Chapter 06

COMPREHENSIVE HIV PREVENTION

The steady growth of the AIDS epidemic stems not from the deficiencies of available prevention strategies but rather from the world’s failure to use the highly effective tools at its disposal to slow the spread of HIV. Some 25 years after the epidemic was first recognized, most people at high risk of HIV infection have yet to be reached by HIV prevention, as many policy-makers refrain from implementing approaches that have been shown to work.

Whereas the previous chapter focused on key populations particularly within concentrated epidemics, this one discusses the programmatic interventions and policy actions that are essential to all strong national HIV prevention programmes. It specifically addresses the urgent prevention needs of women and young people, as well as the complex prevention opportunities and challenges presented by expanding access to treatment. Most importantly, it emphasizes the urgent need for comprehensive, robust national HIV prevention programmes to be scaled up, to cover sufficient numbers of people and target resources where they can be most effective.

Intensifying HIV prevention

If anything has been learnt from the past 25 years of the epidemic, it is that HIV prevention works. The early successes of Brazil, Thailand and Uganda in reversing their national AIDS epidemics through courageous political leadership and starting strong prevention efforts early have been well documented. More recent evidence suggests that prevention efforts are now also contributing to reductions in HIV prevalence in Cambodia and Zimbabwe, and in parts of Burkina Faso, Haiti, Kenya and the United Republic of Tanzania (UNAIDS, 2005a).

HIV prevention, like treatment, is for life. Instead of short-term or isolated prevention initiatives, effective national programmes need to sustain essential programmatic and policy actions at a sufficient scale over the long term, adapting them as the epidemic evolves, responding to changes in infection patterns and social environments. In recognition of the inherent long-term nature of the HIV prevention enterprise, implementation
and scaling up of available prevention strategies should be coupled with longer-term efforts to address human resource challenges and to develop new prevention technologies, including the ultimate prevention tool, a preventive vaccine.

Although much progress has been made, the global prevention response falls far short of the urgent, scaled-up effort needed to curb the epidemic’s expansion. While funding for HIV programmes has increased in recent years, many countries are failing to direct financial resources towards activities that address the prevention needs of the populations at highest risk, opting instead to prioritize more general prevention efforts that are less cost effective and less likely to have an impact on the epidemic (see ‘Financing’ chapter).

There are also disturbing signs that support for HIV prevention in some regions may be diminishing. In recent years, Thailand, for example, has reduced its HIV prevention budget by two thirds, even though injecting drug use is contributing to substantial new HIV infections. (UNDP/UNAIDS, 2004).

Decisive action can—and must—make the difference

The world’s failure to make proven prevention methods available to those who need them represents a remarkable missed opportunity. Scaling up available prevention strategies in 125 low- and middle-income countries would avert an estimated 28 million new HIV infections between 2005 and 2015—more than half of those that are projected to occur during this period—and would save US$ 24 billion in associated treatment costs (Stover et al., 2006).

Countries also need to ensure that both prevention and treatment are scaled up in a balanced way, in order to capitalize fully on synergies between the two. Globally, it is estimated that a response focusing solely on treatment would result in only 9 million averted new HIV infections. In contrast, simultaneous scaling up of both prevention and treatment would avert 29 million new HIV infections by the end of 2020 (Salomon et al., 2005). Figures 6.1 and 6.2 illustrate the benefits of scaling up prevention and treatment together (the combined response

Countries also need to ensure that both prevention and treatment are scaled up in a balanced way, in order to capitalize fully on synergies between the two.
**Figure 6.1** Impact of three scenarios on HIV infection in sub-Saharan Africa, 2003–2020

- Baseline
- Treatment-centred
- Prevention-centred
- Combined response

Source: Salomon JA et al. (2003). Integrating HIV prevention and treatment: from slogans to impact.

**Figure 6.2** Impact of three scenarios on AIDS-related deaths in sub-Saharan Africa, 2003–2020

- Baseline
- Treatment-centred
- Prevention-centred
- Combined response

Source: Salomon JA et al. (2003). Integrating HIV prevention and treatment: from slogans to impact.
scenario), compared with concentrating on either prevention or treatment alone or with doing nothing (the baseline).

**Preventing sexual transmission of HIV**

Unprotected vaginal intercourse accounts for the vast majority of HIV infections globally. Effective prevention of sexual transmission of HIV requires a combination of programmatic interventions and policy actions that promote safer behaviours, reduce biological and social vulnerability to transmission, encourage use of key prevention technologies, and promote social norms that favour risk reduction, as stated in the UNAIDS’ policy position paper *Intensifying HIV Prevention* (see end of this chapter).

**SAFER BEHAVIOURS AND SEXUAL NORMS**

Analysis of prevention interventions to change behaviour has consistently found that such programmes reduce the frequency of sexual risk behaviours (Crepaz et al., 2005; Elwy et al., 2002; Merson et al., 2000). Behavioural change programmes typically include basic information about the virus, personal risk assessment, counselling, building skills, such as negotiating condom use with sex partners, and access to condoms and other prevention technologies.

As discussed in the previous chapter, behavioural change programmes targeting populations at especially high risk are among the most cost-effective prevention interventions available and represent a core component of any national HIV prevention programme. Although these are indispensable in all national responses, broader-based programmes are also essential in generalized epidemics or in settings where the epidemic is likely to spread from discrete high-prevalence groups into the broader population. Public education and awareness programmes that reach the general population are essential to any sound HIV response.

Behavioural aims for HIV prevention include: abstinence and delayed sexual debut for young people; monogamy within relationships; reduction in the number of partners; and correct and consistent condom use. Especially in settings with high HIV prevalence, effective HIV prevention often requires changes to deep-seated traditions and social norms regarding human sexuality. Given the important role of concurrent unprotected sexual partnerships in the spread of HIV in sub-Saharan Africa (Halperin and Epstein, 2004), persuading sexually active individuals to accept partner reduction and monogamy as valued norms may be critical to the long-term success of HIV prevention efforts. Countries that have lowered HIV incidence have benefited from the emergence of new sexual behaviour patterns—fewer commercial sex transactions in Cambodia and Thailand, delayed sexual debut in Zimbabwe, increasing emphasis on monogamy in Uganda, and an increase in condom use.

**CONDOMS STILL VITAL**

For sexually active people, the condom remains a vital prevention technology (UNFPA et al., 2004). Correct and consistent use of the male condom reduces the risk of sexual transmission of HIV by 80–90%—an efficacy rate that exceeds those reported for many of the world’s standard vaccines (Halperin et al., 2004; Cohen and Farley, 2004). Observational studies, laboratory experiments and mathematical modelling indicate that female
condoms also offer strong protection against HIV infection (Hoffman et al., 2004).

In addition to promoting condom access for especially vulnerable populations, prevention efforts should prioritize encouraging condom use for all sexually active adults, especially in countries with generalized epidemics. According to one global estimate, condoms supplied by the public sector were used in only 21% of unprotected sex acts involving non-regular partners in 2003 (USAID et al., 2004).

Many men harbour negative attitudes towards condoms, feeling that condom use reduces sexual pleasure or impedes sexual intimacy with regular partners. However, strong and sustained promotion of condoms helps overcome such resistance, significantly increasing condom use. For example, with the goal of normalizing condom use, this year the Brazilian Ministry of Health distributed 25 million condoms at parades, dances, parties and on the street during the annual carnival—just one component of the government’s plan to distribute 1.5 billion condoms in 2006. In Singapore, following implementation in 1995 of energetic condom promotion for sex workers and their clients, consistent condom use increased from 45% before the intervention to more than 95% in 2002, and sex workers experienced significant declines in gonorrhoea incidence (Wong, Chan and Koh, 2004). In addition to condom social marketing, condoms should be also made available free of charge, as even extremely low prices for over-the-counter condoms can serve as a deterrent to use (Cohen and Farley, 2004).

**URGENT ACTION: INCREASING KNOWLEDGE OF HIV SEROSTATUS**

Once diagnosed with HIV, and particularly if they receive proper counselling, most individuals take steps to avoid exposing others to the virus. Unfortunately, however, most people living with HIV are unaware of their serostatus.

Worldwide, only 12% of people who want to be tested are currently able to do so (UNAIDS et al., 2005c). In 2003, it was estimated that only 0.2% of adults in low- and middle-income countries...
received voluntary HIV counselling and testing services (USAID et al., 2004).

There are many reasons why people at risk of HIV infection fail to be tested: fear of discrimination, fear that the test result will be positive, lack of access to treatment or lack of access to testing services. According to ILO, fear of losing employment often discourages individuals from making use of available testing services. Workplaces with ‘Know your status’ campaigns administered jointly by managers and workers’ representatives report improved uptake of testing, treatment and prevention services. For example, trade unions in Rwanda that maintain solidarity funds to care for workers who test positive report that nearly all their members have been tested for HIV (UNAIDS/ ILO/ICFTU, 2006).

Recognizing the urgency of increasing knowledge of HIV serostatus, in June 2004, UNAIDS and WHO recommended that traditional voluntary testing and counselling programmes be supplemented by enhanced diagnostic HIV testing and by the routine offer of HIV testing in clinics for sexually transmitted infections, in programme sites for the prevention of mother-to-child HIV transmission, and in clinical and community-based health-service settings in areas with high levels of HIV and access to antiretroviral drugs (UNAIDS and WHO, 2004).

In recommending a scaled-up approach to HIV testing, UNAIDS and WHO built on lessons learnt in Botswana, where the national government decreed in early 2004 that public and private health-care sites must offer HIV testing as a routine part of medical check-ups—a policy change that has led to more rapid uptake of testing (WHO, 2005a). For example, since up to half of all people living with HIV develop tuberculosis, clinics for tuberculosis represent an ideal venue for the promotion of HIV testing and linkage of HIV-positive individuals to HIV services. However, as this trend is taken up by health systems, care must be taken to ensure that the routine offer of testing does not lead to the imposition of a test.

In addition to a lack of testing locations, other obstacles need to be addressed including cost and convenience. A number of approaches have proven
More than 340 million people contract a curable sexually transmitted infection each year, with women having greater vulnerability to infection than men.

Effective. Experience in the United Republic of Tanzania has shown that eliminating out-of-pocket costs associated with HIV testing services can significantly increase use of the services and their cost-effectiveness (Thielman et al., 2006). Another approach is to reduce the time that testing takes. According to a survey of adults in Malawi, 90% who wished to know their HIV serostatus preferred to learn their results the same day of the test (Degraft-Johnson et al., 2005). Such a desire can be met by rapid HIV tests, which provide results in about 20 minutes and eliminate the need for individuals to return days later for their results. While rapid HIV testing technologies are not unduly complex, they nevertheless require training of laboratory personnel. WHO and the United States’ Centers for Disease Control and Prevention have developed a comprehensive five-day training module for rapid testing that is being rolled out in 2006.

PREVENTING SEXUALLY TRANSMITTED INFECTIONS

More than 340 million people contract a curable sexually transmitted infection each year, with women having greater vulnerability to infection than men (WHO, 2005b). As untreated sexually transmitted infections increase the risk of HIV transmission by several orders of magnitude (Fleming and Wasserheit, 1999), efforts to ensure the prompt diagnosis and treatment of sexually transmitted infections represent an essential programmatic component of a strong and comprehensive response to HIV (Dallabetta and Neilson, 2004). Increased cooperation between HIV prevention efforts and programmes to diagnose and treat other sexually transmitted infections has been identified as an important means of increasing the effectiveness of both.

While available treatments for sexually transmitted infections are among the most potent HIV prevention tools, more effective technologies are still needed. Hepatitis B is the only sexually transmitted infection for which a preventive vaccine is licensed, although emerging evidence suggests that a vaccine to prevent human papilloma virus infection may be imminent. Syphilis control continues to depend on therapies that have barely changed in 60 years, as newer antibiotics have not systematically been studied to assess their potential in treating syphilis and other sexually transmitted
CIRCUMCISION: HOW EFFECTIVE IN HIV PREVENTION?

Although it has long been documented that circumcised males have lower infection rates than uncircumcised males, until recently no prospective study had specifically tested the efficacy of adult male circumcision in preventing the acquisition of HIV (Siegfried et al., 2005; Weiss et al., 2000). In 2005, researchers announced the results of a randomized controlled trial recruiting 3274 men aged 18 to 24 years in Orange Farm, South Africa, in an area where almost one in three adults are HIV-positive. The trial found that adult male circumcision reduced the men’s risk of contracting HIV during sexual intercourse by over 60% during the 18-month study period. (Auvert et al., 2005.) Research suggests that among other possibilities, male circumcision may help to protect against HIV infection by removing cells in the inner foreskin that serve as entry points for the virus (Reynolds et al., 2004).

In July 2005, UNFPA, UNICEF, WHO and the UNAIDS Secretariat advised that the South Africa trial results should be confirmed before male circumcision is broadly promoted as a standard measure within comprehensive HIV prevention programmes (UNFPA et al., 2005). Two efficacy trials for adult male circumcision are underway in Kenya and Uganda, with results anticipated in 2007. The Kenyan trial of 2776 men uses the same circumcision method as the one tested in South Africa while the Uganda trial of 5000 men uses a different circumcision method. Both trials are designed to follow participants over a longer period to assess the duration of any observed benefit and to determine whether the intervention has an effect on overall levels of sexual risk behaviour. A third trial in Uganda is assessing the degree of protection that male circumcision may offer to female partners of HIV-positive men.

HIV PREVENTION IN EMERGENCY SITUATIONS

Displacement as a result of conflict can sometimes increase the affected population’s HIV risk by reducing their access to HIV prevention services, disrupting social support networks, increasing exposure to sexual violence, encouraging sex in return for food, shelter or other necessities, or simply moving to a higher HIV prevalence location (UNAIDS and UNHCR, 2005). In Nepal, where a continuing violent conflict has displaced between 200 000 and 400 000 people, widespread population displacement may be accelerating the country’s HIV epidemic. In particular, the conflict is severely curtailing the ability of nongovernmental organizations to provide HIV prevention services in such chaotic and dangerous circumstances (Singh et al., 2005).

UNAIDS and UNHCR recommend that refugee programming should include culturally and linguistically relevant community-based prevention interventions (UNHCR, 2005). In Uganda, where more than 220 000 refugees share health services with 135 000 people from surrounding communities, UNHCR...
HIV PREVENTION IN THE TRANSPORT SECTOR

HIV prevention efforts designed for specific occupational groups, often targeting the purchase of sex while on the road, have met with considerable success. For example, there is ample evidence that HIV prevention programmes aimed at truck drivers can reduce their frequency of unprotected sex. In Tamil Nadu, for example, research carried out after an HIV prevention programme for truck drivers found the percentage of drivers reporting that they had had commercial sex declined from 14% in 1996 to 2% in 2003. Moreover, the percentage of drivers whose last instance of commercial sex was unprotected fell from 45% to 9% in the same period (MAP, 2005).

Although long-haul truck drivers are more likely to engage in casual sex due to extended periods of time away from home, short-haul drivers have more access to communities and have been known to withhold goods and food in exchange for sex. This is particularly likely to happen when the goods being delivered are urgently needed, for instance in emergency situations. Opportunities for sexual exploitation and abuse and unprotected sex may increase in such situations and need to be addressed (WFP, 2006).

Programmes targeting truck drivers are most effective if carried out with the agreement of both employers and employees. In South Africa, an agreement between representatives of workers and employers has led to the establishment of a network of roadside clinics that provide general health services and HIV prevention interventions (ILO, 2005). In Malawi, the World Food Programme is in partnership with private companies, nongovernmental organizations and the government to provide HIV prevention information, condoms, treatment of sexually transmitted infections, voluntary HIV counselling and testing and referrals for HIV treatment to truck drivers and sex workers in two locations in the country.

works with the government to provide refugees with access to voluntary HIV testing and counselling, screening and treatment for sexually transmitted infections, and services to prevent mother-to-child HIV transmission. Recent evidence has documented an increase in condom use among refugees at the Kyaka II refugee settlement in Uganda.

Humanitarian relief efforts now routinely integrate HIV prevention into their work. UN agencies and nongovernmental organizations, for example, prioritized HIV prevention from the outset of the international response to the 2004 Asian tsunami.

Preventing mother-to-child transmission of HIV

Each day, 1800 children worldwide become infected with HIV—the vast majority of them newborns. More than 85% of children infected with HIV live in sub-Saharan Africa, although incidence of mother-to-child transmission of HIV is rapidly rising in Eastern Europe and Central Asia (UNICEF, 2005).

Effective prevention of mother-to-child HIV transmission involves a combination of strategies. These include primary HIV prevention for women (including integration of HIV prevention into reproductive
and sexual health services), prevention of unintended pregnancies in HIV-positive women, access to comprehensive antenatal care, promotion of voluntary HIV testing and counselling for pregnant women and their partners in antenatal and community-based settings, antiretroviral therapy for mother and newborn and counselling on strategies to reduce the risk of HIV transmission via breastfeeding.

Although pilot projects are currently delivering HIV prevention services in antenatal settings, few countries have effectively scaled up such services. Globally, just less than 8% of pregnant women are currently offered services to prevent mother-to-child transmission of HIV (see ‘Progress’ chapter). In sub-Saharan Africa, fewer than 6% of pregnant women in 2005 were offered services for the prevention of mother-to-child HIV transmission.

Timely administration of antiretroviral drugs to the HIV-diagnosed pregnant woman and her newborn significantly reduces the risk of mother-to-child HIV transmission. Combination regimens appear to be most effective but were until recently regarded as too costly for widespread use in low- and middle-income countries. In recent years, projects to prevent mother-to-child transmission in resource-limited settings have primarily focused on the provision of single-dose intrapartum and neonatal nevirapine, which cuts the risk of HIV transmission by more than 40% (Jackson et al., 2003). However, studies indicate that women who receive single-dose nevirapine to prevent transmission to their newborn may develop resistance to the drug, potentially compromising the effectiveness of future antiretroviral regimens (Johnson et al., 2005; Flys et al., 2005; Jourdain et al., 2004). While the benefits of single-dose nevirapine outweigh the risk of resistance in resource-limited settings, development of affordable regimens with superior resistance profiles represents an urgent global priority.

Prolonged breastfeeding by HIV-infected mothers significantly increases the risk of HIV transmission to the infant. Breastfeeding is preferable to artificial feeding in the first six months of life, regardless of the mother’s HIV status, as replacement feeding poses a greater risk of death to the infant than breastfeeding from an
HIV-infected mother in the first months (Ross and Labbok, 2004). HIV-infected mothers are advised to wean their infants early to avoid prolonged exposure of the infant and to avoid combining breastfeeding with replacement feeding, which appears to heighten the risk of transmission. The complex relationship between breastfeeding and HIV transmission risk to the newborn underscores the importance of extensive, culturally appropriate counselling on breastfeeding to new mothers who are living with HIV.

Current research is focused on the potential of an extended course of nevirapine therapy to reduce the risk of HIV transmission through breastfeeding.

Because the women and households served by prevention of mother-to-child transmission services have multiple, often overwhelming needs, efforts to scale up such services require extensive investments in programmes that extend well beyond the delivery of counselling and short-course antiretroviral drugs in antenatal settings. Founded in 2002, the MTCT-Plus initiative administered by Columbia University’s Mailman School of Public Health in the United States seeks to accelerate uptake of HIV prevention services by ensuring long-term access to antiretroviral drugs by women reached by prevention of mother-to-child transmission programmes. As of early 2006, the initiative was supporting 13 sites in 9 countries in Africa and Asia and providing HIV care and treatment to more than 8000 individuals.

In 2004, WFP issued formal guidance to the field on the integration of food and nutrition support into programmes for the prevention of mother-to-child transmission. In Rwanda, WFP provides food assistance from the 7th month of pregnancy until the baby is 12 months old. Such assistance not only contributes to the health of HIV-infected mothers and their newborns, but also helps reduce economic burdens associated with childbirth and HIV infection. (WFP, 2004.)

The Family Planning Association of Kenya provides an example of such integration in action. Working closely with the International Planned Parenthood Federation, the Family Planning Association of Kenya developed a model of services that offers comprehensive sexual and reproductive health care together with a wide range of services related to HIV including antiretroviral therapy for people living with HIV. The association’s pioneering programme offers antiretroviral therapy in a sexual and reproductive health setting. All nine clinics of the association provide voluntary HIV counselling and testing; several offer prevention of mother-to-child HIV transmission as part of their maternal health services, and four of the nine are geared up to provide antiretroviral therapy. The provision of antiretroviral therapy is part of the BACKUP Initiative (Building Alliances – Creating Knowledge – Updating
LINKING HIV RESPONSES WITH REPRODUCTIVE AND SEXUAL HEALTH SERVICES

There is an inherent association between HIV and sexual and reproductive health as many more than 75% of HIV infections are acquired through sexual transmission or through transmission during pregnancy, labour and delivery, or during breastfeeding. The presence of sexually transmitted infections other than HIV increases the risk of HIV transmission. Apart from these obvious direct associations, many of the same root causes affecting sexual and reproductive health status are also linked with the epidemic, such as gender inequality, poverty, stigma and discrimination, and marginalization of populations vulnerable to HIV (UNFPA, 2005).

Experience teaches that strengthening links between sexual and reproductive health and HIV programming can lead to important public health benefits. The commitment of the international community to intensify links between sexual and reproductive health and HIV at the policy and programme level is expressed in the June 2005 UNAIDS policy position paper Intensifying HIV Prevention. This reflects and builds upon two internationally agreed-upon policy statements: (i) the New York Call to Commitment: Linking HIV/AIDS and Sexual and Reproductive Health (UNFPA, 2004a); and (ii) The Glion Call to Action on Family Planning and HIV/AIDS in Women and Children (UNFPA, 2004b).

The New York Call to Commitment was issued in June 2004 by UNAIDS, UNFPA and Family Care International, at a high-level consultation that stressed the critical need to link HIV and sexual and reproductive health services. Noting that failure to link these systems has diminished the effectiveness of global efforts, the Glion Call to Action called for necessary resources to promote links between HIV and sexual and reproductive health, integration of links in national development plans and budgets, and a coordinated and coherent HIV response built on the principles of the “Three Ones” (see ‘National responses’ chapter).

Partners in the fight against HIV/AIDS, tuberculosis and malaria) of the German development agency, Deutsche Gesellschaft für Technische Zusammenarbeit. Thus, the Family Planning Association of Kenya has demonstrated that the provision of antiretroviral therapy within sexual and reproductive health settings is both possible and practical. The strong network of community health volunteers attached to the clinics provides an excellent infrastructure for delivery of antiretroviral therapy and has good prospects of reaching the poor and marginalized with this life-saving therapy.

HIV prevention for women and girls: a global priority

Extensive evidence demonstrates that HIV prevention initiatives that are specifically tailored to women’s needs can reduce women’s risk of HIV infection. Nevertheless, there are still far too few evidence-based prevention programmes that are designed for the particular needs of women and girls. These are sorely needed. For the most part, HIV prevention strategies have yet to grapple effectively with the gender dimensions of HIV prevention, treatment and impact mitigation. As well as being more
UNAIDS estimates that people under 25 years account for half of all new HIV infections.

Physiologically vulnerable to sexual HIV transmission than men, women face a host of social, economic and legal disadvantages that severely limit their ability to protect themselves against HIV infection. In many countries, married women have little means of insisting on abstinence or that their husbands use a condom during sexual intercourse, even if they suspect he is having unprotected sex outside their marriage.

Effective HIV prevention for women has many components. These include easy access to HIV prevention services and commodities, intensified research efforts to develop new prevention methods that women can control, policy reforms to reduce women’s vulnerability to HIV infection, and longer-term efforts to develop new gender norms and influence the behaviour and attitudes of men and boys. Sustained advocacy will be necessary for these to be realized, and with this in mind, the Global Coalition on Women and AIDS was launched by UNAIDS in 2004. The coalition aims to increase global awareness of the epidemic’s growing burden on women and girls and to catalyse effective action to address the many sources of women’s vulnerability to HIV infection. The coalition unites a broad array of stakeholders—including civil society groups, networks of women living with HIV, governments and UN agencies—to advocate for policies that address fundamental gender inequities and that promote women’s empowerment.

EMPOWERMENT OF WOMEN AND GENDER EQUALITY

Provision of clinical services and HIV prevention commodities are far from sufficient, however, to contain the epidemic among women and girls. In the long run, effective HIV prevention for women will require policy reforms that empower women and promote gender equality. Central to an effective prevention response for women is a strong commitment to universal education (see ‘Reducing the impact’ chapter). Higher education levels for girls are associated with a higher age of marriage, reduced fertility, improved health-seeking behaviour, lower vulnerability to genital mutilation, and reduced risk of HIV and other sexually transmitted infections (Grown et al., 2005).
Forging new gender norms requires changing the attitudes and practices of men and boys. The International Planned Parenthood Federation currently has a number of projects around the world that aim to engage men in efforts to build healthier norms. For example, as a component of an initiative to build sexual and reproductive health capacity in Haiti, support from the foundation enabled the PROFAMIL (Association pour la Promotion de la Famille Haïtienne) project to help women and men negotiate sexual decision-making and to recognize that both partners should together decide whether to use a condom (IPPF, 2003a). With the aim of changing men’s gender attitudes and to promote communication between men and women regarding condom use, the foundation sponsored a project in Kenya that included male-only clinics, motivational exercises to encourage male use of condoms, and various male-targeted information, education and communications approaches (IPPF, 2003b). In Brazil, it supports men’s discussion groups that encourage men to reformulate certain beliefs about sexuality and the role of men in sexual and reproductive health.

Other policy actions that support HIV prevention for women and girls include legal reform to secure women’s property and inheritance rights, implementation and enforcement of strong legal measures tackling violence against women, enhanced global and regional collaboration to fight human trafficking, and mainstreaming of gender issues into programmes and policies. Leaders in government, religion, business and the media should vocally lead efforts to promote equality and empowerment for women, and education sectors should prioritize initiatives to inculcate healthier gender norms among boys.

Protecting young people

UNAIDS estimates that people aged under 25 years account for half of all new HIV infections. Young people’s risk of HIV infection is closely correlated with age of sexual debut (Petitföir et al., 2004). Accordingly, abstinence from sexual intercourse and delayed initiation of sexual behaviour are among the central aims of HIV prevention efforts for young people (Santelli et al., 2006). For the many young people who are sexually active, access to comprehensive prevention services, including prevention education and provision of condoms, represents an urgent global health necessity and a fundamental human right.

Young people who need HIV prevention services include both males and females, school students and young people who do not attend school, sexually inexperienced young people and those who are sexually active, and a substantial percentage (especially among girls) who are already married. No single prevention approach will meet the diverse needs of all young people who are vulnerable to HIV infection.

To be effective, HIV prevention services for young people should be widely accessible, evidence-based, grounded in human rights, age-specific and gender-responsive, and should help build life skills to enable young people to reduce their vulnerability. Such services should...
Contrary to common fears or stereotypes, extensive research has detected little evidence that sex education leads to an increase in sexual activity.

also involve young people living with HIV, and support balanced and comprehensive prevention strategies that promote abstinence, faithfulness, women’s equality and empowerment, reduction in the number of partners, and consistent condom use (UNICEF, 2005). Young people themselves are often especially effective deliverers of HIV prevention interventions to their peers and thus have an important role to play in the development, implementation and evaluation of youth-oriented HIV prevention programmes.

Open discussion of sex is necessary to the provision of effective HIV prevention for young people. In some cultures, many young people, especially girls seeking to preserve their virginity, may engage in anal or oral sex in the belief that such behaviours do not constitute sex. Veiled or euphemistic discussion of sexuality may inadvertently permit such misconceptions to persist, potentially placing young people at risk of HIV infection.

SCHOOL-BASED HIV PREVENTION PROGRAMMES

Ensure young people’s access to school or other educational opportunities plays a critical role in HIV prevention efforts. Not only are higher levels of education associated with safer sexual behaviours and delayed sexual debut (UNICEF, 2005; Prata, Vahidnia and Fraser, 2005), but school attendance enables students to benefit from school-based sexuality education and HIV prevention programming. In a review of studies of school-based HIV prevention programmes in Africa, 10 of 11 studies found they were associated with significant improvements in young people’s HIV-related knowledge, and all studies that assessed students’ attitudes detected positive behavioural changes. The review found evidence that school-based programmes can contribute to delayed sexual initiation, a reduction in the number of sexual partners, and increases in condom use, although producing sustained behavioural change appears more difficult than increasing knowledge (Gallant and Maticka-Tyndale, 2004).

Contrary to common fears or stereotypes, extensive research has detected little evidence that sex education leads to an increase in sexual activity (Kirby et al., 2005; Cowan, 2002). In recent years, programmes that promote abstinence as the sole HIV prevention strategy for
young people have attracted considerable attention from researchers, programme implementers, policy-makers, advocates and commentators. On the basis of extensive experience in low- and middle-income countries as well as in high-income countries, experts in adolescent health broadly agree that comprehensive HIV prevention programmes—which simultaneously promote condom use and delayed initiation of sex for those who are sexually active—represent the most effective approach to HIV prevention for young people. A formal position statement of the Society for Adolescent Medicine, released in January 2006, supports a “comprehensive approach to sexual risk reduction, including abstinence, as well as correct and consistent use of condoms and contraception among teens who choose to be sexually active” (Santelli et al., 2006).

However school-based HIV prevention programmes cannot reach young people who are not sent to school. Provision of in-school meals helps to bring vulnerable children to school and provides them with access to education including HIV education. WFP is working with governments, nongovernmental organizations and UN agencies to integrate HIV prevention education into its school feeding programmes, thereby serving a dual purpose of protecting young people.

Given the links between HIV infection and injecting drug use (see ‘At Risk’ chapter), HIV prevention programmes for young people should integrate strong, evidence-based drug prevention messages. Youth-oriented HIV prevention initiatives should also address the many other factors that increase the risk of HIV transmission, such as violence or sexual abuse. Moreover, programmes are needed to meet the HIV prevention needs of the millions of school-age children who do not attend school (see ‘Reducing the Impact’ chapter).

In 2005, in response to the urgent need for HIV prevention with and for young people, UNAIDS and UNICEF, with the support of UNFPA and UNESCO, initiated the Unite for Children, Unite against AIDS campaign, which seeks, among other things, to ensure achievement of the 2001 Declaration of Commitment’s target of a 25% reduction in HIV prevalence among young people by 2010.

**HIV EDUCATION THROUGH THE MASS MEDIA**

The mass media has an important role to play in promoting greater awareness and understanding of HIV and thus its

**USING THEATRE TO PROMOTE HIV PREVENTION FOR YOUNG PEOPLE**

In Burkina Faso, the International Building Workers Union supports a drama group that uses music, drama and poetry to educate communities about HIV. Called Yamwekre, which means ‘prick your conscience’, the group has reached more than 10,000 people. Discussion sessions follow each performance. The group has particularly focused on reaching young people and their parents. Since good practice emphasizes the participation of children in designing the programmes that affect them, children from 30 schools have been asked to take part in a competition to choose the themes the theatre group should incorporate in its work.
prevention. A study of a youth-oriented media campaign in Zambia called the Helping Each Other Act Responsibly Together (HEART) campaign found that young people who saw the campaign were 60% more likely than those who had not to report being abstinent and more than twice as likely to have ever used a condom (Underwood et al., 2006). Similarly, a youth-oriented mass media and interpersonal communication campaign in Cameroon increased condom use during the last episode of sex with a regular partner by 32% (Meekers, Agha and Klein, 2005). To achieve successful results, reporters and editors must themselves be properly educated about HIV. Not doing so can have serious consequences, as was shown in three case studies in Guinea, Sudan and Uganda. In each case, inaccurate, misleading and stigmatizing media reports on HIV and refugees risked inflaming the local population and exposing refugees to discrimination (Lowicki-Zucca, Spiegel and Ciantia, 2005).

Since the UN Secretary-General Kofi Annan convened a special meeting of media leaders in January 2004 to establish the Global Media AIDS Initiative, the media’s engagement in the response has significantly increased at a global level. Meetings of regional- and national-level media leaders have been held in Moscow and New Delhi and in November 2004, 100 creative individuals from 35 media companies attended the first ever meeting to encourage greater integration of HIV prevention messages in entertainment programming. Transatlantic Partners Against AIDS and the Heroes Project have launched public education campaigns in the Russian Federation and India, respectively. At a meeting in Johannesburg, in October 2005, African broadcast media leaders adopted the Old Fort Declaration on HIV/AIDS, which called for a redoubling of regional media efforts including incorporating HIV and AIDS as an integral part of the strategic business plans of media companies.

### Linking treatment access to HIV prevention

Today’s global efforts towards universal treatment access for people living with HIV (see ‘Treatment and care’ chapter) provide critical opportunities to strengthen and accelerate HIV prevention efforts. Strong evidence demonstrates that increased treatment access enhances awareness, reduces stigma, increases use of HIV testing services and promotes the mobilization of public support for prevention efforts.

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**TELEVISION FOR CHILDREN TEACHES TOLERANCE**

In South Africa, Takalani Sesame Street teaches children about HIV and AIDS. Started by the Public Broadcasting System in the United States in 1969, Sesame Street was introduced in South Africa in 1996, and in 2000 the country’s own version was launched with the support of the United States Agency for International Development and South African Department of Education. In September 2002, Kami, a five-year-old girl puppet became part of the show. She is an orphan whose mother died of AIDS-related illness and her role is to humanize and destigmatize people living with HIV and encourage open discussion about issues such as coping with illness and loss.
of communities affected by HIV (Global HIV Prevention Working Group, 2004). Many people believe that antiretroviral drugs may reduce the per-contact likelihood that an HIV-infected individual will transmit the virus, although this hypothesis is not substantiated by data.

A complicated dynamic exists between HIV prevention and treatment. As treatment access expands in resource-limited countries, the health, longevity and quality of life for people with HIV will improve, potentially increasing opportunities for sexual transmission. At the same time, optimism about the treatment or misperceptions about the effects of antiretroviral drugs may also cause some people to increase their risk behaviour. Concern about this potential effect is not without foundation. In a study of 1168 HIV-positive women in the United States, initiation of antiretroviral therapy was associated with an increased likelihood of engaging in unprotected sex (Wilson et al., 2004). Among men who have sex with men in Sao Paolo, men who were optimistic about HIV treatment prospects were significantly more likely to engage in unprotected sex (da Silva et al., 2005).

HIV PREVENTION SERVICES FOR HIV-POSITIVE PEOPLE
One strategy for maximizing the prevention benefits of greater treatment access is to increase prevention services for people living with HIV. While most people who test HIV-positive take careful steps to avoid exposing others to the virus, studies indicate that a minority of people with diagnosed HIV infection often have difficulty implementing and sustaining safer sexual practices (Denning and Campsmith, 2005). Relatively few studies have been undertaken to measure the effectiveness of behavioural interventions for people living with HIV, but emerging evidence indicates that such programmes are effective in reducing the likelihood that people with HIV will engage in sexual activity that might expose others to the virus (Crepaz et al., 2005). Integration of HIV prevention counselling in a home-based antiretroviral therapy programme in Uganda, combined with voluntary HIV counselling and testing for the partners of persons on antiretroviral therapy, resulted in a 70% drop in
unprotected sex, including an 85% reduction in unprotected sex among married couples (Bunnell, 2006).

As a result of expanded treatment access, millions of people living with HIV are periodically visiting health-care delivery sites to monitor their treatment progress. This provides important opportunities for the delivery and reinforcement of HIV prevention for people living with HIV (Global HIV Prevention Working Group, 2004; CDC, 2003). A study of six HIV clinics in California, found that the delivery of brief HIV prevention counselling by medical providers reduced reported episodes of unprotected sex by 38% among HIV-infected patients seen at the clinic (Richardson et al., 2004).

Safe injections and health-care precautions

Although bloodborne exposure results in substantially fewer new HIV infections each year than does sexual intercourse, direct exposure of blood to HIV is the most efficient means of transmission. Effective HIV prevention measures exist for the major sources of bloodborne transmission—injecting drug use (see ‘At risk’ chapter), injections in health-care settings and blood transfusion—although many countries are making inadequate use of these highly effective tools.

Unsafe injections in health-care settings account for an estimated 5% of new HIV infections worldwide, including 2.5% of new infections in sub-Saharan Africa (Hauri, Armstrong and Hutin, 2004). Although unsafe injections account for substantially fewer new HIV infections than does sexual intercourse (Schmid et al., 2004), an estimated 250,000 people contracted HIV through medical injections in 2003, underscoring the need for all national HIV prevention programmes to promote adherence to sound infection control practices in health-care settings, including prohibitions on the reuse of injection equipment. Relatively inexpensive auto-disable syringes help prevent HIV transmission in health-care settings by making reuse impossible and by eliminating the risk of inadvertent needle-stick injuries. International guidelines recommend use of auto-disable syringes as the equipment of choice for immunization initiatives (WHO et al., 1999).

While use of auto-disable syringes for routine immunization has significantly increased in recent years, 38% of low- and middle-income countries did not use such syringes in their national vaccine programmes in 2004 (WHO, 2005c). The Global Alliance for Vaccines and Immunization has significantly contributed to the implementation of safer injection practices worldwide, financing the purchase and delivery of nearly 1 billion auto-disable syringes between 2000 and 2005.

Preventing unsafe injections is only one component of a broader effort to ensure sound infection control practices in health and emergency settings, where workers may be exposed to blood or other body fluids. This risk can be significantly lowered through workers’ adherence to universal precautions, which involve the routine use of gloves and other protective equipment to prevent occupational exposures, safe disposal of sharps, and timely administration of a four-week prophylactic course of antiretroviral drugs (CDC, 2001). Where workers have the potential to encounter blood or other body fluids in the course of their work, employers
have an obligation to train these workers in infection control and to ensure ready access to protective equipment and post-exposure prophylaxis.

**BLOOD SAFETY**

While blood transfusions were an important source of HIV transmission in the epidemic’s early stages, the incidence of blood-related HIV infection has declined over time as countries have implemented recommended strategies to improve the safety of the blood supply. Despite recent progress, ensuring the safety of the blood supply remains a particular challenge in times of emergency, when wars, civil strife, disasters or epidemics damage health infrastructure.

One important measure for public health systems to carry out is to reduce and eventually stop paying for blood and increase the use of voluntary donors, who are the least likely to transmit infectious agents such as HIV and hepatitis viruses. Only 40 countries in the world have achieved 100% voluntary blood donation. However, some countries have made substantial progress in this direction. In China, for example, the percentage of blood units obtained from voluntary donors increased from 22% to 94.5% between 1998 and 2005 (Ministry of Health China, 2006).

**Prevention technologies**

Although available prevention strategies are highly effective, they have important limitations. Existing tools for the prevention of sexual HIV transmission are not 100% efficacious, do not confer lifelong protection and typically depend on the individual’s correct and consistent use during each instance of sex, as well as the individual’s ability to negotiate condom use with his or her partner. The current array of prevention options is notably insufficient for women, who lack access to unobtrusive prevention methods under their control.

However, recent years have witnessed an acceleration of efforts to develop new prevention approaches. By early 2006, large-scale human trials had been initiated to assess the HIV prevention efficacy of microbicides, the female diaphragm and adult male circumcision, and research continues on vaccine development.

*Ultimately, the world’s best hope for reversing the AIDS epidemic is a preventive vaccine.*
KEEPING UP MOMENTUM ON MICROBICIDES

In light of the critical need for unobtrusive prevention technologies that women can control, increased global energy has been focused on research to develop topical microbicides that protect against HIV transmission during vaginal intercourse (Weber et al., 2005; Moore, 2005). Microbicides are gels, creams or other substances that can be inserted in the vagina to reduce the risk of HIV transmission. It is believed that microbicides might also potentially offer a measure of protection against transmission of HIV and other sexually transmitted microorganisms during rectal intercourse, although research and development for such a product is much less advanced than for vaginal microbicides. More than 60 candidate vaginal microbicides are under development, including 5 that are now being tested in large Phase III human trials in 10 countries.

Spending by the public and philanthropic sectors on microbicide research and development has more than doubled since 2000 (see ‘Financing’ chapter). On World AIDS Day in 2005, the governments of Denmark, Ireland, Sweden and the United Kingdom announced nearly US$ 30 million in new funding for the International Partnership for Microbicides, the result of sustained advocacy by the international partnership and other partners such as the Global Campaign for Microbicides and the Alliance for Microbicide Development.

SUPPORTING RESEARCH

Although progress on HIV vaccine research has been slow, the search for a vaccine remains one of the world’s most urgent scientific priorities. A Phase III trial is under way in Thailand to assess the efficacy of a vaccine based on a canary-pox vector containing genetic components of HIV. Numerous other candidates are also in earlier stages of development, with clinical trials currently under way in Africa, Asia, Australia, Europe, South America and North America.

However, a host of complex scientific challenges has slowed progress on development of a vaccine. No perfect animal model exists for HIV, the correlates of immunity are unknown, the virus can be transmitted in multiple ways, and there is substantial viral variability around the world.

In an effort to overcome obstacles to accelerated vaccine development, diverse partners in 2003 launched the Global HIV/AIDS Vaccine Enterprise. This is a multi-stakeholder alliance of independent research organizations dedicated to greater strategic collaboration on HIV vaccine research. Following extensive deliberations by working groups focused on the key scientific and logistic barriers to swifter vaccine development, the enterprise published a strategic scientific plan in 2005 that is intended to guide the collaboration and resource allocations of key actors in the field (Global HIV/AIDS Vaccine Enterprise, 2005).

A founding member of the Global HIV/AIDS Vaccine Enterprise, the International AIDS Vaccine Initiative—which celebrates its tenth anniversary this year—has assembled research consortia to improve understanding of the mecha-
nisms of action of live-attenuated vaccines and of the requirements for broadly neutralizing HIV antibodies. Since its creation, this initiative has advanced five vaccine candidates into human trials, and mobilized roughly US$ 300 million in new funding for HIV vaccine research.

Political support for HIV vaccine development has increased, as has available funding (see ‘Financing’ chapter). In October 2005, 2000 African leaders, international scientists and vaccine stakeholders gathered in Yaoundé, Cameroon, to devise strategies concerning legislation and other policy responses to ensure regional preparedness for future vaccine trials. The Group of Eight leading industrialized countries reaffirmed their commitment to a robust vaccine research effort at their annual summit meeting in Gleneagles, in 2005.

**OBSTACLES TO RESEARCH AND DEVELOPMENT**

The quickened pace of research on new HIV prevention approaches is merely one outcome of a new approach to global health, catalysed by strong and sustained activism and new sources of funding. However, HIV prevention clinical trials are often complex and expensive, requiring the enrolment and retention over several years of thousands of uninfected volunteers. Between 2004 and 2010, it is estimated that capacity for at least 96 000 volunteers in clinical trials will be needed to prevent delays in the development of potentially promising new HIV prevention tools.

Prevention research can often be highly controversial. For example, activist criticism regarding the fairness of planned multi-country research led to termination in 2005 of trials in Cambodia and Cameroon that were to test the use of the antiretroviral drug tenofovir in pre-exposure prevention. The experience with tenofovir highlights the need for researchers to engage a broad range of national and community stakeholders in the planning and conduct of prevention trials (UNAIDS, 2006; International AIDS Society, 2005). UNAIDS initiated a global consultation process in 2005 designed to inform the development of guidelines for durable partnerships between HIV prevention researchers and key stakeholders.

**A sound policy environment**

Implementing a strong national HIV prevention programme involves more than the selection of an appropriate mix of programmatic actions. It also requires a strong national policy framework that encourages safer behaviours, reduces vulnerability, maximizes the accessibility and effectiveness of HIV prevention services, promotes gender equality and women’s empowerment, and reduces stigma and discrimination (see ‘National responses’ chapter).
To mount a comprehensive, sustained HIV prevention effort with the appropriate coverage and intensity, financing for such efforts must significantly increase. UNAIDS and its research partners estimate that US$ 11.4 billion in financing for HIV prevention activities will be needed by 2008 to ensure that the world is on track to achieve the Millennium Development Goal of halting and beginning to reverse the global AIDS epidemic by 2015. Were the world to mount such a comprehensive, evidence-based response in all regions, HIV prevention would account for 52% of all HIV and AIDS spending worldwide in 2008 (UNAIDS, 2005c).

In 2005, with the aim of promoting universal access to HIV prevention, UNAIDS published a policy position paper, *Intensifying HIV Prevention*, which articulates basic principles and strategies that form the basis of strong national HIV prevention plans (UNAIDS, 2005a). For all countries, HIV prevention requires specific policy actions and programmatic actions, implemented with sufficient coverage, scale and intensity. These actions are detailed below. While national prevention programmes in all settings should incorporate each essential programmatic and policy action, the relative emphasis of specific HIV prevention measures may differ, based on the nature and severity of national and subnational HIV epidemics.

**ESSENTIAL POLICY ACTIONS FOR HIV PREVENTION**

- Ensure that human rights are promoted, protected and respected and that measures are taken to eliminate stigma and discrimination.
- Build and maintain leadership from all sections of society, including governments, affected communities, nongovernmental organizations, faith-based organizations, the education sector, media, the private sector and trade unions.
- Involve people living with HIV in the design, implementation and evaluation of prevention strategies, addressing their distinct prevention needs.
- Address cultural norms and beliefs, recognizing both the key role they play in supporting prevention efforts and the potential they have to fuel HIV transmission.
- Promote gender equality and address gender norms and relations to reduce the vulnerability of women and girls to HIV infection, involving men and boys in this effort.
- Promote widespread knowledge and awareness of how HIV is transmitted and how infection can be averted.
- Promote the links between HIV prevention and sexual and reproductive health.
- Support the mobilization of community-based responses throughout the continuum of prevention, care and treatment.
- Promote programmes targeted at HIV prevention needs of key affected groups and populations.
- Mobilize and strengthen financial, human and institutional capacity across all sectors, particularly in health and education.
- Review and reform legal frameworks to remove barriers to effective, evidence-based HIV prevention, eliminate stigma and discrimination, and protect the rights of people living with HIV or vulnerable to or at risk of HIV infection.
- Ensure that sufficient investments are made in the research and development of, and advocacy for, new prevention technologies.
While national prevention programmes in all settings should incorporate each essential programmatic and policy action, the relative emphasis of specific HIV prevention measures may differ, based on the nature and severity of national and subnational HIV epidemics.

**ESSENTIAL PROGRAMMATIC ACTIONS FOR HIV PREVENTION**

- Prevent the sexual transmission of HIV.
- Prevent mother-to-child transmission of HIV.
- Prevent the transmission of HIV through injecting drug use including harm reduction measures.
- Ensure the safety of the blood supply.
- Prevent HIV transmission in healthcare settings.
- Promote greater access to voluntary HIV counselling and testing while promoting principles of confidentiality and consent.
- Integrate HIV prevention into AIDS treatment centres.
- Focus on HIV prevention among young people.
- Provide HIV-related information and education to enable individuals to protect themselves from infection.
- Confront and mitigate HIV-related stigma and discrimination.
- Prepare for access to and use of vaccines and microbicides.