duration of training, the relative contribution that different interventions in the facilities make to increasing the use of services and the benefit of involving other sectors in relation to the increased effort required.
- A number of specific issues have been highlighted in this review, including the need to tease out the relative contributions of the different interventions and for better costing data to be made available.

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7. The effectiveness of mass media in changing HIV/AIDS-related behaviour among young people in developing countries

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Objectives To review the strength of the evidence for the effects of three types of mass media interventions (radio only, radio with supporting media, or radio and television with supporting media) on HIV/AIDS-related behaviour among young people in developing countries and to assess whether these interventions reach the threshold of evidence needed to recommend widespread implementation.

Methods We conducted a systematic review of studies that evaluated mass media interventions and were published or released between 1990 and 2004. Studies were included if they evaluated a mass media campaign that had the main objective of providing information about HIV/AIDS or sexual health. To be eligible for inclusion studies had to use a pre-intervention versus post-intervention design or an intervention versus control design or analyse cross-sectional data comparing those who had been exposed to the campaign with those who had not been exposed. Studies also had to comprehensively report quantitative data for most outcomes.

Findings Of the 15 programmes identified, 11 were from Africa, 2 from Latin America, 1 from Asia, and 1 from multiple countries. One programme used radio only, six used radio with supporting media, and eight others used television and radio with supporting media. The data support the effectiveness of mass media interventions to increase the knowledge of HIV transmission, to improve self-efficacy in condom use, to influence some social norms, to increase the amount of interpersonal communication, to increase condom use and to boost awareness of health providers. Fewer significant effects were found for improving self-efficacy in terms of abstinence, delaying the age of first sexual experience or decreasing the number of sexual partners.

Conclusions We found that mass media programmes can influence HIV-related outcomes among young people, although not on every variable or in

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every campaign. Campaigns that include television require the highest threshold of evidence, yet they also yield the strongest evidence of effects. This suggests that comprehensive mass media programmes are valuable.

7.1 Introduction

In countries worldwide, young people comprise a key audience for messages about preventing HIV/AIDS. Unless a young person acquired HIV in utero or as an infant, almost all young people enter adolescence HIV-negative. Yet the very nature of adolescence – characterized by experimentation, risk-taking and a sense of immortality – make youths particularly vulnerable to HIV. Annually, 50% of all new HIV infections occur among young people aged 15–24 years (1).

Given the sheer number of young people and the critical importance of alerting them to the threat of HIV and AIDS, most governments have turned to the mass media as a means of informing their population, shaping social norms and influencing behaviour associated with the transmission of HIV.

Given that adolescents are so attuned to mass media for information and cues about how to behave, the media have tremendous potential for reaching them with messages about HIV and AIDS. Mass media campaigns may complement other programmes (for example, the training of personnel or the distribution of condoms) designed to stop the spread of HIV.

Because the epidemic has continued to spread in many countries, it has been concluded that mass media interventions are not an effective means of preventing the spread of HIV (2). The evidence in the published literature on the effectiveness of communication programmes is sparse but there have been several rigorous studies that identified reported changes in HIV/AIDS-related behaviours, such as avoiding unprotected sex (3). A difficulty in arriving at an assessment of the potential effectiveness of communication programmes is that relatively few countries have mounted full-scale, coordinated, comprehensive communication programmes aimed at combating the spread of HIV (4).

The mass media are an increasingly important component of intervention programmes when they are scaled-up. Thus, this review evaluates programmes that have a mass media component although they may also have additional community or interpersonal components. We define mass media interventions as any programmes or other planned, time-limited efforts that have the explicit goal of changing knowledge, attitudes and behaviours that are related to preventing the transmission of HIV and that disseminate messages among an intended population through channels that reach a broad audience. For the purposes of this review, these channels include radio, television, video, print

media and the Internet; the programming may take a variety of forms, including variety shows, songs, advertisements or public service announcements, soap operas, music videos, films, pamphlets, billboards, posters and interactive web sites. The review does not include certain media, such as street theatre, puppetry or the work of itinerant singers, since these media are less frequently subject to evaluation, and the evaluation of such interventions may often be primarily of local relevance, rather than international.

This article reviews the literature evaluating the effects of mass media interventions on the HIV/AIDS-related behaviour of young people in developing countries in order to determine whether the evidence provides justification for recommending that these types of interventions be implemented more widely in future.

7.2 Methods

The methods used in this review are similar to those used in other chapters in this series (see [chapter 4](#)). First, we defined the most common types of interventions to prevent HIV transmission used in the mass media in developing countries; we categorized them into radio only, radio with other supporting media, and radio and television with other supporting media. These types were chosen to reflect the key decisions that programme development and delivery staff and policy-makers need to make when choosing in which mass media interventions to invest. The inclusion and exclusion criteria were then defined ([Table 7.1](#)). The authors, in discussion with the series editors, then decided on the strength of evidence needed to recommend widespread implementation of each of these types of interventions taking into account their feasibility, the potential for adverse outcomes, their acceptability, the potential size of the intervention effect and the potential for bringing about other health or social benefits ([Table 7.2](#)). The literature was reviewed, and each of the eligible studies was summarized in a standard manner. Additional information is available on the web (www.who.int/child-adolescent-health/). Key aspects of the intervention, as well as the design of the evaluation study and results, were also summarized ([Table 7.3](#) and [Table 7.4](#)). The overall conclusions on the strength of the evidence for the effectiveness of each of the three types of intervention were compared with the threshold strength of evidence needed to recommend widespread implementation ([Table 7.2](#)).

Table 7.1

Inclusion and exclusion criteria used to identify studies for review

Inclusion criteria	Exclusion criteria
Evaluation must be a study that compares outcomes pre-intervention versus post-intervention or intervention versus control design or a cross-sectional design comparing those exposed to the campaign with those unexposed	Evaluation design that does not compare pre-intervention outcomes with post-intervention outcomes or intervention versus control or cross-sectional
Evaluation results must report findings comprehensively, which is defined as including quantitative and statistical data for most outcomes under study	Incomplete reporting of findings, including failure to report quantitative or statistical significance for most outcomes under study
Evaluation must have been published or released between 1990 and 2004	Evaluations published before or after the designated time frame
Intervention must be a mass media programme, which is defined as a programme that conveys messages through channels that reach a broad audience. Media include radio, television, video, print, and the Internet; the programmes may take different forms, such as radio variety shows, songs, advertisements or public service announcements, soap operas, music videos, films, pamphlets, billboards, posters and interactive web sites	Intervention is community-based, school-based or interpersonal but does not contain a mass media component
Objective of intervention must be education about HIV/AIDS or sexual health or risk reduction	Interventions whose main outcomes are not explicitly related to HIV/AIDS, such as family planning
Intervention must have taken place in a developing country	Interventions taking place in other parts of the world

Table 7.2
Threshold of evidence needed to recommend widespread implementation of each type of intervention

Intervention type	Feasibility	Lack of potential for adverse outcomes	Accept-ability	Potential size of effect	Other health or social benefits	Overall threshold	Comments
1. Radio-only	++	++	++	+	+	Moderate	Radio-only interventions targeted at other health issues have been shown to have substantial effects. Supporting media often include posters, print materials, listening groups and promotional materials, such as T-shirts and hats. Supplementary interventions, such as school workshops and counselling, promote awareness of local health and social resources.
2. Radio with other media	++	++	++	++	+	Moderate	
3. Radio and television with other media	+	++	+	++	+	High	While the broad reach of these interventions increases the likelihood and size of their effects, they are feasible only when budgets permit, when television is widely available to the target audience, and when there is a high level of creative talent and production facilities within the country. Images and stories increase the power of the messages but may occasionally cause concern for local religious and community leaders; however, with sufficient pre-testing and endorsement from local leadership, these campaigns can be highly acceptable

^a Degree of desirability is indicated with a maximum of 3 “+” signs. Degree of undesirability is indicated with a maximum of 3 “-” signs.

Table 7.3

Description of the interventions by study

Study, location and campaign	Target population and primary objectives	Description ^a
Intervention type 1 (radio only)		
A – Saint Vincent and the Grenadines, national campaign (5)	• Parents of adolescents, other adults, adolescents • Encourage parents to talk to adolescents about safer sex and condom use	• Radio advertising campaign • Duration: 2 months
Intervention type 2 (radio with other media)		
B – Paraguay, Arte y Parte campaign (6)	• Adolescents aged 15–19 years • Increase knowledge of sexual and reproductive health issues in order to promote responsible sexual behaviour • Improve communication and negotiation skills	• Booklet, street theatre skits, radio programme and news flashes, columns in newspapers and teen magazines, school workshops with videos • Reach: 44% (% exposed to at least one campaign activity or product) • Duration: about 24–32 months
C – China, multiple mass media campaign in eastern China (7)	• Young adults aged 18–30 years • Promote sexual abstinence prior to marriage • Promote use of condoms for sexually active people, regardless of marital status	• Written materials, videos, radio programme, workshops, small group discussions, home visits, personal counselling, free condoms • Duration: 12 months
D – Cameroon, Horizon Jeunes adolescent reproductive health programme (8)	• Young people (primary target population); parents, teachers, community leaders (secondary) • Increase adolescents' awareness and use of reproductive health products and services	• Radio spots and talk shows, brochures, posters, discussions with peer educators, video broadcasts, condom demonstrations, presentations at soccer games, theatre sketches • Reach: 28% ever involved with activities • Duration: 13 months
E – Guinea, PRISM behaviour change youth campaign in Haute Guinea (9)	• Young people aged 15–24 years • Increase knowledge and awareness of STIs^b and HIV/AIDS • Promote responsible sexual practices, including delay in sexual debut or (among sexually active youth) condom use	• Interactive radio shows in rural areas, posters, brochures; theatre groups produced plays, led discussions • Reach: 83% of males and 63% of females exposed to any campaign activity • Duration: 12 months

F – Zimbabwe, promoting sexual responsibility among young people (10)	• Young people aged 10–24 years and adults • Increase knowledge of reproductive health and contraception	• Posters, leaflets, newsletter, radio programme, launch events, dramas, peer educators, hotline; training for family planning providers, designation of youth-friendly clinics • Reach: 97% exposure to at least one campaign component • Duration: 6 months
G – Botswana, Tsa Banana adolescent reproductive health programme (11)	• Adolescents (primary target population); parents, teachers and youth community leaders (secondary) • Persuade adolescents that reproductive health services exist for them and that they should use them	• Radio messages, printed media • Reach: 71% of males and 68% females exposed to any campaign activity • Duration: 8 months
Intervention type 3 (radio and television with other media)		
H – Guinea, adolescent reproductive health programme (12)	• Adolescents and young adults • Increase young people's knowledge of STIs and AIDS • Increase knowledge and use of condoms and other modern contraceptives • Delay age at sexual debut • Encourage sexual abstinence	• Posters, flyers, peer educator discussions; campaign supplemented with radio and television advertisements for specific condom brands • Reach: 39% of males and 15% of females participated in programme • Duration: 8–9 months
I – Zambia, HEART campaign (13)	• Young people aged 15–19 years • Change social norms and individual sexual behaviour, specifically focusing on consistent condom use, continuation of abstinence, knowledge that people who look healthy can have HIV, belief that condoms and abstinence are hip	• Television spots, radio spots, songs, posters, stickers, exercise books, messages on buses, music videos • Duration: 6 months • Reach: 52% exposed to at least one TV advertisement or public service announcement

Study, location and campaign	Target population and primary objectives	Description ^a
J – South Africa, loveLife campaign (14, 15)	• Young people aged 12–17 years • Reduce the rate of HIV infection, other STIs and pregnancy • Promote positive choices around sexual partnerships, condom use, sexual debut, treatment seeking, HIV risk behaviours	• Multimedia campaign including radio, television, print and billboards. • Duration: about 24 months • Reach: 84% of youth had heard of or seen a component of the loveLife campaign
K – Côte d'Ivoire, PL.U.S positive deviance campaign (16)	• Young females aged 13–20 years (primary target population); male youth, parents (secondary) • Increase knowledge and practice of HIV/AIDS prevention behaviours • Increase use of reproductive health services	• Television spots, community radio variety show, audio cassettes of popular songs, photonovella, posters, leaflets, advocacy brochure • Duration: 9 months • Reach: 70% of males and 64% of females exposed to at least one campaign material or activity
L – South Africa, Soul City campaign (17–19)	• Previously disadvantaged “African” and “coloured” South Africans (aged 16–65 years) • Affect awareness of and knowledge and attitudes about HIV/AIDS • Influence subjective social norms, perception of personal risk of HIV • Increase self-efficacy with regard to HIV prevention behaviours • Promote seeking information and support, risk reduction	• Television and radio dramas, booklets, national advocacy strategy • Soul Buddyz – radio and booklets designed to target children aged 8–12 years • Reach: 82% (any campaign component)
M – South Africa, adolescent reproductive health programme (20)	• Young females aged 16–20 years • Educate adolescents about reproductive health issues • Promote safer sex	• Radio messages, weekly radio talk shows, documentary shown on South Africa Broadcasting Corporation • Duration: Reproductive health campaign – 12 months; social marketing campaign ongoing 4–5 years previously

N – 44 countries worldwide, Staying Alive MTV campaign (21)	• Young people aged 16–25 years • Increase awareness of HIV • Encourage prevention • Reduce HIV-related stigma and discrimination	• Television documentary, programme featuring Bill Clinton, public service announcements, global forum, concerts, web site. • Reach: Kathmandu: 12% exposed to at least one campaign material or activity; Sao Paulo: 23%; Dakar: 82%
O – Ghana, Stop AIDS Love Life, phase 1 campaign (22)	• Young people • Increase knowledge of how to avoid AIDS and perceived personal risk of HIV infection • Improve interpersonal communication about HIV/AIDS • Increase perceptions that social norms that favour HIV-protective behaviours • Increase use of safer sexual behaviours	• Launch event, music video and song performed by well known local musicians, television and radio spots, serial dramas, community rallies, vans with audio-visual displays • Duration: 17 months • Reach: 83% males and 77% females of those aged 15 to 45+ years exposed to any campaign component

^a Percentages describing “reach” indicate the proportion of the study population that reported being exposed to the intervention.

^b STIs = sexually transmitted infections.

Table 7.4

Description of outcome evaluations by study

Study	Design and sample size	Evaluation results	Strength of evidence for effect
Intervention type 1 (radio only)			
A (5)	Design: cross-sectional survey comparing exposed participants with unexposed Sample size: 297 (intervention group = 213, control group = 84) No statistical adjustments made for differences between exposed and unexposed	Health services • Heard of AIDS hotline – significant Reduction in vulnerability • Friends use condoms – significant • Partner suggested condom use – not significant Reduction in HIV prevalence • Ever or always used a condom or suggested condom use to one's partner – not significant Several measures of interpersonal communication – not significant	Weak evidence for improved perceptions in social norms, interpersonal communication and condom use Strong evidence for increased awareness of AIDS hotline
Intervention type 2 (radio with other media)			
B (6)	Design: survey pre-intervention and post-intervention in three intervention cities. Cross-sectional analysis comparing exposed with unexposed Sample size: pre-intervention = 947, post-intervention = 1575	Knowledge • 2/2 outcomes – not significant Reduction in HIV prevalence • Had sex for the first time, condom use at first sexual relationship – not significant • Used a condom in last sexual relationship – not significant	Weak evidence for improved knowledge; weak evidence for improvements in abstinence and condom-use behaviours
C (7)	Design: experimental randomized controlled trial with pre-intervention and post-intervention components matching	Knowledge • 5/5 general knowledge outcomes – significant	Strong evidence for increasing knowledge and self-efficacy to negotiate condom use, reducing the number of partners and condom-use behaviours

two intervention villages and two control villages	• 10/10 routes by which HIV can or cannot be transmitted – significant	
Sample size: pre-intervention = 748, post-intervention = 710 (366 in intervention group and 344 in control group)	Skills • Confidence to convince partner to use condom – significant Reduction in HIV prevalence • 3/3 condom outcomes – significant • 1/1 outcomes regarding number of partners – significant	
D (8) Design: separate sampling pre-intervention and post-intervention in one intervention city and one control city Sample size: pre-intervention = 1606, post-intervention = 1633 (811 in intervention group and 822 in control)	Knowledge • Whether AIDS is avoidable – mixed results Health services • Ever visited a health centre for information about contraceptives – not significant Reduction in vulnerability • Small to moderate differences in perception of being at high risk for STI^a or AIDS – significant Reduction in HIV prevalence • 3/6 ABC programme (Abstain, Be faithful, use Condoms) outcomes – not significant • Remaining 3 outcomes – mixed results by sex of participant Frequent discussion of sexuality – significant	Weak evidence for increases in knowledge, perceived personal risk of HIV and increases in visits to health centres; weak evidence of improvements in abstinence, partner reduction and condom use Moderate evidence for improvements in interpersonal communication

Study	Design and sample size	Evaluation results	Strength of evidence for effect
E (9)	Design: baseline established by proxy using Demographic and Health Survey data; data for post-test collected from random sample of youths in the intervention area and a reduced sample in the comparison area Sample size: pre-intervention = 417, post-intervention = 1008 (908 in intervention group and 100 in control group)	Knowledge • 1/4 outcomes – significant Skills • Knowledge of how to use condoms – two times higher for males and nearly three times higher for females; significant Health services • Knows where to get condoms – significant Reduction in vulnerability • High perceived personal risk of contracting HIV/AIDS – not significant • Youth who report that others are more open to discussing reproductive health questions than one year prior – significant Reduction in HIV prevalence • Ever use a condom, condom use at last sex, recommending condoms to others – significant	Weak evidence of increased knowledge and perception of personal risk Strong evidence for improved condom-use skills, awareness of condom vendors as well as improvements in social norms, condom use and interpersonal communication
F (10)	Design: random sample using pre-intervention and post-intervention design with cross-sectional assessment comparing: 5 intervention and 2 comparison sites and combining data from all sites and analysing outcomes by exposure to intervention components Sample size: pre-intervention = 1426 (973 in intervention group and 453 in control),	Knowledge • 1/3 outcomes – significant Health services • Likelihood of having sought services at health centre – significantly higher as number of campaign components exposed to increases Reduction in HIV prevalence	Weak evidence for increasing knowledge Strong evidence for improvements in seeking health services, abstaining from sex, reducing number of partners, using condoms and interpersonal communication

post-intervention = 1400 (1000 in intervention group and 400 in control) Statistical adjustments conducted for age, sex of participant, education, sexual experience, marital status and urban vs rural residence	• Likelihood of saying no to sex and continued abstinence – significantly higher among intervention group and as number of campaign components exposed to increases • 6/7 outcomes regarding interpersonal communication – significant	Weak evidence for improved knowledge and improvements in social norms
G (11) Design: pre-intervention and post-intervention component comparing an intervention city with a control city Sample size: pre-intervention = 1002, post-intervention = 2396 (1230 in intervention group and 1166 in control)	Knowledge • 2/2 outcomes – not significant Reduction in vulnerability • Improvements in both intervention and comparison groups for statement “very few of my friends use condoms” – significant	
Intervention type 3 (radio and television with other media)		
H (12) Design: pre-intervention and post-intervention survey in cities in two regions; intervention and control groups within each city Sample size: pre-intervention = 2016, post-intervention = 2005 (1009 in intervention group and 996 in control) Statistical adjustments were made for differences in sex of participant, age, school enrolment, school type, employment status, religion, marital status and number of children	Knowledge • Knowledge of condom as means of protecting against AIDS – significant Health services • Visiting health centre in the past year – mixed outcomes by sex of participant Reduction in vulnerability • Perceived personal risk of HIV/AIDS – not significant	Weak evidence for improvements in seeking health services, perceived personal risk and ABC behaviours (Abstain, Be faithful, use Condoms) Strong evidence for improved knowledge

Study	Design and sample size	Evaluation results	Strength of evidence for effect
I (13)	Design: separate sample with pre-intervention and post-intervention component; cross-sectional analysis comparing participants who saw all or some of the television health communication spots and those who saw none Sample size: pre-intervention = 901, post-intervention = 1100; viewers = 572, non-viewers = 528 Statistical adjustments were made for differences in age, education, sex of participant, and urban vs rural residence	Reduction in HIV prevalence • Being sexually experienced – not significant • Having ≥ 2 partners in 4 weeks – not significant • Protecting self from sexual risks by using condoms – not significant • Onset of sexual activity by age 15 years – mixed outcomes by sex of participant • Usually uses condoms – mixed outcomes by sex of participant • Condom use during last sex – significant Knowledge • Recall abstinence as a way to prevent HIV – significant • Recalling that using condoms is a way to prevent HIV – not significant Skills • Self-efficacy score for condom use – significant Health services • Awareness of voluntary counselling and testing – significant • Awareness of places to purchase condoms – significant Reduction in vulnerability • Perceived risk of HIV – not significant	Weak evidence for knowledge of condoms Strong evidence for increasing knowledge of abstinence, increasing self-efficacy in use of condoms and improvements in awareness of health services, abstinence and condom-use behaviours

Reduction in HIV prevalence

- 1/1 abstinence outcomes – significant
- 2/2 condom-use outcomes – significant
- Mean number of people with whom discussed abstinence – significant

J (14, 15)	Design: random sample with only post-intervention cross-sectional analysis comparing participants who were exposed to the intervention with those who were not	Skills	Strong evidence for improvements in participation in HIV testing, interpersonal communication about HIV and decreases in HIV infection rates
	Sample size: 11 904	• Ever tested for HIV – significant Reduction in HIV prevalence • Prevalence of HIV among youth who participated in loveLife programmes – females, adjusted odds ratio = 0.61 ($P < 0.01$); males: adjusted odds ratio = 0.60 ($P = 0.01$) • Ever talked to parents about HIV – significant	

K (16)	Design: separate sample pre-intervention and post-intervention	Skills	Weak evidence for increases in perceived peer support for abstinence and condom use
	Sample size: pre-intervention = 2681, post-intervention = 2232	• Self-efficacy to refuse sex with gift-givers – significant • Self-efficacy to consistently use condoms – significant Reduction in vulnerability • Perceived peer support for abstinence – marginally significant difference	Strong evidence for increases in self-efficacy and interpersonal communication

- Reduction in HIV prevalence
- Consistent condom use – marginally significant differences
 - Discussion about abstinence with parent – significant
 - Encouraging someone to use condoms in the past 12 months – significant

Study	Design and sample size	Evaluation results	Strength of evidence for effect
L ^b – study 1 (17, 18); study 2 (19)	<i>Study 1</i> Design: random sample with pre-intervention and post-intervention component, following a panel of respondents in one urban and one rural site; cross-sectional analysis comparing participants who were exposed to the intervention to those who were not Sample size: pre-intervention = 2000, post-intervention = 2000 <i>Study 2</i> Design: pre-intervention and post-intervention trial; cross-sectional analysis comparing participants who were exposed to the intervention (intervention arm) to those who were not exposed (comparison arm), controlling for exposure to other HIV/AIDS programmes Sample size: pre-intervention = 421, post-intervention = 416	Knowledge - Disagreement with idea that there is a cure for AIDS – significant differences pre-intervention and post-intervention (21, 26) - AIDS knowledge index associated with exposure to Soul Buddyz TV and radio programming – significantly lower (8) Reduction in vulnerability 4/4 social norm outcomes regarding abstinence, condoms and stigma – significant (21, 27) Reduction in HIV prevalence - Always use a condom – significantly higher as exposure to number of Soul City media increases - Often talk to someone close about HIV/AIDS – significantly higher as exposure to number of Soul City media increases (21, 27) - Higher consistent condom use index – associated with exposure to Soul City radio drama (8)	Mixed evidence for increases in knowledge Strong evidence for improvements in social norms regarding abstinence, condoms and stigma, and increases in condom use and interpersonal communication
M (20)	Design: random sample with pre-intervention and post-intervention components comparing two purposively selected communities	Knowledge - Knowledge that condoms are the best way to prevent HIV/AIDS – significant Reduction in HIV prevalence - Ever had sex – not significant	Weak evidence for increases in condom use Strong evidence for increases in knowledge about condoms

- Ever used a condom – not significant
- Condom used during last sex act – not significant

Sample size: pre-intervention = 226, (118 in intervention group and 108 in control group), post-intervention = 204 (no data on intervention vs control)

N (21)	Design: random sample with pre-intervention and post-intervention components using household surveys and population-based surveys; cross-sectional analysis comparing participants who were exposed to the intervention to those who were not exposed in Kathmandu, Nepal, Sao Paulo, Brazil, and Dakar, Senegal Sample size: pre-intervention = 3000 (1000 per site), post-intervention = 3000 (1000 per site)	Reduction in vulnerability • Positive association between campaign exposure and beliefs about importance of using condoms, discussing HIV with a sexual partner, and getting tested for HIV • Association between exposure and egalitarian gender norms – mixed results Reduction in HIV prevalence • Number of different types of people talked to in the past month about HIV/AIDS – significant	Weak evidence for improvements in social norms Strong evidence for increases in interpersonal communication
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O (22)	Design: baseline established by proxy using data from DHS Demographic and Health Survey and the Ghana Youth Survey; mid-term assessment used data from the Ghana Reproductive Health and Child Survival Survey Sample size: Pre-youth survey = 1355, post-youth survey = 1161 Statistical adjustments made for differences in age, education, marital status, region, urban vs rural residence, religion and media access	Skills • Self-efficacy to use condoms for those exposed with high exposure to campaign – significant Reduction in vulnerability • Perceived peer approval for abstinence and condom use – significant Reduction in HIV prevalence • Median age of first sex – not significant	Weak evidence for increases in self-efficacy in terms of abstinence and in abstinence and partner-reduction behaviours Moderate evidence for increases in self-efficacy in the use of condoms Strong evidence for increases in perceived peer approval for abstinence and condom use, as well as improvements in condom use and interpersonal communication
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Study	Design and sample size	Evaluation results	Strength of evidence for effect
		• Number of sexually active respondents having sex with more than one partner in the past 12 months – not significant • Condom use at last sex – significant • Talking about using condoms – significant • Talking about avoiding or delaying sex in the past year – significant	

^a STI = sexually transmitted infection.

^b The second study listed for the Soul City campaign (8) evaluates six types of ongoing HIV prevention activities in this region of South Africa, one of which was the mass media campaign related to Soul City. The authors track changes in a series of outcome variables over time, to which the six types of interventions collectively contributed. Thus, it is not possible to identify the extent to which a given intervention contributed to the observed change. The authors created indices for knowledge and consistent condom use. Multiple regression analysis demonstrated that exposure to radio messages and to the Soul City radio drama were positively linked to the consistent condom use index but not to the AIDS knowledge index. Since the multivariate aspect of the analysis was the only part of the analysis that allowed for an assessment of the effects of Soul City on the outcomes of interest, we report only those here.

The literature review for this paper took three forms. First, the authors participated in the mass media-intervention component of a WHO initiative known as “synthesizing intervention effectiveness”, which included an effort to locate all research published between 1990 and 2004 on the effects of mass media interventions on HIV/AIDS-related behaviours (3). Another component summarized the findings of those papers that met certain criteria for methodological rigor. Studies were evaluated according to eight quality criteria (3) and were included in the review if they used either a pre-test versus post-test design or a treatment versus comparison design. Of 25 studies that performed rigorous evaluations, four targeted young people and met the inclusion criteria; these form part of the current review (5, 7, 10, 19).

Second, the Center for Communication Programs at Johns Hopkins Bloomberg School of Public Health has conducted at least four studies on the impact of mass media programmes on HIV/AIDS-related behaviours among young people. All have been submitted for publication, but do not appear in the previous WHO review because they were not published by 2004.

Third, we followed references from other published reviews (23, 24) and consulted POPLINE, Medline, and the Communication Initiative web site (<http://www.comminit.com>) in an attempt to identify additional studies.

We included studies that evaluated the effectiveness of mass media campaigns in a developing country and that had the main objective of providing education on HIV/AIDS or sexual health. To be eligible for inclusion, studies had to use a pre-intervention versus post-intervention design or an intervention versus control design or analyse cross-sectional data comparing those who had been exposed to the campaign with those who had not been exposed. They also had to comprehensively report quantitative and statistical data for most outcomes being studied (Table 7.1). We defined an intervention effect as:

- a significant change occurring from pre-intervention to post-intervention
- a significant difference between the intervention and control groups, or
- a significant association between exposure to a mass media campaign and the outcome.

These types of studies yield results that allow “plausibility statements” to be made when using the classification of scientific inference offered by Victora et al. (25). Not surprisingly, we did not find any randomized controlled trials that randomized individuals because of the virtual impossibility of randomly allocating participants to intervention and control groups in cases in which there is full coverage of a mass media intervention; one study did randomize at the village level (7).

There are several limitations to this study. The primary studies reviewed here varied substantially in their rigor; several compared intervention and control groups without addressing baseline differences between groups. However, because they all met a minimum level of rigor, we did not attempt any further weighting of the evidence. Almost all of the studies relied on self-reported measures of campaign exposure and outcomes; self-reporting is subject to strong bias, especially in relation to sexual behaviour. Another limitation is the measurement of exposure to a given mass media intervention. People already performing a certain behaviour (for example, using condoms) may be more likely to attend to and recall messages about condoms than those who are not engaging in that behaviour. In addition, a given intervention classification (for example, television) may cover a wide range of highly varied programming and content – from a 30 second public service announcement to an hour long soap opera. Finally, most of the interventions that were studied were conducted in the context of multicomponent programmes offering health services, peer counselling or other educational elements; however, the evaluations are largely unable to differentiate the effects of mass media from those of the other components of the intervention. These limitations are by no means trivial, nor are they unique to this set of evaluations of mass media interventions.

Additionally, few studies considered the costs and cost effectiveness of mass media interventions, limiting donors' ability to select programmes that offer the most cost-effective interventions. Whereas mass media programming often requires substantial investment in both production and diffusion, the cost per person reached can be surprisingly low, as we know from evaluations of programmes in other health sectors (26, 27). Further research examining the cost effectiveness of behaviour-change communication programmes is in the pipeline.

7.2.1 *Outcomes of interest*

We were interested in identifying outcomes that directly affect the global goals for preventing HIV/AIDS among young people as outlined in the Declaration of Commitment of the UN General Assembly Special Session on AIDS (28). To this end, we focused on the following outcomes as indicators of progress on the global goals:

- increase awareness and knowledge of **information** on how to avoid HIV infection, measured as
 - changes in knowledge (about modes of transmission, methods of prevention, how to tell if someone has HIV/AIDS);
- increase access to the **skills** needed to avoid HIV infection, measured as

- self-efficacy (in abstinence, condom use);
- increase access to the **health services** needed to avoid HIV infection, measured as
 - awareness and utilization of health products and services;
- decrease young people's **vulnerability** to HIV, measured as
 - more accurate perceptions of personal risk
 - changes in social norms (friends' approval of use of condoms or abstinence);
- decrease **HIV prevalence**, measured by its proximate behavioural determinants, such as
 - abstinence (both intention and behaviour)
 - a decrease in the number of sexual partners (intention and behaviour)
 - the use of condoms (intention and behaviour)
 - improvements in mediating factors, such as interpersonal communication (about sexual health, HIV/AIDS, condoms).

The evaluations of most mass media campaigns do not measure directly the goal of decreasing HIV prevalence but rather they measure its proximate determinants. The exception in this review is the “loveLife” campaign in South Africa, which did measure HIV prevalence (14). Interventions that aim to change behaviour are rarely subject to long-term evaluations of outcomes (such as prevalence) because change may be difficult to measure during the life of the intervention, and factors outside the intervention may have a powerful influence on long-term outcomes. In the case of HIV/AIDS, a third factor also comes into play: the logistical and ethical difficulty of measuring HIV prevalence as part of a programme evaluation. For these reasons, prevalence is generally measured indirectly through reported behavioural determinants instead of directly through biological markers.

Within each of the outcome areas outlined above, the interventions under review often measured a given concept in different ways (for example, condom use may have been measured as whether a participant ever used a condom, used one the last time he or she had sex or used one with a casual partner). In this review, we combined different operational definitions into a single category (for example, condom use). The lack of standardization of indicators of outcome seriously limits the potential to perform a meta-analysis on this topic.

7.3 Findings

We found rigorous evaluation data for 15 mass media interventions addressing HIV-related behaviours among young people: 11 examined interventions in Africa, 2 in Latin America, 1 in Asia, and 1 examined a programme that took place in 44 countries (Table 7.3). No studies of print-only materials met the inclusion criteria. Intervention designs are summarized in Table 7.3. One study evaluated a radio-only campaign (which we have designated a type 1 intervention) (5). Six of the studies evaluated interventions using radio with other supporting media (for example, written materials, videos, posters, theatre performances, school workshops); these are designated type 2 interventions (6–11). The remaining eight interventions involved television and radio with other supporting media; these are designated type 3 interventions (12–22). One intervention (“Soul City” in South Africa) was evaluated in two studies (17–19). All studies are described in detail on the web.

7.3.1 *Additional outcomes*

Additional outcomes are summarized in Table 7.4 and described below.

7.3.1.1 *Access to information: changes in knowledge*

Of the nine studies reporting data on knowledge of HIV transmission and prevention, four measured increased knowledge of modes of HIV/AIDS transmission. In China, study C (7) showed large, significant differences – measured both before and after the intervention – in knowledge of modes of transmission, including sexual intercourse (77% before versus 95% after), having multiple sexual partners (69% before versus 93% after) and sharing needles for drug use (67% before versus 95% after). Similarly large differences were found for rejecting incorrect modes of transmission, and all knowledge measures were significantly different from the control group. The “Tsa Banana” campaign in Botswana (study G) (11) showed mixed results on the item, “sexually active people risk getting infected with HIV,” with males showing significant improvements in knowledge (adjusted odds ratio = 3.2) and females showing no significant improvement. In Guinea, study E (9) reported levels of knowledge of transmission of 90–96% among the control groups, leaving little room for improvement in the intervention group. One study of HIV programmes in South Africa (study L) (19) reported a positive association between a low score on an AIDS knowledge index and exposure to “Soul Buddyz” (a programme within the Soul City intervention aimed at children aged 8–12 years) in South Africa.

The one study measuring knowledge of abstinence as a prevention technique, the “HEART” campaign in Zambia (study I) (13), showed significantly higher knowledge among those who had seen the campaign compared

with those who had not (66% of males exposed to the campaign versus 53% of males not exposed; 65% for females exposed versus 55% for females not exposed). Three of the five studies measuring knowledge of condoms as a prevention method showed large and significant differences between intervention and comparison groups (studies B, C and M) (6, 7, 20). The Soweto Adolescent Reproductive Health Programme (study M) (20) reported a significant jump in the knowledge that condoms can prevent HIV transmission, from 60% pre-intervention to 85% post-intervention; study C (7), “HIV Prevention and Education in Rural China” also found a substantial improvement in this type of knowledge (a change from 46% to 94% in the intervention group versus 44% to 49% for the control group).

The one study measuring a response to the statement “there is a cure for AIDS” (study L in South Africa) (17) found significant increases in disagreement with the statement post-intervention (change from 79% pre-intervention to 89% post-intervention). Of five studies reporting on responses to the statement that “you can tell someone has HIV/AIDS by the way that they look,” only study C (7) in China showed a significant improvement between intervention and control groups from pre-intervention to post-intervention.

7.3.1.2 *Access to skills: self-efficacy to pursue preventive behaviours*

Two evaluations measured young women’s self-efficacy in pursuing abstinence or refusing to have sex with someone who offered gifts. Study K (16) in Côte d’Ivoire showed significant differences in self-efficacy across those with low levels of exposure to the campaign compared with those who had high levels of exposure, while study O (22) in Ghana did not detect significant differences across levels of exposure. However, all four studies investigating self-efficacy in using condoms or convincing a sexual partner to use condoms showed significant differences between the intervention and comparison groups (7, 13, 16, 22). Those who were highly exposed to the “Stop AIDS Love Life” campaign in Ghana (study O) (22) had significantly higher scores on a scale of 1–6 measuring condom-related self-efficacy than those who were not exposed to the campaign (3.9 for males exposed to the campaign versus 2.9 for males not exposed; 3.0 for females exposed versus 1.6 for females not exposed). Similarly, those who were exposed to a campaign in Côte d’Ivoire (study K) (16) were significantly more likely to report self-efficacy in terms of consistent condom use than those who were not exposed (58% of those with no exposure used condoms consistently versus 70% of those with low exposure versus 75% of those with high exposure). In study C in China (7), both the intervention and the control groups showed increases in their confidence about their abilities to convince sexual partners to use condoms, but the increase for the intervention group was significantly larger

(83% to 92% among the intervention group versus 78% to 84% among the control group).

7.3.1.3 *Access to health services: awareness and utilization*

All four campaigns that measured awareness of a health product or service showed significant positive differences between interventions and controls. Variables measured included awareness of an AIDS hotline in study A (5) in Saint Vincent and the Grenadines (91% of the intervention group versus 75% of the controls), and in study I (13) in Zambia the availability of voluntary counselling and testing (79% for males in the intervention group versus 67% for male controls; 84% for females in the intervention group versus 64% for female controls) and places where condoms could be purchased (81% intervention versus 72% controls). Other variables measured included the location of condom vendors in study E in Guinea (9) (86% for males in the intervention group versus 57% for male controls; 59% for females in the intervention group versus 22% for female controls). However, awareness did not necessarily translate into utilization; no significant differences were found in the use of the AIDS hotline in Saint Vincent and the Grenadines (5), and study D in Cameroon (8) reported no significant differences in visits to health centres between the intervention and control groups. In Zimbabwe, study F (10) reported that members of intervention groups were significantly more likely to attend health centres than controls (28% versus 10%) and more likely to attend youth services (11% versus 2%). In South Africa, study J (14) reported that those exposed to the loveLife campaign were significantly more likely than those who had not been exposed to have ever been tested for HIV (16% versus 10%).

7.3.1.4 *Decreasing vulnerability*

Perception of personal risk

None of the four evaluations reporting data on the perception of personal risk of HIV/AIDS showed a consistent and significant difference (studies D, E, H, I) (8, 9, 12, 13).

Social norms

Eight of the 15 studies reported measures of social norms; these measures were highlighted especially by data for the broad-based media efforts of Soul City in South Africa (study L) (17) and the global Staying Alive campaign (study N) (21). Evaluation of the Soul City programme (study L) (17, 18) found significant desirable changes in all norms tested before and after the campaign, including disagreement with the expectation that a woman would have sex with a man without using a condom (59% disagreed with the

statement pre-intervention and 65% disagreed post-intervention). The Soul city evaluation also found that participants disagreed with the idea that boys or men have the right to have sex with their girlfriends if they buy them gifts (65% pre-intervention versus 73% post-intervention) (17). The global Staying Alive campaign reported more varied results; positive associations with campaign exposure were shown for the importance of using a condom, discussing HIV with a sexual partner and getting tested for HIV. However, norms regarding tolerance toward people living with HIV/AIDS did not show similar positive associations (21).

After the PRISM media campaign in Guinea, young people, parents, health workers, community leaders, religious leaders and members of established social networks were significantly more likely to report that their community was open to discussing young people's reproductive health questions than the year before campaign (study E) (9). In Cameroon, study D (8) reported that the proportion of youths that often discussed sexuality or contraceptives was significantly higher among the intervention group (0.897 versus 0.774). Study K in Côte d'Ivoire (16) reported significantly higher perceptions of peer support for abstinence among those who were highly exposed to the campaign compared with those who were not exposed (62% versus 53%).

In study O in Ghana (22), the percentage of youths who believed that their friends approved of avoiding or delaying sexual activity decreased significantly from before the intervention to after the intervention (60% versus 42% for males; 61% versus 36% for females); however, those who had higher exposure to the Ghana Stop AIDS Love Life campaign were significantly more likely to believe that their friends approved of delaying or avoiding sex than those with no exposure (52% of males with high exposure versus 27% of males with no exposure; 47% of females with high exposure versus 26% of females with no exposure).

In study A (5) in Saint Vincent and the Grenadines, some measures of social norms showed improvement after a radio campaign while others did not. Although campaign listeners and non-listeners were equally likely to report that their friends, parents or most people important to them thought that they should use condoms, campaign listeners were significantly more likely than non-listeners to report that their friends used condoms (46% for listeners versus 22% for non-listeners).

7.3.1.5 *Decreasing prevalence as measured by proximate behavioural determinants*

Abstinence

The age of sexual debut or current or continued abstinence was evaluated for six programmes. Two showed significant effects (10, 13); two did not (20, 22); and two showed mixed results (8, 12). Study F (10) in Zimbabwe found that 53% of those in the intervention sites “said no to sex” compared with 32% in the comparison sites; however no differences were found for participants’ responses to “stopped having sex due to the campaign”.

Number of sexual partners

Of the five studies reporting on whether the number of sexual partners was reduced, four showed equivocal or null results (7, 8, 12, 22). However, study F in Zimbabwe (10) showed a marked change, with 20% of respondents in the intervention group reporting that they had had only one partner during the recall period compared with 2% of the control group.

Condom use

Twelve programmes reported on condom use, with eight reporting on condom use during last sexual episode. Of these eight, five showed significant differences between intervention and comparison groups (7, 9, 12, 13, 22). The largest effects were reported by study O (22) in Ghana, which found that those who were highly exposed to the campaign were several times more likely than those who were not exposed to report using a condom during the last time they had sex (males: 34% versus 10%; females: 22% versus 4%). Study E (9) found similarly strong effects (males: 48% versus 24%; females: 27% versus 3%).

Of the five programmes reporting on whether condoms had ever been used, three found significant increases (8, 9, 13). Two separate evaluations of Soul City in South Africa (study L) showed an association between consistent condom use and exposure to the programme (17-19).

Mediating factors: interpersonal communication

Nine studies reported data on whether young people discussed HIV, abstinence or condom use with peers, parents or partners. Study F (10) in Zimbabwe showed a significant difference between intervention and control groups in participants having discussions with anyone about sexually transmitted infections or AIDS (78% of intervention group versus 67% of control group). Significantly more youths who were exposed to the loveLife campaign in South Africa reported ever talking to their parents about HIV/AIDS than youths who were not exposed to the campaign (90% versus 81%) (15).

The Soul City campaign in South Africa (study L) also reported significantly more frequent discussions with “someone close” among those with access to more sources of Soul City media than among those with fewer sources (18, 19). The multicountry Staying Alive campaign (study N) calculated a network score, ranging from 0 to 6, for which respondents were assigned one point for each type of individual (parent, sibling, teacher or counsellor, doctor or nurse, sexual partner, friend or schoolmate) with whom they talked about HIV/AIDS during the previous month (21). In each of the three Staying Alive evaluation sites, those exposed to the campaign scored significantly higher than those who were unexposed (in Kathmandu: 2.26 points versus 1.30; in Sao Paulo: 0.96 versus 0.65; in Dakar 1.48 versus 1.04).

In Zambia, abstinent youths who were exposed to the HEART campaign (study I) spoke to significantly more people about abstinence than those who were not exposed (males: 2.9 for those exposed versus 2.3 for those not exposed; females: 3.8 for those exposed versus 2.2 for those not exposed) (13). Single females highly exposed to the “PL.U.S.” campaign in Côte d’Ivoire (study K) were significantly more likely to discuss sexual abstinence with a parent during the previous 12 months than those who were not (33% versus 15%) (16). The PL.U.S. campaign also showed significant gains in discussions about condoms for both single males and single females: 90% of single females who were highly exposed to the campaign encouraged someone to use condoms during the previous 12 months compared with 56% of those who were not exposed to the campaign (16).

The PRISM campaign in Guinea (study E) and the Stop AIDS Love Life campaign in Ghana (study O) also showed significantly higher levels of discussion about condoms among participants in the intervention group than among the control group. Those in the PRISM intervention group were roughly twice as likely as controls to recommend condom use to someone else (males: 70% versus 31%; females: 31% versus 16%) (9). Study O, the Stop AIDS Love Life campaign, also reported large and significant differences between the proportion of participants who were highly exposed to the campaign and the proportion of those who were not exposed in terms of discussing the use of condoms to avoid AIDS and other sexually transmitted infections during the past year (males: 57% versus 16%; females: 55% versus 18%) (22). However, a radio campaign in Saint Vincent and the Grenadines (study A) did not show improvements in the proportion of adolescents and parents who discussed the use of condoms (5). Less than 2% of the sexually experienced participants in the Zimbabwe study (study F) asked a partner to use a condom as a result of the campaign (10).

HIV prevalence

Only one of the 15 studies recorded HIV prevalence (study J). The evaluation of study J in South Africa found that overall young people who participated in the programme had an adjusted odds of being HIV positive of approximately 0.60 compared with those who had not participated (15).

7.3.2 Summary of studies of effectiveness

The evidence supports the effectiveness of mass media interventions in increasing the knowledge of HIV transmission and prevention, improving self-efficacy in terms of condom use, influencing social norms about the acceptability of young people discussing reproductive health, increasing interpersonal communication about HIV and prevention behaviours, increasing the use of condoms, and boosting awareness of health providers. The studies reviewed in this article did not tend to show significant effects with regard to creating awareness that healthy looking people may have HIV/AIDS or improving self-efficacy in terms of abstinence. They also did not show significant effects in terms of increasing the proportion of adolescents who delay their first sexual experience or decreasing the number of sexual partners.

7.3.3 Relative effectiveness of different types of interventions

This section summarizes findings by intervention type ([Table 7.5](#) and [Table 7.6](#)). Although we highlight the results of the five goals of the UN Declaration and nine possible outcomes (see section 7.2.1), a given study usually reported on only three or four of these outcomes. The summary below is based on the studies that reported findings for the relevant variables.

7.3.3.1 Radio only

The one radio-only campaign (study A) showed mixed results: significant improvements were achieved in awareness of an AIDS hotline but there were no improvements in social norms, interpersonal communication about HIV/AIDS or in different measures of condom use (5).

7.3.3.2 Radio with other supporting media

There were six interventions of this type (6-11). All of the studies reported some measure of knowledge gain. With the notable exception of study C in China (7), most results tended not to be significant. In contrast, more studies than not showed positive effects on skills, knowledge about health services and social norms.

Table 7.5

Strength of evidence of effectiveness for each intervention type by goal as outlined by the Declaration of Commitment of the UN General Assembly Special Session on AIDS (14)

Intervention type and study design ^a	Increase knowledge		Improve skills		Increase access to and awareness of health services		Reduce vulnerability		Reduce HIV prevalence	
	S ^b	Mixed ^c	NS ^d	S	Mixed	NS	S	Mixed	NS	S
Type 1 (radio only)										
Cross-sectional					A			A		A
Before-after										
Intervention vs control										
RCT ^e										
Type 2 (radio with other media)										
Cross-sectional		E	B	E	E, F			E	E, F	B
Before-after		G						G		
Intervention vs control	F	D			D		D			D, F
RCT	C			C					C	
Type 3 (radio and television with other media)										
Cross-sectional				K	O		K, O	N		K
Before-after	L						L			L
Intervention vs control	M	I	H	I, J	H, I				I, J	H, M
RCT										

^a Studies are classified according to the type of data they report; for example, a before-after study that uses cross-sectional data analysis may appear either in the row for cross-sectional study or the row for before-after, depending on which part of the study the findings came from.

^b S = significant

^c Findings are designated as "mixed" if they were significant for some measures but not others or significant for one sex but not the other.

^d NS = not significant

^e RCT = randomized controlled trial.

Table 7.6

Recommendations on the strength of the evidence

Intervention type	Conclusion	Comments
1. Radio only	Steady	• Improve knowledge and skills – no evidence (not reported) • Improve access to health services – strong evidence for a small increase in awareness of services (AIDS hotline) but only weak evidence for increasing reported attendance at these services • Reduce vulnerability – no evidence of improved perceptions in social norms • Mitigate vulnerability/risk – no evidence (not reported) • Reduce HIV prevalence (surrogate measure: condom-use behaviours) – no evidence of improvements in condom use • Mediating factors (interpersonal communication about and attitudes towards condoms) – no evidence of improvements
2. Radio with other media	Go	• Improve knowledge – weak evidence of improved knowledge • Improve skills – the two studies reporting on this outcome showed strong evidence for increased self-efficacy in using condoms and knowledge of how to use condoms • Increase use and awareness of health services – the three studies reporting on this outcome showed moderate evidence for increases in these variables • Reduce vulnerability – 1/1 study found improved social norms • Mitigate vulnerability/risk – no evidence (not reported) • Reduce HIV prevalence – Moderate to strong improvements in ABC behaviours (Abstain, Be faithful, use Condoms) • Mediating factors – moderate to strong improvements in interpersonal communication and attitudes towards the ABC behaviours
3. Radio and television with other media	Go	• Improve knowledge – moderate-to-strong evidence, especially regarding condoms • Improve skills – moderate-to-strong evidence of improved self-efficacy for preventive behaviours • Increase awareness of health services – moderate-to-strong evidence for increases • Reduce vulnerability – no evidence to weak evidence of improvements in perceived personal risk; moderate evidence of improved social norms regarding the ABC behaviours • Mitigate vulnerability/risk – no evidence (not reported) • Reduce HIV prevalence (surrogate measure: ABC behaviours) – weak evidence of increases in abstinence and reduction in the number of partners; strong evidence for improvements in condom use. The one study measuring HIV prevalence found strong evidence of prevalence reduction associated with participation in the intervention • Mediating factors (interpersonal communication) – strong evidence of improvement

In terms of sexual behaviour, the findings were split fairly evenly between significant and non-significant results related to abstinence and delay of sexual debut. There was little evidence that interventions reduced participants' number of sexual partners. However, the weight of the evidence across studies reporting condom use was strongly positive, and this type of programme had favourable effects on increasing interpersonal communication with others about HIV/AIDS. None of the studies of radio with supporting media included HIV prevalence as an outcome measure.

7.3.3.3 *Television and radio with other supporting media*

There were eight interventions of this type (12-22). Evaluations of this type of intervention generally showed improvements in knowledge and skills related to HIV/AIDS as well as knowledge about health services. The results tended to be positive for social norms.

Evidence from the evaluations that measured abstinence or delay of sexual debut varied but leaned towards having no effect. The findings of the few studies reporting a reduction in the number of sexual partners were also split but tended towards no effect. In contrast, data on different measures of condom use showed positive effects in the majority of studies. The only study to report HIV prevalence (study J) (14, 15) found that programme participation was associated with lower HIV prevalence. Finally, all studies reported a positive effect on interpersonal communication regarding HIV/AIDS.

7.3.4 *Dose-response relationship*

Dose-response theory suggests that if a campaign causes changes in an outcome, then higher levels of campaign exposure should yield larger changes (27). Four of the fifteen studies examined the dose-response question (10, 16, 17, 22); all four studies found significant differences between those with low exposure and those with high exposure to the campaigns, when socioeconomic factors and access to media were controlled for.

In the programme in Ghana for example (study O), a dose-response relationship was evident for 6 of 11 variables (22). In the intervention in Côte d'Ivoire (study K), the proportion of single females who perceived that they had peer support to abstain from sex and the proportion of young people of both sexes who encouraged someone else to use condoms were significantly greater among those with high exposure to the campaign (study K) than among those with low or no exposure (16). In the project in Zimbabwe (study F), 9 out of 10 outcomes showed evidence of significant dose-response effects. The likelihood of having had discussions with others about sexually transmitted infections or AIDS or of having sought care at a health centre or

youth centre was significantly greater among those who had been exposed to 5–8 components of the campaign than among those who had been exposed to 1–2 or 3–4 components (10). And in South Africa, study L reported that the frequency of talking to someone close about HIV/AIDS and always using a condom were positively associated with exposure to more sources of the campaign (17, 18).

7.4 Discussion

The purpose of this review was to identify methodologically rigorous studies that examined the effects of mass media interventions on HIV/AIDS-related behaviours among young people in developing countries and to determine the extent to which the evidence would justify future widespread implementation of three types of mass media programmes (Box 7.1). Radio-only programming and radio programming with other media require a moderate threshold of evidence to justify their expansion. In contrast, despite the fact that television and radio programming used with other media have the potential to reach millions of people it is a less feasible intervention primarily because of the financial and human resources needed to produce and broadcast high quality programmes. Thus, the threshold of evidence needed to recommend future expansion of a comprehensive radio and television intervention with other media is high.

The lack of evidence for radio-only interventions indicates that most projects have now moved beyond this single channel to offer more comprehensive services. Because we identified only one study of this intervention type, we cannot generalize about its effectiveness. The mixed results of that one study lead to our classifying this type of intervention as “Steady”.

The comparison of interest is between interventions that use radio together with other media and those that use radio and television together with other media. For most outcomes, the two types of interventions showed a surprisingly similar pattern. First, both had positive effects on knowledge, skills, awareness and use of health services, use of condoms and interpersonal communication with others. Second, the two types of interventions yielded similar results on social norms: they were generally positive though split or mixed when disaggregated by sex of the participant. The evidence was too limited to make a comparison on mitigation of vulnerability or risk or on the prevalence of HIV. Because of the consistently strong effects on multiple outcomes, we categorize both radio with other media and radio and television with other media as interventions as “Go”. Although we required a higher level of evidence for radio and television than for radio alone with other media, we believe that both merit the endorsement of “Go” for the following reason: the strong evidence of dose effect (that is, the greater the exposure

via multiple channels, the stronger the effect) favours the use of a wider range of media, especially where access to television is high.

Box 7.1

Recommendations for mass media campaigns

For policy-makers

- Mass media have the potential to reach millions of people with life-saving messages that can change behaviour.
- Large-scale campaigns must be closely coordinated with other interventions (such as those that are school-based or clinic-based) to maximize their effects.

For programme development and delivery staff

- To achieve large-scale effects, mass media programmes should be developed and implemented through multiple channels with mutually reinforcing messages.
- Mass media interventions should be tailored for young people, and campaign materials should be pre-tested among young people.

For researchers

- Focus scarce evaluation resources on large-scale comprehensive communication programmes that have the potential to achieve population-based effects (rather than pilot studies or “boutique” programmes).
- Recognize that randomized controlled trials are not the method of choice for evaluating full-coverage mass media programmes. Instead, use strong quasi-experimental designs and analytic approaches that build a case for inferring causality.
- Work towards standardizing outcome indicators.
- Conduct cost-effectiveness analyses for mass media programmes to determine the cost per unit of effect.

It might be tempting to conclude that radio used with other media can produce the same results as radio and television used with other media. However, this presupposes that the settings for the different mass media programmes are comparable; this is a tenuous assumption. Our review of the findings provides programme developers and staff with a justification for using either type of intervention. Given that television is generally more costly than radio – in terms of both production and broadcast – this finding suggests that radio used

with other media may be a valuable means of reaching young people when budgets are constrained. Another important factor in deciding between the two interventions relates to the intended audience. Radio without television may work well where access to television is limited. However, among a population where there is high access to television, it may be more difficult for radio-based interventions to capture the necessary attention. Thus, our findings do not lead to a hard and fast recommendation of one over the other. Rather, they point to the value of both, depending on the media habits and preferences of the intended audience and the costs involved in programming.

7.4.1 *Features of the most effective interventions*

Given the nature of peer-reviewed journals, researchers often provide little detail regarding the components of the communication intervention or the process of its development and monitoring. Thus we have relatively little information on the interventions themselves even from published studies. Since this area of exploration is still in its infancy, it is premature to look to the published literature to answer questions about which features of a campaign enhance its effectiveness.

7.4.2 *Factors that facilitate or obstruct effective interventions*

Although a list of all factors would be too lengthy to elaborate here, multiple factors affect the development of effective media campaigns. Many are common to other types of interventions: political will and adequate funding and personnel, among others. Two factors are particularly relevant to communication programmes. They are described below.

7.4.2.1 *Cultural sensitivities*

Sexual behaviour is a taboo subject in many cultures, yet it lies at the heart of efforts to prevent the spread of HIV. Communicators must find ways to be as explicit as possible without crossing the fine line of cultural sensibility.

7.4.2.2 *Availability of local talent*

The use of “entertainment and education” together is one of the fastest growing means of communication used to teach people about HIV/AIDS; it is also potentially one of the most effective because this type of programme engages the audience in compelling dramas about the lives of people to whom they can relate. Maibach and Holtgrave dubbed entertainment and education programmes “fun with a purpose” (29). However, for education and entertainment programmes on HIV/AIDS to compete with commercial programmes, they must have the same professional polish. Because many developing countries do not have a sufficiently large pool of local talent experienced in

scripting and producing this genre, communicators are faced with the special challenge of developing and producing materials. Nonetheless, a number of highly entertaining soap operas that touch on HIV/AIDS have emerged in developing countries (30).

7.4.3 **Conclusions**

Despite the millions of dollars that have been invested in communication programmes to prevent the spread of HIV and AIDS, the number of programmes that have undergone rigorous evaluation is limited. Results from the 15 studies reviewed here suggest that communication programmes can and do influence HIV-related outcomes among young people, although not for every variable or in every campaign. The strongest evidence points to changes in knowledge, interpersonal communication and condom use. However, we need to continue to build the evidence base for the effectiveness of mass media campaigns among youths and focus especially on comprehensive programmes that go to scale with a combination of television, radio and other supporting media.

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8. The effectiveness of community interventions targeting HIV and AIDS prevention at young people in developing countries

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Objective To identify successful HIV/AIDS prevention interventions targeting youths and delivered in geographically bounded communities (for example, rural villages, urban settlements or neighbourhoods) in developing countries.

Methods A systematic review and synthesis of studies evaluating interventions that were published between January 1990 and December 2004 was conducted. Using predetermined criteria, all interventions were summarized into multiple tables to facilitate comparison. Results of the evaluations of each of four types of intervention were reviewed using predetermined thresholds of evidence. The four types of interventions were classified as follows. Type 1 interventions were those targeting youths and delivered through existing organizations or centres that served youths. Type 2 were those targeting youths but not affiliated with existing organizations or centres. Type 3 were those targeting all community members and delivered through traditional kinship networks. Type 4 were those targeting communities as a whole and delivered through community-wide events.

Findings Evaluations of 22 interventions were reviewed. Type 1 interventions produced primarily positive results at the required threshold of evidence. They are recommended for use in scaling-up projects but should be subject to continued rigorous evaluations. Studies of all other intervention types produced primarily positive results, but the evaluations were less rigorous so clear conclusions could not be drawn about their effectiveness. It is recommended that these interventions be continued and that priority should be given to implementing rigorous evaluations of these interventions.

Conclusions Considerable creativity, ingenuity and commitment is demonstrated in designing and delivering HIV interventions but there is a paucity of adequate evidence of their effectiveness. This precludes identification of the types of interventions that actually produce the targeted changes. It is

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essential that governments and donor agencies invest in high quality process and outcome evaluations and cost–benefit analyses so that effective interventions can be identified and promoted.

8.1 Introduction

There is increasing recognition that young people are at the centre of the AIDS pandemic regardless of whether they are living in countries with generalized or concentrated epidemics. Not only are they carrying a disproportionately high burden of infection but they also consistently face conditions and circumstances that make them vulnerable to new infection (see [chapter 2](#)). The United Nations General Assembly Special Session on HIV/AIDS (UNGASS) (1) acknowledged the need to focus attention on young people by specifying goals for interventions targeting youths (see Paragraph 53). Reaching these goals requires that governments, organizations working with youth and donor agencies ensure that young people (those aged 15–24 years) have access to information about HIV and health services, to interventions that help them build skills to avoid becoming infected with HIV, and that the vulnerability to and prevalence of HIV infection among young people is decreased. There has been international acceptance of these goals. What remains is to identify the best ways of achieving them.

Our objective is to strengthen the evidence base for interventions targeting young people in developing countries, particularly those interventions that are delivered in geographically bounded communities. These communities may be rural villages, urban settlements or neighbourhoods. What distinguishes them in this case is that they are where young people live regardless of whether they are in school or out of school, married or unmarried, employed or unemployed. As such, interventions in these settings have the potential to reach large numbers of people. The focus of this paper is on identifying the types of interventions delivered in geographically bounded communities that have demonstrated success in achieving at least one of the UNGASS goals.

8.2 Methods

A systematic review of the literature was undertaken to locate interventions delivered in geographically bounded communities. We searched the following electronic databases: PsycINFO, AIDSLINE, Medline, POPLINE, ERIC, Sociological Abstracts, Social Sciences Abstracts and the Leeds Health Education Effectiveness Database. We also searched the reference sections of articles retrieved, conference proceedings, issues of journals that had published articles evaluating interventions and the web sites of organizations involved in AIDS-related programmes and research (AEGiS, AVERT, the

CORE Initiative, CAPS – the Center for AIDS Prevention Studies, Development Gateway, the United Kingdom Department for International Development, Europeer, Family Health International, the Pan American Health Organization, UNAIDS, UNFPA, UNESCO, UNICEF, WHO). We also sent requests to individuals knowledgeable about HIV prevention or working for organizations involved in HIV prevention. Publications appearing in both peer-reviewed journals and grey literature were retrieved, and authors or sponsoring organizations were contacted by email if additional information was needed.

Inclusion criteria were set in consultation with the editors of this report. Articles and reports were reviewed by both authors to determine whether they met the inclusion criteria outlined in [Table 8.1](#). Studies that met the inclusion criteria were summarized and put into a chart for comparison. Further detail on the studies is available on the web (www.who.int/child-adolescent-health). An iterative process of discussion and re-reading of documents was used to achieve consensus on categorizing the interventions.

Information on the shared characteristics of interventions was reviewed and, based on discussions with colleagues experienced in intervention research or programme delivery, interventions were divided into four types, which differed in their target population and their mode of delivery. Type 1 interventions and type 2 interventions target only young people (aged 15–24 years) and focus on providing information, building skills and changing behaviours. Type 1 interventions are affiliated with existing organizations or centres that serve youths. Through this affiliation, the organization or centre's acceptance within the community as well as their mechanisms for reaching young people, their infrastructure and mode of sustainability become available to the intervention. However, a suitable host organization must be found for these interventions and a working relationship with, placement of, and support for the intervention must be negotiated; additionally, sensitive topics must be included in the intervention without challenging the position of the organization in the community. Type 2 interventions create their own mechanism and infrastructure to deliver the intervention. While negotiating with an existing organization is not necessary, this type of intervention must establish acceptance with gatekeepers, develop a mechanism to reach young people, as well as a sustainable method of delivery. A suitable location must also be found and infrastructure for delivering the intervention must be developed.

Type 3 interventions and type 4 interventions are delivered to the community as a whole. Type 3 interventions use traditional kinship networks to deliver interventions that have been designed to fit in with local traditions and customs for communicating about health and sexuality. These interventions use repeated one-on-one discussions or small, often family-based, group

Table 8.1

Inclusion and exclusion criteria used to identify studies for review

Inclusion criteria	Exclusion criteria
Some of the intervention content deals with HIV/AIDS	Intervention delivered exclusively to adults (aged > 24 years) or children (aged < 15 years)
Youths (aged 15–24 years) included in population targeted by intervention	Intervention delivered primarily through school, health facility or media
Description of intervention available	
Intervention designed to be delivered in geographically bounded community	Intervention targets youths living in institutional settings
Primary objectives are stated	
Intervention delivered in a developing country	Intervention delivered only in a developed country
One or more of the following outcomes is reported for youth: knowledge of HIV/AIDS, skills related to preventing sexual transmission of HIV, behaviour related to preventing sexual transmission of HIV, HIV prevalence/incidence or outcomes related to community awareness of circumstances and conditions contributing to youth vulnerability	Evaluation study has insufficient evidence from which to draw conclusions
Evaluation method described and includes judgements based on project records or qualitative interviews with participants, cross-sectional surveys with or without comparison groups, surveys conducted before and after the intervention with or without comparison groups, or randomized controlled trials	No information about design of evaluation provided
Results reported for youths aged 15–24 years	No results reported for youths aged 15–24 years
Report published between January 1990 and December 2004	
	Intervention targets youths identified as “especially vulnerable” (for example, intravenous drug users, refugees, sex workers)
Results published in English, French or Spanish	Results published only in a language other than English, French or Spanish

discussions in which a relationship is built among those delivering and those receiving the intervention. Since delivery of this type of intervention proceeds one individual or family at a time, these are the most labour-intensive type, and attention must be paid to the mechanism of delivery if large numbers of

people are to be reached. Type 4 interventions deliver their messages through large-scale community activities, such as festivals, community theatre events or competitions. They have a broad reach and deliver a uniform message, but there is little, if any, accommodation or response to individual concerns or circumstances.

We identified 22 evaluated interventions that met the inclusion criteria. Their distribution across intervention types is shown in Figure 1.

8.3 Findings

8.3.1 *Intervention types and threshold of evidence*

Evidence-based decision-making typically requires the application of rigorous evaluation standards to support recommendations. However, as Ross et al. discuss in [chapter 4](#), applying such standards is fraught with difficulty when interventions targeting behaviour change and community norms are being evaluated. Thus, an alternative framework, based on establishing different thresholds of evidence, is used here. The evidence required at each threshold is based on the typology presented by Habicht et al. (2) and described by Ross et al. In this framework, a threshold of evidence is set for each type of intervention. This threshold takes into consideration the feasibility of delivering the intervention on a large scale, the acceptability of the intervention to participants and those who are implementing it, its risk of producing adverse outcomes, the potential size of the effect, and the presence of other health and social benefits associated with delivery of the intervention.

[Table 8.2](#) provides information on the criteria and threshold of evidence needed to recommend an intervention for each of the four intervention types

Fig. 1.
Types of interventions

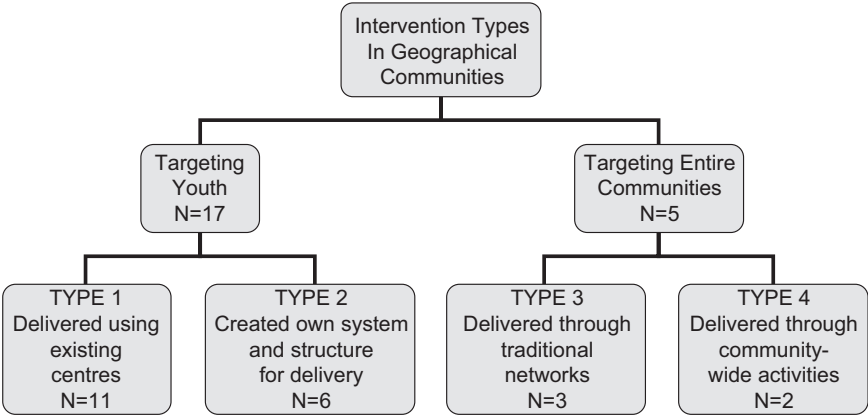


Table 8.2

Threshold of evidence needed to recommend widespread implementation of each type of intervention^a

Intervention type	Feasibility	Lack of potential for adverse outcomes	Acceptability	Potential size of effect	Other health or social benefits	Overall threshold	Comments
1. Targets youths and is delivered using existing organizations or centres serving youth	+++	--	+++	++	++	Moderate	Requires an existing organization or centre that is accepted by the community with infrastructure to support programme. The effect size depends on the reach of the organization or centre
2. Targets youths and creates its own system and structure for delivery	+	-	+	+	+	High	Must create a system of delivery acceptable to the community and that adequately penetrates target population
3. Community-wide intervention delivered through existing traditional kinship networks	++	-	++	+	+++	Moderate	Must address social norms associated with communicating about sexual matters within the identified networks
4. Community-wide intervention delivered through communitywide activities, (eg. festivals)	+++	-	++	++	++	Moderate	Community activities provide wide reach if the approach is acceptable and meaningful to community members

^a Degree of desirability is indicated with a maximum of 3 “+” signs. Degree of undesirability is indicated with a maximum of 3 “-” signs.

studied. All types of interventions must address the challenges posed by the potential delivery of misinformation and community backlash. For example, misinformation may result from personal interpretation, lack of comprehension, errors in recall or cultural norms associated with the information or its communication. Cultural resistance to the advocacy of condoms in much of sub-Saharan Africa, for example, has at times resulted in schoolteachers, government officials, community leaders or religious leaders presenting information about condoms in ways intended to discourage their use (3–5). Community backlash may occur if the content of an intervention is considered inappropriate for young people (most typically this happens with interventions aimed at girls). While the challenge posed by misinformation and backlash is evident, less obvious is the opportunity that these mishaps afford to open discussions of a community's beliefs and norms and the potential for shifting such norms. This was the case for three interventions reviewed here (denoted as I, S and T in [Table 8.3](#)) (6–9). The threat posed by backlash and misinformation are acknowledged in the negative rating given for potential adverse effects for all intervention types. The greater potential for damage posed by a backlash to type 1 interventions, where it may threaten the ongoing work of the host organization, is acknowledged in the more negative rating given to this type of intervention.

Also common across intervention types is the possibility of producing other health and social benefits by engaging participants in conscious consideration of their health, the possibility of changing their behaviour to protect their health, and the adoption of attitudes favouring delayed gratification in order to experience long-term health benefits. Each of these could extend beyond HIV to other areas of health and social life. As a result, all types of interventions received at least a small positive rating in the category assessing other health and social benefits.

When considering the remaining threshold criteria, type 1 and type 4 interventions benefit from their connection with existing community organizations and events. The feasibility of the interventions as well as their acceptability and reach may be enhanced by their association with and use of the infrastructures, facilities and delivery mechanisms of their host organizations. In addition, there is a potential synergy between the social benefits and the health benefits provided by the host organization or event and the HIV interventions. Since type 4 interventions are delivered to an entire community, their reach is especially wide; however, the personal relevance and specificity of their message is limited, potentially weakening their effect. Based on these characteristics, intervention types 1 and 4 are judged to require a moderate threshold of evidence before they can be recommended for investment and scaling-up – that is, evidence is needed at the level of plausibility. (See description of levels of evidence in [chapter 4](#) and in Glossary).

Table 8.3

Description of the interventions by study

Study, location and dates	Target population and primary objectives	Description
Intervention type 1 (targeting youths and delivered using existing youth organizations or centres)		
A – Cameroon: Nkongsamba, 1997–1998 (15)	- Youths aged 12–25 years - Increase contraceptive use - Reduce incidence of STIs,^a HIV and unintended pregnancies	Carefully selected peer educators were given 1 week of training (with quarterly retraining); they have a high investment in the project and deliver one-on-one and group activities that include reproductive health information, referrals and promotional materials
B – Cameroon: Mokolo neighbourhood of Yaoundé (16, 17)	- Adolescents - Improve reproductive health knowledge - Promote behaviour change using trained peer educators and information, education and communication publications	Carefully selected and supervised peer educators deliver informal talks, one-on-one sessions, conferences, round table discussions, cultural and athletic activities, as well as a magazine containing reproductive health information
C – Nigeria and Ghana, 1994–1997 (28)	- Youths aged 12–24 years, both in and out of school - Improve knowledge of sexuality and reproductive health issues - Promote safer sex and contraceptive use among those who are sexually active	8 youth-service organizations in Nigeria, 2 in Ghana trained staff to develop programme; staff trained peer educators to deliver one-on-one discussions and group activities, to distribute material containing education about and counselling on sexual and reproductive health, referrals to other services
D – Bali: Kuta, Ubud, Candidasa and Lovina 1995–1996 (13)	- Bali age-mate (culturally defined cohorts) group members - Utilize established Balinese youth groups to provide information on HIV prevention	Peer educators from existing age-mate (culturally defined cohort) groups to which all youth belong from puberty to marriage received 3-day training to deliver a single 7-hour session to age-mate group containing information on HIV risk, transmission and prevention

E – Ghana: Four project areas connected with NGOs^b beginning in 1998; multicountry initiative (18)	• Adolescents • Reach youths both in and out of school with information about reproductive health	Peer educators trained peer promoters who recruit peer contacts and deliver counselling, discussion groups, workshops, drama and music focusing on reproductive health information and services, as well as providing non-prescription family planning methods
F – Zambia: 4 NGO-based projects (date not reported) (19)	• Youths aged 14–25 years and gatekeepers • Increase knowledge of HIV • Promote safer behaviour • Build capacity to respond to and cope with HIV/AIDS	Peer educator programmes were part of overall reach; peer educators with regularly updated training materials deliver drama, games and music that focus on services for youths and women, condom distribution, life-skills training, gender awareness and sensitization
G – Malawi: mid-1997 to Dec. 2000 (12)	• Youths aged 5–20 years • Competence and life skills to promote sustained HIV prevention among children aged 5–14 years • Reduce levels of HIV in youths aged 15–20 years	Youth technical subcommittees train club matrons and patrons, link with UNICEF, and guide delivery of services that include anti-AIDS clubs and life skills education for out-of-school youths, focusing on reproductive health information, services and promotional materials
H – Zambia: two provinces in northern Zambia, (date not reported) (26)	• Youths in school and community anti-AIDS clubs • Train youths to care for people living with HIV/AIDS and orphans and vulnerable children in hope of inspiring safe behaviour	Health professionals trained youth caregivers, with follow up after 2 months and ongoing training every 3 months; trained youths provide care to people living with HIV/AIDS and orphans and vulnerable children; provide reproductive health information, materials and support
I – Kenya: Mathare slum, Nairobi, 1987, expanded in 1992 to include girls (6)	• Adolescents aged 9–18 years • Create opportunities for youth development • Impart HIV/AIDS information as well as motivation to stay safe	Develops life skills through soccer playing, community services and informal conversations among youths; programme also offers financial assistance for education and HIV information provided via peer educators

Study, location and dates	Target population and primary objectives	Description
J – Nepal: Terai district of Nawalparasi and Kwasoti and suburbs of Kathmandu, (date not reported) (23)	• Adolescents and adults • Use existing youth communication networks to increase reproductive health knowledge	Activities designed and implemented by local youths who deliver adolescent-friendly health services and provide a support network for health professionals; peer education and counselling are also offered as well as adult education and drama addressing HIV information and social norms
K – Kenya: Nyeri, 1997–2001 (24)	• Unmarried youths aged 10–24 years and influential adults • Delay onset of sexual activity • Prevent those who are sexually active from suffering negative consequences of activity	Carefully selected young parents delivered educational activities (via group discussions, drama and lectures), counselling, referrals for health services and sensitization of adults to the situations and needs of youths with a focus on reproductive health information
Intervention type 2 (targeting youths and creating own system and structure for delivery)		
L – Ghana: 12 districts in upper eastern and northern Ghana, 1996 (29)	• Youths aged 15–25 years • Promote HIV/AIDS awareness and knowledge and safer sex practices through peer-to-peer education	Youth to Youth is one of many projects being run by different local organizations; carefully selected peer educators are given 5-day training, 3-day refresher courses, yearly review meeting and training of trainers workshop; they deliver weekly peer education sessions, group activities containing reproductive health information and condom demonstrations
M – Sri Lanka: low income urban area of Kandy and the University of Peradeniya (30) (date not reported)	• Urban youths aged 17–27 years • Learn sexual negotiation and decision-making skills necessary to avoid risk, such as safe sex practices	Peer educators recruited, supervised and technically assisted to facilitate group sessions that include factual presentation, written activities, group discussion and problem-solving around relationships, sexuality and information on STIs, HIV and AIDS
N – India: Gujarat, 1998 (20)	• Young men aged 15–30 years	Outreach workers train peer educators and worker educators to run group discussions

Engage males in reproductive health education, sexual risk reduction and early treatment of HIV and STIs	using narrative intervention model with activities on semen loss concerns integrated into HIV and STI education; this programme also included income generation, self-help groups for those in the illegal liquor trade, couples' clubs and 3-day health fairs however, these aspects of the programme do not fall within the scope of this paper		
O – India: 14 /261 urban slums in Lucknow (25) (date not reported)	- Adolescent males - Increase awareness of STI risk - Expand sex education to include forms of sexuality other than coitus	Retired psychiatrist and 3 male assistants deliver programme including a secure box for anonymous questions from participants, taped educational messages, lectures and answer questions focusing on reproductive health information	Supervised peer educators given 5-day training (with refresher training 6 months later) to run group discussions, role play, debates and games with reproductive health information; provide access to condoms, health services and counselling and childcare support services; linked to programmes run by other NGOs targeting youths who were in school or out of school these are other aspects of the programme which are not part of the scope of this paper
P – Ghana: Ga Mashie area of Accra, 1998 (29)	- Youths - Promote attitudinal and behavioural changes related to HIV/AIDS and other STIs among youths both in and out of school		
Q – Nepal: Thimi and Balkot (27) (date not reported)	- Youth 15-24 - Enable behavioural change to prevent HIV/AIDS and STI - Increase access to youth-friendly health care		Youth Action Groups deliver training in street drama, leadership, HIV information, basic counselling and training-of-trainers, with focus on reproductive health information and services
Intervention type 3 (community-wide intervention delivered through family networks)			
R – Uganda: 2 Baganda communities in rural	Adolescent girls aged 13–19 years were the primary focus, but “sengas” accessible to entire		“Sengas” are given 7 days’ training, monthly meetings and 6-monthly workshops; they

Study, location and dates	Target population and primary objectives	Description
Uganda (21, 22) (dates and exact locations not reported)	- community (traditionally the “senga” or “father’s sister” is a channel of communication about sexual behaviour for adolescent girls) - Use trained “sengas” to provide adolescent girls with information on reproductive health - Married and unmarried adolescents - Provide reproductive health information, access to birth control and condoms - Work to influence community gender norms	deliver community supported one-on-one activities and distribute condoms
S – Burkina Faso: 4 villages, 2003 (7)		30 married, adolescent mothers trained as peer educators provided educational support kits for home visits and focused on one-to-one counselling and providing reproductive health and HIV prevention information
T – Uganda: Mpigi and Iganga, 1992–1994 (8, 9)	- Muslim families in community - Use Muslim religious structure to increase knowledge of AIDS - Identify and modify risky practices	Trained imams and family AIDS workers; imams introduced and supported AIDS workers in household-based education focusing on HIV and AIDS
Intervention type 4 (community-wide intervention delivered through community-based activities)		
U – Thailand: All 77 villages in Suwannakuha district, Nongbua Lamphu province, northern Thailand, July 1995 (14)	- Community members aged 15–35 years - Increase self-efficacy, skills and confidence in condom use and discussions with partner	Used training-of-trainers approach; recruited village leaders to participate in condom relay races at village, subdistrict and district level; included condom demonstrations and a focus on the development of self efficacy in accessing, discussing and using condoms
V – United Republic of Tanzania: Kisarawe, Musoma, Masasi, Bagamoyo districts (10, 11) (date not reported)	- Out-of-school youths and other community members - Enable youths to reduce their risk of HIV infection through popular theatre	Young artists trained in popular theatre and facts about HIV/AIDS deliver cascade training, audience-directed dramas with discussions and workshops focusing on HIV/AIDS information and exploration of local situations that may increase the risk of HIV transmission

^a STIs = sexually transmitted infections.

^b NGOs = nongovernmental organizations.

Type 3 interventions, which work through traditional kinship networks, also require a moderate threshold of evidence. Their feasibility and the potential size of their effect are weaker than for types 1 and 4 because they rely on a larger number of intervention leaders and are delivered on a one-on-one basis or on a family or household basis, thus they require greater effort to reach a large number of community members. However, this intervention type has a stronger potential to produce other social and health benefits because the personalized nature of the delivery makes it possible to incorporate other beneficial messages.

Intervention type 2 is judged to require a high threshold of evidence. Interventions of this type must build their own delivery mechanism and infrastructure, find a location for delivery and address issues of acceptability without forming an alliance with other already accepted community activities or organizations. This added effort and cost limits their feasibility, acceptability and potential effect size as well as their ability to bring about other health and social benefits.

None of the studies reviewed here provided any costing information. At most, there were comments about costs. For example, a participatory theatre approach in the United Republic of Tanzania found that the cost of using videos of their productions to extend the reach of the intervention was prohibitive (study V in [Table 8.3](#)) (10, 11); in study G, the activities of anti-AIDS clubs that relied on sports and audiovisual equipment could not be sustained because of the cost of maintaining, repairing and replacing damaged and stolen equipment (12). Without further information, the effect of costs on the feasibility of interventions could not be judged for any of the intervention types.

8.3.2 *Description of interventions*

Table 8.3 briefly summarizes information about each intervention's location, target population and primary objectives as well as giving a brief description of the study. (Additional details are available on the web.)

8.3.2.1 *Theoretical frameworks*

Only three studies explicitly articulated a theoretical framework of behaviour change. These frameworks included social influence theory (study D) (13), social learning theory (study U) (14), and theatre for change (study V) (10, 11). Some type 1 and 2 studies commented on the assumptions on which they were based, with the most common set of assumptions those of the knowledge, attitudes and behaviour model – that is, that changes in knowledge and attitudes are necessary and potentially sufficient to change behaviour (type 1: A, B, E, F; type 2: N) (15–20). However, not all of the

knowledge, attitude and behaviour elements were necessarily measured in the evaluations of these interventions, and no evaluations tested the association among knowledge, attitudes and behaviour. Some interventions supported their use of peer educators with the claim that peers were better able to effect change than adults (type 1: A, B, E) (15–18). However, only one study compared the difference in programme delivery between peers and adults (type 3: R) (21, 22), and none of the studies articulated a theory of how peers influenced each other. Several intervention studies focused specifically on cultural appropriateness either in the content or method of delivery (type 1: F, J, K; type 2: N, O; type 3: R, T; type 4: U, V) (8–11, 14, 19–25). In these studies, cultural appropriateness was described as either a contributor to effecting change or as being necessary to effect change. Mention was made of the importance of building self-esteem and peer bonding around positive social behaviours (type 1: I) (6); in two studies there was also mention of increasing the perception among young people that “AIDS is real” by involving them in caring for people with HIV (type 1: H) (26). In the 10 remaining studies, no mention was made of a theoretical framework or the assumptions on which a model of behaviour change was built.

Models of programme delivery were even less likely to be articulated. Three peer-led interventions described the use of a cascade or step-down model of delivery in which training programmes were delivered through an ever widening circle of peer leaders as those who were originally trained went on to train others (type 1: E, F; type 2: Q) (18, 19, 27). One other study specifically described a model that linked organizations that were delivering the intervention with other organizations such as health centres that could provide counselling, testing and healthcare support (type 1: H) (26). Other intervention studies described methods used to train leaders and deliver programmes but did not articulate the specific models or theoretical frameworks on which these were built.

8.3.2.2 *Objectives*

The objectives of most interventions were to convey information, build skills needed to establish or change targeted behaviours, and change sexual behaviours that put young people at risk. In addition, most type 3 and 4 interventions shared the objectives of raising awareness and changing community norms that contributed to vulnerability. The objectives of the evaluations of two type 1 interventions also included testing the dispersal of information from those directly involved in the intervention to all youth in the community (studies C and G) (12, 28). Two others (studies E and J) (18, 23) tested different forms of programme organization.

8.3.2.3 *Content*

The most common information provided in all interventions was about the transmission and prevention of HIV. In 14 of the 22 interventions this was done within the context of reproductive health (studies A, B, C, E, G, H, J, K, L, O, P, Q, R and S) (7, 12, 15–18, 21–29). Interventions that targeted skill building included both general life skills (studies C, D, J, Q, R, S) (7, 13, 21–23, 27, 28,) and skills specific to avoiding HIV infection (studies C, D, L, P, R, U, V) (10, 11, 13, 14, 21, 22, 28, 29). Skills specific to preventing HIV were often restricted to locating and accessing condoms, condom self-efficacy and the proper use of condoms (studies D, L, P, U) (13, 14, 29). Skills in communicating with partners were taught in four interventions (D, J, K, R) (13, 21–24), and in two studies (T, V) (8–11) participants learnt to identify local situations and practices where there were heightened risks of becoming infected with HIV.

8.3.2.4 *Providers and delivery*

Interventions of all types (but not all interventions) were delivered by community members. Thirteen of the 17 type 1 and 2 interventions used “peer educators”, “peer supporters” or “peer leaders” to deliver programmes. (There was no consistency in the terminology used or the definitions of these roles.) The remaining four type 1 and 2 interventions used adult community members as intervention leaders, but expected the youth who were participating to become informal educators and role models for their peers (G, H, I, K) (6, 12, 24, 26). Two each of type 3 and 4 interventions used peer educators either exclusively (S, V) (7, 10, 11) or with adult leaders (R, U) (14, 21, 22). The remaining type 3 intervention (T) (8, 9) used trained adult community members to deliver the programme.

8.3.3 *Quality of the evidence*

Only 9 of the 22 evaluations used experimental designs – that is, designs that met the requirements for a moderate or high threshold of evidence. Three from type 1 used some form of random allocation to intervention and control groups (A, C, H) (15, 26, 28), and six from types 1, 2 and 3 used non-randomized comparisons (B, J, K, O, R, T) (8, 9, 16, 17, 21–25). Of the remaining studies, two each from types 1 and 2 and one from type 4 could demonstrate adequacy of the intervention either by using data collected before and after the intervention or by tracking the effects of the intervention using project records, field notes, interviews and materials produced by intervention participants (D, G, M, N, U) (12–14, 20, 30). The remaining eight (three type 1, three type 2 and one each of types 3 and 4) provided evidence based on the informed judgement of those responsible for the intervention (E, F, I, L, P, Q, S, V) (6, 7, 10, 11, 18, 19, 27, 29).

Among the 9 evaluations that used experimental designs, the net change found before and after the interventions were tested in only two, both of which were type 1 interventions (A, H) (15, 26). Only one study with a non-randomized comparison (type 1: J) (23) controlled for potential confounders other than sex of the participant; and only 8 of the 22 studies disaggregated results by the sex of the participant (A, B, H, J, K, M, T, U) (8, 9, 14–17, 23, 24, 26, 30). All but one of these studies (study H) (26) found that results were conditional on the sex of the participant, raising the question of whether results in the remainder of studies would have been different had they been disaggregated by the sex of the participant. None of the three evaluations that used randomized cluster sampling took this into account in their data analysis (A, C, H) (15, 26, 28).

The generally poor quality of the design and data analyses must be considered when weighing the evaluation outcomes.

8.3.4 *Outcome measures*

Four of the UNGASS goals were commonly set as objectives for the interventions included here: increasing knowledge related to HIV, building skills related to preventing HIV transmission or acquisition, decreasing vulnerability to HIV, and reducing the prevalence of HIV. Changing sexual behaviour and increasing the use of condoms, which may be considered antecedents to reducing prevalence, were also set as objectives in several interventions. Table 8.4 provides information on the design and outcomes of the evaluations. (More details about each intervention are available on the web.) The results presented here are based primarily on evidence reported at the 0.05 level of statistical significance and obtained in evaluations using experimental designs required for the probability (randomized comparison trials) or plausibility (non-randomized comparison trials) levels of evidence. Results based on adequacy levels of evidence (produced by designs that included pre-intervention and post-intervention components with no control comparisons) or informed judgement (produced by qualitative assessment without formal pre-intervention and post-intervention measures) are used only when they provide useful information, and they are identified as coming from less rigorously designed evaluations. When the net changes before and after an intervention were not reported, results are considered to reflect gains that may be attributed to the intervention if there is a net gain of at least 10 percentage points from baseline to post-intervention in the intervention group when compared with the control group. The acceptance of the 0.05 level of significance or a net change of 10 percentage points are liberal criteria that err on the side of inflating the chance of an alpha error in favour of reducing the chance of a beta error. We felt this was justified since there is considerable urgency to identify interventions that might be useful.

Table 8.4

Description of outcome evaluations by study^a

Study and location	Design	Outcomes measured	Males	All	Females	Strength of evidence
Intervention type 1 (targeting youths and delivered using existing youth organizations or centres)						
A – Cameroon (15)	Design: Cluster randomized trial using household clusters;	Knowledge				Strong evidence for gains in knowledge and sexual behaviour and condom use
	1 intervention, 1 control site.	• Spontaneous knowledge of STIs occurring in women		+		
	Post-intervention data collection took place 3 months after intervention completion, 17 months after pre-intervention data collection	Behaviour				
	No. of participants pre-intervention: intervention group = 402, control = 400	• Ever had sex	+NS ^b		+	
	No. of participants post-intervention: intervention group = 403, control = 413	• Had sex in last 3 months			-	
		• Condom used during last sexual episode (recent sex only)		+		
Limitation: Data analysis did not take into account clustered sampling						
B – Cameroon (16, 17)	Design: Non-randomized trial; 1 intervention and 1 control group selected using 2-stage probability sampling	Knowledge				Strong evidence of no gains in knowledge and no gains in young men's behaviour but some gains for young women's sexual behaviour
	Participants: Majority were secondary school students aged 15–19 years	• General knowledge of HIV/AIDS	NS	NS	NS	
	No. of participants pre-intervention: intervention group = 1248 (males: 632; females: 616), control group = 1256 (males: 634; females: 622)	Behaviour				
		• Sex during past 12 months	NS		+	
		• 1 partner during past 12 months	NS		+	
	• Reported abstinence					
	• Used condom during last sex with regular partner	NS	+	NS		

Study and location	Design	Outcomes measured	Males All	Females	Strength of evidence
C – Ghana and Nigeria (28)	No. of participants post-intervention: intervention group = 1238 (males: 604; females: 634), control = 1226 (males: 615; females: 611) Limitation: Another simultaneous intervention, known as “100% youth” may have influenced results	• STI symptoms during past 12 months	NS	NS	
	Design: Cluster randomized trial; 10 intervention, 10 control sites; data collection also included in-depth interviews, focus group discussions and project monitoring over 18 months	Knowledge • Overall knowledge of reproductive health (out-of-school youths)	NS		Strong evidence for lack of spread from targeted youth to youth in general community
	No. of participants pre-intervention: intervention group = 911, control = 873	Skills (measured among out-of-school youths) • Contraceptive self-efficacy • Willingness to buy condoms	NS NS NS		
	No. of participants post-intervention: intervention group = 908, control = 893	Behaviour • Sex in past 3 months (all youth) • Use of modern contraceptives (out-of-school youth)	NS		
	Limitation: Results for entire community without control for programme participation				

D – Bali (13)	Design: Before and after survey with no control with a total of 12 “banjars”, 3 selected from each of 4 areas; data collection included surveys, 6 focus group discussions No. of participants pre-intervention: 375 volunteers (male: 218; female: 157) No. of participants post-intervention: 97 participants (at 3 sites) Limitation: Post-intervention survey held during tourist season with substantial loss of participants, reducing statistical power	Knowledge • Measured on knowledge scale Skills • Talking with friends/adults • Perceived barriers to condom use • Condom self-efficacy	+ + + +	Moderate evidence for gains in knowledge and skills
E – Ghana (18)	Design: Qualitative comparison of structured and unstructured models of programme delivery, no control groups; data collection from surveys, focus groups, observation guides for peer educators, and in-depth interviews with opinion leaders Structured model: 87 peer educators (40% trained), 524 peer promoters (58% trained) Unstructured model: 83 peer educators (40% trained), 378 peer promoters (42% trained) Limitations: Fieldwork coincided with first national census; respondents not always cooperative	Knowledge • Protection against HIV • Overall knowledge about HIV • Condom use knowledge	+ + +	Unstructured programme + NS NS Weak evidence for gains in structured intervention compared with unstructured

Study and location	Design	Outcomes measured	Males	All	Females	Strength of evidence
F – Zambia (19)	Design: Qualitative case study with variable-by-variable, cross-case analysis of operationalization of projects and activities. Data collection included document reviews, semi-structured interviews and non-structured interviews with key informants as well as on-site visits to observe peer activities. There was an impressionistic assessment of possible impact but attributable causal links could not be proven given time constraints	Knowledge • General knowledge of HIV and symptoms • Modes of transmission Behaviour • Some change of behaviour • Reduced number of partners	+	+		Weak evidence for gains in knowledge and some behaviour change; no change in number of partners
G – Malawi (12)	Design: Before and after survey with no control group. Data collection included narrative research and annual focus group discussions with target groups, information on STI and HIV prevalence, document reviews and site visits. Limitations: The groups measured in the pre-knowledge, attitudes and behaviours study did not correspond to the target age group so could not be used for comparison	Knowledge • General knowledge and awareness Transmission: • Sentinel survey		NS		Weak evidence for gains in knowledge and some evidence for negative effect on HIV incidence
H – Zambia (26)	Design: Cluster randomized trial with > 6 clusters; 16 of 30 clubs selected at random in one intervention, one comparison site. Data collection also included focus groups and in-depth interviews with caregivers, patron or matrons, people living with AIDS and their family members	Behaviour • Ever had sex • Had sex in the past 3 months • Ever used a condom: • Used condom during last sex	+	NS	+	Strong evidence for improvements in some sexual behaviours and condom use

No. of participants pre-intervention: intervention group male = 200, female = 165; control group male = 209, female = 222					
No. of participants post-intervention: intervention group male = 280, female = 216; control group male = 269, female = 218					
I – Kenya (6)	Design: Anecdotal reports of programme activities	Knowledge • General AIDS and prevention Skills • Able to deliver peer education on HIV/AIDS	+	Weak evidence for gains in knowledge and skills	
J – Nepal (23)	Design: Non-randomized trial; 2 intervention groups with matched control sites (1 each urban and rural); surveys and qualitative data collected; participatory approach with 9 activities with 4–5 groups each in pre-intervention, and 5 activities with 20 groups in each post-intervention.	Knowledge • Modes of transmission (urban participants) • Modes of transmission (rural participants) Behaviour • Ever had sex (unmarried urban men only) • Ever had sex (unmarried rural men only)	- NS +	Strong evidence for gains in young women's knowledge and reductions in sexual activity among rural young men Moderate evidence for negative effect on knowledge of rural young men and sexual behaviour of urban young men	
	No. of participants pre-intervention: adolescents = 724, adults = 752, service providers = 59				
	No. of participants post-intervention: adolescents = 979, adults = 654, service providers = 62; key informant interviews = 3; 14 in-depth interviews; 10 focus groups; 231 facilitator reports; 48 mystery client surveys; 67 community group assessments at midpoint and post-intervention		+		

Study and location	Design	Outcomes measured	Males	All	Females	Strength of evidence
K – Kenya (24)	Design: Non-randomized trial; 1 intervention and 1 control. Data collection included interviewer-administered and self-administered questionnaires No. of participants pre-intervention: intervention group male = 573, female = 523; control group male = 219, female = 229 No. of participants post-intervention: intervention group male = 711, female = 697; control group male = 214, female = 243	Skills • Communication with parent Behaviour • Secondary abstinence • > 3 partners during past 3 years • Used condom last time had sex	+		+	Strong evidence for gains in communication with parents, change in condom use and behaviour of young women (not young men)
Intervention type 2 (targeting youths and creating own system and structure for delivery)						
L – Ghana (29)	Design: Qualitative study; pre-intervention and post-intervention exercise with participants in peer education sessions; site visits; feedback workshops with peer educators, outreach staff and management committee. Data collection included observations, in-depth interviews, focus groups, review of documentation and reports, and visits to pharmacies. Evaluation simultaneous with study P (18)	Knowledge • Modes of transmission and ABC programme (Abstain, Be faithful, use Condoms) as prevention • STI knowledge Skills • Could demonstrate how to use a condom Behaviour • Abstain • Use condoms correctly and consistently		+		Weak evidence for gains in some knowledge, condom use skills and sexual behaviour and condom use behaviour

M – Sri Lanka (30)	Design: Before and after intervention, no control No. of participants pre-intervention and post-intervention: 615 youths interviewed for ethnographic research; approximately one half were low income, one half were university students, roughly same number of males and females	Knowledge • AIDS • Condoms • Sexual terms	NS NS NS	Weak evidence for gains in knowledge among young women but no effect on young men
N – India (20)	Design: Qualitative intervention with pre-intervention and post-intervention comparison of flowcharts and produced by programme participants. Data also collected through informal groups of men discussing masturbation and nocturnal emissions Flowcharts analysed: pre-intervention = 35, post-intervention = 16 No. of participants: 50 single men including 22 villagers, 16 migrant workers, 12 prison inmates	Knowledge • Masturbation is safe sex Attitudes • Masturbation acceptable and has positive consequences	+	Weak evidence for gains in knowledge and attitude changes among young men
O – India (25)	Design: Non-randomized trial; 14 intervention sites, 14 matched control sites. Data collected through surveys and participatory dissemination workshops No. of participants pre-intervention: intervention group = 377, control = 343 No. of participants post-intervention: intervention group = 363, control = 343	Knowledge • Time to symptoms of HIV • Multiple prevention methods	+	Strong evidence for gains in knowledge for young men

Study and location	Design	Outcomes measured	Males	All Females	Strength of evidence
P – Ghana (29)	Design: Anecdotal evidence. Data collected from site visits; feedback workshops and reports from peer educators, outreach staff and management; informal discussions and meetings; in-depth interviews and focus groups with peer educators and target group members. Pre-survey data collected but not analysed until 2 years later. Data evaluated simultaneously with that collected in study L ¹⁸	Knowledge • Knows about 2 or more modes of transmission and prevention • Information about STIs Skills • Demonstrate correct condom use (out-of-school youth) Behaviour • Demand for condoms and condom use • Female condoms purchased	+	+	Weak evidence for gains in some knowledge, skills, and condom acquisition.
Q – Nepal (27)	Design: Qualitative study. Data collected from discussions, participatory methods and 3 case studies; project documents and other relevant materials reviewed; No. of participants: 162 members of 18 youth action groups	Knowledge • General knowledge of HIV/AIDS, STIs and sexual health Skills • Youth have “sense of social responsibility”	+	+	Weak evidence for gains in knowledge, sense of responsibility and sexual behaviours

Limitations: Few action group members or local representatives interviewed. However, all action group coordinators interviewed and participated in data collection and analysis	Behaviour • Safer sexual behaviours • Reduced personal vulnerability	+	
		+	
		+	
Intervention type 3 (community-wide intervention delivered through family networks)			
R – Uganda (21, 22)	Design: Non-randomized trial; 2 intervention, 1 control community. Included only girls who participated in study for full 12 months; intervention group was self-selected (83 girls lived in intervention communities, 30 in control); 8 focus groups (4 groups of males and 4 of females), 60 in-depth interviews with adults (30 with males and 30 with females). Data collected from workshops, community focus groups and in-depth interviews with non-target adults who had visited “sengas” (women trained to provide sexual health information in the manner appropriate to traditional kinship networks)	Knowledge • Modes of HIV transmission Skills • If sexually active • Communicate with partner • Communicate with other people Behaviour (among sexually active girls) • Had symptoms of an STI • Report consistent condom use	Weak evidence for gains in knowledge and behaviour change among young women but no change in communication skills
		+	NS
		+	NS
		+	
		+	
No. of participants: intervention group = 71, control = 24			

Study and location	Design	Outcomes measured	Males	All Females	Strength of evidence
S – Burkina Faso (7)	Design: Qualitative study. Data collection included 61 in-depth interviews with peer educators, leaders, spouses ^c and chief medical officer; 17 focus groups with peer educators, mothers-in-law, married adolescents who were not peer educators, other programme beneficiaries and members of organizing committee. There was also a review of project documentation and 6 case studies	Knowledge • Of reproductive health in the community and among peer educators Behaviour • Contraceptive use • Change in community norms related to women (for example, movement about the community, ability to talk with others about sexual health issues, etc)		+	Weak evidence for gains in knowledge, contraceptive use and change in community norms related to young women
T – Uganda (8, 9)	Design: Non-randomized trial; 2 communities. Pre-intervention participants divided into exposed and non-exposed groups for pre-intervention vs –post-intervention analysis. Non-exposed acted as control group. Data collection included surveys, focus groups (9 with about 75 participants) and 25 interviews with key informants (family AIDS workers, imams, imam's assistants, sheikhs)	Knowledge • Modes of transmission and prevention • Risk perception Behaviour • Decrease number of sexual partners • Ever use condom (Urban youth: +; Rural: NS)	+	+	Strong evidence of gains in knowledge and sexual behaviour (among both young men and women)
No. of participants pre-intervention: 1907					

	No. of participants post-intervention: exposed (intervention group) = 1260, non-exposed (control group) = 566 Limitations: national programmes exist, which confound results; samples include wider age range than “youth”			
	Intervention type 4 (community-wide intervention delivered through community-based activities)			
U – Thailand (14)	Design: Before and after study with no control group; surveyed immediately before community-wide race, immediately after race and 6 weeks post-race with convenience sample; 29 villages used in evaluation	Knowledge	+	Weak evidence of gains in knowledge and skills related to condom use
		• Proper condom use ^d		
		Skills	+	
		• Condom self-efficacy ^d		
	No. of participants pre-race and post race: women = 87, men = 77 (members of first teams formed)	Behaviour	28%	
	No. of participants in convenience cross-section 6 weeks after race: men = 79, women = 81	• Proportion accessing condoms (post-intervention only)		
	Limitations: Highly mobile target group precludes measurement of long-term effect			
V – United Republic of Tanzania (10, 11)	Design: Qualitative data collection by a team of artists who kept notebooks of daily observations; community members and artists catalogued economic, social and health problems that facilitate the spread of HIV; reports were developed from notebooks of the groups used to prepare for next phase of programme (training peer educators)	Knowledge	+	Weak evidence of gains in knowledge and skills, changes in community norms and community taking action
		• Cultural practices contributing to HIV spread		

Study and location	Design	Outcomes measured	Males	All	Females	Strength of evidence
		Skills				
		• Able to identify dangerous practices unprompted		+		
		Behaviours				
		• Changes in community norms				
		Community action		+		
		• Action taken to protect youth				
				+		

A “+” indicates that a result is statistically significant at least at $P \leq 0.05$ and in the desired direction (for example, an increase in knowledge, a decrease in sexual activity, or an increase in condom use). A “-” sign indicates that a result is statistically significant at least at $P \leq 0.05$ and in an undesirable direction (for example, a decrease in knowledge, an increase in sexual activity or a decrease in condom use). For cases in which no appropriate tests of statistical significance were conducted, results are rated + or – if the net difference between the pre-intervention and post-intervention results is ≥ 10 percentage points when compared with controls. For studies that used only intervention groups, the net difference is calculated between pre-intervention and post-intervention controls and must be > 10 percentage points. For qualitative studies, results are rated + or – based on the report; these are identified as weak results in the in strength of evidence column.

^b NS = not significant.

^c Within this cultural setting, it was necessary to get spousal confirmation of information provided by female peer educators.

^d Results disaggregated by sex provided by the authors (October 2005).

8.3.4.1 *Knowledge outcomes*

Altogether, 20 of the 22 studies, representing all four intervention types, evaluated gains in knowledge related to HIV transmission and prevention. Seven produced evidence at the level of probability (type 1: A, C) (15, 28) or plausibility (type 1: B, J; type 2: O; type 3: R, T) (8, 9, 16, 17, 21–23, 25). All but two of these found at least some gains in knowledge. Both of the interventions that found no gains in knowledge were type 1 (B, C) (16, 17, 28). However, one evaluation (study C) (28) tested the dispersal of an intervention from a sample of “out-of-school youths” to whom it was delivered to all “out-of-school youths” in the community rather than the effect of the intervention on participating youths. Two of the three intervention studies that disaggregated knowledge effects by the sex of the participant demonstrated knowledge gains only for young women (type 1: J; type 2: M) (23, 30).

Specific gains were reported in knowledge related to modes of HIV transmission, including some distinctive cultural practices such as ablution of the dead or genital excision (type 3: T) (8, 9). Gains were also reported in knowledge of prevention behaviours, such as abstinence or condom use (type 2: A, B; type 3: T) (8, 9, 15–17), as well as in scores on summative knowledge scales (type 1: A, D; type 2: M; type 3: R) (13, 15, 21, 22, 30). Knowledge gains related to distinctive cultural practices were most often reported only at the level of adequacy or based on informed judgement. These included the recognition in a type 2 study that “semen loss” was not detrimental to health and that masturbation could be used as an alternative to more risky sexual activities (study N) (20) or that a variety of local practices increased vulnerability to HIV infection (type 3: V) (10, 11).

8.3.4.2 *Skills outcomes*

Three interventions specifically taught skills in using condoms. The evaluation of a type 4 intervention (study U) (14) produced evidence at the level of adequacy of gains in skills for both young men and women, with type 2 intervention studies (L, P) (29) providing the informed judgement of intervention leaders that more young people demonstrated proper use of condoms. The evaluation of a type 1 intervention included measures of self-efficacy in using condoms (study D) (13). Only the evaluation study of a type 4 intervention (study U) disaggregated results for skills by the sex of the participant (14).

Improvements in communication about sexuality and HIV/AIDS with peers, adults or sexual partners were assessed in three studies of type 1 interventions (studies D, J, K) (13, 23, 24) and one study of a type 3 intervention (study R) (21, 22). The three evaluations that provided plausibility evidence (type 1: J, K; type 3: R) (21–24) all demonstrated significant gains, although the only evaluation that tested for potential confounding effects found that communication improved only among rural males and urban females (type 1: J)

(23). Intervention leaders and case notes from several studies provided evidence at the level of informed judgement that girls had been empowered to speak about sexual matters as a result of participating in the intervention (for example, type 1: I; type 3: S) (6, 7).

8.3.4.3 *Community norms, attitudes and actions*

Interventions of all types provided evidence of increased awareness and potential changes in community norms that could contribute to reducing vulnerability to HIV. None, however, evaluated these outcomes above the level of adequacy or extended their evaluations over a long enough period to draw conclusions about whether the changes had been realized.

Three interventions targeted local norms that made girls more vulnerable to HIV infection (type 1: I; type 3: S; type 4: V) (6, 7, 10, 11). Three targeted local beliefs and practices that contributed to HIV transmission or created barriers to preventing transmission (type 2: N; type 3: T; type 4: V) (8–11, 20). Three targeted local communication norms that created barriers to providing information about HIV to youths or to communication between partners about risk and prevention (type 3: S; type 4: U, V) (7, 10, 11, 14). The evaluation studies documented ways in which communities were responding to heightened awareness, including the actions being taken to change local practices. For interventions targeting youths, some evaluations also documented shifts in personal norms and attitudes, but in only one evaluation were data presented that suggested these may have led to less risky sexual behaviour (type 4: V) (10, 11).

8.3.4.4 *HIV incidence*

Changes in HIV incidence were used in only one evaluation (type 1: G) (12). This intervention included initiation of anti-AIDS clubs across Malawi following a national media campaign. Sentinel surveillance data demonstrated an increase in incidence over the period of this intervention. However, in the absence of an experimental design, it is not possible to determine whether the change in HIV incidence was related to the intervention or whether the intervention merely lacked the power to reverse the existing national trend.

8.3.4.5 *Sexual activity*

Seven evaluations used experimental designs producing plausibility-level or probability-level evidence to assess changes in sexual intercourse. Six were type 1 interventions (studies A, B, C, H, J, K) (15–17, 23, 24, 26, 28) and one was type 3 (study T) (8, 9).

All evaluations of type 1 interventions found reductions in the proportion of both males and females reporting that they ever had sexual intercourse. Young women made positive gains in both of the studies that disaggregated results by sex (type 1: B, H) (16, 17, 26); young men made positive gains only in one (type 1: study H) (26). The other studies produced non-significant results. However, reports of recent sexual activity (for example, occurring during the past 3 months or past year) generally did not show statistically significant changes, with the exception of two evaluations of type 1 interventions. In young women, one found a decrease in reports of recent sexual activity (type 1: B) (16, 17) and one an increase (type 1: A) (15); there were no significant changes in young men's reports. Women were more likely to report a reduction in the number of partners (type 1: B, K; type 3: T) (8, 9, 16, 17, 24). Only one study (type 3: T) (8, 9) found a decrease in the number of partners for young men; two type 1 studies showed no change for young men (studies B, K) (16, 17, 24).

8.3.4.6 *Condom use*

Condom use was assessed using a variety of questions including whether a condom had ever been used (type 1: C; type 3: T) (8, 9, 28), had been used during the last sexual encounter (type 1: A, B, H, K) (15–17, 24, 26) and whether condoms were used consistently (type 3: R) (21, 22). One study also asked about condom use with different types of partners (type 1: B) (16, 17). All seven of these evaluations produced evidence at the level of plausibility or probability; four of them demonstrated gains in condom use. In the two studies that disaggregated results by sex of the participant (studies H and K) (24, 26) the gains were the same for both sexes. Both type 1 and type 3 interventions demonstrated gains, with the level of evidence meeting or exceeding the threshold requirement in each case.

8.3.4.7 *Overview of outcomes*

As is shown in [Table 8.5](#), none of the studies produced strong, unequivocal evidence of positive effects. Most provided either mixed results or were evaluated using designs that could produce conclusions only at the level of plausibility or lower. However, in [Table 8.4](#), when specific results are reviewed relative to the threshold of evidence required for each intervention type (see [Table 8.2](#)), it is evident that intervention types 1, 3 and 4 provide evidence at or above the required threshold for at least one, and most often several, of the UNGASS goals. The goal of reducing HIV prevalence, however, was not met in the intervention in which incidence data were evaluated (12). In addition, the results suggest that changes in sexual behaviour, as antecedent conditions to reducing HIV prevalence, may require interventions that specifically target young people (type 1 interventions) or, if delivered to a broader age range in the community, may require delivery within a traditional or family setting (type 3).

Table 8.5

Strength of evidence of effectiveness for each intervention type and recommendations for programmes^a

Study design	Positive effect		No significant effect	Negative effect	Strength of evidence
	Statistically significant	Statistical significance not known		Statistically significant	
Intervention type 1 (targeting youths and delivered using existing youth organizations or centres)					
Anecdotal		I			Equivocal
Qualitative		E,F			
Cross-sectional (no comparison group)					
Before-after (no comparison group)	D, G			G	
Quasi-experimental (≥ 1 comparison group)	B, J, K ^a		B, J, K		
RCT ^b (< 6 clusters)					
RCT (≥ 6 clusters)	A, H		C, H		
Intervention type 2 (targeting youths and creating own system and structure for delivery)					
Anecdotal		P			Weak
Qualitative		L, N, Q			
Cross-sectional (no comparison group)					
Before-after (no comparison group)	M				
Quasi-experimental (≥ 1 comparison group)	O				
RCT (< 6 clusters)					
RCT (≥ 6 clusters)					
Intervention type 3 (community-wide intervention delivered through family networks)					
Anecdotal					Equivocal
Qualitative		S			
Cross-sectional (no comparison group)					
Before-after (no comparison group)					
Quasi-experimental (≥ 1 comparison group)	R, T		R		
RCT (< 6 clusters)					

RCT (≥ 6 clusters)		
Intervention type 4 (community-wide intervention delivered through community-based activities)		
Anecdotal		Weak
Qualitative	V	
Cross-sectional (no comparison group)		
Before-After (no comparison group)	U	
Quasi-experimental (≥ 1 comparison group)		
RCT (<6 clusters)		
RCT (≥ 6 clusters)		

^a Interventions appear in more than one column when they had mixed results. See table 4 for details.

^b RCT = randomized controlled trial.

8.4 **Go, ready, steady, do not go**

[Table 8.6](#) presents recommendations for donors, governments and organizations that work with or are concerned about youths based on the evidence reviewed in this paper. The criteria used for making these recommendations are reviewed in [chapter 4](#).

8.4.1 **Go**

The relatively weak study designs and incomplete information preclude giving a “Go” recommendation to any of the intervention types.

8.4.2 **Ready**

Five of the 10 type 1 interventions were evaluated using designs that produced plausibility or probability evidence sufficient to meet the moderate threshold set for this type. All of the studies that evaluated the effect of the intervention on knowledge, skills, age of sexual debut or condom use demonstrated significant gains. Gains were generally not obtained in changing the incidence or frequency of recent sexual activity or number of partners. Given the diversity within this type of intervention and the lack of adequate monitoring or process data that would provide a clear picture of the content or delivery of these interventions, this type is not rated as “Go”, but is considered “Ready” for delivery on a large scale when this is accompanied by continued evaluations of impact, particularly in different settings, and among different population subgroups; and with comprehensive monitoring of processes.

8.4.3 **Steady**

The remaining intervention types fall into the “Steady” category. While they generally produced positive results, the evaluation designs were too weak, conducted over too few interventions and over too short a time to support a stronger recommendation. Only three of the 11 studies of types 2, 3 and 4 interventions produced evidence at the level of plausibility (studies O, R, T) (8, 9, 21, 22, 25); the remainder had evidence either at the level of adequacy (studies M, U) (14, 30) or informed judgement (studies L, N, P, Q, S, V) (7, 10, 11, 20, 27, 29). Each intervention type did, however, have unique characteristics that are likely to have contributed to their success. Type 2 interventions often addressed unique local and cultural issues, and type 3 used traditional kinship networks of communication to convey information about matters of sexuality. While the two type 4 interventions had the widest reach and involved large numbers of community members in participatory activities that raised awareness and mobilized communities, the small number of interventions of this type and the weak study designs point to a need for further testing and verification of the results. Because of the generally positive results

Table 8.6

Recommendations on the strength of the evidence by intervention type

Intervention type	Key characteristics	Conclusion	Comments
1. Targets youths and is delivered using existing organizations or centres that serve youths	- Youth organizations or centres already accepted by community; intervention is sustainable and has capacity to move into HIV/AIDS programming - Successful negotiation of entrance into organization - HIV/AIDS education must have logical fit with organization - Peer educators should be chosen using specific, relevant selection criteria; monitoring and support should be provided	Ready	These interventions were most likely to have demonstrated sustainability, to have a strong evaluation design and positive results
2. Targets youths and creates its own system and structure	- Successful negotiation of entrance into community - Preliminary context and needs assessment should be used as foundation for the intervention - Sensitization of community and/or gatekeeper is necessary - Peer educators should be chosen using specific, relevant selection criteria; monitoring and support should be provided	Steady or Do not go	All evaluations of these interventions had weak designs The studies were as likely not to demonstrate sustainability beyond the initial test phase as they were to demonstrate sustainability
3. Community-wide intervention delivered through existing traditional kinship networks	- Successful negotiation of entrance into community - Preliminary context and needs assessment and assessment of most acceptable peer educators should be used to build intervention - Sensitization of community and/or gatekeeper is necessary	Steady	Specific problems with some interventions are addressed in the discussion of the "Do not go" category Once the system for delivering the intervention is established, this type demonstrated an ability to cover a wide range of issues; however, few of these interventions were evaluated

Intervention type	Key characteristics	Conclusion	Comments
4. Community-wide intervention delivered through activities, such as festivals	• Peer educators should be chosen using specific, relevant selection criteria; monitoring and support should be provided • Successful negotiation of entrance into community • Preliminary context and needs assessment should be used as a foundation for the intervention • Sensitization of community and/or gatekeeper is necessary • Appropriate community activities must be identified • Peer educators should be chosen using specific, relevant selection criteria; monitoring and support should be provided	Steady	These interventions have the widest reach and are most successful in addressing community norms and producing community-wide responses The studies evaluating these interventions had weak designs Difficult to evaluate community-wide responses

and the unique characteristics of many of these interventions, it is recommended that interventions of these types that are already in place should continue, but no new ones should be implemented until evaluations demonstrate their effectiveness at least at the level of plausibility.

One type 1 intervention has also been categorized as “Steady” (rather than “Ready”) based on promising results but a weak study design. The Kenyan Mathare Youth Sports Association’s intervention (study I) (6) is a type 1 intervention that has received international awards for its work with youth. Its reach extends to thousands of youth, and its programming includes an innovative approach to challenging the gender norms that heighten the vulnerability of young girls. Education about HIV risks and risk avoidance is incorporated into small group activities. Considering the broader social benefits that this programme has brought to the community, it should continue to be supported at its current level but an evaluation to assess its effects on HIV-related knowledge, skills and behaviours should be undertaken.

8.4.4 ***Do not go***

While no intervention type has been categorized as “Do not go”, lessons were learnt from several interventions that led to the identification of approaches that should be avoided. The evaluation of a type 2 programme in Nepal demonstrated the need to monitor activities at all sites in multisite interventions to ensure the intervention is actually delivered and that the design is feasible (study Q) (27) Multisite interventions that lack these characteristics do not warrant the financial investment of donor agencies or governments.

Also unsuitable for funding are interventions that have high resource needs and lack a mechanism to ensure their ongoing provision as well as interventions that do not provide training, structure, monitoring or support for peer leaders. The former is seen in an example of anti-AIDS clubs in Malawi (type 1 intervention) that relied on videos, video equipment and sports equipment (study G) (12) The equipment was stolen or broken within 1–2 years, thus limiting the ongoing activities of the clubs. In contrast, anti-AIDS clubs in Zambia (also type 1 interventions) were able to replenish supplies in home-based care kits every 3 months by maintaining relationships with nongovernmental organizations (NGOs) and health services (study H) (26) The problems of providing inadequate training, structure, monitoring or support for peer leaders is evidenced in the type 2 intervention in Nepal (study Q) (27) as well as the type 1 intervention in Ghana (study E) (18) that compared results of a structured intervention with those of an unstructured intervention involving peer leaders. Clearly, interventions that depend on a continuing supply of materials and that do not have a long-term and sustainable source of supplies, or those that rely on peer leaders but do not provide them with

the training, structure and support they need to do their job, should be categorized as “Do not go”.

8.4.5 ***Requirements for success***

From reviewing the materials brought together here, it is possible to identify key characteristics that are required for interventions to succeed. It is essential that all types of interventions provide the following for the leaders of the interventions, especially peer leaders.

- A screening procedure should be used to select peer leaders to ensure they are motivated and capable of taking on the required tasks.
- Comprehensive training and refresher sessions in programme content and the skills required for delivery should be provided.
- Leaders should be assigned specific tasks and objectives, and their work must be monitored and supported.

In addition, all intervention types should:

- focus on gaining entry into the community and on developing strategies to deal with adverse reactions to programme components;
- focus on participatory learning activities;
- ensure there is a sustainable means of obtaining required programme supplies;
- build links between components of complex interventions (for example, referral systems and activities should operate across components).

Beyond the requirements common to all interventions, each type of intervention has its own requirements.

Those implementing type 1 interventions should:

- ensure the intervention is incorporated into the activities of an existing organization or centre that has demonstrated an ability to reach a large number of youths and also ensure it is sustainable and accepted by the community;
- ensure that the organization’s activities attract both males and females.

Those implementing intervention types 2, 3 or 4 need to develop a system of outreach to the target population that is sustainable and acceptable to community members. Those implementing type 2 interventions need to develop an infrastructure that can sustain the intervention over the long term.

Those implementing type 3 interventions need to:

- hold discussions with community leaders and gatekeepers to identify the appropriate traditional networks for delivering an intervention that deals with sexual behaviour and to determine the best type of leaders to deliver the intervention;
- develop a method to ensure that appropriate material support and resources are available to programme leaders to compensate them for the sizable commitment of time and to ensure they can reach the target population.

Those implementing type 4 interventions should:

- identify activities that have wide community appeal;
- choose the timing and location of the intervention to maximize its reach and community participation;
- advertise the activities in a way that make them accessible to community members.

Although using an established theoretical model of behaviour change has often been cited as a requirement for success (31), this conclusion is not supported by the studies reviewed here. Few interventions were explicitly based on a theoretical model, and neither the number nor the strength of outcomes was influenced by the presence or absence of a theoretical framework. This finding parallels that of Gallant and Maticka-Tyndale in their review of school-based programmes in sub-Saharan Africa (5).

8.5 Conclusions

In drawing conclusions about interventions implemented in specific geographically bounded communities, the weakness of the study designs and data analyses and the paucity of evaluations for several intervention types cannot be ignored. It is evident that the attention of NGOs involved in designing and implementing interventions has most often been on the intervention itself and not on its evaluation. This is understandable given the urgency of the AIDS epidemic and the mission of NGOs. Recognizing these priorities, this report has used a more liberal interpretation of the adequacy of the study design needed to demonstrate the effectiveness of an intervention.

The most encouraging results in terms of outcomes and programme reach are for intervention types 1, 3 and 4 in which AIDS programmes were linked to existing youth-focused organizations, to traditional kinship networks or were part of community-wide events. The stronger study designs and successes noted for type 1 interventions present a particular contrast with those assessing type 2 interventions, which differ from type 1 interventions only in their lack of connection to existing organizations. Of the interventions targeting entire communities, type 3 interventions, which also used existing

infrastructure, were most successful in demonstrating gains in knowledge and skills as well as behaviour change; they also provided some evidence of shifts in community norms. Finally, while few in number, the success of the two type 4 interventions in raising awareness and mobilizing communities to plan action that could reduce the vulnerability of young people suggests that type 4 interventions are promising and more of them should be evaluated. The challenges encountered by type 2 interventions suggest that it may be easier to achieve success when attention can be focused on developing and delivering the content of the intervention rather than also focusing attention on developing an infrastructure for delivery.

While the publications reviewed for this paper provided evidence of a considerable amount of innovation and creativity, and there are several interventions that may make substantial contributions to achieving the UNGASS goals, it is clear that more attention needs to be paid and funding applied to the evaluation of both processes and outcomes and particularly to the specification of the conditionality of the effects of the intervention. Attention must also be paid to cost–benefit analyses or at least to the costing of interventions. Continued delivery of the best of these interventions is important. However, good quality evaluations of processes and outcomes that test the efficacy and effectiveness of interventions and provide information on cost are essential to providing the evidence base needed for future decision-making. To this end, a summary of recommendations to guide the development, evaluation and delivery are contained in Box 8.1.

Box 8.1

Recommendations for interventions targeting youths that are delivered in geographically defined communities

For policy-makers

There is a sufficiently strong evidence base to support widespread implementation of interventions to prevent HIV that are delivered within the framework of existing youth-service organizations or youth centres. However, these interventions should only be implemented if they are carefully evaluated.

In addition, there is also a sufficiently strong evidence base to support the continued delivery of similar interventions when they are not connected to existing youth-oriented organizations and to support the continued delivery of interventions targeting both adults and youths when they are delivered through traditional or family networks or when they are delivered through community-wide

events, such as theatrical performances, health fairs or festivals and competitions. However, expansion of such interventions should not take place until they have been more carefully evaluated.

For programme development and delivery staff

Interventions delivered within existing youth-oriented organizations, centres or infrastructures (for example, through faith-based organizations, families or existing community festivals) are able to focus greater attention on elements necessary for success than are interventions that must also build their own infrastructure to support delivery. Attention should be paid to working with gatekeepers ensure ongoing acceptance of and support for interventions; there should be careful selection, training and supervision of programme leaders; the tasks and duties of intervention leaders should be identified; mechanisms must be found to provide the necessary ongoing resources for intervention delivery; participatory learning activities should be used; links should be established between institutions and organizations involved in the delivery and support of multifaceted interventions; and culturally appropriate leaders, content and delivery methods should be identified.

For researchers

Evaluation and operations research should be core elements of any intervention targeting either young people or communities as a whole for the purpose of increasing young people's knowledge and skills and changing their behaviours related to HIV transmission and infection. In particular, evaluation results should pay attention to analyses that identify specific conditions for different levels of success (for example, gender differences, and differences between rural and urban areas) and should include an evaluation of the cost of the intervention.

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9. Achieving the global goals on HIV among young people most at risk in developing countries: young sex workers, injecting drug users and men who have sex with men

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Objective To review evaluations of interventions in developing countries targeting three groups most at risk of becoming infected with HIV: young sex workers, young injecting drug users and young men who have sex with men.

Methods A systematic literature review was undertaken to identify programmes in developing countries targeting young people in the three selected groups most at risk from HIV. We also identified programmes directed at young people in developed countries as well as programmes in developing countries that targeted these three population groups but that did not differentiate between young people and adults.

Findings Young people 10 to 24 years of age represent a large proportion of the population most at risk of becoming infected with HIV in developing countries. Despite this fact, well documented evaluations of interventions that target these groups are scarce. However, there is evidence of effectiveness for programmes that are facility-based and use outreach to provide information and services to at-risk young people.

Conclusion There is growing evidence from developing countries of successful interventions that target groups most at risk from HIV, and these programmes should be widely implemented provided that they are carefully planned and monitored and have a strong evaluation component. However, there is an urgent need to disaggregate data by age in order to determine how effective these programmes are in reaching young people and to better understand the specific needs of at-risk young people as opposed to older age groups.

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9.1 Introduction

Since the beginning of the AIDS pandemic it has been clear that not everyone is equally at risk of becoming infected with HIV. This remains true in generalized epidemics, concentrated epidemics and low-level epidemics. Preventing transmission of HIV to and from individuals and groups who are most at risk will be crucial if governments are to contain the epidemic and achieve the Millennium Development Goal on AIDS. In low-level and concentrated epidemics, groups with an increased risk of becoming infected include injecting drug users, sex workers, men who have sex with men, and people who are incarcerated or live in institutions. In addition, in generalized epidemics, young girls, men who have many sexual partners and the women who are married to them, mobile groups and groups living in relative poverty may also be particularly at risk.

With the exception of injecting drug use, the virus is transmitted the same way among the groups most at risk and other groups in the population. For those most at risk, however, there are many factors that increase their chances of becoming infected, and underlying these factors are structural determinants, such as inequity and discrimination, exploitation and abuse. Interventions that aim to change these determinants of vulnerability are outside the scope of this chapter.

Many young people are particularly at risk of becoming infected with HIV because of the situations in which they live, learn and earn and as a result of behaviours they adopt, or are forced to adopt, as a result of social, cultural and economic factors. The ultimate long-term challenge is to decrease these causes of vulnerability. In the short term, however, the groups most at risk of HIV are particularly in need of the interventions outlined in the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) goals and targets for young people, notably the goals of providing them with access to information, skills and services. Achieving these goals will mitigate their vulnerability and decrease their risk of HIV infection.

During the process of developing this series of papers that review the evidence for policies and programmes to achieve the global goals on HIV and young people, it was felt important to review the evidence for achieving these targets among young people aged 15–24 years who are most at risk of becoming infected. Many of these young people live on the fringes of society, and they are unlikely to be reached by the majority of interventions outlined in this series, such as those implemented through schools, health services or the media. To complicate matters, these groups frequently suffer from discrimination and marginalization, and their behaviours – such as drug use or sex work – are often illegal, making it even harder for interventions delivered through mainstream settings to reach them.

What then do we know about the evidence for reaching the global goals on young people who are most at risk and most in need of the interventions that governments endorsed during UNGASS? Clearly it is important to prevent HIV infection in these groups, and national responses need to focus strongly on these groups. They also need to receive explicit attention because it would be possible for countries to achieve the UNGASS targets without ensuring coverage of these groups, who are at the centre of the HIV epidemic.

This is not to imply that young injecting drug users necessarily require separate or parallel services from those provided to adult drug users. And this is the same for young sex workers, young men who have sex with men, young prisoners or other groups of young people at high risk from HIV. It is likely to be neither necessary nor practicable to provide separate services. However, it is clear that any assessment of interventions designed to achieve the global goals must not ignore these groups. It is important to review what we know about reaching these groups through the interventions outlined in the global goals. It is also important to clarify whether young people most at risk have specific needs relative to older age groups and whether these needs require explicit attention from policies and programmes.

9.2 **Methods**

9.2.1 ***A focus for this paper***

It was clearly not possible to include all groups of young people who might be at particular risk in all epidemic scenarios. It was therefore decided to focus on groups most at risk in areas of low-level and concentrated epidemics, since many of the groups of young people most at risk in generalized epidemics are likely to have some access to information, skills and services through existing channels. Within low-level and concentrated epidemics it was decided to focus on young injecting drug users, young sex workers and young men who have sex with men, since data are more likely to be available for these groups than other at-risk groups, such as mobile populations or prisoners. However, it needs to be emphasized that there is significant overlap among these groups. For example, young men who have sex with men may be sex workers, and sex workers may be injecting drug users.

In addition to selecting specific groups for inclusion in this review, it was also necessary to have a process for assessing the evidence for the effectiveness of interventions. An initial search for studies focusing on at-risk young people in developing countries indicated that there were relatively few data, either in the published literature or the grey literature. It was therefore decided also to review studies of interventions directed at young people in developed countries as well as studies that had been undertaken within

general populations of sex workers, injecting drug users and men who have sex with men in developing countries but that had not disaggregated their data by age.

This chapter therefore reviews studies and reports that:

1. quantify the number of young people most at risk of HIV and assess their specific needs compared with older age groups of at-risk populations;
2. focus on young people most at risk of HIV in developing countries;
3. focus on young people most at risk of HIV in developed countries;
4. focus on people most at risk of HIV in developing countries that do not disaggregate data by age.

9.2.2 ***Inclusion and exclusion criteria***

Inclusion and exclusion criteria are outlined in [Table 9.1](#).

The main focus of this series is to review the evidence for policies and programmes aiming to achieve the global goals and targets on HIV and young people in developing countries. The inclusion and exclusion criteria for this specific component of the chapter have therefore been tighter and more aligned with other chapters in this series than the inclusion and exclusion criteria for studies that have been included for the last two categories above (studies in developed countries and studies in developing countries that have not disaggregated their data by age). These categories have been included only to provide a broader evidence context for assessing the effectiveness of interventions directed towards the groups who are the primary focus of the series.

A systematic literature review was undertaken, including searches in databases (PubMed, POPLINE, CAB Direct, Cochrane Library and Educational Research Abstracts Online), recent issues of journals focusing on young people's health and HIV prevention activities (*AIDS*, *AIDS and Behavior*, *AIDS Care*, *AIDS Education and Prevention*, *Archives of Pediatrics and Adolescent Medicine*, *Behavior Modification*, *Journal of Adolescent Health*, *Journal of Adolescent Research*, *Journal of HIV/AIDS Prevention and Education for Adolescents and Children*, *Journal of Sex Education and Therapy*), and finally on relevant web sites, such as WHO, UNAIDS, UNICEF, UNESCO, the United Kingdom Department for International Development (including the Safe Passages to Adulthood research programme), German Technical Cooperation (GTZ), Family Health International (including YouthNet), Population Council, Pathfinder International, AIDS Education Global Information System (AEGiS), International Centre

Table 9.1

Inclusion and exclusion criteria used to identify studies for review. (Numbers in parentheses refer to categories listed in section 9.2.1)

Inclusion criteria	Exclusion criteria
Interventions designed to mitigate vulnerability to HIV infection through providing increased access to information, skills and services (categories 1–4)	Interventions that aim to decrease vulnerability to HIV, such as structural interventions
Interventions implemented in developing countries that aim to reduce the risk of HIV transmission among injecting drug users, sex workers and men who have sex with men by providing increased access to information, skills and services for HIV prevention (categories 1 and 4)	
Interventions in developing countries were aimed at reducing the risk of HIV transmission among young people aged 10–24 who are injecting drug users, sex workers or men who have sex with men by providing increased access to information, skills and services for HIV prevention (categories 1 and 2)	
Interventions in developed countries that aimed to reduce the risk of HIV transmission in young (10-24 years) injecting drug users, sex workers, and men who have sex with men by providing increased access to information, skills and services for HIV prevention (category 3)	
Study provides a description of the intervention that enables a judgement to be made about what was done (category 2)	Study provides inadequate descriptions of the content of the intervention, the design of the study or how data were collected and analysed (category 2)
Study provides a description of the evaluation design and there were sufficient data to make a judgement about the level of evidence of effectiveness (category 2)	
Research and reports were published between 1990 and 2004	

for Reproductive Health (ICRH), International Center for Research on Women (ICRW), KIT (Royal Tropical Institute of the Netherlands) library catalogue, International Council on Management of Population Programmes (ICOMP), Johns Hopkins Bloomberg School of Public Health Center for

Communication Programs, CAPS – the Center for AIDS Prevention Studies, Streetkids–SRH.org, and the Network of Sex Work Projects.

A number of review articles on HIV prevention interventions that focused on young people (1–6) and developing countries (7) were scanned for relevant studies. All reference sections of peer-reviewed papers identified during this literature search were checked for additional articles of interest. Finally, 12 experts working in the field were contacted to identify unpublished research.

A less extensive search was made for studies assessing the effectiveness of interventions in developing countries directed towards injecting drug users, sex workers and men who have sex with men but that did not disaggregate the data by age and for studies of interventions targeted at young people most at risk of HIV in developed countries, predominantly the United States.

No systematic search for studies reported in languages other than English was undertaken.

9.2.3 *Developing a typology*

From the initial review of the literature it was clear that interventions aimed at groups considered to be most at risk included some mix of facility-based interventions with or without outreach and the provision of information with or without additional services. The typology that was developed was based on these programme elements, and the interventions were categorized into the following types.

- Type 1: these interventions only provided information through an outreach programme.
- Type 2: these interventions provided information and services through an outreach programme.
- Type 3: these interventions provided information and services through a facility-based programme.
- Type 4: these interventions provided information and services through a facility-based programme that also included an outreach component.

Apart from distinguishing the place where the intervention was based, this typology also differentiates between those programmes that only provide information and those that also include services. A range of services were provided in the studies reviewed, including treatment for sexually transmitted infections (STIs), strategies to reduce harm by providing needle exchange or substitution therapy, or both, as well as condoms, counselling and support.

9.2.4 ***Threshold of evidence required to recommend widespread implementation***

As with the other papers in this series, once the typology had been defined it was necessary to determine the threshold of evidence that would be required to recommend widespread implementation of different types of interventions – that is, to allocate them to the “Steady”, “Ready”, “Go” and “Do not go” categories. [Table 9.2](#) provides an overview of the threshold of evidence required to recommend the four types of interventions. As the complexity of the interventions increases – for example, offering information plus services, or outreach plus facilities – the levels of evidence required become higher since the interventions become increasingly difficult to develop and sustain, even though they are likely to have a greater impact.

9.3 **Findings**

9.3.1 ***Studies quantifying the number of at-risk young people and assessing their needs***

The literature indicates that people who are younger than 25 years represent a significant proportion of the groups most at risk of HIV (see [chapter 2](#)). In several south-east Asian countries, for example, the proportion of women younger than 25 who are working in high-risk environments, such as brothels, has been estimated to vary between 41% in Indonesia (8) and 76% in the Lao People’s Democratic Republic (9).

In Africa, a large proportion of female sex workers are young. For example, 37% of 622 female sex workers in a study from Zambia were younger than 20 (10), and in one region in the United Republic of Tanzania, women younger than 20 accounted for 23% of 983 women working in bars and similar establishments (11).

Two longitudinal studies from west Africa indicate possible trends towards younger people becoming involved in sex work. In Benin, the number of female sex workers younger than 25 rose from 17% in 1993 to 34% in 1998–1999, despite an ongoing HIV intervention directed towards female sex workers (12). In Côte d’Ivoire, the median age of female sex workers attending an STI clinic declined from 30 years in 1992 to 23 years in 1998 (13).

In Central Asia and eastern Europe, areas that are experiencing some of the fastest growing HIV epidemics in the world, the impact of economic and social transition has led to unparalleled proportions of young people injecting drugs, which is the main mode of HIV transmission in those regions (14). It is estimated that the average age of young people using injected drugs for the first time is between 16 years and 19 years (15), and 70% of all people injecting drugs are younger than 25 (14). A study in Irkutsk, Russia, showed

Table 9.2
Threshold of evidence needed to recommend widespread implementation of each type of intervention^a

Intervention type	Feasibility	Lack of potential for adverse outcomes	Acceptability for target group	Acceptability for community and policy-makers	Potential size of effect	Other health or social benefits	Overall threshold	Comments ^b
1. Information only provided through outreach	+++	+++	++	++	+	+	Low	Relatively easy to organize and implement but least likely to have any long-lasting positive effect on the target group
2. Information and services provided through outreach	+	++	++	+	++	++	Moderate	Services are more likely to have an effect than information alone but this type may be difficult to organize, especially the outreach component
3. Facility-based information and services	++	+++	+++	++	++	++	Low	Likely to be effective only if the target group visits the facility but otherwise easier to organize than outreach
4. Outreach and facility-based information and services	+	+	+++	+	+++	+++	Moderate	Most difficult to establish and sustain but also most likely to be effective, especially if outreach encourages the target group to make use of the facilities

^a Degree of desirability is indicated with a maximum of 3 “+” signs. Degree of undesirability is indicated with a maximum of 3 “-” signs.
^b All interventions need to overcome stigmatization of the target group and the illegality of the behaviours in order to be successful

that 90% of injecting drug users were younger than 20 years, and 65% of young people living on the street who were also injecting drugs were HIV positive (16).

Not only do young people make up a significant proportion of injecting drug users, but as this study from Irkutsk indicates they may also be particularly vulnerable. In Bangladesh, sex workers who are younger than 25 were almost twice as likely to report having been beaten or raped when compared with their older peers (17); in Myanmar national surveillance reports show that sex workers and injecting drug users who are younger than 25 have a higher prevalence of infection with HIV than other age groups (18). A cross-sectional study from India found a significantly higher prevalence of HIV infection among female sex workers who were younger than 20 compared with the prevalence among older age groups ($P = 0.002$, odds ratio [OR] = 2.4, 95% confidence interval [CI] = 1.3–4.4) (19). A high prevalence of HIV among young women was also reported from a cohort of female sex workers in the United Republic of Tanzania that reviewed HIV prevalence among women aged 16–39 years: 46% of those who were younger than 20 were HIV positive; 72% of women aged 20–24 were HIV positive; and 68% of those aged 25 years or older were HIV positive (20).

Not only do the data indicate that young people represent a significant proportion of the population most at risk of becoming infected, and that they may be particularly vulnerable, but there is also some evidence that their needs differ from older people in at-risk groups.

For example, Tawil (21) cited a Moroccan programme targeting men who have sex with men. This programme's baseline survey found that only 28% of males aged 15–24 years reported using condoms regularly, while 57% of those aged 25 years or older reported using condoms regularly. Similarly, a Bolivian study conducted among female sex workers reported an increased risk of gonorrhoea, trichomoniasis and genital ulcer among those aged 24 years or younger, without indicating behavioural reasons for this disparity (22). A study that compared drug users who were younger than 26 with older drug users found significant differences in risk-taking behaviours between the two groups (23). Although younger drug users were less likely to inject their drugs compared with older drug users, the age at which users started taking drugs had dropped significantly among the younger drug users (16.2 years for younger users versus 17.9 years for older users, $P < 0.001$), and younger users were also less likely to be aware of their HIV status (41.8% for younger users versus 64.9% for older users, $P < 0.001$).

9.3.2 *Studies focusing on young people most at risk in developing countries*

While there is a wealth of information from cross-sectional studies conducted among at-risk young people, there are few published evaluations of interventions targeting these groups in developing countries. No studies were found in peer-reviewed journals, and the 11 studies that were identified were all in programme reports or other grey literature. Three of these were from Africa, two from Asia and six were from Latin America. Target groups included sex workers (5 studies), men who have sex with men (1 study), injecting drug users (3 studies) and youths living on the street (2 studies). Unfortunately, only four of these studies met the inclusion criteria ([Table 9.1](#)). The studies that met the inclusion criteria came from Africa (1 study) and from Latin America (3 studies). One of the Latin American studies examined interventions directed to sex workers; one examined interventions targeted at men who have sex with men; and two examined interventions targeted at street youths.

9.3.2.1 *Sex workers*

Interventions targeting young sex workers were identified in Brazil, Ethiopia and Nicaragua (24). The Ethiopian programme, run by the Organisation for Social Services for AIDS, and the Brazilian “Sidewalk Girls” programme both used older peer educators who met with younger sex workers in an attempt to teach them how to reduce their risk of becoming infected. Unfortunately, no evaluations of these interventions were found. A second intervention by the Instituto Centroamericano de la Salud in Nicaragua provided all sex workers in Managua with vouchers that entitled them to receive a standardized package of free sexual and reproductive health treatment (study D) (24, 25). The project started in 1996 and for eight years afterwards distributed more than 30 000 vouchers and provided more than 12 000 consultations, during which a large number of STIs were treated among female sex workers (25). A substudy among 114 sex workers who also sniffed glue showed decreases in the prevalence of gonorrhoea (13.7% to 8.6%, not significant), syphilis (15.6% to 8.0%, not significant) and trichomoniasis (22.1% to 12.4%, $P < 0.01$) (24).

9.3.2.2 *Injecting drug users*

Interventions for young injecting drug users were identified in Argentina, India and Kenya (24). The Kenyan centre trained 54 volunteers in counselling and HIV prevention, and it provided counselling and detoxification services for 20 young injecting drug users. In Argentina, HIV testing, safer sex workshops and a drug users’ network were provided; in India a drop-in centre provided counselling and HIV testing as well as support groups for more than

4 000 drug users. Unfortunately, none of these interventions provided evaluation data.

9.3.2.3 *Men who have sex with men*

Only one project was identified that specifically targeted men who have sex with men who were also sex workers. “El Salon” in Costa Rica provided a safe place in the form of a home at which young male sex workers could access counselling, education and support (study B) (24). The evaluation of the intervention showed an increased use of condoms and the formation of support groups among the target group (24).

9.3.2.4 *Street youths*

Evaluations of interventions targeting youths living on the street were also included because this group frequently becomes involved in sex work and drug use. Studies of interventions were identified in Brazil and Uganda (26, 27). In Uganda, services provided information and counselling and increased access to condoms (147 000 condoms distributed) and STI treatment (29 000 adolescents treated for STIs from April 2002 to March 2004). Unfortunately no denominators were available (study C) (26). In Brazil, the intervention aimed to increase knowledge about HIV prevention through the use of videos, comic books and drama groups (study A) (27). Cross-sectional surveys among 400 young people carried out before and after the interventions demonstrated significant changes, with the interventions resulting in increased levels of knowledge about HIV transmission and decreased levels of misconceptions about HIV/AIDS.

[Table 9.3](#) summarizes the studies that met the inclusion criteria according to typology (whether the interventions were outreach-based and/or clinic-based and whether they included information and/or services). Only one project that met the inclusion criteria was identified as a type 1 intervention (providing only information through an outreach programme). No studies of type 2 interventions (information and services provided through an outreach programme) had sufficient details on either the content or the evaluation. For interventions based only in facilities, (type 3 interventions), one programme for male sex workers was identified. Two studies of type 4 interventions were identified; these provided facility-based services as well as outreach activities. One worked with street children and sex workers and the other worked only with sex workers.

Table 9.3, [Table 9.4](#) and [Table 9.5](#) include studies focusing on the main target group of this review, namely young people in developing countries who are most at risk of becoming infected with HIV. Table 9.4 describes the evaluation designs for each of the studies, and Table 9.5 summarizes the studies according to the level of evidence of effectiveness that could be derived from the studies.

Table 9.3

Description of the interventions by study

Study and location	Target population and primary objectives	Description
Intervention type 1 (information only provided through outreach programme)		
A – Brazil (27)	• Primary objectives: to prevent HIV/AIDS transmission in the target group	• Multicomponent programme consisting of education about sexuality and HIV/AIDS; training in HIV/AIDS prevention skills; sensitization of educators and institutional directors to the need to support vulnerable youths
	• Target groups: Young women vulnerable to sexual violence, youths living on the street	• After formative research, educators were trained with a manual and through meetings. The intervention produced a video and a comic book that were distributed among the target group and staged group discussions, role-plays and theatre activities. Sessions were conducted in 10 institutional settings and 125 outreach activities were implemented
• Scale of project: information not available		
Intervention type 2 (information and services provided through an outreach programme)		
No study met the inclusion criteria		
Intervention type 3 (facility-based information and services)		
B – Costa Rica (24)	• Primary objective: not stated	• Multicomponent programme consisting of a safe place to spend time off the streets in project house and education about HIV/AIDS prevention
	• Target groups: young people involved in sex work, injecting drug use and/or young male sex workers living on the street	• Counselling and support provided for alcohol-related and drug-related problems • This intervention started with a thorough situation analysis • Emphasis placed on creating a safe space for vulnerable youths

Intervention type 4 (facility-based information and services with an outreach component) C – Uganda (26)	• Primary objective: to reduce prevalence of STIs^a and HIV among vulnerable youths; to increase access to youth-friendly health services • Target groups: children and adolescents living on the streets and sex workers	• Approach is confined to the locality of the centre • Scale of project: 1 house • Multicomponent programme consisting of drop-in health centres and mobile clinics for youth for treatment and counselling and testing; training of peer providers for socially marketed contraceptives and STI kits; training of health-care providers in youth-friendly services; close involvement of community leaders • After determining the size of the target group and informing community leaders about the programme, 5 youth-friendly drop-in clinics and 17 mobile clinic outreach posts were opened around Kampala • 100 peer providers were trained to distribute socially marketed condoms and STI kits • Drama and film shows provided information to the target group • Scale of intervention: throughout capital city
D – Nicaragua (24, 25)	• Primary objective: to provide STI services for young female sex workers • Target groups: All sex workers and their clients	• Not a multicomponent intervention • Treatment vouchers distributed to be used at various health-care providers (public, nongovernmental and private sector) • Providers contracted on a competitive basis • Each voucher provided treatment for STIs, safe sex counselling and educational material • Target group involved in designing treatment vouchers and accompanying handbooks that were distributed among female sex workers, their clients and young people who sniffed glue • Service providers were given an updated STI treatment plan and introduced to the programme • Scale of intervention: throughout capital city

^a STIs = sexually transmitted infections.

Table 9.4

Description of outcome evaluations by study

Study	Design and sample size	Evaluation results	Strength of evidence for effect
Intervention type 1 (information provided only through outreach programme)			
A (27)	Design: pre-test and post-test evaluation; no comparison group Sample size: random sample of 400 youths interviewed 10 months apart	“Significant” changes both in increased levels of knowledge about HIV transmission as well as in decreased levels of misconceptions	Weak Limitations: tests for statistical significance not available
Intervention type 2 (information and services provided through an outreach programme)			
No study met the inclusion criteria			
Intervention type 3 (facility-based information and services)			
B (24)	Design: pre-intervention and post-intervention evaluation	• Increase in reported use of condoms among male sex workers • Increase in number of support groups	Weak Limitations: no comparison group; no denominator
Intervention type 4 (facility-based information and services with an outreach component)			
C (26)	Design: service utilization statistics	• 29 564 treatments provided in 1½ years at 6 369 drop-in centres and 23 195 outreach sites • 1 291 referrals (mainly for blood tests for sexually transmitted infections) • 215 counselling sessions plus testing provided • 21 664 young people received condoms (10 079 females and 11 585 males)	Weak Limitations: no denominators provided
D (24, 25)	Design: pre-test and post-test evaluation in a subsample of target population (females who sniff glue)	• 15 000 vouchers distributed in 8 years, 40% leading to medical consultations • Gonorrhoea prevalence reduced from 13.7% to 8.6% • Syphilis prevalence reduced from 15.6% to 8.0% • Trichomoniasis prevalence reduced from 22.1% to 12%	Weak Limitations: no comparison group

Table 9.5
Strength of evidence of effectiveness for each intervention type

Intervention type and study design	Positive effect	No significant effect	Negative effect	Evidence
Type 1 (information only provided through outreach) (1 evaluation) Before–after (no comparison group)				Weak
Type 2 (information and services provided through outreach) (0 evaluations)	A			None
Type 3 (facility based information and services) (1 evaluation) Before–after (no comparison group)	B			Weak
Type 4 (outreach and facility-based information and services) (2 evaluations) Descriptive (service statistics)		C		Weak
Before–after (no comparison group)	D			

9.3.3 ***Studies focusing on at-risk young people in developed countries***

Four evaluation studies from developed countries were reviewed to determine whether they corroborated the findings from studies in developing countries. Two of these studies focused on interventions directed towards young men who have sex with men (28, 29), and two focused on young injecting drug users (30, 31). No studies of interventions directed towards young sex workers were identified.

Studies in Bulgaria and the Russian Federation targeted the leaders of previously identified social networks of men who have sex with men and trained them as peer educators (28, 29). Risk surveys were administered to members of their network and to members of a control network. Among members of the network in the intervention group, the frequency of unprotected intercourse dropped significantly as did the proportion of men engaging in unprotected intercourse with multiple partners (29).

A study in San Francisco (31) evaluated a needle and syringe exchange programme that targeted 15–25-year-old injecting drug users. The programme was run by peers and targeted homeless injecting drug users, providing sterile injecting equipment and educational materials. There was a significant reduction in reported sharing and reusing of syringes among young people participating in the programme when compared with those in a control group.

9.3.4 ***Studies of interventions for at-risk populations in developing countries that did not disaggregate data by age***

Thirty studies were identified that examined interventions directed towards general populations most at risk of becoming infected with HIV, of which 21 were interventions directed towards sex workers, 5 towards injecting drug users and 4 towards men who have sex with men. There were 16 studies from Asia, 8 from Africa, and 6 from Latin America.

9.3.4.1 ***Sex workers***

Studies of interventions with sex workers included several peer-reviewed articles with data measured both pre-intervention and post-intervention, with or without control groups. Studies from the Asia–Pacific region included interventions in China (32), India (33–35), Indonesia (36–38), Papua New Guinea (39) and Thailand (40–42). In Africa, studies from Benin (12), Côte d’Ivoire (43), Ghana (44), Kenya (45, 46), Sierra Leone (47) and the Democratic Republic of the Congo (48) were identified. In Latin America, three studies were identified, one each from Bolivia, Honduras and Peru (22, 49, 50). In addition, projects in Bangladesh, India and Papua New Guinea were

documented in the UNAIDS case study *Female sex worker HIV prevention projects* (51).

All of the interventions had information and education components, and most offered services either by providing free condoms (12 studies) or free STI treatment (6 studies). The majority of programmes were type 4 interventions. They operated in specially designed facilities (either STI clinics or community centres) where the education sessions or STI treatment took place, and they engaged in outreach activities to attract clients to their facilities. A few of the interventions had only outreach activities, although these sometimes included training peer educators at their workplaces.

The best documented intervention to reduce HIV transmission among sex workers is the Thai government's "100% condom" programme (40). After proving successful in Thailand, a similar approach was adopted by several other Asian countries. Additional strategies have been tested in different locations, mainly in Asia, including peer education, outreach education, group education and the involvement of employers. Other measures tested widely included distributing condoms and providing HIV counselling and testing and STI treatment. All programmes used more than one method to reduce HIV incidence, and therefore it was not possible to tease out the impact of specific interventions.

Other evaluation studies of interventions targeting sex workers in Asian countries that showed positive changes in behaviour and knowledge included: peer education (increased AIDS and STI knowledge and decreased prevalence of gonorrhoea, $P = 0.05$) (37) and combined educational activities and STI treatment (increased knowledge about AIDS and STIs, $P < 0.001$; increased condom use, $P = 0.01$; and decreased prevalence of trichomoniasis, $P < 0.001$) (38).

In Côte d'Ivoire a randomized controlled trial among female sex workers was conducted with 542 women who were given either a basic or intensive intervention (more frequent visits) consisting of information and education, free condoms and STI treatment (type 4 interventions). Outcomes were measured for 225 women (42%) through self-reported behaviour and testing for STIs. When baseline data were compared with post-intervention data, the intervention was found to be significantly associated with increases in condom use (from 40% to 82%) and decreases in the prevalence of gonorrhoea (from 14% to 5%) and trichomoniasis (from 24% to 11%). In terms of HIV incidence, rates were lower among those who participated in the intensive programme than among those in the basic programme, although these differences were not statistically significant (43).

A longitudinal study of an intervention in the United Republic of Tanzania involving 600 women at increased risk of becoming infected provided information sessions every 3 months on HIV and STIs and reproductive health, voluntary HIV counselling and testing, and clinical health check-ups including syndromic management of STIs. This intervention reduced HIV incidence from 13.9/100 person-years to 5.0/100 person-years over three consecutive 9-month periods; the reduction was attributed to the combination of information and services, which describe a type 4 intervention (52).

Although the study in the United Republic of Tanzania demonstrated that interventions aimed at improving STI treatment can be successful in reducing HIV incidence among sex workers, monthly oral administration of 1g of azithromycin among Kenyan sex workers in a randomized placebo-controlled trial did not have this effect (46). Two studies – in Benin and Bolivia – tried to assess the impact of interventions through serial cross-sectional surveys (12, 22). Although both studies reported significant reductions in STI prevalence that were achieved through treatment and educational activities, the research design is severely limited because it does not provide information on any of the outcome measures for consecutive visits made by the same person, only for the group of sex workers as a whole. It also failed to document the level of participation in the programmes. The findings can at most, therefore, show time trends for STI prevalence among a group of sex workers.

9.3.4.2 *Injecting drug users*

The vast majority of interventions for injecting drug users concentrate on making drug injecting safer (that is, they use a harm reduction approach). A key component of this approach is needle and syringe exchange programmes, in which sterile injecting equipment is provided or exchanged for used equipment. Two evaluations of type 4 intervention exchange programmes were found in Asia. An evaluation in Nepal interviewed 586 clients of a programme during a 4-year period and found that the median number of times participants shared needles decreased from 14 to 2, and the median number of people they shared injecting equipment with was reduced from 2 to 1 (53). An evaluation of an exchange intervention in Thailand reported significant reductions in risk-taking behaviours, despite difficulties encountered by young injecting drug users in accessing the programme (54).

Two type 2 outreach education interventions for adult injecting drug users were also identified. The first was based in Chennai, India, and targeted men aged 18 years and older. An outreach team recruited injecting drug users and provided various interventions at street level, including the distribution of bleach. These combined interventions brought about safer injecting behaviours ($P = 0.01$) without affecting sexual risk behaviour (55). The second

intervention took place in Puerto Rico where outreach workers provided information on HIV prevention to indigenous adults who were injecting drug users. This intervention was associated with significant improvements in knowledge of HIV and a reduction in risky injecting behaviours (56).

A WHO multisite study that looked at injecting drug users and took place in two cities in Brazil and one city in Thailand as well as nine cities in developed countries (57), showed that the behavioural changes that occurred were similar in Bangkok and the cities in developed countries but different from those in the Brazilian cities. The frequency of consistent condom use with casual partners was lowest in Rio de Janeiro, whereas in Bangkok it was reported to be higher than in most of the cities in developed countries. This highlights the challenge of comparing results from studies conducted in different developing countries and between developed and developing countries.

In addition to the data from developing countries, evidence of successful HIV interventions aimed at injecting drug users is available from a number of literature reviews (58). Consecutive HIV prevalence data from injecting drug users in cities in the United States with and without needle-exchange programmes were reviewed (59); there was significant evidence of a 5.8% decrease in seroprevalence among injecting drug users in the 29 cities that had needle-exchange programmes compared with a 5.9% increase among drug users in the 52 cities without such programmes ($P = 0.004$) (59). A Cochrane systematic review assessed the effect of oral substitution treatment for opioid-dependent injecting drug users on rates of HIV infection and high-risk behaviours and found significant associations between treatment and reductions in illicit opioid use, injecting use and the sharing of injecting equipment. Reductions in risk behaviours related to drug use also translated into reductions in the prevalence of HIV infection (60). In general, these were type 4 interventions.

9.3.4.3 *Men who have sex with men*

Four interventions targeting men who have sex with men were identified from Brazil (61), India and Morocco (both mentioned in Tawil) (21) and Puerto Rico (62). The intervention in Morocco included 600 men and the intervention in India included 3 000 men reached through peer outreach programmes focusing on safer sex messages, condom distribution and providing STI care at a drop-in centre (a type 4 intervention). Increased safer sex practices were reported in post-intervention analyses at both sites, with these effects being statistically significant in India but not in Morocco. The two interventions in Latin America identified participants through peer referral and focused on peer education. The study in Brazil had a pre-intervention versus post-intervention design and included 227 men who have sex with men, who had a mean age

of 29 years; in this study men were assigned either to an intensive series of safer sex workshops or a series of health education lectures. There were no significant differences in health outcomes between the two interventions, although comparisons between baseline and post-intervention surveys showed statistically significant increases in knowledge and awareness and decreases in self-reported risk behaviours. These differences were found to have been sustained at a 6-month follow-up survey.

In addition to these studies from developing countries, a meta-analysis of HIV behavioural interventions aimed at reducing sexual risk behaviour among this group of men included 33 studies from different parts of the world (63). It described significant decreases in the prevalence of unprotected anal intercourse (OR = 0.8, 95% CI = 0.7–0.9) and number of sexual partners (OR = 0.85, 95% CI = 0.6–0.9) as well as a significant increase in condom use during anal intercourse (OR = 1.6, 95% CI = 1.2–2.2). In this meta-analysis, successful programmes were those that were based on a theoretical model, included training in interpersonal skills, incorporated several delivery methods and were delivered over multiple sessions spanning a minimum of 3 weeks (63), thus providing evidence for the effectiveness of type 4 interventions.

9.4 Discussion

The authors of the original papers that were commissioned for the meeting in Talloires in March 2004 that initiated the “Steady, Ready, Go!” process were asked to give special consideration to young people who are most at risk of becoming infected with HIV. When the papers were reviewed during the meeting, participants recommended that a specific chapter be written focusing on these groups of young people. This is important for two reasons. First, interventions for young sex workers, men who have sex with men, and injecting drug users are likely to be key to decreasing the transmission of HIV in low-level and concentrated epidemics. Second, having the evidence of effectiveness for these interventions is important because they are usually surrounded by controversy, the behaviours that this group participates in are often illegal, and the groups themselves are marginalized and exposed to discrimination.

However, there was uncertainty about whether enough data would be available to allow the interventions to be analysed in the same manner used for other chapters in this series. There was also concern that the evidence for effectiveness would be weak since programmes for groups most at risk often focus more on taking action than finding out whether an action works. This problem has already been described by Myers and colleagues (64) who suggested that part of the reason for the difficulty in finding evaluations of

interventions targeting these three groups is the fact that much of the literature has been produced by practitioners rather than researchers. While some of the reservations about writing this chapter were clearly justified, our review has nonetheless enabled us to draw some conclusions and allowed us to identify some important issues that require further attention.

This review set out to assess the level of evidence of effectiveness needed to recommend implementation of interventions targeting at-risk young people in developing countries, in order to achieve the global goals on preventing the spread of HIV. Prior to reviewing the evidence, it was necessary to establish whether young people were actually an important proportion of the group most at risk of becoming infected. Our findings support the conclusions of Monasch and Mahy in [chapter 2](#) that young people make up a significant proportion of the population most at risk from HIV. In addition, data indicate that younger injecting drug users, sex workers and men who have sex with men may be particularly vulnerable.

However, little is known about the specific needs of young people in these groups as opposed to older people. This issue needs to be emphasized in future research, given the fact that a large number of the people most at risk are young, and it will be important to ensure that their needs are adequately met by any programmes that are implemented.

As anticipated, few studies were identified that explicitly focused on at-risk young people in developing countries. However, the fact that so few studies were identified in either the published or the grey literature was surprising in view of the evidence from other areas of programming that young people require specific attention from policies and programmes, and that they may be particularly vulnerable and have specific needs.

Not only was it difficult to identify relevant studies, but those that were identified often did not provide adequate information to allow for comparison among studies or assessments of the studies themselves. In general, studies did not provide sufficient details about the interventions, did not clearly define or measure expected outcomes, lacked information about the impact of the interventions and failed to provide adequate pre-test and post-test evaluations or control groups. Given that young people are at the centre of the epidemic in many developing countries, the lack of well evaluated interventions targeting them is a cause for concern.

Despite the comprehensive strategy used to identify relevant studies for this review, it is possible that studies may have been missed, for example if they were reported only in conference abstracts or in internal programme reports or other project documents. Furthermore, it must be recognized that conducting research with these groups is challenging. Not only do many

interventions not consider the specific needs of young people but data collected by studies are often not disaggregated by age. Additionally, researching and evaluating interventions for such marginalized groups may be difficult for both methodological and ethical reasons.

In this review, we did not attempt to identify or analyse studies conducted among the general population of people most at risk and that did not disaggregate data by age with the same systematic rigour that had been used for studies of interventions targeting young people. However, the studies we reviewed provide consistently supportive evidence for the effectiveness of interventions targeting at-risk populations in developing countries in terms of changing knowledge and reported behaviours and even biological outcomes, such as reducing the prevalence of STIs.

Because of the lack of studies, this review did not really benefit from the overall methodology that had been developed for chapters in this series. In addition, while the typology is likely to have some resonance with programme development and delivery staff, it is questionable whether these groups are sufficiently similar enough to warrant being combined, even if there is sometimes overlap between them. It is therefore unrealistic to draw strong conclusions from [Table 9.5](#).

However, as indicated in [Table 9.6](#), this does not mean that we do not have evidence from which to recommend action. What it demonstrates is the need to see the evidence for young people in developing countries within the wider context of evidence for the effectiveness of interventions in developing countries that have been directed at adults and young people (where the data are not disaggregated by age). When the evidence for effectiveness among young people in developing countries is combined with the evidence for general at-risk populations in developing countries and the data from young people in developed countries, it becomes reasonable to move type 4 interventions from “Steady” to “Ready” or even to “Go”. The studies that focused on young people in developed countries additionally demonstrate that good research on at-risk young people is possible.

Young people who are at the centre of concentrated epidemics require interventions urgently. Such interventions should be based on good practice (5) and should include facility and outreach components as well as a focus on information and services ([Box 9.1](#)); thus, they should be type 4 interventions. However, in recommending the widespread implementation of such interventions it is important to include the caveat that they also should be carefully planned, monitored and evaluated and that an operations research component should be included to provide a better understanding of the mechanisms of action and the interactions between different parts of each intervention.

Table 9.6.

Recommendations on the strength of the evidence for effectiveness by intervention type

Intervention type	Key characteristics	Conclusion	Comments
1. Information only provided through outreach	Target group needs to be identified and reached with the information	Steady	• This type of intervention is used widely and aims at improving information and skills • No thorough evaluations have been found • It is questionable whether educational activities alone can be successful in changing risk behaviour among vulnerable groups without including services that provide condoms, STI^a treatment and harm-reduction interventions • No intervention of this type was reviewed in a study that met the inclusion criteria
2. Information and services provided through outreach	No study met the inclusion criteria	None	
3. Facility-based information and services	Target group must know about and want to use the facility, which must be accessible and provide a confidential service	Steady	• All UNGASS goals are addressed by this intervention type: information, skills and services are provided in an attempt to decrease risk and ultimately HIV prevalence • Possible stigmatization must be overcome if the facility-based approach is to work • The one study cited primarily provides safe places for young people most at risk of HIV, but it does not include specific services aimed at reducing HIV transmission (for example needle exchange)
4. Outreach and facility-based information and services	Good integration of services in outreach and facility-based activities necessary Information about services must be consistent All members of target group must have equal access to the intervention	Ready ^b	• All UNGASS goals are addressed by this intervention type: information, skills and services are provided in an attempt to decrease risk and ultimately HIV prevalence • The outreach component is a crucial aspect, helping to inform the target group about facility-based services • Both studies in this category were successful in increasing knowledge, improving service utilization and reducing prevalence STIs

^a STI = sexually transmitted infection. ^b When taking the evidence from adult programmes in developing countries into account.

Recommendations for interventions targeting young people most at risk

For policy-makers

- Specific attention needs to be given to young people who are most at risk from HIV, including young injecting drug users, sex workers and men who have sex with men.
- Urgent action must be taken if these young people are to benefit from strategies to meet the global goals on HIV/AIDS and the Millennium Development Goal on AIDS.
- Interventions should be widely implemented for these groups of young people and more emphasis needs to be placed on identifying the specific needs of young people compared with those of adults.
- Interventions should include strong monitoring and evaluation components (an important message for donors as well).
- Interventions to mitigate the vulnerability of young people need to be seen within the broader context of structural interventions being made to decrease their vulnerability.

For programme development and delivery staff

- When developing interventions for sex workers, injecting drug users, men who have sex with men and other groups at high risk from HIV, it is important to ensure that the specific needs of young people are given adequate attention and that data are disaggregated by age and sex.
- If the global goals on HIV and young people are to be achieved, at-risk young people will need to receive information, skills and services through facilities and outreach strategies.
- Practitioners working with at-risk young people should monitor their interventions and collaborate more closely with researchers from the initial stages of project design in order to better assess the impact of their programmes.

Researchers

- There is an urgent need to strengthen the evaluation component of interventions for young people most at risk, in order to determine the impact of the intervention and the mechanisms of action.
- There is also a need to be clear about key indicators for monitoring and evaluating programmes to achieve the global goals on HIV among at-risk young people.
- More research is needed to identify the special needs of young people most at risk, compared with the needs of at-risk adults.

Planning, monitoring and evaluating interventions will not only ensure that the evidence base for their effectiveness will be strengthened but it will also contribute to the collective ability to track the achievement of the global goals on HIV among these groups of at-risk young people.

Finally, it needs to be emphasized that stopping the spread of HIV among at-risk young people will depend on interventions that decrease their vulnerability to HIV not those that merely mitigate this vulnerability. Such interventions were beyond the scope of this review, although several studies that attempted to do this were identified (65, 66, 67). Unfortunately their impact is often difficult to assess.

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10. Conclusions and recommendations

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10.1 Introduction

An estimated 40 million people were living with HIV at the end of 2005 (1). More than one quarter of this total are young people aged 15–24 years, and about 2 million young people are newly infected each year. Almost 25 years after the first cases of AIDS were recognized, the HIV pandemic continues to pose unprecedented challenges to individuals, families, communities and governments around the world, especially in developing countries, which bear the greatest burden. Young people are particularly affected in terms of transmission, vulnerability and impact. (see [chapter 2](#)).

In addition to HIV being a focus of the Millennium Development Goals, global goals were also endorsed during the UN General Assembly Special Session on HIV/AIDS. Some of the goals and targets that were agreed are explicitly directed towards young people (see [chapter 1](#)). Achieving these targets will require national governments, civil society and funding agencies to expend far greater resources and make stronger efforts to prevent HIV among young people. There are many programmes and activities competing for limited HIV resources in all countries, including the growing demand for effective treatment. In terms of the resources that are directed towards preventing infection among young people, it is not just a question of increasing the resources but also of ensuring that the resources are used effectively. So it is important not only to be able to make a compelling case for focusing on young people but also to be clear about what needs to be done. Although there is broad consensus about the key interventions necessary to prevent HIV among young people in developing countries (2–4) and there have been reviews of the effectiveness of several of these (5, 6), no systematic review of a comprehensive set of interventions for young people has been undertaken, although one other effort is in development (7).

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Encouragingly, there has recently been an increase in the spending allocated to tackling the epidemic (1, 8), and additional resources are likely to be generated by recent calls for universal access to prevention, treatment and care (9). It has been estimated that US\$ 6.1 billion was available for AIDS activities from all sources in 2004. For 2005, 2006 and 2007, projections have been made, based on past trends and known pledges and commitments, that amount to US\$ 8.3 billion, US\$ 8.9 billion and US\$ 10 billion, respectively. Unfortunately, much of this spending has not been allocated according to the evidence of effectiveness. Many factors influence which programmes are funded and implemented, and there is rarely a simple linear progression from research evidence to policy and practice (10). Decision-makers are more likely to make evidence-informed choices about the use of resources if they are provided with evidence that has been synthesized and is presented in a readily understandable way that facilitates the transformation of information to knowledge.

The authors of the chapters in this report have reviewed the evidence for the effectiveness of interventions to achieve the global goals on preventing HIV/AIDS among young people in developing countries. They have explicitly endeavoured to do this in ways that will be useful not only to researchers and other specialists in the field but also to programme managers and policy-makers. While the authors have applied rigorous research methods to systematically review the evidence, they have also aimed to directly address the key choices that policy-makers and programme managers in developing countries need to make when deciding how to allocate funds for HIV prevention among young people.

Based on the major settings through which interventions are provided to young people (schools, health services, mass media, geographically-defined communities, and outreach to young people who are most at risk), the chapters have teased out the different types of interventions provided in each setting. The interventions aimed to achieve a variety of outcomes (Box 10.1). Clear guidance has been provided about which types of interventions are suitable for wide implementation, based on the evidence, in order to make the best use of resources to achieve the global goals and targets.

This chapter summarizes the main findings of the systematic reviews. It draws overall conclusions and makes recommendations from the whole series in terms of the “Do not go, Steady, Ready, Go” continuum (Box 10.2 and chapter 4). It has benefited from a meeting that was held in June 2005 in Chavannes, Switzerland, that involved a number of external experts from different geographical regions who reviewed earlier versions of the chapters and assisted the editors in identifying key conclusions and recommendations from the papers.

Summary of intervention outcomes

Intervention setting	Outcomes measured
Schools	Knowledge, skills (personal values, perceptions of peer norms, communication about sex), sexual behaviour (sexual initiation, condom use, number of partners, use of contraceptives)
Health services	Increased utilization of health services
Mass media	Knowledge, skills (self-efficacy in terms of abstinence or condom use), sexual behaviour (condom use, numbers of partners, abstinence), communication (parents, others), social norms, awareness and use of health services
Communities	Knowledge, skills (communication with peers, parents, partners, condom use), sexual behaviour (ever having sex, number of partners), community norms
Young people most at risk	Increased access to information and services (harm reduction interventions and STI ^a treatment)

^a STI = sexually transmitted infection.

10.2 The road to “Steady, Ready, Go”

Although the scope of this report has been limited to a review of the evidence on the effectiveness of interventions that have aimed to prevent HIV among young people in developing countries, the task has not been easy. It has encompassed different types of interventions of varying complexity and scale that have taken place among different population groups, settings and contexts and that have used a range of study designs. The iterative process by which the chapters in this report were written and revised has been described in [chapter 1](#). While this process has been relatively time consuming, it has ensured that all chapters have been extensively reviewed and revised in the light of comments from a range of researchers, programme managers and policy-makers. It has also helped to ensure that the five reviews – despite spanning evidence from different types of interventions implemented in different settings – all used the same methods and have the same structure. This has allowed the strength of the evidence for each type of intervention in each setting to be evaluated on a level playing field. The five systematic reviews

The “Steady, Ready, Go” continuum for recommending interventions

Recommendation	Criteria
Go	Evidence threshold met Sufficient evidence to recommend widespread implementation on large scale now, ideally with careful monitoring of coverage, quality and cost, and operations research to better understand the mechanisms of action
Ready	Evidence threshold partially met Evidence suggests interventions are effective but large-scale implementation must be accompanied by further evaluation and operations research to clarify impact and mechanisms of action
Steady	Evidence threshold not met Some of the evidence is promising but further development, pilot-testing and evaluation of processes and outcomes are needed before it can be determined whether these interventions should move into the “Ready” category or “Do not go”
Do not go	Strong enough evidence of lack of effectiveness or of harm Not the way to go

included in this technical report each followed the same seven key steps outlined in [Box 10.3](#) and described in greater detail in [chapter 4](#).

The typologies that have been developed for the interventions used in different settings aimed to reflect the key choices that decision-makers need to make when selecting, developing and implementing interventions. Being clear about these different types of interventions makes the results of the reviews more transparent and useful to policy-makers and programme managers. For example, within the health services setting, rather than simply discussing “youth-friendly health services” the authors have discussed different types of interventions that were defined according to their specific components, such as training service providers and other clinic staff, changing the structure or functioning of the health facility itself, providing outreach from the facility to the community and involving other sectors.

Some systematic reviews exclude evidence from studies that are not randomized controlled trials. A key concept in this report is that different types of interventions require different strengths of evidence in order for them to be recommended for widespread implementation. The strength of evidence

Steps followed in the systematic reviews in this report

Step	Description
1.	Define the key types of interventions that policy-makers need to choose between in the setting under consideration
2.	Define the strength of evidence that would be needed to justify widespread implementation of the intervention
3.	Develop explicit inclusion and exclusion criteria for the studies under review
4.	Critically review all eligible studies and their findings, by intervention type
5.	Summarize the strength of the evidence on the effectiveness of each type of intervention
6.	Compare the strength of the evidence provided by the studies against the threshold of evidence needed to recommend widespread implementation
7.	From this comparison, derive evidence-based recommendations related to the implementation of each type of intervention in the setting or population group

required depends on the feasibility of the intervention (including its likely cost), its potential risk of adverse outcomes, its acceptability, the potential effect size and the time needed for that effect to be achieved, as well as its potential to bring about other benefits (see [chapter 4](#)). Where appropriate, therefore, the reviews have included evidence on effectiveness from quasi-experimental study designs, designs that included before-intervention and after-intervention measurements, and other observational studies.

A key aim of the process used in these reviews was transparency. So although readers may not necessarily agree with the conclusions reached by the authors of each of the chapters, the transparency of the methods used make it easier to see where the disagreement lies. The authors have inevitably had to make value judgements in assessing the evidence, but the standardized method used enables readers to be clear about the judgements that have been made. This standard method includes creating a typology for the interventions, assigning the threshold of evidence required to recommend widespread implementation, weighing the strength of evidence from the different studies for each intervention type and finally, making recommendations using the “Do Not Go, Steady, Ready, Go” continuum.

10.3 Results

[Chapter 2](#) clearly demonstrates that young people (those aged 10–24 years) are at the centre of the HIV epidemic in developing countries, and it asserts that they should be at the centre of prevention efforts. They are the age group with the highest incidence of HIV and they are disproportionately represented among the population subgroups most at risk of becoming infected. Fortunately, they are also the age group where HIV prevention interventions may have the greatest potential for reversing the epidemic (11). Unless HIV is kept from spreading among young people, and especially among young women living in areas with generalized epidemics, future generations will be condemned to suffer not only from HIV itself but also from the enormous economic and social costs of sustained HIV treatment and care services.

[Chapter 3](#) provides an overview of the public health interventions that have been used to prevent HIV transmission. These include interventions aimed at changing behaviours, including those that attempt to reduce sexual risk behaviours and injecting drug use; biomedical interventions, such as managing sexually transmitted infections (STIs), providing antiretroviral treatment and circumcision; and social or environmental interventions, including increasing access to sterile syringes and needles for those who inject drugs and using microfinance initiatives aimed at women. This chapter does not specifically focus on young people but it clearly shows that there is a range of interventions, and that they have widely differing costs and logistical and human resource implications, as well as varying evidence of their effectiveness. The chapter concludes that there is a large and expanding armamentarium of prevention interventions available to policy-makers and programme managers, but it also cautions against confusing a lack of implementation with a lack of efficacy (12, 13).

The key results of the systematic reviews of the different types of interventions in the five settings – presented in [chapters 5 to 9](#) – are shown in [Table 10.1](#). This table summarizes the number of studies of each type of intervention that met the inclusion criteria, the threshold of evidence needed to recommend widespread implementation, the strength of evidence for a positive impact provided by the studies reviewed and, finally, the overall recommendation.

Altogether, 23 different types of interventions were defined, and a total of 85 studies were identified that could be used to assess their effectiveness. Five of these studies contributed evidence to two intervention settings (14–18).

Table 10.1

Summary of findings and recommendations from the systematic reviews of interventions to achieve the global goals on HIV and young people in five delivery settings

Setting	Type of intervention	No. of studies meeting inclusion criteria	Threshold of evidence needed to recommend widespread implementation	Strength of evidence for a beneficial impact	Recommendation
Schools	Curriculum-based interventions <i>with</i> characteristics that have been found to be effective in developed countries and are led by adults	13	Low	Very strong	Go
	Curriculum-based <i>with</i> characteristics found to be effective in developed countries and that are led by peers	1	Low	Weak	Steady
	Curriculum-based <i>without</i> the characteristics found to be effective in developed countries and that are led by adults	2	Low	Weak	Steady
	Curriculum-based <i>without</i> the characteristics found to be effective in developed countries and led by peers	1	Low	Weak	Steady
Health services	Non-curriculum based <i>without</i> characteristics found to be effective in developed countries and led by adults	4	Low	Weak	Steady
	Non-curriculum based <i>without</i> characteristics found to be effective in developed countries and led by peers	1	Low	Equivocal	Steady
	Interventions with service providers and in the community	1	Low	Equivocal	Steady (or Do not go)
	Interventions with service providers and in facilities and the community	4	Low	Weak	Go
	Interventions with service providers and involving other sectors	1	Moderate	Equivocal	Steady (or Do not go)

Setting	Type of intervention	No. of studies meeting inclusion criteria	Threshold of evidence needed to recommend widespread implementation	Strength of evidence for a beneficial impact	Recommendation
	Interventions with service providers and in facilities and involving other sectors	0	Moderate	No data	No data
	Interventions with service providers and in the community and involving other sectors	2	Moderate	Equivocal	Steady (or Do not go)
	Interventions with service providers and in facilities and the community and involving other sectors	8	Moderate	Weak	Ready
Mass media	Radio only	1	Moderate	Equivocal	Steady
	Radio with other media (excluding television)	6	Moderate	Medium	Go
	Radio and television with other media	8	High	Strong	Go
Geographically defined communities	Targeting youths through existing youths-service organizations	11	Moderate	Equivocal	Ready
	Targeting youths through new structures	6	High	Weak	Steady (or Do not go)
	Targeting the community through traditional networks	3	Moderate	Equivocal	Steady
	Targeting the community through community events	2	Moderate	Weak	Steady
Young people most at risk	Information only provided through outreach	1	Moderate	Weak	Steady
	Information and services provided through outreach	0	High	No data	No data
	Facility-based information and services	1	Low	Weak	Steady
	Outreach and facility - based information and services	2	Moderate	Weak	Steady (but Ready if evidence from developing countries among all ages considered)

- There were six types of school-based interventions. These were classified on the basis of the content and quality of the interventions, whether they were curriculum based and according to who delivered the intervention (teachers or peers).
- There were also six types of health service interventions. These were classified according to whether they provided training to clinic staff with or without implementing changes in the structure or functioning of the facility itself and whether there were also information and sensitization activities held in the community with or without the involvement of other sectors.
- The three types of mass media interventions were classified according to distinctions between the delivery channels used to target young people: radio only, or some combination of radio, television and other media (such as print).
- Interventions in geographically defined communities were divided into four types. The first distinction made was whether the target group was young people or the entire community. The youth-only interventions were further subdivided according to whether they were delivered through a pre-existing youth-service organization or a new institutional structure; the interventions targeting the entire community were subdivided according to the delivery channels used, namely traditional networks or community events.
- The four types of interventions targeting young people most at risk of becoming infected with HIV were classified based on the site of delivery of the interventions (within facilities, through outreach, or both) and the content of the intervention (provision of information only or both information and services).

The thresholds of evidence needed to recommend widespread implementation of different interventions varied ([Table 10.1](#)). Nine types of interventions were judged to require only weak evidence (a low threshold) (that is, there had to be at least some evidence from adequacy studies and plausibility studies), 11 to require at least moderately strong evidence (that is, at least some evidence from strong plausibility studies), and 3 to require strong evidence (a high threshold) (that is, substantial evidence from strong plausibility or probability studies or both) (19). Interventions deemed to require a high threshold of evidence were placed in that category because there were challenges inherent in the feasibility of implementation that related to the complexity and likely costs of delivery.

Despite the fact that many of the studies included in the reviews had unclear descriptions of the interventions and weak study designs, 23 of the 80 studies were considered to show strong evidence of effectiveness or lack of

effectiveness. These were distributed across the settings, with the exception of interventions targeting young people who were most at risk, for which the evidence was consistently weak.

Overall, however, the evidence for most intervention types was not strong (Table 10.1). Studies related to 11 types of interventions were considered to have weak evidence (4 in schools, 2 in health services, 2 in geographically defined communities, 3 targeting the most at-risk young people). Studies of an additional 7 intervention types were judged to have only equivocal evidence of effectiveness (1 in schools, 3 in health services, 1 in the mass media, 2 in geographically defined communities). Authors used the term “equivocal” to describe those studies for which the quality of the evidence or the results, or both, made it difficult to definitively assess the impact of the intervention. The studies considered under one type of intervention type (mass media) were considered to have moderately strong evidence. Only studies included under one of the intervention types for schools and one intervention type for mass media were thought to have strong evidence.

All authors sought out studies of interventions that would lead towards achieving the global goals – that is, by increasing access to information, skills and services; reducing vulnerability to HIV infection and reducing HIV prevalence. In the schools, mass media and communities settings (chapters 5, 7 and 8), there was evidence of changes in knowledge as well as in reported attitudes, behaviours and skills, indicating that interventions delivered in these settings offer opportunities to increase access to information and skills. The evidence on the effectiveness of interventions in health services focused almost exclusively on their impact in increasing young people’s access to and use of the services themselves (chapter 6). The studies reviewed did not examine the degree to which the health services could become a venue for providing effective information or for improving skills, with the notable exception of self-efficacy for condom use. Similarly, the focus of studies on interventions for the young people most at risk of HIV was on increasing access to information and services. Overall, there were few studies that provided evidence on the prevalence of HIV or other biological outcomes, such as other STIs or pregnancy. And there were not many studies that addressed vulnerability.

The recommendations made for the different interventions are described below.

“Go” – There were four types of interventions for which the authors concluded that the evidence threshold had been met. Thus there was sufficient positive evidence to be able to recommend widespread implementation of these interventions on a large scale as long as coverage and quality were monitored: there was one intervention in schools, one in health services and two in the mass media (Box 10.4).

Interventions recommended to “Go” (widespread implementation now)

Setting	Intervention type
Schools	Curriculum-based interventions with characteristics that have been found to be effective in developed countries and are led by adults
Health services	Interventions with service providers that include making changes either to the structure or functioning of the facilities themselves and are linked to interventions in the community to promote the health services for young people
Mass media	Interventions with messages delivered through the radio and other media (for example, print media), except television Interventions with messages delivered through the radio and television and other media (for example, print media)
Geographically defined communities	No interventions met the criteria
Young people most at risk	No interventions met the criteria

“Ready” – There were three types of interventions for which it was concluded that the evidence threshold had been partially met. Thus there was sufficiently strong positive evidence to recommend large-scale implementation but only if this were to be accompanied by further outcome evaluations and operations research to clarify the impact of the intervention and the mechanisms of action. This applied to one intervention type in health services, one in geographically defined communities, and one implemented among young people considered to be most at risk (but only when the evidence from interventions in developing countries targeting all ages was also taken into account) (Box 10.5).

“Steady” – The remaining interventions (14 in total) were given a “Steady” recommendation. There were five types of interventions in schools, three in health services, three in geographically defined communities, two intervention types targeting young people most at risk and one delivered through the mass media (Box 10.6). For these types of interventions, some of the evidence is promising but further development, pilot-testing and evaluation are needed before it can be determined whether they should move into the “Ready” category or the “Do not go” category.

Interventions recommended as “Ready” (widespread implementation accompanied by further evaluation and operations research)

Setting	Intervention type
Schools	No interventions met this criteria
Health services	Interventions with service providers and in health facilities and in the community that involve other sectors
Mass media	No interventions met the criteria
Geographically defined communities	Interventions targeting youths using existing youth-service organizations
Young people most at risk	Facility based programmes that also have outreach and provide information and services

“Do not go” – In four of the “Steady” interventions, the authors considered that there was some evidence, at least under certain circumstances, that this type of intervention might have no beneficial impact on preventing the spread of HIV. These four types of interventions included three in the health services (the types that did not include making any changes to facilities) and one in geographically defined communities (interventions that used new delivery structures).

10.4 Discussion

The choices that face policy-makers and programme managers are complex. Not only do they need to consider different settings and population groups, but also within each of these settings they need to choose between several different types of interventions. It is hoped that these reviews will go some way towards facilitating these difficult decisions.

We know that there is no magic bullet that will decrease HIV prevalence among young people, so programmes need to include a range of interventions. Fortunately, the global goals themselves assist with such decisions, since they help us move beyond a simplistic focus linking specific interventions with decreases in HIV prevalence towards a more realistic approach that links specific interventions with intermediate outcomes that are points on the path to decreasing prevalence: these outcomes are to increase knowledge and skills, increase access to services and to decrease vulnerability.

Although we consider that the reviews included in this report will make an important contribution to making decisions about the allocation of resources

Interventions recommended as “Steady” (interventions that require further development, pilot-testing and evaluation before widespread implementation can be recommended)

Setting	Intervention type
Schools	Curriculum-based <i>with</i> characteristics found to be effective in developed countries and that are led by peers
	Curriculum-based <i>without</i> the characteristics found to be effective in developed countries and that are led by adults
	Curriculum-based <i>without</i> the characteristics found to be effective in developed countries and led by peers
	Non-curriculum based <i>without</i> characteristics found to be effective in developed countries and led by adults
Health services	Non-curriculum based <i>without</i> characteristics found to be effective in developed countries and led by peers
	Interventions with service providers and in the community
	Interventions with service providers and involving other sectors
	Interventions with service providers and in facilities and involving other sectors
Mass media	Interventions with service providers and in the community and involving other sectors
	Radio only
	Interventions targeting youths through new structures
	Interventions targeting the entire community through traditional networks
Geographically defined communities	Interventions targeting the entire community through community events
	Outreach only interventions providing information and services
Young people most at risk	

to different interventions, there were several important limitations. First, not all interventions for all groups of young people in all delivery settings have been included. Three groups of young people who are most at risk of HIV were the focus of the studies included in [chapter 9](#), namely young sex workers, young injecting drug users and young men who have sex with men. However, there are obviously other groups of young people who are also vulnerable and

at increased risk, such as young migrant workers, young prisoners, and young people in the uniformed services. For practical reasons these groups were not included in order to limit the scope of the reviews and because data on the effectiveness of interventions directed towards these groups are scarce. In addition to the absence of some groups from this review, some interventions have “fallen between the cracks” of the settings that were defined. For example, folk media, such as traditional theatre, songs and puppetry, fall between interventions delivered through the media and those delivered through the community, and the social marketing of condoms falls among interventions delivered through the media, health services and the community.

Second, there was no attempt to review the evidence for the effectiveness of interventions directed towards underlying determinants of behaviour (sometimes known as “upstream”, “structural” or “environmental” factors), such as decreasing poverty, improving education or providing vocational training. In general, the focus of these chapters has been on mitigating vulnerability rather than preventing it. The decision not to include interventions directed towards decreasing vulnerability was taken in order to limit the scope of the review and because an initial search of the literature identified few studies that were likely to meet the inclusion criteria or would be amenable to the methods that were used for reviewing evidence. As noted in [chapter 3](#), evaluating such interventions remains a major challenge. However, the fact that such interventions were not included should not in any way be seen as implying that they are unimportant. Clearly, changing these underlying determinants will be central to any long-term response to HIV and AIDS. Mitigating young people’s vulnerability is, however, likely to make important contributions in the short term, as will greater commitments to, and compliance with, the obligations of governments outlined in the *Convention on the rights of the child* and other human rights instruments.

Third, none of the chapters has explicitly reviewed interventions in the political environment that may contribute to achieving the global goals. (The political environment includes a number of different components, such as political leadership, activism, policies and legislation. Policies and legislation are often a reflection of the other two components, since they are tangible evidence of political commitment, providing both vision and the means for achieving specific outcomes). Such interventions have an impact both directly – because they influence budget allocations and expressed priorities for action – and indirectly – because they provide the basis for policies and legislation, which subsequently facilitate or impede the implementation of interventions provided through other settings, such as schools and health services.

Efforts were made at the start of this process to develop a chapter that would review the evidence for a range of interventions in the political environment on specific outcome measures related to HIV prevention (20). These efforts included exploring the links between political commitment and HIV/AIDS prevention, examining case studies on adolescent sexual and reproductive health policies in developing countries (case studies from 11 countries were identified) (21, 22), and conducting a preliminary analysis of the YouthNet database on sexual and reproductive health policies for adolescents in 40 countries that explicitly promoted behaviour-change communication or action to reduce STIs among adolescents (23). Preliminary conclusions from these efforts supported the likely relationship between the policy environment and HIV interventions for young people, but it was not possible to apply the methods that had been used to assess the evidence for interventions in other settings because there was insufficient information on the interventions. Alternative forms of analysis were beyond the scope of this project.

Some of the evidence that emerged from this initial review emphasized the political nature of policy-making, the importance of credible data and research evidence to be used for advocacy and the value of assessing the “political palatability” of interventions – that is, whether they are technically feasible, cost effective, simple to understand and pose minimal threats to political positions or yield political dividends. These issues are reflected in the judgements made by the authors of the settings papers ([chapters 5 to 9](#)) when they established the thresholds of evidence that would be needed in order to recommend widespread implementation.

In addition to developing specific policies and laws, there are a number of other activities that are important in creating a supportive environment for effective responses to HIV prevention; these are frequently included in “best practice” publications but often have not been systematically evaluated. Such interventions are particularly important when considering interventions directed towards young people’s sexuality and interventions targeting groups that are already subject to marginalization and discrimination, such as injecting drug users. The fact that we often do not have rigorous evaluations of such activities is likely to be more a reflection of the difficulties of evaluating them than a lack of effectiveness.

Fourth, the reviews focused on HIV prevention and did not include treatment, care or support for young people living with HIV and AIDS, nor did they provide an explicit focus on “positive prevention”. This should in no way be seen as implying that these are unimportant components of national responses to preventing the spread of HIV among young people. Although many clinical decisions are likely to be similar for adolescents and children or adults, and the basic preventive interventions are likely to be the same whether or not a

person is infected with HIV, there are a range of issues related to care and support that are likely to be of particular importance to young people living with HIV and AIDS; these include issues of sexuality, fertility, disclosure, living with a chronic disease, adhering to treatment regimens and dealing with stigma and discrimination. Testing, treatment and care are likely to provide important entry points for preventing HIV among young people.

With the growing focus on universal access, and as experiences are gained in providing care and support for young people living with HIV and AIDS, a similar review may be warranted to assess the evidence for the effectiveness of interventions that aim to provide care and support. At the same time, as access to HIV testing and treatment expands it will be important to carefully monitor the resources allocated to prevention and treatment. It will also be important to monitor and evaluate the impact of greater awareness about the availability of treatment and greater community knowledge about the extent of HIV infection in the community on young people's behaviours and on the community's values and norms, including stigma and discrimination.

In addition to the limitations that result from what we did not plan to include, there are also a number of limitations relating to the interventions and studies that actually were reviewed. First, although the authors of the five systematic reviews made every effort to ensure that all studies that met their inclusion criteria were included, inevitably some will have been missed. For example, while computerized searches can locate the majority of articles appearing in peer-reviewed journals, they do not identify books or chapters in books or grey literature, such as unpublished project reports. There was also a language bias towards English in the search criteria of most of the chapters. In addition, there are likely to be biases in the kind of evaluations that are published. A bias towards publishing positive results has been well documented as has the fact that expensive interventions are more likely to be evaluated more thoroughly than less costly interventions (24, 25); this may reflect positively on media interventions but negatively on interventions delivered through community settings.

Second, with the exception of the review of mass media approaches, the majority of the studies reviewed were of local interventions and so they shed limited light on the likely effectiveness of interventions implemented on a larger scale. It is possible that the effectiveness (and cost effectiveness) might be greater because of the economies of scale and the potential for changing social norms to the degree where a tipping point is reached. On the other hand, the quality and intensity of an intervention may be lower when it is implemented on a large scale.

Third, with a few notable exceptions, such as the "MEMA kwa Vijana" project in the United Republic of Tanzania (26), little data could be found on

the costs of the interventions. Yet given that per capita annual spending on all health care in the least developed countries was estimated at US\$ 11.00 in 2000 (27), cost will obviously be a key factor in deciding which interventions to choose.

Fourth, few studies provided adequate information about the contextual features that were probably necessary to achieve the documented outcomes (28). The importance of context cannot be underestimated, and although the focus of this review was on developing countries it is clear that there is a wide range of contexts within this broad categorization. For example, the effectiveness of interventions may well differ between Asia, Latin America and Africa and between middle-income and low-income countries within one region. Furthermore, the evidence for the effectiveness of interventions in developing countries needs to be viewed within the wider evidence base from developed countries. This wider evidence base informed the authors' thinking and is referred to in the reviews. As interventions classified as "Go" and "Ready" are introduced in new contexts it will be important to conduct careful evaluations to ensure that they remain effective.

Fifth, there are well known measurement problems inherent in the reporting of attitudes and behaviours (29), and these may well be greater among young people (30). For example, interventions may well bias reported behaviours towards more socially desirable behaviours. However, few studies in any setting included biological outcomes, and most relied on reported behaviours as surrogates for changes in HIV incidence or prevalence.

Sixth, a key finding of this series of reviews was that there are other serious limitations to many of the studies that provided the evidence. A number of studies that were initially identified did not meet even the minimum levels of intervention specification required for inclusion. Furthermore, many of the reports of the interventions that did meet these minimum criteria were far from ideal in terms of the information they provided; at least some of the time this reflected poor underlying design of the intervention and the evaluation, poor implementation, or some combination of these. Frequently, the specifics of the intervention were not described in detail, and this problem was often compounded either by a lack of evaluation of the process or the results not being reported. Many of the studies did not report the methods used in sufficient detail, and this often made assessing the quality of the evaluation difficult.

In general, there was much more detail in studies of interventions conducted in schools and through the mass media than in the other settings. This reflects the greater effort that has gone into defining interventions in these settings, and makes it much easier to be clear about the characteristics of interventions that are related to their effectiveness in achieving health outcomes. Defining

these characteristics remains a challenge in other settings, such as in the health services and for interventions in geographically defined communities and among young people who are most at risk.

This had a number of implications for the programmatic recommendations that were made for different interventions by comparing evaluation data with the predefined threshold of evidence needed to recommend widespread implementation. A number of value judgements had to be made by the authors based on their assessment of the quality of the intervention and of its evaluation in each study; less weight was placed on evidence from studies where either of these were poor. The benefits of the methods adopted for this review are that the facts on which such judgements were based are summarized in the tables in the printed version of the report and can be found in greater detail in the web versions of each of the five systematic reviews (www.who.int/child-adolescent-health/). Readers may not agree with all the judgements made, but the aim was to ensure that the basis for these judgements was as clear as possible, thus guaranteeing that they can act as a point of departure for further debate and dialogue.

A final challenge in interpreting the data was the fact that a number of the studies included multiple interventions, and it was difficult or often impossible to tease out the relative contributions of the different components. Given the importance of combining interventions in multiple settings, it is critical to know which individual interventions should be included in a multicomponent package. It is also important to have a better understanding of how the relative and absolute contributions of each component might differ if they are used in different combinations.

Despite these many qualifications, this overview of the evidence does lead to a set of clear recommendations for policy-makers, programme developers and researchers. Some of the caveats arise because of the pragmatic nature of this endeavour. As many as 5 000–6 000 young people become infected with HIV every day, and governments, donors and nongovernmental organizations are already allocating large amounts of money to prevent the spread of HIV among young people. Even though the evidence is not perfect it is important that these funds are spent on interventions that are likely to have as much impact as possible and that decisions are influenced by the evidence on effectiveness. There would have been fewer caveats had the evidence been more rigorously reviewed – for example, if it had been restricted to randomized controlled trials and, perhaps, quasi-experimental studies. However, this would likely have led to the conclusion that the data are not sufficient to make any recommendations, which would neither help advocates for this important aspect of national responses nor help policy-makers and programme managers move beyond such generic questions as “does prevention work?” It

would also not have ensured that funds are spent on those interventions that have the best evidence, even if it is incomplete.

There is clearly a great deal to do. The evidence is much clearer after this review but so are the challenges. First, interventions categorized as “Go” must be widely implemented on a large scale together with adequate monitoring and operations research. From this review, it is clear that these interventions are effective in contributing to the global goals for increasing knowledge and skills and access to health services, and they will ultimately contribute to reducing the prevalence of HIV among young people. Second, interventions categorized as “Ready” should be implemented together with adequate outcome and process evaluations to establish whether they should move into the “Go” category. Third, improvements in intervention design and piloting and evaluation should be accelerated for interventions in the “Steady” category to determine whether they should be moved into the “Ready” or the “Do not go” categories.

Accomplishing all this will be a challenge for intervention developers and evaluators and for those who support and fund programmes. It should be of concern that 25 years into the epidemic we do not have enough evidence to recommend as “Go” any interventions targeting the young people who are most at risk or any community interventions.

10.5 Recommendations

The key recommendations are summarized in [Box 10.7](#), [Box 10.8](#) and [Box 10.9](#). As can be seen from these boxes, this series of reviews provides numerous challenges for policy-makers, people responsible for programme development and delivery, and researchers. Policy-makers and programme managers should make every effort to ensure that “Go” interventions are widely implemented now: requests for additional reviews and synthesis of the evidence for these types of interventions risk becoming an apology for a lack of action and thus a form of denial, in the face of the challenge posed by the need to ensure that we can demonstrate effectiveness and impact by taking such interventions to scale and ensuring their quality. Of course there will be an ongoing need to better understand different strategies for implementing these interventions, for operations research and for more detailed information about costs and cost effectiveness. But this should not prevent us from acting now to implement “Go” recommendations.

Recommendations for policy-makers

Setting	Recommendations
General	• Young people are at the centre of the HIV pandemic and there are a range of interventions that have an adequate evidence base to recommend them to be widely implemented to achieve the global goals on HIV and young people as long as there is careful monitoring, evaluation and operations research • Prevention can work • School-based interventions that incorporate characteristics previously shown to be related to effectiveness in developed countries and that are led by adults can reduce sexual risk behaviour and increase knowledge
Schools	
Health services	• Training health-care providers, making changes in facilities and undertaking activities to obtain community support can increase young people's use of health services that provide treatment for STIs^a, counselling, testing and condoms • Access to health services will be enhanced by interventions in other sectors directed at young people's knowledge, skills, attitudes and behaviours
Mass media	• Mass media programmes, particularly when coordinated with interventions in other sectors, can reach many young people with important prevention information on HIV/AIDS as well as help to reduce reported sexual risk behaviour
Geographically defined communities	• Established community organizations serving young people can influence their knowledge, attitudes and reported sexual behaviours to help prevent the spread of HIV
Young people most at risk	• Young people who are most at risk of HIV (in this review the groups considered were injecting drug users, sex workers, and men who have sex with men) require urgent action • Greater attention to specifying the needs of young people in order to tailor interventions known to be effective to them is required

^a STIs = sexually transmitted infections.

Recommendations for programme development and delivery staff

Setting	Recommendations
General	- Interventions, and their reports, should be clear about what is being done and what the expected outcomes are - They should also provide results disaggregated by age and sex of the participants - The implementation of all interventions should be accompanied by careful monitoring and by evaluation appropriate to the level of existing evidence - Greater collaboration is needed between programme managers and researchers to facilitate effective monitoring and evaluation design
Schools	Programmes should be curriculum-based and designed and implemented using the characteristics shown to be associated with effectiveness
Health services	- In order to increase young people's use of services it is necessary to train service providers and other clinic staff in how to provide high quality health services for young people - Facilities should be made more accessible and acceptable to young people - Work also needs to be done in the community to generate demand and support for the services targeting young people
Mass media	Other sectors, in particular schools and the media, can assist in creating demand by improving young people's overall knowledge about HIV/AIDS and encouraging health-seeking behaviours
Geographically defined communities	- To achieve the best results, mass media programmes must be tailored specifically to young people - They need to provide mutually reinforcing messages through multiple channels - Initiatives should largely focus on working with existing youth-service organizations, where careful attention should be paid to selecting, training and specifying culturally appropriate interventions and tasks for programme staff
	Staff should benefit from ongoing supervision
	Organization leaders need to be vigilant in maintaining overall community support and resource mobilization
Young people most at risk	- These young people should be provided with information, skills and services through facilities and through outreach strategies - Their specific needs should be given increased attention. - Careful evaluation of the impact and processes of interventions is essential to increase knowledge of what is effective among this group of young people

Recommendations for researchers

Setting	Recommendations
General	• There is a critical need to strengthen research and programme monitoring and evaluation capacity in developing countries • High-quality evaluations and monitoring of the impact of HIV prevention interventions among young people in developing countries are urgently required for interventions classed as “Ready” and “Steady” • Operations research is needed to better understand the mechanisms of action of interventions • Clarity is needed about the specific vulnerabilities of young people, including young injecting drug users, young sex workers and young men who have sex with men, to guide programme managers • Standardization of outcome indicators would greatly facilitate comparisons of results across studies • Costing and cost-effectiveness studies should be built into evaluation studies • Research is needed to better understand the relationship between reported effects on behaviours and biomedical impacts
Schools	• Whenever possible, future evaluations of school-based interventions should use randomized designs with sufficiently large samples • They should also measure the impact on STIs^a and HIV as well as knowledge and self-reported attitudes, self-efficacy and sexual risk behaviours
Health services	• Evaluation and operations research should be core elements of any interventions to increase young people’s use of health services
Mass media	• Evaluations of mass media programmes should focus on those that are comprehensive, have the potential for achieving population effects and use strong quasi-experimental designs to build a case for inferring causality
Geographically defined communities	• Evaluation and operations research need to be core elements of programmes targeting young people and the community at large • This research should pay particular attention to identifying conditions for effectiveness among various populations (such as, young men and young women) and locations (such as rural or urban areas)
Young people most at risk	• Research is needed to identify the special needs of these young people in contrast to those of adults in order to improve indicators that can be used for monitoring and evaluation

^a STIs = sexually transmitted infections.

Interventions classified as “Ready” also need to be widely implemented but at the same time supported by carefully conducted evaluations and monitoring, and operations research. Programme developers and researchers need to work together to achieve these aims, and this collaboration will ensure that young people benefit from these interventions and, at the same time, that their implementation contributes to the evidence base so that others can learn from these experiences. For interventions classified as “Go” and “Ready” the reviews in this series have emphasized the need for much greater clarity about expected outcomes and about what is being done and how it is being done. However, the challenge is to accelerate action towards the global goals, and increased resources are only likely to become available if there is wide consensus about what needs to be done and if collectively we can demonstrate that it is doable on a large scale in a sustainable way.

The future research agenda is substantial. However, many of the priority questions that need to be answered are now much clearer. Our hope is that if a similar exercise were to be conducted in 5 years’ time, a much greater number of interventions would either be in the “Go” or “Do not go” categories. This would provide implementers with clearer evidence-based guidance to inform their decisions, and would also ensure that resources available for prevention are used effectively.

Acting on the recommendations of this review will have a significant impact on preventing the transmission of HIV among young people, which in turn will have wide-ranging implications for the health and development of individuals, families, communities and countries around the world.

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Glossary

Adolescents

10-19 year olds.

Before-after study

An **intervention study** design in which one or more outcomes of interest are measured in a population before and after the introduction of an **intervention**. This **intervention study** design does not include a control population who do not receive the intervention.

Case-Control Study

An **observational study** design that starts with the identification of individuals with the outcome of interest, such as a disease (cases), and individuals without the outcome of interest (controls). The frequencies of exposures to potential risk or protective factors for the outcome of interest are compared in cases and controls.

Cluster randomized trial (CRT)

A specific type of **randomized controlled trial** in which groups of individuals, such as whole communities, are randomly allocated to the **intervention** and comparison (control) arms of the trial.

Cohort study

An **observational study** in which individuals who do not have the outcome of interest are identified as either being exposed or not being exposed to a possible risk or protective factor for the outcome of interest, and are then followed up over time to measure the incidence of the outcome of interest, such as the development of a disease.

Cross-sectional study

An **observational study** in which the frequency of one or more outcomes of interest (and/or exposures) is measured in a population at one point in time.

Intervention

A defined set of activities that are implemented to achieve specified outcomes in a target population. Examples could include trained teachers delivering a series of classes on sexual and reproductive health to students, or a series of

television “spots” to promote abstinence and/or condom use among young people.

Intervention study

A study in which an **intervention** is assigned to individuals or to clusters of individuals and the frequency of the outcome(s) of interest is measured to assess the effect of the intervention. Examples of intervention study designs include **before-after**, **time series**, **quasi-experimental**, and **randomized controlled trials** (including **cluster randomized trials**)

Intervention type

A group of **interventions** sharing common characteristics. In the systematic reviews in this report, similar **interventions** have been grouped into these “intervention types” based on key choices that policy makers and programme managers need to make. Examples include:

1. Curriculum-based interventions in schools, with characteristics that have been found to be effective in developed country settings, and that were adult-led
2. Mass media interventions with messages delivered through the radio, television and through other media (eg. print media)

Observational study

A study design in which the distribution of both exposures and outcomes of interest are measured without the investigator attempting to influence them.

Programme

A set of **interventions** implemented on a large scale, such as a national adolescent health programme or a national AIDS control programme.

Project

The implementation of a particular **intervention** or interventions in a specific local setting.

Quasi-experimental study

An **intervention study** design in which an **intervention** is assigned to some individuals or clusters of individuals (intervention group) and not to others (comparison or control group) in a non-random manner. The frequency of the outcome(s) of interest is measured in both intervention and control groups in order to assess the effect of the intervention. Quasi-experimental studies include studies where data are collected after an intervention has been implemented, before and after an intervention has been introduced, or at several points in time after an intervention has been introduced. The key issue is that similar data on the outcome(s) of interest are collected in both intervention and control groups, but that the individuals or clusters of individuals have

been assigned to either receive or not receive the intervention in a non-random manner.

Randomized controlled trial (RCT)

An **intervention study** design in which individuals or groups of individuals (see **cluster randomized trial**) are randomly allocated either to receive (intervention arm) or not to receive (control or comparison arm) the intervention(s) under evaluation.

Setting

The situation in or through which the **intervention** is delivered, such as in schools, health services, geographically-defined communities, through mass media, or among groups most at risk of HIV.

Strength of evidence

Each study of the effectiveness of an **intervention** contributes evidence. In this report, the strength of evidence that a study contributes has been defined as depending on a combination of the quality of the intervention, the evaluation design and its implementation. The evaluation designs have been weighted, with increasing weight being assigned to study designs on a hierarchy from adequacy, to plausibility and probability.

Structural intervention

An **intervention** that aims to change underlying determinants of risk, vulnerability or disease, such as interventions that aim to decrease poverty, improve education, or increase employment. Such interventions are sometimes known as ‘upstream’, or ‘environmental’ interventions.

Time series study

An **intervention study** design in which one or more outcomes of interest are measured at several points in time in a population receiving an **intervention**. This design of **intervention study** does not include a control population who do not receive the intervention.

Threshold of evidence for widespread implementation

The minimum **strength of evidence** needed to be able to recommend widespread implementation of a specific **intervention type** within a particular intervention setting. The threshold of evidence depends on the feasibility (including cost), potential for adverse outcomes, acceptability, potential size of effect and potential for other health or social benefits of that **intervention type**.

Young people

10-24 year-olds.

Youth

15-24 year-olds.

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