

6. Appendix

Sub-regional cases

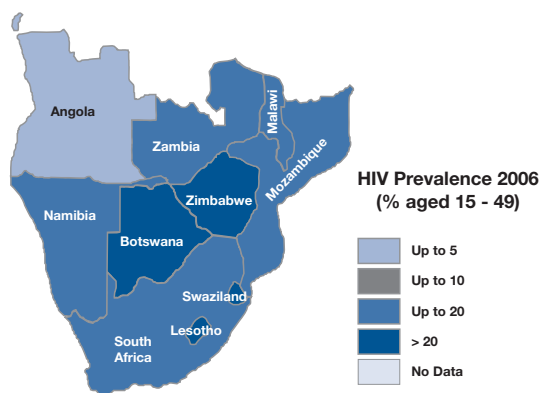
Southern Africa

The scale and trends of the epidemics in the region vary considerably, with southern Africa most-affected. Southern Africa includes the countries of Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. This sub-region accounted almost one third (32%) of all new HIV infections and AIDS deaths globally in 2007, with national adult HIV prevalence exceeding 15% in eight countries in 2005 (Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe).

Figure 6.1

Southern Africa has 9 of the world's 10 countries with 1 in 10 adults infected with HIV

Estimated adult (ages 15–49) HIV prevalence (%)



Data source: UNAIDS/WHO 2007

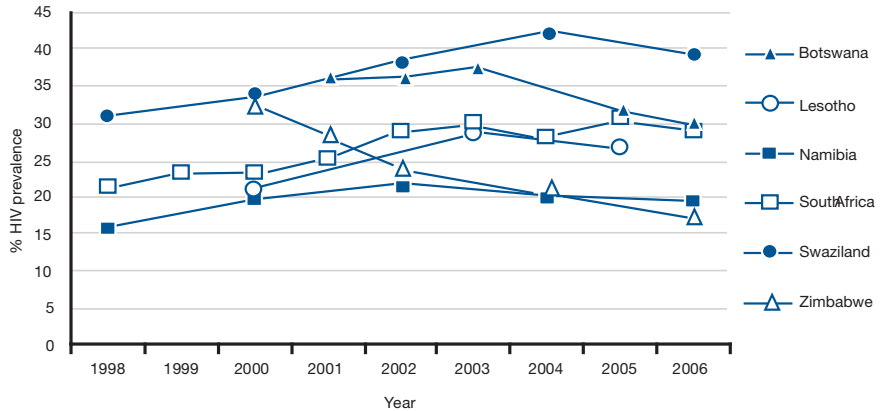
Nowhere else in the world has national adult HIV prevalence reached such levels. However, there is evidence of declines in the epidemics of some countries (notably Zimbabwe), while the epidemics in most of the rest of the sub-region have either reached or are approaching a plateau. Only in Mozambique has the latest HIV data (in 2005) shown an increase in prevalence over the previous surveillance data set.

The epidemics in this region are unique in at least two respects. First, national adult HIV prevalence levels have soared to heights not seen anywhere else in the world. Second, prevalence levels have remained at these high levels for a decade. At this level they can be termed 'hyperendemic'. The overall stabilization of the prevalence figures represents 'stability' only in the limited sense that the number of people newly infected roughly equals the number dying of AIDS (UNAIDS

and WHO 2005). As the provision of antiretroviral treatment expands, more people with HIV will survive longer, increasing the number of people living with the virus, and overall prevalence levels will therefore increase.

Figure 6.2

Median HIV prevalence among women (15-49 years) attending antenatal clinics in consistent sites in southern African countries, 1998-2006



Source: Various antenatal clinic surveys

The epidemics in southern Africa are so severe that their consequences will last for several decades, even should prevalence levels fall. Across the subregion, AIDS has approximately doubled overall mortality and reduced population growth to the extent that it is expected to fall to near zero in many countries. (UN DESA/ Population Division 2007).

In Zimbabwe, HIV prevalence in pregnant women attending antenatal clinics has declined significantly in the past few years, from 26% in 2002 to 18% in 2006. Among young pregnant women (15-24 years) prevalence declined from 21% to 14% over the same period. Infection levels were highest among pregnant women attending antenatal clinics in mining (26% HIV prevalence) and commercial farming (22% prevalence) areas (Ministry of Health and Family Welfare [Zimbabwe], 2007).

Latest HIV prevalence estimates obtained from antenatal clinic surveillance match those reported in the most recent population-based HIV survey, which estimated national adult (15-49 years) HIV prevalence at 18% in 2005-2006 and found that 11% of young women (15-24 years) and 4% of young men were infected with HIV (Central Statistical Office [Zimbabwe] & Macro International, 2007). However, it also found that a considerably larger proportion of

adult women were living with HIV than men: 21% versus 15%. For both men and women, the risk of acquiring HIV increases considerably from their late teens to mid-30s. Six percent of women and 3% of men aged 15-19 years tested HIV-positive, compared to around 35% of women in their 30s and 30-32% of men that age. The data also show a marked increase in the HIV prevalence for people with multiple lifetime sexual partners. For example, 7% of men with only one sexual partner in their lifetime were HIV-positive, compared with 31% of men with ten or more lifetime partners (Central Statistical Office [Zimbabwe] & Macro International, 2007).

Infections level in pregnant women vary considerably from place to place, and range from 11% in Mashonaland Central to above 20% in Matabeland South and Mashonaland West. At Banket (in the north), Victoria Falls (on the western border with Zambia) and Beitbridge (on the border with South Africa, in the south) at least 25% of antenatal clinic attendees tested HIV-positive in 2006 (Ministry of Health and Family Welfare [Zimbabwe], 2007).

The declining trend observed in Zimbabwe's surveillance data is supported by several studies (UNAIDS, 2005; Mahomva et al., 2006; Hargrove et al., 2005; Mugurungi et al., 2005; Ministry of Health and Child Welfare [Zimbabwe], 2007), while declining prevalence among both men and women has also been observed in rural parts of Manicaland (Gregson et al., 2006). The trend reflects a combination of very high mortality and declining HIV incidence, related, in part, to behaviour change (UNAIDS, 2005). There is evidence from eastern Zimbabwe that more women and men have been avoiding casual sex liaisons, and that consistent condom use with 'casual' partners increased for women (from 26% in 1998-2000 to 37% in 2001-2003), though not for men (Gregson et al., 2006). More detailed discussion can be found in UNAIDS (2006). Mathematical modeling also suggests that the declines in HIV prevalence could not be attributed solely to the natural evolution of Zimbabwe's AIDS epidemic (Hallet et al., 2006).

A comparison of data in the 1999 and 2005 Demographic and Health Surveys show only minor changes in condom use during higher-risk sex. In 1999, 42% of women said they used condoms the last time they had sex with a non-regular partner, compared with 47% in 2005, while for adult men condom use during higher-risk sex remained about the same (70% vs 71%) But paid sex appears to have decreased: the 7% of adult men in 1999 who said they had bought sex in the previous year decreased to only 3.8% in 2005. On the other hand, condom use declined slightly among those men who said they had paid for sex—from 82% in 1999 to 73% in 2005 (Central Statistical Office [Zimbabwe] & Macro International, 2000 & 2007).

Against the background of economic deterioration, the impact of AIDS illness and death, in particular, is threatening household viability. According to one recent study in the east of the country, almost four in ten (39%) households dissolved or relocated after an AIDS death, compared to one in four (27%) households that had experienced a non-AIDS death. AIDS deaths more often resulted in the loss of the head of the household, while households with AIDS deaths spent significantly more on health care than did households with a non-AIDS death. Median expenditure on healthcare, funeral and memorial services equalled one quarter of the average annual per capita income (Gregson et al., 2006).

With an estimated 5.5 million [4.9 million - 6.1 million] (UNAIDS, 2006)¹ people living with HIV in 2005, South Africa is the country with the largest number of infections in the world. The country's Department of Health estimates that 18.3% of adults (15-49 years) were living with HIV in 2006 (Department of Health [South Africa], 2007). More than half (55%) of all South Africans infected with HIV reside in the KwaZulu-Natal and Gauteng provinces (Dorington et al., 2006).

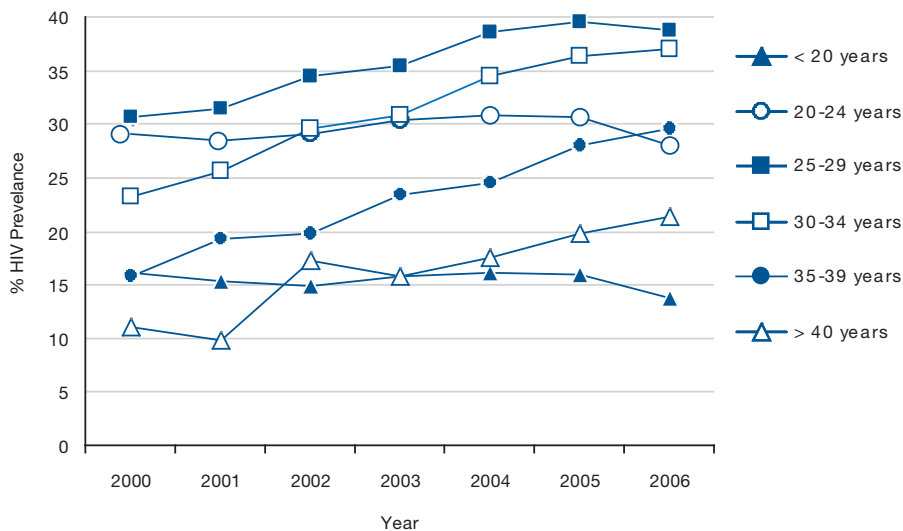
The latest HIV data collected at antenatal clinics suggest that HIV infection levels might be levelling off, with HIV prevalence in pregnant women at 30% in 2005 and 29% in 2006 (Department of Health South Africa, 2007). In addition, the decrease in the percentage of young pregnant women (15-24 years) found to be infected with HIV suggests a possible decline in the annual number of new infections. The consistently high and rising prevalence among older antenatal clinic attendees is a concern that needs further investigation (see graph).

The epidemic varies considerably between provinces. HIV prevalence among pregnant women is highest in the populous KwaZulu-Natal province, at 39%, and lowest in the Northern Cape, Western Cape and Limpopo provinces, at 15%, 16% and 19%, respectively. In the five other provinces (Eastern Cape, Free State, Gauteng, Mpumalanga and North West) at least 25% of women attending antenatal clinics in 2006 tested HIV-positive (Department of Health [South Africa], 2007). There is also variation within provinces and populations. For example, in the Northern Cape, prevalence among pregnant women ranged from an average of 5% at clinics in one district to almost 23% in another, while in Limpopo province it varied from 14% to 28%, depending on the district. Similarly, although only 9% of South Africa's population (aged 2 years and over) live in urban informal settlements, 29% of persons living with HIV are found in these areas (Rehle et al., 2007b).

¹ All estimates of the total number of people living with HIV in a given country are for 2005.

Figure 6.3.

HIV prevalence by age group among antenatal clinic attendees in South Africa, 2000-2006



Source: Department of Health, South Africa, 2000-2006

Very high prevalence levels have been found in parts of KwaZulu-Natal. For example, in Amajuba district, 47% of women attending antenatal clinics tested positive in 2006 (Department of Health South Africa, 2007), as did 51% of women aged 25-29 years who participated in an earlier household-based HIV survey in the rural district of Umkhanyakude (Welz et al., 2007). HIV incidence of 8% was found in men and women aged 25-29 years in another study in a rural district in the north of the same province. On current trends, and in the absence of effective interventions, it is estimated that two thirds of the 15-year-olds in that district could be infected with HIV by the time they reach their 35th birthday (Barnighausen et al., 2007).

Studies indicate that young women face greater risks of becoming infected than men. Indeed, among 15-24 year-olds, women account for about 90% of new HIV infections (Rehle et al., 2007b). HIV incidence among 20-29 year-old women in 2005 was approximately 5.6%, more than six times higher than for males of the same ages (0.9%) (Rehle et al., 2007b). But very high HIV incidence is being found also among slightly older men: in a northern KwaZulu-Natal study, an estimated 8.8% of men aged 24-29 years had been newly-infected in the previous year (Barnighausen et al., 2007).

An estimated 1.8 million South Africans have died from AIDS since the epidemic began (Dorrington et al., 2006). Total annual deaths (from all causes) increased by 87% from 1997 to 2005 (from 316 505 to 591 213) (Statistics South Africa, 2005 & 2006); it is estimated that at least 40% of those deaths were AIDS-related (Anderson and Phillips, 2006; Actuarial Society of South Africa, 2005; Medical Research Council, 2005; Bradshaw et al., 2004). Rising death rates lowered life expectancy at birth to 49 years for males and 52.5 years for females in 2006, and have probably contributed to the decline in the country's population growth rate from 1.25% in 2001-2002 to just over 1% in 2005-2006 (Statistics South Africa, 2007).

In Swaziland, according to preliminary data from a new population-based survey, one in four (26%) adults (15-49 years) are HIV-infected. This is the highest prevalence ever found in a national population-based survey anywhere in the world. Both antenatal and population-based survey data show little difference in HIV prevalence between regions, but there is a significant difference in infection levels between men and women: 20% of adult men tested HIV-positive, compared with 31% of women (Ministry of Health and Social Welfare, 2007; Central Statistical Office [Swaziland] & Macro International, 2007).

HIV prevalence found among antenatal clinic attendees remains among the highest in the world. There is some evidence that many young women (more than 60%, according to one study) abstain from sex until their late teens (Buseh, 2004), but HIV infection levels rise rapidly once women become sexually active. One in two (49%) 20-34 year-olds attending antenatal clinics and the same proportion of women aged 25-29 years who participated in the 2006 population-based HIV survey were found to be HIV-infected, as were one in four (26%) pregnant teenagers (15-19 years) (Ministry of Health and Social Welfare [Swaziland], 2006; Central Statistical Office [Swaziland] & Macro International, 2007). HIV infection levels in men reach similar heights, but in older age groups: 44% of men aged 30-34 years and 45% of those aged 35-39 years were found to be infected with HIV. Unusually high HIV prevalence is found also among older men and women, with around one quarter (28% and 24%, respectively) of those aged 50-54 years also found to be HIV-infected (Central Statistical Office [Swaziland] & Macro International, 2007).

AIDS awareness and knowledge appears not to be associated with safer behaviour to the extent anticipated. HIV knowledge is high, with more than 85% of women and 80% of men saying that HIV transmission can be prevented by using condoms and restricting sexual intercourse to one, uninfected partner. Yet just over half of adult men (56%) and women (57%) who reported more than two sexual partners in the previous year said they had used a condom the last time they had sex (Central Statistical Office [Swaziland] & Macro International, 2007).

Lesotho's HIV prevalence levels remain high. Almost one in four (23% [21.9%-24.7%]) Basotho adults (15 -40 years of age) were living with HIV in 2005 (UNAIDS, 2006), with infection levels highest in urban areas. Women account for about 57% of people living with HIV, with prevalence among antenatal clinic attendees reaching 38% in the 25-29 year age group in 2005 (Ministry of Health and Social Welfare [Lesotho], 2005). The most recent HIV data show a decline in infection levels among young (15-24 years) pregnant women from about 25% in 2003 to 21% in 2005, but the apparent decrease might be due to the addition of new sentinel surveillance sites in the most recent survey (Ministry of Health and Social Welfare [Lesotho], 2005).

Prevention efforts in Lesotho lack the quality and scale needed to reverse the epidemic. HIV knowledge is poor. Fewer than one in five married (and fewer than one in three unmarried) young people (15-24 years) could demonstrate comprehensive knowledge of HIV when surveyed in 2004. In addition, a large proportion of young people are sexually active at very young ages – more than one quarter of young men (27%) were having sex before they turned 15, as were 15% of young women. Very few (7% of the boys and 4% of the girls) used a condom the first time they had sex. Among young men having extramarital sex, condom use in 2004 was almost non-existent: only 5% of married or cohabiting young men said they used a condom during sex with their other partner(s) in the previous 12 months (Ministry of Health and Social Welfare [Lesotho] & ORC Macro, 2004). Reluctance to use condoms has been found in other studies, too, including one among inmates at Quthing prison. Despite relatively high knowledge of HIV (about 70% of the men knew at least one way of preventing HIV infection), 42% said that they would not use a condom (Akeke et al., 2007).

As in other countries in the region, there is a huge need and opportunity to improve HIV prevention within marriages and other long-term relationships in Lesotho. It is estimated that about 40% of HIV-infected couples are 'discordant', i.e. one but not both persons are HIV-positive (Corno & De Walque, 2007).

Overall, the epidemic in Namibia appears to have stabilized with one in five women (20%) seeking antenatal care testing HIV-positive in 2006 (Ministry of Health and Social Services, 2007). But the risk of HIV varies considerably across this large, sparsely populated country. HIV prevalence below 10% was found among pregnant women in Gobabis (in the east) and Windhoek (the capital), but in Engela and Oshakati (in the far north) it exceeded 25% and it reached 39% in Katima Mulilo, at the country's eastern tip (Ministry of Health and Social Services, 2007). Indeed, the relatively steady trend since the mid-1990s in HIV prevalence among young pregnant women (15-24 years), and the rising trend among those in their 30s suggests that prevention efforts need to be improved (Ministry of Health and Social Services, 2007).

Preliminary data from a 2006 population-based survey show that nine in ten (90%) sexually active young (15-24 years) men and three quarters (75%) of young women reported having had 'higher-risk' sex (that is, sex with a non-marital, non-cohabiting partner) in the previous 12 months. Half those women (48%) and one third of the men did not use a condom consistently with those partners (Ministry of Health and Social Services & ORC Macro, 2007). In another survey (carried out in the towns of Keetmanshoop, Oshakati, Rundu and Walvis Bay), around one in ten (11%) sexually active young men (15-24 years) and almost one in three (29%) of their female counterparts said their most recent sexual partnership had been with a person at least ten years older than them. Because HIV prevalence tends to be highest among women in their 30s and men in their mid-30s to mid-40s, these young people face a high risk of acquiring HIV (Parker & Connolly, 2007).

The decrease in HIV infection levels among pregnant women attending antenatal clinics in Botswana in recent years (from 36% in 2001 to 32% in 2006) suggests that the epidemic there has also reached its peak and could be on the decline. Based on these and other HIV data (including data from a recent population-based HIV survey), it is estimated that one in four adults (24% [23.0%-32.0%]) of 15-49 year olds in Botswana were living with HIV in 2005 (UNAIDS, 2006). Botswana's epidemic therefore remains severe.

Half the pregnant women aged 30-34 years tested for HIV at antenatal clinics in 2005 were found to be infected with HIV, as were 45% of those aged 25-29 years (Seipone, 2006). Infection levels in pregnant women varied across the country – from a low of 21% in the Goodhope district in the south to over 40% in the Francistown and Tututume districts (in the northeast), and 47% in Selebi-Phikwe (a densely-populated mining community in the east). Prevalence was unusually high even among pregnant teenagers, 18% of whom tested HIV-positive in 2005. This, however, was the lowest infection level seen among pregnant women in that age group since the early 1990s, suggesting a possible decrease in new infections (Ministry of Health [Botswana], 2006). Such an interpretation is supported by the ongoing decline in HIV prevalence observed among young pregnant women. Among 15-19 year-old women attending antenatal clinics, prevalence decreased from 25% to 18% between 2001 and 2006, while among their 20-24 year-old counterparts it declined from 39% to 29% over the same period (Ministry of Health [Botswana], 2006).

There is evidence that condom use among teenagers has increased. In 2001, 81% of unmarried men in their late teens (15-19 years) said they had used a condom the last time they had sex, compared to 95% in a 2004 survey. Among their unmarried female counterparts, the corresponding figures were 71% in 2001 and 82% in 2004. However, misconceptions about HIV persist, with almost one third (30%) of survey respondents in 2004 claiming that HIV can be acquired by

supernatural means and more than one half believing the virus can be transmitted by mosquitoes. Only one in five (21%) persons knew that having multiple sexual partnerships increases the risk of HIV infection, and three in four knew that condoms can prevent HIV transmission (National AIDS Coordinating Agency & Central Statistical Office, 2005). The latter finding is consistent with evidence that significant levels of high-risk sexual behaviour have persisted: one in four (23%) sexually-active participants in a population-based survey said that they had had concurrent sexual relationships with two or more partners in the previous 12 months (Carter et al., 2007).

At least one third of adults are believed to know their HIV status (Weiser et al. 2006). After Botswana implemented a massive opt-out voluntary counselling and testing system in 2003, the uptake of HIV testing more than doubled from about 61,000 in 2004 to almost 158 000 in 2005, when about 89% of persons who were offered an HIV test agreed to be tested. More than two thirds (69%) of the people who were tested for HIV in 2005 were women (Steen et al., 2007). The percentage of pregnant women who know their HIV status has grown considerably – from 47% in 2003 to 78% in 2004, for example, among women delivering babies at the regional referral hospital (which performs deliveries for most of Francistown's pregnant women, as well as for many women from outlying areas). The proportion of pregnant women receiving treatment to prevent the transmission of HIV to their infants also increased (from 29% to 56%) in the same study. After the introduction of routine, on-site rapid tests in antenatal clinics in 2005, nearly all tested women received their results and intervention uptake increased even further to 75% (Creek et al., 2007).

The latest HIV data collected at antenatal clinics in Angola indicate that HIV prevalence among pregnant women did not change much between 2004 and 2005. Median national HIV prevalence was estimated at 2.4% in 2005, compared with 2.4% in 2004 (Ministério da Saúde & CDC [USA], 2006). Because only 40% of pregnant women access antenatal services (which are located mainly in urban or peri-urban areas), these HIV data provide an incomplete picture of Angola's HIV epidemic. Nevertheless, HIV infection levels among antenatal clinic attendees in 2004-2005 varied from under 1% in Bie province (in the centre of the country) to 2.7% in the capital, Luanda, 4.2% in Huila province (in the south) and 11% neighbouring Cunene province (which borders Namibia) (Ministério da Saúde & CDC [USA], 2006). Other earlier surveys have revealed high HIV prevalence of 33% among female sex workers in Luanda (Grupo Tematico, 2002) and 9% among male and female independent miners in Lunda Norte province (which borders the Democratic Republic of Congo) (Ministério da Saúde & CDC [USA], 2006).

In the other Lusophone country of this sub-region, Mozambique, it is estimated that 16.1% [12.5%-20.0%] of adults (15-49 years of age) were living with HIV in

2005 (UNAIDS, 2006). After appearing to stabilize in the early 2000s, Mozambique's epidemic has again grown, with HIV prevalence rising in all three zones of the country. HIV infection levels found in women attending antenatal clinics are lowest in the north (average of 9% in 2004), but in the central and southern zones prevalence of 20% or more has been found, including in the capital, Maputo, and in Gaza, Inhambane, Manica and Sofala provinces (where it reached almost 27% in 2004) (Conselho Nacional de Combate ao HIV/SIDA, 2006). The reasons for the lower prevalence in the north are not well understood but could include the fact that male circumcision is widespread in that part of the country.

Rising infection levels among young people (15-24 years) suggest that new HIV infections in Mozambique are still increasing (Conselho Nacional de Combate ao HIV/SIDA, 2006). Among young adults in the northern zone, HIV prevalence doubled to 10% between 2000 and 2004, while it rose from about 12% to 18% in the south (Ministry of Health [Mozambique], 2005). However, there are some signs that prevention activities among school-going adolescents are prompting more young people to protect themselves against possible HIV infection. In one such programme, introduced in five provinces, the percentage of teenagers who said they used a condom the first time they had sex almost doubled, from 36% to 60% between 2003 and 2005 (Tivane et al., 2006).

The lower levels of infection observed in Cabo Delgado, Inhambane, Nampula and Niassa (all in the north), compared with other regions, could be maintained if successful prevention efforts are expanded. Prevention efforts should also be scaled up among people enrolled in the country's expanding antiretroviral therapy programme. A study among persons starting antiretroviral treatment has found that 70% of the sexually-active patients had had unprotected sex in the three months before starting treatment, and only one quarter (26%) of the patients had disclosed their HIV status to their partners whose HIV status was unknown or negative (Pearson et al., 2007).

Malawi's epidemic appears to have stabilized amid some evidence of behavioural changes that can reduce the risk of HIV infection (Heaton et al., 2006). Median HIV prevalence among pregnant women at sentinel surveillance sites has remained between 15% and 17% since the turn of the century (National AIDS Commission, Ministry of Health [Malawi], 2005).

Adult (15-49 years) HIV prevalence was estimated at 14% [6.9%-21.4%] in 2005 (UNAIDS, 2006). Results from a triangulation study suggest that prevalence could be declining in parts of the country, with evidence of decreasing HIV prevalence among women attending antenatal clinics in some urban areas (where average HIV prevalence of 18% is much higher than the 11% found in rural areas) (National AIDS Commission, [Malawi], 2007; Ministry of Health and Population [Malawi], 2005a). HIV prevalence among women using antenatal

services in the capital, Lilongwe, for example, fell from 27% in 1996 to 17% in 2003 before rising slightly again in 2005 to 19% (Bello, Chipeta & Aberle-Grasse, 2006; National AIDS Commission & Ministry of Health, 2005). However, there are regional differences in the spread of HIV. Infection levels in the south are as high as 20-22% (in Mulanje, Mangochi, Thyolo and Blantyre), but are considerably lower in the north (8%) and centre (7%) (National Statistical Office & ORC Macro, 2005).

Overall, it appears that young women have higher risks of acquiring HIV than young men. Among young people (15-24 years) nationally, women are more than four times more likely to be infected with HIV than men (9% prevalence versus 2%). Regionally, these gender differences also occur. Among young people (15-24 years), HIV prevalence among females in the North was more than 12 times higher than among males, while in the South and Central regions it was more than four and three times higher, respectively (National Statistical Office & ORC Macro, 2005).

There is still considerable room for strengthening HIV prevention in Malawi. Comprehensive knowledge about HIV (defined as 'knowing at least two ways to prevent infection' and 'holding no major misconceptions about the virus') is low. Only one in five adult women (22%) and a little more than one in three adult men (39%) demonstrated such knowledge when surveyed, as did similar proportions of young men and women (National Statistical Office & ORC Macro, 2005). At the same time, the proportion of men reporting sex with non-regular, non-cohabiting partners decreased from 33% to 26% in 2003-2004 (although it did not change among women), while the percentage of men who said they had used condoms the last time they had sex with a non-marital, non-cohabiting partner rose from 39% to 47% (Ministry of Health and Population [Malawi], 2005b).

Progress is evident in other areas. The number of women accessing services for preventing mother-to-child transmission of HIV rose ten-fold between 2002 and 2005, when it reached 53,000. Almost three quarters (72%) of pregnant women who tested HIV-positive at antenatal clinics received antiretroviral prophylaxis (Ministry of Health and Population [Malawi], 2005b).

While there is little sign of a decline in HIV infections at the national level in Zambia, the epidemic appears to be receding in some parts of the country. Just over one million [1.1-1.2 million] Zambians were living with HIV in 2005, equivalent to approximately 17% [15.9%-18.1%] of the adult (15-49 years old) population (UNAIDS, 2006).

The most recent HIV surveys at antenatal clinics showed HIV infection levels among pregnant women to be twice as high in urban compared with rural areas (25% versus 12%) (Ministry of Health, 2005), as did earlier population-based

survey estimates (23% versus 11%) (Central Statistical Office et al., 2003). Prevalence is especially high in cities and towns along main transport routes (such as Kabwe, Livingstone and Ndola), compared with more secluded rural areas. HIV prevalence of up to 30% has been found among pregnant women in Livingstone, but was under 10% in Kasaba (in the far north), Macha (in the south) and Mukinge (in the centre) (Ministry of Health [Zambia], 2005).

HIV prevalence has declined among 20-24 year-old pregnant women in urban areas (where it dropped from 30% in 1994 to 24% in 2004) and their 15-19 year-old counterparts (down from 20% in 1994 to 14% in 2004) (Ministry of Health [Zambia], 2005). In some communities, there was a decrease in HIV prevalence among the most educated women; in other communities, infection levels among young pregnant women increased (Sandoy et al., 2006). Additionally, changes in HIV prevalence are reported in some population-based surveys, which show HIV prevalence in young people (15-24 years) declining steeply between 1995 and 2003. Among young rural residents surveyed in 1995 and 2003, prevalence fell from 16% to 6.4% in females and from 5.6% to 3.1% in males, while among their urban peers it decreased from 23% to 12% in females and from 7.5% to 3.2% in males (Michelo et al., 2006a). Behaviour changes were reported among higher-educated, urban young people (Michelo et al., 2006b), among whom a significant increase in condom use during 'casual' sex was observed between 1995 and 2003 (Sandoy et al., 2007).

Other research confirms that some Zambians are adopting behaviours that can protect them against HIV infections. The proportion of sexually active men who reported having sex with a 'non-regular' partner in the previous 12 months, for example, declined from 39% in 1998 to 28% in 2005. Among married men, the proportion who said they had no casual partners in the previous year increased from 79% to 90% over the same period. No such change was observed among women (Central Statistical Office [Zambia], 2006). However, the proportion of young (15-24 years) urban women who said they used a condom the last time they had 'casual' sex almost doubled between 1995 and 2003, from 46% to 82%, while the percentage of young urban men reporting more than two 'casual' partners in the previous year declined from 52% to 39% (Sandoy et al., 2007). It appears that a fear of AIDS-related mortality, combined with prevention programmes, has prompted changes in behaviour, which in turn have reduced the risk of acquiring HIV infection (Michelo et al., 2006a).

These reported positive changes, however, are set against other challenges. For example, about 40% of health workers surveyed at five Zambian hospitals did not believe that condoms were effective in preventing HIV. Of the one quarter (26%) of sexually-active health workers who reported having several sexual partners, more than one third (37%) did not use condoms (Kiragu et al., 2007). Similarly, in a study in five rural areas, almost half (46%) of the sexually-active

young people said they did not use condoms (Mwansa, 2006). Stigma remains a concern, as well. When surveyed in five districts, two thirds of married women who were starting antiretroviral therapy said they had not disclosed their HIV status to their husbands for fear of blame and/or abandonment (Zulu, 2005).

As in many other countries, the frequency of sex between men in Zambia and its possible role in the country's HIV epidemic is still poorly understood. One recent study found high levels of sexual risk-taking behaviour (defined as 'unprotected anal sex') among surveyed men who have sex with men. More than two thirds of the men (68%) said they had had unprotected anal sex with men and women, and almost three quarters (73%) thought anal sex was safer than vaginal sex. One in three (33%) of the men tested HIV-positive (Zulu et al., 2006).

Much smaller epidemics are underway in the island nations of southern Africa. Recent HIV data collected from pregnant women using antenatal services in Madagascar show an HIV prevalence of 0.2%, although infection levels were 1.1% in Sainte Marie and 0.8% in Morondava. The same surveillance data revealed high levels of syphilis infection among pregnant women – 5.1% nationally, and almost 10% in Sainte Marie and Toliara (Ministere de la Sante et du Planning Familial, 2005), suggesting high frequency of unprotected sex. Earlier studies have shown condom use to be infrequent and HIV knowledge to be poor. Only one in five Madagascans could name two methods for preventing the sexual transmission of HIV when surveyed in 2003-2004, and one in 10 (12%) sexually-active young men and one in 20 (5%) young women said they had used a condom the last time they had sex with a casual partner (Institut National de la Statistique and ORC Macro, 2005). No information is available on injecting drug use and on men who have sex with men in Madagascar.

Exposure to contaminated injecting equipment is the main risk factor for HIV infection in the currently small HIV epidemic in Mauritius, where about three quarters of the HIV infections diagnosed in the first six months of 2004 were among drug injectors (Sulliman & Ameerberg, 2004). Sharing of injecting equipment appears to be common: 80% of drug injectors said they had shared needles in the previous three months, when surveyed in a 2004 Rapid Situation Assessment. Among those injecting drug users who were tested for HIV, 4% were found to be infected. Also of concern is the large percentage of sex workers (75%) who said that they also injected drugs, and the comparatively low reported rate of condom use (only 32% said they had consistently used condoms during the previous three months). Overall, 13% of the surveyed sex workers tested HIV-positive (Sulliman, Ameerberg & Dhannoo, 2004). Mauritius needs to focus stronger prevention efforts on injecting drug users and especially on those who also engage in sex work (Dewing et al., 2006).

Box 6.1

The twin challenge of tuberculosis and HIV

An estimated 8.8 million new tuberculosis cases occurred worldwide in 2005—more than 80% of them in Asia and sub-Saharan Africa. It is estimated that over 600 000 of those persons were co-infected with HIV.

People living with HIV are at much greater risk of developing tuberculosis disease than people who are HIV negative (Antonucci et al., 1995; Selwyn et al., 1989). Furthermore, HIV is responsible for the high tuberculosis incidence in many parts of Africa and some parts of Asia (WHO, 2007). In southern Africa, the sub-region with the highest HIV prevalence, it is estimated that 50%–80% of tuberculosis patients are also HIV-positive (Sharma et al., 2005; Sonnenberg et al., 2005). In Swaziland, for example, 80% of tuberculosis patients tested HIV-positive in the 2006 sentinel survey, and tuberculosis continues to be the most likely cause of death for HIV-positive persons (Ministry of Health and Social Welfare [Swaziland], 2006). HIV is an important factor in tuberculosis in other parts of Africa, for example, in Ethiopia, an estimated one third (34%) of the 141,000 tuberculosis cases in 2005 were in persons who were also infected with HIV (Federal Ministry of Health Ethiopia, 2006).

Despite this heavy burden of HIV among tuberculosis patients, in 2005, only 7% of tuberculosis patients were tested for HIV globally, and only 14% of the estimated total of tuberculosis cases among people living with HIV were detected (WHO, 2007). Yet, when tuberculosis patients are tested for HIV, a significant proportion of those found to be HIV-infected do receive treatment. Thus, in 2005, 91% of HIV-positive tuberculosis patients accessed co-trimoxazole and 38% accessed antiretroviral therapy (WHO, 2007). Lack of access to HIV counselling and testing for tuberculosis patients therefore stands in the way of increasing access to HIV treatment and care. However, the introduction of provider-initiated HIV counselling and testing has led to substantial increases in the numbers of tuberculosis patients tested for HIV and the numbers of HIV-positive tuberculosis patients starting on CPT and antiretroviral therapy (see Figure 6.4).

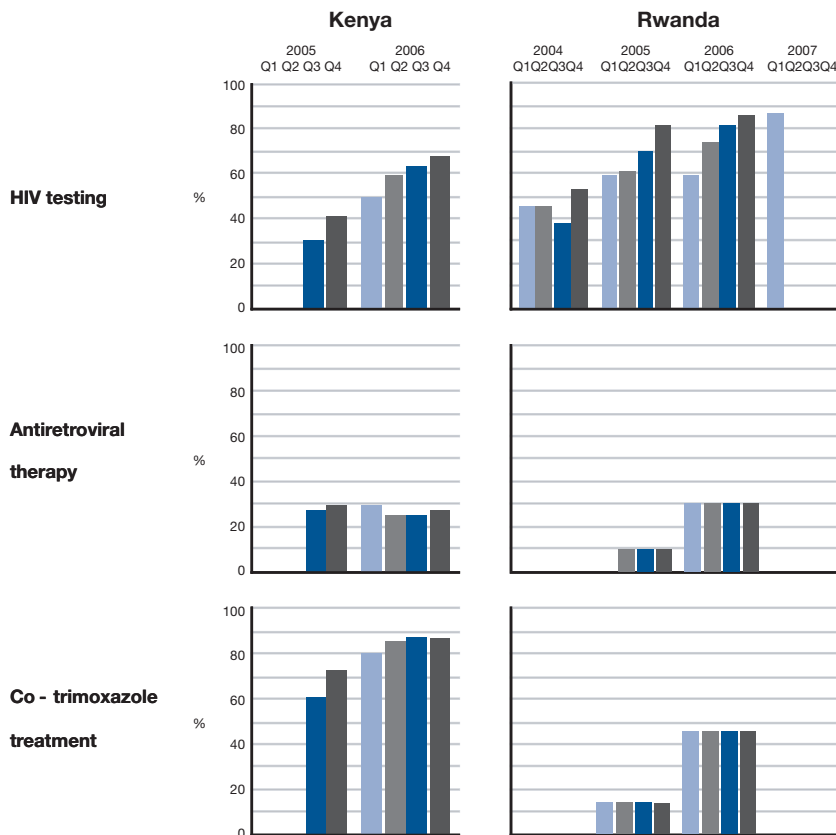
Globally less than 0.5% of people living with HIV were screened for tuberculosis in 2005. But in the increasing number of countries who reported screening for tuberculosis symptoms among people living with HIV in 2005, overall about 12% of people living with HIV screened were found to have active tuberculosis disease (WHO, 2007).

HIV is increasing tuberculosis incidence in many parts of the world, placing additional stress on already under-resourced tuberculosis control programmes and contributing to the development and spread of drug-resistant tuberculosis. Drug-resistant tuberculosis, and especially extensively drug-resistant tuberculosis (with resistance to both first- and second-line anti-tuberculosis drugs) can spread rapidly in communities of people living with HIV and results in very high mortality—as seen in South Africa, for example (Gandhi et al., 2006). There, tuberculosis case reports collected by the Department of Health show that the tuberculosis incidence rate increased from 169 per 100,000 people in 1998 to 645 per 100,000 people in 2005 (Government of South Africa, 2007).

Tuberculosis remains a major cause of illness and death in people living with HIV. Efforts to scale up collaborative tuberculosis and HIV activities are currently inadequate and many opportunities to provide life-saving prevention and treatment for both diseases are being missed. Moreover, data collection is often poor. Much stronger coordination of tuberculosis and HIV programmes is needed in order to achieve universal access to tuberculosis and HIV prevention, treatment, care and support.

Figure 6.4

Progress of HIV testing therapy and cotrimoxazole treatment of TB patients in Kenya and Rwanda 2004-2007



Sources: National Tuberculosis Programme Kenya; and National Tuberculosis Programme Rwanda

Note: Cotrimoxazole is a prophylactic recommended by WHO

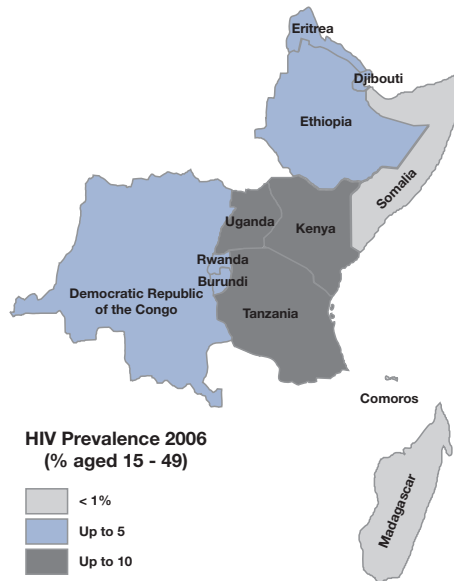
East Africa

In most of the countries in East Africa, adult HIV prevalence is either stable or declining slightly. The latter trend is most evident in Kenya, which is experiencing a slow but steady decline in HIV prevalence amid evidence of changing behaviour. Besides behaviour change, mortality of people infected several years ago is another contributing factor to the declines in HIV prevalence.

Uganda was the first country in sub-Saharan Africa to register a drop in adult national HIV prevalence. Its epidemic, however, remains serious. An estimated 6.7% [5.7%-7.6%] of adults (15-49 years) were living with HIV in 2005 – approximately one million people [850 000-1.2 million] (UNAIDS, 2006).

Infection levels are highest among women (7.5% compared to 5.0% among men) and urban residents (10% compared to 5.7% among rural residents). Prevalence among children younger than five years of age was 0.7% (Ministry of Health [Uganda] & ORC Macro, 2006).

Figure 6.5
Estimated adult (ages 15–49) HIV prevalence (%)



Data source: UNAIDS/WHO 2006

Starting in 1992, significant decreases in HIV prevalence were observed in Uganda, alongside evidence of substantial behaviour change that inhibited the spread of HIV (Asamoah-Odei, Garcia-Calleja & Boerma, 2004). However, that trend appears to have stabilized in the early 2000s, and there are now concerns that the HIV epidemic could be growing again. While the decline in HIV prevalence observed among pregnant women attending antenatal clinics in Kampala and some other urban areas appears to have persisted through 2005, other urban and most rural surveillance sites indicate an overall levelling of prevalence during the current decade (Kirungi et al., 2006; Shafer et al., 2006). Similarly, in a cohort study in a rural area in southern Uganda, there is evidence that HIV prevalence and incidence rates have levelled since about 2000 in both men and women (Shafer et al., 2006). It is important to note that with a population growing as rapidly as in Uganda (which had a total fertility rate of 6.7, according to the 2006 Demographic and Health Survey), a stable HIV incidence rate means that an increasing number of people acquire HIV each year.

The stable HIV trends are occurring alongside an apparent increase in behaviour that favours HIV transmission. In national population-based surveys conducted in 1995, 2000, 2004-5, and 2006, higher-risk sex² was reported by 12%, 14%, 15% and 16% of adult women respectively, and by 29%, 28%, 37% and 36% of adult men respectively (Kirungi et al 2006; Ministry of Health [Uganda] & ORC Macro, 2006; Uganda Bureau of Statistics & Macro International Inc. 2007). In the same surveys, condom use during sex with these partners was reported by 20%, 39%, 47% and 35% of women, respectively, and by 35%, 59%, 53% and 57% of men, respectively, indicating a lack of progress in promoting safer sex in recent years. The 2004-2005 AIDS Indicator Survey also highlighted the importance of the potential for transmission within couples. Of almost 4,000 couples tested for HIV, 3% were concordant HIV-positive, while 5% were discordant. There is an urgent need to revive and adapt the kind of prevention efforts that helped bring Uganda's HIV epidemic under control in the 1990s.

Kenya's AIDS epidemic is of the same scale as Uganda's. The estimated 5.1% of adults (15-49 years) living with HIV in 2006 is equal to approximately nearly 1 million people— a large epidemic, despite evidence of a slow but steady decline in HIV prevalence (National AIDS Control Council [Kenya], 2007). Adult HIV prevalence is almost twice as high among women (8.7%) than among men (4.6%), according to a national population-based HIV survey (Central Bureau of Statistics, Ministry of Health [Kenya] & ORC Macro, 2004).

Nationally, HIV infection levels decreased from a high of around 14% in the mid-1990s to 5% in 2006 (Ministry of Health [Kenya], 2005; National AIDS Control Council [Kenya], 2007). The downward trend was especially profound in the urban sites of Busia, Meru, Nakuru and Thika, where median prevalence declined from 28% in 1999 to 9% in 2003 among 15–49 year-old women attending antenatal clinics, and from 29% in 1998 to 9% in 2002 among those aged 15–24 years (Hallett et al., 2006).

There is evidence of changing behaviour in Kenya which could be associated with these declines in HIV prevalence. In population-based surveys, the proportions of unmarried young people (15-24 years) who said they were sexually active changed from 56% to 41% for males and from 32% to 21% for females between 1998 and 2003. In addition, the percentage of adults (15-49 years) with multiple partners decreased by almost half in the same period. Persons with more than one partner were also more likely to have used condoms the last time they had 'higher-risk' sex in 2003, compared with 1998 (Central Bureau of Statistics, Ministry of Health [Kenya] & ORC Macro, 2004; National Council for Population and Development et al., 1999).

2 Defined as sex with a person who neither was a spouse nor lived with the respondent.

Box 6.2

Hidden epidemics among men who have sex with men

The role of sex between men in sub-Saharan Africa's HIV epidemics is poorly understood. However, a number of recent studies indicate that sex between men could be an important factor in several of the epidemics in this region, despite the widely-held assumption that sex between men is 'alien' to African societies.

One study has estimated that more than 700 men were selling sex to other men in Mombassa, Kenya, for example (Geibel et al., 2007), which implies a reasonably large population of male clients willing to pay for sex with men (van Griensven, 2007). Several other studies have been able to easily locate and enrol men who have sex with men as participants. In one ongoing study among men who have sex with men in the town of Kilifi, located on Kenya's coastline between Mombassa and Malindi, it was found that more than 38% of the 60 men in the study group were HIV-positive at baseline (Sanders et al., 2006). Lower levels of HIV infection have been found among men who have sex with men in other parts of Kenya (11% among men at voluntary and counselling sites), in Dakar, Senegal (22%) and in Khartoum, Sudan (9%) (Angala et al., 2005; Wade et al., 2005; Elrasheid, 2006). In all those studies, prevalence among men who have sex with men was higher than in the general population.

As in other regions of the world, it appears that the majority of African men who have sex with men also have sex with women – two thirds or higher, according to some studies (Onyanga-Ouma et al., 2005; Angala et al., 2006; Wade et al., 2005). Once HIV is introduced into networks of men who have sex with men, the virus is therefore also likely to be transmitted to the men's wives and girlfriends (given the typically low rates of condom use between regular partners), and subsequently to their newborn babies (van Griensven, 2007).

There is a clear need for further research on this aspect of the HIV epidemics in sub-Saharan Africa, and for prevention efforts that focus on averting HIV transmission among men who have sex with men and their female partners. In Dakar, for example, men who have sex with men have reported experiencing widespread stigma and violence (Niang et al., 2003), while in a study in Nairobi, one in four men who have sex with men said they had been aggressed or humiliated in public in the previous 12 months. Other research has shown that men who had been subjected to physical and other violence were less likely to use condoms during anal sex (Onyanga-Ouma et al., 2005).

Commercial sex still features prominently in Kenya's epidemic, and research suggests that prevention projects that result in increased condom use during paid sex could significantly reduce the number of new HIV infections in the country. For example, an estimated 8,000 female sex workers operate along the trans-Africa highway that links Mombassa and Kampala (in neighbouring Uganda). According to a recent study, condoms are used in about 77% of paid sex liaisons along this route, where prevalence among sex workers is estimated at around 50% and the annual number of sexual acts per female sex worker is estimated at 634 (with 129 different partners per year). Calculations indicate that, if condom use is increased to 90%, about 2,000-2,500 new HIV infections could be prevented

annually on that section of the highway (with a decline in HIV incidence from 1.3% to 0.4%) (Morris & Ferguson, 2006).

Meanwhile, other research has also highlighted the need to promote safer sex between sex workers and their regular partners. A study in Nyanza province has found that most sex workers have one or two regular partners, many of who are married to someone else. Although condom use with clients was relatively high (about 75%), it was infrequent with regular partners (less than 40%) – despite the fact that many of the latter were high-risk partners who also frequently had unprotected sex with other ‘regular’ sex worker partners, as well as with ‘casual’ or new sex workers, girlfriends or wives. Three quarters (75%) of the men were married (Voeten et al., 2007). Earlier studies in Benin and Ghana in 2000 and 2004 have also shown that regular partners of sex workers could pose a higher risk of HIV infection than clients (Lowndes et al., 2000; Cote et al., 2004). In one Ghana study, for example, HIV prevalence was 32% among boyfriends, compared with 13% among clients (Cote et al., 2004).

HIV prevention programmes for sex workers therefore should promote condom use in both regular and commercial sex partnerships (Voeten et al., 2007). Additionally, prevention programs should also encourage sex workers and their clients to use condoms during anal sex. A high proportion of surveyed sex workers in Meru reported having anal sex (41%) and more than one quarter (27%) of those women said they never used condoms when doing so (Schwandt et al., 2006). The risk of HIV transmission during unprotected anal sex is estimated to be at least 10 times higher than during vaginal sex (Royce et al., 1997).

HIV infection levels have declined also in the United Republic of Tanzania, where an estimated 6.5% [5.8%-7.2%] of adults (15 to 49 years) were living with HIV in 2005, down from just over 8% a decade earlier (UNAIDS, 2006; Somi et al, 2006). There is substantial regional variation in HIV prevalence – between Zanzibar and the mainland, and on the mainland itself. The most recent information shows HIV prevalence among antenatal clinic attendees in Zanzibar ranging from 0.7% in Unguja to 1.4% in Pemba (Salum et al., 2003), while in mainland Tanzania it was 8.7% among women using antenatal services in 2003-2004 (Swai et al., 2006).

On the mainland, a national population-based HIV survey in 2003-2004 found adult HIV prevalence to be almost twice the national average (of 7%) in Mbeya and Iringa (where it exceeded 13%), high in Dar Es Salaam (11%), and lowest in Kigoma and Manyara (2%) (Tanzania Commission for AIDS, National Bureau of Statistics & ORC Macro, 2005). However, a study during the same period in the remote rural Manyara and Singida regions (with relatively low HIV prevalence – under 2%) found patterns of sexual risk behaviour that could cause the HIV epidemic to escalate. Almost half the men surveyed had multiple partners

and almost 80% of men and women had never used a condom. Effective prevention measures will be needed to prevent wider spread of the virus in those areas (Yahya-Malima et al., 2007).

Recent national population-based surveys also suggest that behaviours that can protect against sexual transmission of HIV are waning in some sections of society. The percentage of married men and women who reported having had a 'casual' partner in the previous 12 months, for example, rose from 19% to 22% and from 5% to 9%, respectively, between 1996 and 2004-2005 (National Bureau of Statistics & ORC Macro, 2005; Bureau of Statistics & Macro International, 1997). Among young people (aged 15-24 years) surveyed in 2004-2005, 34% of young women and 83% of young men said they had engaged in higher-risk sex in the previous 12 months, on par with the 81% of young men and 37% of young women who reported similar behaviour in a 2003-2004 national survey. But in the 2004-2005 survey, fewer than half (46%) of the young men reported using a condom the last time they had higher-risk sex, as did only one third (32%) of the young women (down from 42% in the 2003-2004 survey). A similar reduction in condom use during higher-risk sex was evident among adult women (15-49 years) generally – from 38% to 28% over the same period. Among young and adult men, however, condom use levels during higher-risk sex remained steady in the two surveys. Age mixing, though, appears to be on the decrease. Only 6% of women in their late teens (15-19 years) reported in the 2004-2005 survey that they had had non-marital sex with someone 10 years or older during the previous year, compared with 9% in the 2003-2004 survey (National Bureau of Statistics & ORC Macro, 2005; Tanzania Commission for AIDS, National Bureau of Statistics & ORC Macro (2005).

Box 6.3

Injecting drug use: a growing factor in several sub-Saharan African HIV epidemics

Although a relatively new phenomenon in sub-Saharan Africa, injecting drug use is an increasingly important factor in several of the HIV epidemics in this region, including those in Kenya, Mauritius, South Africa and the United Republic of Tanzania. Available research shows that high-risk behaviour such as the sharing of injecting equipment and unprotected sex is commonplace within injecting drug user populations, and that HIV prevalence is high. In various studies, up to half of the injecting drug users tested in Mombassa and Nairobi (Kenya) were found to be HIV-positive, as were 26% in Zanzibar and 28% in South Africa (Ndetei, 2004; Odek-Ogunde, 2004).

The situation is most dramatic in Mauritius where, uniquely in sub-Saharan Africa, the HIV epidemic is driven primarily by injecting drug use. Unusually, HIV transmission initially occurred mainly through unprotected sex but transmission patterns have shifted dramatically since 2000 and most of the new reported HIV infections are now attributable to injecting drug use (Sulliman & Ameerberg, 2004).

In Mauritius, up to 80% of injecting drug users surveyed in a 2004 Rapid Situation Assessment had shared injecting equipment in the previous three months. In the same study, three quarters (75%) of sex workers reported having injecting drugs and only one quarter (23%) of them said they never shared injecting equipment. Of the injecting sex workers who had previously been tested for HIV, 13% were infected with the virus. Yet, two thirds (68%) of the sex workers said they had not consistently used condoms during the previous three months. One quarter (22%) of them said they never used condoms with clients, and three quarters (77%) said they did not use condoms with regular partners (Sulliman et al., 2004b).

In Kenya, about 80% of injecting drug users interviewed in Malindi, Mombassa and Nairobi said that they had used needles after someone else had used them. Amid such risk-taking, it was not surprising that, when tested, 50% of the injectors in Mombassa were found to be infected with HIV (Ndetei, 2004). In another study in Nairobi in, 53% of injecting drug users were found to be HIV-positive, two thirds (67%) of whom said they were sexually-active (Odek-Ogune, 2004).

In some urban areas on the Tanzanian mainland, injecting drug use has also emerged as a potentially important factor in the HIV epidemic (McCurdy et al., 2005). In Dar es Salaam, for example, 27% of 319 male and 58% of 98 female heroin injectors participating in a 2005-2006 study were found to be HIV-positive. There, too, the high HIV infection levels reflect a combination of unsafe injecting practices and risky sexual behaviour. All the injecting drug users claimed to be sexually active, with 85% of the female injectors saying that they traded sex for money. Two thirds (68%) of those women said they used condoms consistently during paid sex, but condom use seemed highly infrequent with regular partners, given that almost two thirds (62%) of the male and female injectors who had had sex in the previous week had not used condoms (Timpson et al., 2006).

Injecting drug use is an important risk factor also in Zanzibar's smaller HIV epidemic. HIV prevalence of 26% has been found among drug injectors on the islands of Unguja and Pemba in 2005, with almost half (46%) of the injectors, most of whom were males, saying that they shared injecting drug equipment. Seventeen percent of the injectors were also infected with syphilis, which indicates that unsafe sex is common, hence increasing the risk of HIV transmission into the general population. Almost all (86%) the female injectors and 8% of male injectors said they had exchanged sex for drugs (Dahoma et al., 2006).

Drug injecting is a growing phenomenon also in South Africa (Plüddemann et al., 2005), where heroin injecting has increased in recent years in the Gauteng and Mpumalanga provinces, while the trend appears to be fluctuating in the port city of Cape Town. In one attempt to measure the level of HIV among arrested injecting drug users in three cities (Durban, Pretoria and Cape Town), prevalence of 20% was found (Parry et al., 2006a), roughly similar to infection levels in the general population.

Adult national HIV prevalence in Burundi declined markedly from nearly 6% in the late 1990s to an estimated 3.3% [2.7-3.8%] in 2005 (UNAIDS, 2006). However, recent HIV surveillance among women seeking antenatal care suggests that the declining trend did not continue beyond 2005, when HIV infection levels started to increase again (sometimes substantially) at most surveillance sites. The highest prevalence was found in the capital, Bujumbura, where 18% (up from 13% in 2004) of adult and 16% (from 9% in 2004) of young (15-24 years) pregnant women tested HIV-positive in 2005, while in Butezi and Ijenda, HIV prevalence of less than 2% was found among antenatal clinic attendees in 2005 (Ministère de la Santé Publique [Burundi], 2005). It is too early to know whether the recent increase in HIV prevalence is an anomaly or whether it heralds a rising trend in infection levels. In addition, the inconsistent trends in recent infection levels among young pregnant women at various sites across the country make it difficult to understand recent trends in new HIV infections. It seems likely that the apparent decline in national HIV prevalence could be due mainly to the substantial drop in HIV prevalence observed up to 2004 in Bujumbura.

Adult national HIV prevalence in Rwanda was estimated to be 3.1% [2.7%-3.8%] in 2005 (UNAIDS, 2006). The 2005 antenatal clinic survey showed that 4.1% of pregnant women were HIV-infected, with prevalence highest in Kigali (13%), but on average about 5% in other urban areas and a little over 2% in rural areas. Substantial declines in HIV prevalence were observed in Rwamagana (from 13% to 4% between 1998 and 2005) and in Gikondo in the city of Kigali (14% to 8%) (Ministère de la santé [Rwanda], 2005). But, as in neighbouring Burundi, the declines in HIV prevalence among pregnant women in urban areas of Rwanda were strongest in the late 1990s and infection levels appeared to stabilize subsequently (Kayirangwa et al., 2006). In Kigali, for example, HIV prevalence in women attending antenatal clinics remained steady at 13% in three successive antenatal surveys between 2002 and 2005 (Ministère de la Santé [Rwanda], 2005). In rural areas, HIV prevalence has remained stable, but at much lower levels (Kayirangwa et al., 2006). Indeed, infection levels in pregnant women range from a low of 0.2% (at one rural clinic) to as high as 18% (at a clinic in Kigali).

Although still infrequent, condom use among young people appears to be increasing. The 3% of young women who, when surveyed in 2000, said they consistently used condoms, rose to 15% in a similar 2006 survey. Among their male counterparts, consistent condom use increased from 14% to 21% over the same period. In addition, fewer sexually-active young women reported having had two or more sexual partners in the previous 12 months (32% in 2000 versus 22% in 2006), although the corresponding proportions increased slightly for young men (41% versus 44%) (Centre de traitement et de recherché sur le SIDA, 2007).

HIV data collected in the 2005 national population-based survey showed HIV prevalence to be more than three times higher in urban than in rural areas (7.3%

versus 2.2%), with infection levels peaking in and around the capital Kigali (Institut National de la Statistique du Rwanda & ORC Macro, 2006). The same patterns were evident among young people (15-24 years), although HIV prevalence was relatively low in this age group, at about 1% nationally (Institut National de la Statistique du Rwanda & ORC Macro, 2006).

Among the recent improvements in Rwanda's HIV response is the expansion of services for preventing HIV transmission from mothers to children, which are now available in more than half of the country's health facilities. Compared with 2005, 1.5 times more women (636 000) agreed to be tested for HIV in 2006 (Ministry of Health [Rwanda], 2007). In addition, more male partners are attending prevention of mother-to-child transmission services with their wives and girlfriends. According to one study, the percentage of men doing so increased from 9% in 2003 to 74% at the end of 2006 (Ngendahimana et al., 2007). On the other hand, despite huge increases in the numbers of condoms distributed (Ministry of Health [Rwanda], 2006), consistent condom use by young people (Kayitesi et al., 2007) and during paid sex (Kabeja et al., 2007) remains low.

Until recently, understanding of the HIV epidemic in Ethiopia has been limited by the reliance on HIV information collected at antenatal clinics, which are used by a minority of pregnant women (about one in four pregnant women receive care at antenatal clinics) (Central Statistical Agency & ORC Macro, 2006). Recent, additional information derived from a national population-based and other HIV surveys has enabled a more complete picture to be drawn. The 2005 Demographic and Health Survey estimated national adult HIV prevalence to be 1.4%, with infection levels highest in the Gambela (6%) and Addis Ababa (4.7%) regions (Central Statistical Agency & ORC Macro, 2006). Both antenatal clinic data and population-based survey data indicate that HIV prevalence is at least five times higher in urban than in rural areas (Federal Ministry of Health [Ethiopia]; Central Statistical Agency & ORC Macro, 2006). Indeed, the epidemic shows great variation, with infection levels observed among pregnant women at some surveillance sites in 2003 up to 40 times higher than those observed at others. HIV prevalence ranged from 0.5% in rural Aira to 20% in urban Bahir Dar (Hladik et al., 2006).

Overall, the country's epidemic appears to be stable, with roughly equal numbers of Ethiopians newly acquiring HIV (an estimated 350 per day in 2005) and dying of AIDS (370 per day in 2005), according to recent modelling. Ethiopia's epidemic stabilized in urban areas in 1996-2000, after which HIV infection levels declined slowly, notably in parts of the capital, Addis Ababa. In rural Ethiopia, where the majority of the population resides, the epidemic has remained relatively stable since HIV prevalence peaked in 1999-2001 (Federal Ministry of Health [Ethiopia], 2006).

Knowledge about HIV and AIDS, however, remains relatively poor. Only 16% of adult women and 29% of adult men (and 21% and 33% of 15-24 year-old females and males, respectively) could demonstrate comprehensive knowledge of AIDS when surveyed in 2005.³ However, it appears that small proportions of adult Ethiopians engage in higher-risk sex. In the 2005 survey, only about 3% of adult women and 7% of adult men said they had had sexual intercourse with a non-cohabiting partner in the previous year. One in four (24%) of those women and one in two (52%) of those men said they had used a condom the last time they had higher-risk sex (Central Statistical Agency & ORC Macro, 2006).

In Eritrea, approximately 2.4% of women seeking antenatal care were found to be HIV-positive when tested in 2005 – the same prevalence found among antenatal clinic attendees in 2003. HIV infection levels in 2005 were highest in urban areas (3% versus 0.9% in rural areas), and ranged from as high as 7.4% in the port city of Assab in the far south, to 4.2% in the capital, Asmara, and 3.3% in Massawa, another port city. The epidemic appears to be most serious in the Southern Red Sea Zone, where about 6% of antenatal clinic attendees tested HIV-positive in 2005 (Ministry of Health [Eritrea], 2006).

In Somalia HIV surveys among women attending antenatal clinics have found HIV prevalence as high as 2.3% in Hargeisa (WHO, 2005). HIV knowledge appears to be very poor with only 8% of young (15-24 years) women and 13% of young men knowing how to prevent the transmission of HIV when surveyed in 2004 (UNICEF, 2004).

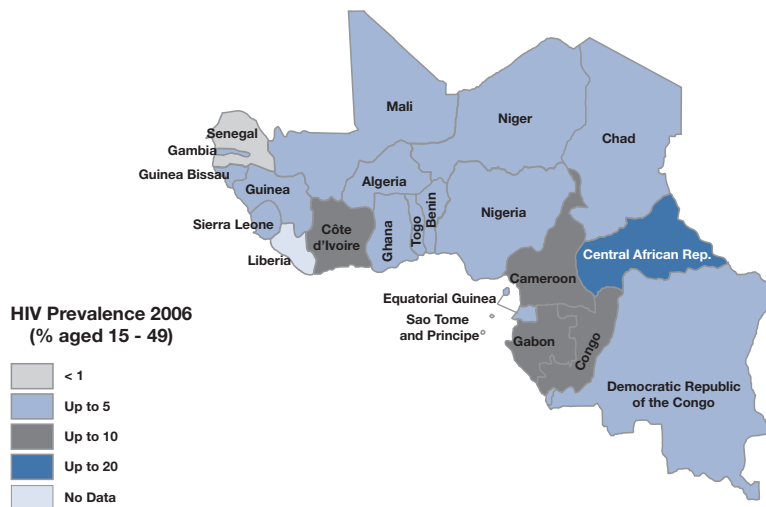
West and Central Africa

In most of the comparatively smaller epidemics in West and Central Africa, adult national HIV prevalence has remained stable overall. However, signs of declining HIV prevalence are evident in an increasing number of countries (notably Côte d'Ivoire, Mali and urban Burkina Faso). The available evidence also points to the ongoing centrality of unprotected paid sex in most of the epidemics in this region. Unfortunately, in several countries (including Cameroon, Central African Republic, Liberia and Sierra Leone), HIV surveillance is either too inadequate or too recent to allow for accurate assessments of epidemic trends at this stage. In others (including the Democratic Republic of the Congo, Gabon and Togo), improved HIV surveillance activities are enabling a more precise understanding of their respective epidemics.

³ Respondent knew that a condom at every sexual intercourse and having just one uninfected and faithful partner can reduce the risk of acquiring HIV, and knew that a healthy-looking person could be HIV-infected, and rejects the two most common local misconceptions about HIV transmission.

Figure 6.6

HIV prevalence from population-based surveys in countries in West and Central Africa, 2003–2006



Sources: various country surveys

Nigeria still has the largest epidemic in this subregion. Although the percentage of adults infected with HIV (an estimated 3.9% [2.3%–5.6%] in 2005) is smaller than many other sub-Saharan African countries (notably in East and southern Africa), the country's large population means that almost 3 million [1.7–4.2 million] Nigerians were living with HIV in 2005, second in number globally only to South Africa (UNAIDS, 2006). The national HIV prevalence among women attending antenatal clinics in Nigeria appears to be stable, but with large variations between different regions and states (Utulu & Lawoyin, 2007). State-wide HIV prevalence among pregnant women, for example, ranges from as low as 1.6% in Ekiti (in the west) to 8% in Akwa Ibom (in the south) and 10% in Benue in the south-east (Federal Ministry of Health [Nigeria], 2006).

In neighbouring Benin, sentinel surveys among pregnant women attending antenatal clinics indicate a relatively stable national epidemic, with HIV prevalence remaining around 2% since 2003. In only one area, Borgou, did HIV prevalence decline significantly between 2003 and 2006. However, in a limited number of urban sites where data have been collected consistently since 2001, HIV prevalence declined slightly between 2001 and 2006 (from 4.1% to 3.8%) (Ministère de la Santé du Bénin, 2006). According to the 2006 Demographic and Health Survey, 1.2% of adults nationally were living with HIV; prevalence in women (1.5%) were almost twice as high as those in men (0.8%) (Institut National de la Statistique et de l'Analyse Economique & ORC Macro, 2007).

HIV prevalence in Togo, to the west of Benin, is among the highest in West Africa: 4.2% of pregnant women tested for HIV at antenatal clinics in 2006 were found to be HIV-positive, representing a slight decline in national infection levels. (In 2003, 4.8% of antenatal clinic attendees tested HIV-positive; this fell to 4.6% in 2004.) This trend, along with the steeper declines observed in the Maritime, Plateaux and Savanes regions suggests that the epidemic in Togo might have peaked around 2003. In the most recent antenatal clinic survey, the highest HIV infection levels were found in the capital, Lomé, and its surroundings, and in Sotouboua, where over 8% of pregnant women tested HIV-positive. Even in this small country, prevalence varies substantially and were under 2% in the Savanes region (Ministère de la Santé du Togo, 2007 & 2006).

Burkina Faso's epidemic continues to decline in urban areas. Approximately 2% [1.5%–2.5%] of adults were living with HIV in 2005 (UNAIDS, 2006). Among young pregnant women using antenatal services in urban areas, HIV prevalence fell by half in 2001–2003 (to a little below 2%), signalling a possible slowing of the epidemic (Présidence du Faso, 2005; Institut National de la Statistique et de la Démographie/ORC Macro, 2004). Mortality of those infected several years ago is likely to be a contributing factor to the decline. However, high prevalence is still being found in the cities of Bobo Dioulasso, Ouagadougou and Ouahigouya—where 3.8%, 5.4% and 3.6%, respectively, of adult women (aged 15–49 years) attending antenatal clinics were found to be HIV-positive in the 2005 round of sentinel surveillance (Ministère de la Santé du Burkina Faso, 2006).

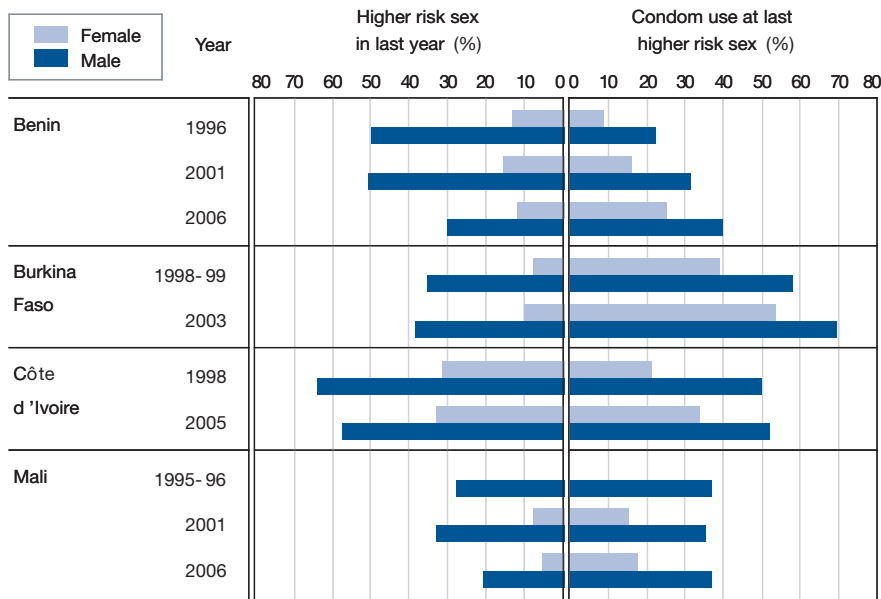
The most recent data for Mali, collected during a 2006 Demographic and Health Survey, also point to a possibly declining epidemic. Adult national HIV prevalence was an estimated 1.2%. As elsewhere in sub-Saharan Africa, women were more likely to be infected with HIV than men: HIV prevalence in adult women was 1.4%, compared with 0.9% in men (Ministère de la Santé du Mali/ORC Macro, 2007). Infection levels found in this latest survey are lower than those recorded in a similar survey in 2001, when adult national HIV prevalence was estimated at 1.7% (2% for women and 1.3% for men) (Cellule de Planification et de Statistique du Ministère de la Santé et al., 2002). Again, mortality would be a contributing factor for the decline in prevalence. Among pregnant women using public antenatal services, prevalence was 3.4% in 2005, similar to prevalence in previous years (Ministère de la Santé du Mali, 2005).

Unprotected paid sex appears to be a major contributing factor in Mali's epidemic. Among female sex workers, HIV infection levels remain high: more than one in three (35%) sex workers participating in a 2006 survey tested HIV-positive—higher than the prevalence of 29% and 32% found in 2000 and 2003 surveys, respectively. Prevalence was 50% among women who had been selling sex for more than six years, and 58% among those older than 40 years. Almost all the women (95%) said they used condoms the last time they sold sex to a client;

however, only half of them (51%) had used condoms the last time they had sex with a regular partner. Notably, 6% of travelling saleswomen were also found to be infected with HIV, as were 2.5% of the truck drivers who took part in the survey (Ministère de la Santé du Mali, 2006).

The epidemic has spread unevenly across Ghana, with prevalence among pregnant women attending antenatal clinics ranging from a low of 1.3% in the northern region to as high as 4.9% in the eastern region. Prevalence of 3.4% was found among pregnant women in Greater Accra (Ministry of Health [Ghana], 2007). Variable HIV infection trends are apparent in Ghana where, in 2006, an estimated 2.2% of adults were living with HIV (National AIDS Control Programme [Ghana], 2007). Median HIV prevalence among women attending antenatal clinics in Ghana has ranged between 2.3% and 3.6% between 2000 and 2006. The main exceptions are Adabraka and Cape Coast, where significant declines in HIV prevalence among antenatal clinic attendees occurred in 2003–2006. However, among consistently reporting sentinel sites in the country, HIV prevalence has remained around 3.4% between 2001 and 2006 (Ministry of Health [Ghana], 2007).

Figure 6.7
West Africa Behavioral Indicators, 1995–2006



Sources: (Benin) Institut National de la Statistique et de l'Analyse Économique; and, ORC Macro. DHS reports 1996, 2001 and 2006. (Burkina Faso) Institut National de la Statistique et de la Démographie; and ORC Macro. DHS Reports 1998–1999 and 2003. (Côte d'Ivoire) Institut National de la Statistique; and, ORC Macro. DHS reports 1998–1999 and 2006. (Mali) Cellule de Planification et de Statistique du Ministère de la Santé, Direction Nationale de la Statistique et de l'Informatique; and, ORC Macro. DHS reports 1995–1996, 2002 and 2007.

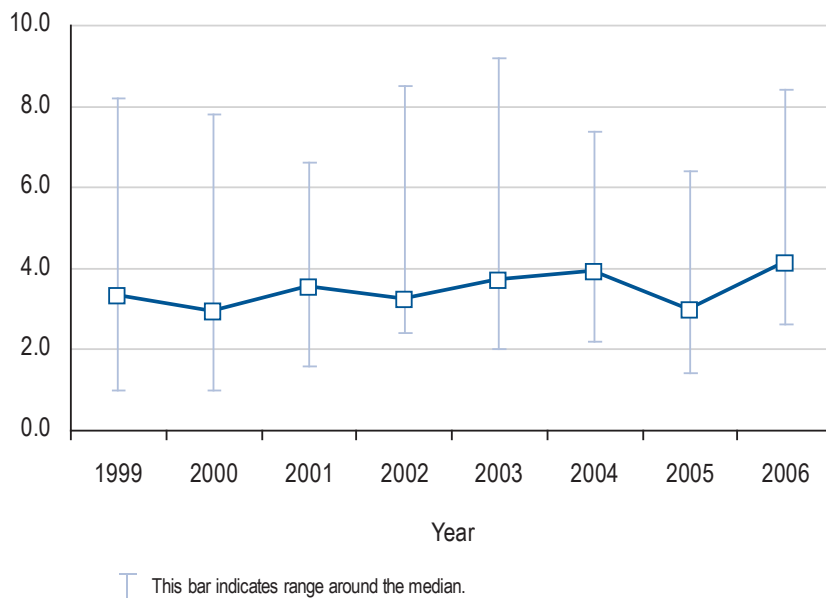
Box 6.4

Signs of a shift towards safer behaviour

Several West African countries present evidence of a shift towards behaviours that can limit the spread of HIV, as Figure 1.8 illustrates. In both Burkina Faso and Côte d'Ivoire, for example, condom use during sex with a non-regular partner increased substantially for women—from 39% to 58% between 1998/99 and 2003 in the former, and from 21% to 34% between 1998 and 2005 in the latter. Meanwhile, in both Benin and Mali, fewer men have been engaging in sex with a non-regular partner. That proportion decreased from 50% in 1996 to 30% in 2006 in Benin, and from 28% in 1995/96 to 21% in 2006 in Mali. Additionally, in Benin, those women and men who had sex with a non-regular partner were more likely to use condoms when doing so. Condom use in higher risk sex rose from 9% to 25% for women and from 22% to 40% for men between 1996 and 2006.

Figure 6.8

Median HIV prevalence among women (15–49 years) attending antenatal clinics in consistent sites in Ghana, 1999–2006



Sources: Sentinel surveillance reports, 1999–2006. (1) National AIDS/STI Control Programme
(2) Ghana Health Service

The lack of decline in prevalence could be explained by HIV infection trends among young people, mostly in urban areas. Women aged 15–24 years accounted for almost one third (30%) of all HIV infections recorded in the 2006 antenatal clinic survey, and prevalence in this age group rose from 1.9% in 2005 to 2.5% in 2006. This could reflect an increase in HIV incidence, since infections in that age

group are likely to have been acquired relatively recently. These data emphasize the need to strengthen prevention efforts that focus especially on younger Ghanaians (Ministry of Health [Ghana], 2007).

In Côte d'Ivoire, the latest Demographic and Health Survey estimated national adult HIV prevalence to be 4.7% (Institut National de la Statistique et Ministère de la Lutte contre le Sida Côte d'Ivoire & ORC Macro, 2006), which is lower than earlier estimates that were based primarily on HIV data collected at antenatal clinics in the provincial or district capitals. HIV surveillance among pregnant women suggests that prevalence is declining, at least in urban areas, where prevalence fell from 10% in 2001 to 6.9% in 2005 (Ministère de la Santé et de l'Hygiène Publique de la Côte d'Ivoire et al., 2007). As in Burkina Faso and Mali, mortality of people infected several years ago is a contributing factor to the decline in HIV prevalence

HIV prevalence is highest in Abidjan and in the south and centre-east regions of the country where between 5.5% and 6.1% of adults (15–49 years) were found to be HIV-positive. In both rural and urban areas, prevalence is more than twice as high for women (6.4%) as for men (2.9%). Among women aged 30–34 years, HIV prevalence was 15% (Institut National de la Statistique et Ministère de la Lutte contre le Sida Côte d'Ivoire & ORC Macro, 2006).

National adult HIV prevalence has remained stable in Senegal and was an estimated 0.9% [0.4%–1.5%] in 2005 (UNAIDS, 2006). However, infection levels of 2% and 2.2% among adults tested in a population-based survey have been found in the Kolda and Ziguinchor regions, respectively, in the south-west (Ndiaye & Ayad, 2006). Here, too, most HIV transmission seems still to be linked to unprotected paid sex: in Ziguinchor, for example, HIV prevalence as high as 30% has been found among female sex workers (Gomes do Espirito Santo et al., 2005).

Meanwhile, in the Gambia, divergent epidemic trends of HIV-1 and HIV-2 have been observed. A 16-year study among research clinic patients found that prevalence of HIV-1 rose from 4.2% in 1988–1991 to 18% in 2001–2003, while prevalence of HIV-2 declined from 7% to 4% over the same period. There was no apparent trend of dual infection of HIV-1 and HIV-2 in patients, with prevalence remaining around 1% during the same period (van der Loeff et al., 2006). The divergent trends may be explained by the lower sexual transmission rate of HIV-2, which is estimated to be one third that of HIV-1 (Gilbert et al., 2003). Recent national HIV data are not available, but prevalence of HIV-1 among pregnant women in the Gambia also increased from 0.7% to 1.0% between 1994 and 2000, while prevalence of HIV-2 decreased from 1.0% to 0.8% in the same period (van der Loeff et al., 2003).

Prevalence in Guinea is slightly higher than in neighbouring Senegal, with adult national HIV prevalence estimated at 1.5% [1.2%–1.8%] in 2005 (UNAIDS, 2006). Infection levels vary little across the country, and appear to have peaked at 2.1% in the capital, Conakry, according to a national population-based survey in 2005 (Direction Nationale de la Statistique & ORC Macro, 2006). However, the HIV surveillance system is weak and does not collect sufficient data from consistent sites to enable confident assessments of recent trend trends in the epidemic.

In Liberia, preliminary results from the 2007 Demographic and Health survey show adult (15–49 years old) national HIV prevalence of 1.5%, with infection levels varying from 2.5% in urban areas to 0.8% in rural areas. Adult prevalence was highest in the Monrovia region, at 2.6% (Liberia Institute of Statistics and Geo-Information Services & Macro International, 2007). Sentinel surveillance among antenatal clinic attendees in urban areas showed an average HIV prevalence of 5.7% in 2006. The high infection levels of 5.7% among young (15–24 years) pregnant women suggests that the epidemic in urban Liberia might still be on the rise (Ministry of Health and Social Welfare [Liberia], 2007). However, formal HIV surveillance began only recently and does not yet allow for an assessment of recent trends in the Liberian epidemic. Unfortunately current behaviour patterns seem to favour an ongoing epidemic. One in three (33%) sexually active women and one in two (52%) sexually active men who had sex with a non-regular partner in the previous year, and yet only one in seven (14%) of those women and one in four (25%) of the men said they used a condom during those encounters (Liberia Institute of Statistics and Geo-Information Services & Macro International, 2007).

More information is becoming available on the HIV epidemic in Sierra Leone, where the country's second national sentinel survey showed HIV prevalence of 4.1% among pregnant women attending (mostly urban) antenatal clinics in 2006. The epidemic is geographically varied, with infection levels under 2% in Kenema and Mattru Jong but exceeding 8% in Makeni and Pujehun. Compared to the HIV prevalence of 3% among pregnant women in a similar survey in 2003, the latest data suggest that the epidemic in Sierra Leone might be growing (Ministry of Health and Sanitation [Sierra Leone], 2007). A 2005 population-based survey found national adult prevalence of 1.5% (National AIDS Secretariat & Nimba Research Consultancy, 2005).

In Chad, a national HIV survey found that 3.3% of adults were living with HIV in 2005. The epidemic appears to be concentrated largely in urban areas, where average HIV prevalence was 7%, more than three times higher than in rural areas. HIV prevalence was highest in the capital, N'Djamena, where 8.3% of survey participants tested HIV-positive, and in Logone Occidental, where prevalence was 6.4%. The epidemic is being affected by changing levels of high-risk behaviour, conflict situations and substantial migration within and across country borders

(Institut National de la Statistique, des Etudes Economiques et Démographiques et Programme National de Lutte Contre le Sida, 2006). HIV prevalence is considerably lower in neighbouring Niger, where a 2006 Demographic and Health Survey estimated that 0.7% of adults were infected with HIV. Prevalence was highest in the Agadez and Diffa regions, at 1.6% and 1.7%, respectively (Institut National de la Statistique & Macro International Inc., 2007).

Cameroon has one of the largest HIV epidemics in this subregion, with almost half a million [460 000–560 000] adults living with HIV in 2005. Adult national prevalence was estimated at 5.4% [4.9%–5.9%] in 2005 (UNAIDS, 2006). A national population-based survey in 2004 showed large variation in prevalence, from 1.7% in the North and 2.0% in the Extreme North, to substantially higher levels of infection in the capital Yaoundé (8.3%) and the south-west (8%), east (8.6%) and north-west (8.7%) provinces (Institut National de la Statistique & ORC Macro, 2005).

Women, especially those in urban areas, have higher HIV prevalence. More than 8% of urban women (15–49 years) tested HIV-positive in the 2004 Demographic and Health Survey, almost twice the level of infection found among adult men in urban areas. Overall, for every 100 men infected with HIV, 170 women are infected. Among young women, a sevenfold increase in HIV prevalence occurs between ages 15–17 and 23–24 years—from 1.6% to 11.8% (Institut National de la Statistique & ORC Macro, 2005). Data from surveillance among pregnant women are lacking for recent years, making it difficult to assess trends in the epidemic.

In the Democratic Republic of the Congo it is estimated that as many as one million [560 000–1.5 million] people were living with HIV in 2005. Estimated adult national HIV prevalence was 3.2% [1.8%–4.9%] in the same year (UNAIDS, 2006). Armed conflict and poor transport infrastructure mean that parts of this large country have remained relatively isolated; partly as a consequence, there is variation in the trends in HIV infections between different places. Thus, while HIV prevalence among antenatal clinic attendees has remained relatively stable in the capital, Kinshasa (fluctuating between 3.8% and 4.2% between 1995 and 2005), prevalence has risen in the country's second-largest city, Lubumbashi (from 4.7% to 6.6% between 1997 and 2005), as well as in Mikalayi (from 0.6% to 2.2% between 1999 and 2005) (Kayembe et al., 2007). Prevalence is also high in the cities of Matadi, Kisangani and Mbandaka (where 6% of women using antenatal services were HIV-positive in 2005), as well as in Tshikapa (where prevalence was 8%) (Programme National de Lutte contre le SIDA, 2005).

Unprotected paid sex is an important factor in the Democratic Republic of the Congo's epidemic. About 12% of sex workers surveyed in five cities in 2005 were found to be HIV-positive, although infection levels varied substantially—from

1.4% in Kikwit to as high as 16% in Goma and 18% in Kananga (Ministère de la Santé, 2006). An earlier study in Kinshasa in 2003 found HIV prevalence of 14% among sex workers (Mpanya et al., 2004).

Adult national HIV prevalence in neighbouring Central African Republic is among the highest in all of West and Central Africa, and was estimated at 6.2% in a 2006 national population-based survey. Nationally, prevalence among women were almost twice as high as among men (7.8% versus 4.3%), and there is considerable regional variation in HIV prevalence rates. HIV prevalence was as high as 11% in Bamingui-Bangoran (in the north) and 14% in Haut-Mbomou (in the east of the country), while it was about 3% or lower in Basse-Kotto (in the south), Nana-Mambéré and Ouham-Pendé (both in the west) (Ministère de l'Economie, du Plan et de la Coopération internationale de la République centrafricaine, 2007).

Northern Africa

The HIV and AIDS epidemic in the countries of North Africa is distinctly different from sub-Saharan Africa and more similar to the Middle East. There is low prevalence of HIV but the potential exists for increased transmission in the immediate future. Sudan is an exception with an epidemic closer to the sub-Saharan pattern.

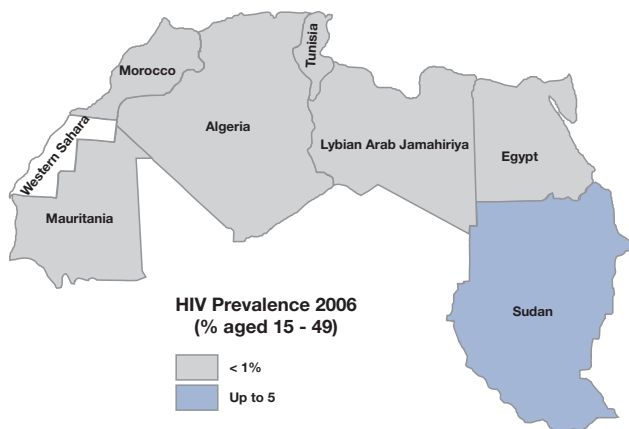
There have been recent improvements in epidemiological surveillance in some North African countries (including Morocco and Sudan). However, as a whole, surveillance in these areas remains limited, and HIV-related information on populations at higher risk of exposure to HIV is uneven. In particular, there is a lack of information in many countries on behavioural patterns and trends among most-at-risk population groups, such as injecting drug users, sex workers and men who have sex with men. In such instances it is difficult to obtain precise statistics or determine the levels and trends of HIV transmission (Obermeyer, 2006). Nevertheless, the HIV information available indicates that throughout the broader Middle East and North Africa region, an estimated 35,000 [16,000–65,000] people acquired HIV in 2007, bringing to 380,000 [270,000–500,000] the total number of people living with HIV in the region. As a result of AIDS-related illnesses, 25,000 [20,000–34,000] people died in 2007.

Although overall numbers of reported HIV cases remain small (except in Sudan—which is in most respects more akin to a sub-Saharan country), they have been increasing in several countries, partly due to expanded HIV testing efforts. Algeria, where reported HIV and AIDS cases doubled between 2001 and 2006, is one

such example (Ministry of Health Algeria, 2007). Across the region, most HIV infections are occurring in men and in urban areas—except in Sudan, where a more extensive epidemic is under way. In some countries, the proportion of HIV-positive women is growing as HIV spreads from (mostly male) injecting drug users and the clients of sex workers to their wives and girlfriends. In Morocco, for example, one third (33%) of women diagnosed with AIDS were married (Ministère de la Santé Maroc, 2007).

Figure 6.9
Low-level epidemics in northern Africa

Estimated adult (ages 15–49) HIV prevalence (%)



Data source: UNAIDS/WHO 2006

With national adult HIV prevalence estimated at 1.6% [0.8%–2.7%] in 2005 (UNAIDS, 2006), Sudan continues to have the largest epidemic in this region. Unsafe heterosexual intercourse is the most important factor in this epidemic. Among pregnant women using antenatal services, HIV prevalence of 2.2% has been found in White Nile State (Ministry of Health Sudan, 2006), and in Khartoum, the capital, it ranged from 0.3% to 0.5% (Ministry of Health Sudan, 2006). In a conflict-affected part of southern Sudan, recorded HIV prevalence among women attending antenatal clinics varied along the Ugandan border, from 0.8% in Rumbek town to 3% in Yei town (Kaiser, Kedamo & Lane, 2006). In other studies, more than 9% of men who have sex with men were found to be HIV-positive in Khartoum State (Elrashied, 2006).

The end of Sudan's north-south war in 2005 brought peace to southern Sudan for the first time in more than twenty years, which entailed an opening-up of areas formerly cut off by conflict and plans for an ambitious programme for the return of refugees and internally-displaced persons. Many southern Sudanese refugees have been living in east Africa including Ethiopia, Kenya and Uganda,

which have a higher HIV prevalence than Sudan. Population mobility, return and reintegration of refugees, and the demobilisation of former soldiers and guerrillas, could all facilitate the spread of HIV through the southern Sudanese population. In northern Sudan, the epidemic has been sustained at a low level, despite conflict, distress migration and urbanization. Data for HIV in many parts of northern Sudan including areas emerging from conflict (such as south Kordofan and Blue Nile) and suffering conflict (Darfur) are extremely scarce and there is concern that hidden epidemics may emerge under closer examination.

Unprotected paid sex appears to be an important factor in the HIV epidemics throughout the Middle East and North Africa. HIV prevalence well above the estimated adult national HIV prevalence have been found among female sex workers in Algeria (9% in Tamanrasset in 2004), and Morocco (2%–3% since 2001) (Fares et al., 2004; Ministère de la Santé Maroc, 2007).

As in many other regions, sex between men is officially forbidden, socially stigmatized, and under-researched. Nevertheless, the limited information available suggests that unprotected sex between men is a key factor in at least some of the epidemics in this region. For example, a recent study in Egypt found that 6% of men who have sex with men were HIV-positive (Ministry of Health Egypt et al., 2006), as were 9% of their counterparts in a Sudanese study (Elrashied, 2006). Almost half (42%) of the Egyptian men and more than half (56%) of the Sudanese men in those studies said that they had engaged in commercial sex. Yet condom use during paid sex was infrequent: about one in ten (9%) men in the Egyptian study and fewer than half of those in the Sudanese study said that they had used a condom the last time they bought sex (Ministry of Health Egypt et al., 2006; Elrashied, 2006). Alert to the implications of such risky behaviour, a number of other countries (including Algeria, Morocco and Tunisia) are now providing outreach services to prevent HIV transmission among men who have sex with men.

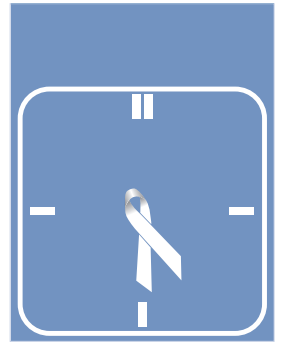
Elsewhere, exposure to contaminated drug injecting equipment is the main documented route of HIV transmission in the Libyan Arab Jamahiriya. Contaminated equipment is probably also the primary route of transmission in Tunisia, where more than 80% of the 186 HIV-positive patients who enrolled in a study at a Tunis hospital were injecting drug users (Kilani et al., 2003).

Exposure to non-sterile drug injecting equipment is common in several countries. Surveys suggest that 40%–50% of injecting drug users in Algeria (Mimouni and Remaoun, 2006) have used non-sterile equipment. In Morocco, almost three quarters (73%) of surveyed injecting drug users said that they had used non-sterile injecting equipment (Ministère de la Santé Maroc, 2007).

Unsafe sex and injecting drug use, which may overlap substantially, appear to be significant factors in HIV transmission in several countries. In various surveys, more than 40% of injecting drug users in Algeria and 36% in Egypt said that they had either bought or sold sex in the previous month (Ministère de l'Enseignement Supérieure et de la Recherche Algeria, UNAIDS & UNODC, 2006; Elshimi, Warner-Smith & Aon, 2004; Khoury & Aaraj, 2005). In most cases, condom use was infrequent. For example, only 14% of injecting drug users in Egypt and 6% of those in the Libyan Arab Jamahiriya said that they had used a condom in the previous 12 months. Similarly, in Morocco, 50% of surveyed male and 70% of surveyed female injecting drug users said that they had multiple sexual partners, yet only one in ten of the men and one in five of the women said that they had consistently used condoms (Elshimi, Warner-Smith & Aon, 2004; UNODC, 2005b; Ministère de la Santé Maroc, 2007).

Widespread male circumcision could act as a protective factor against HIV throughout the subregion, although not to the extent of meriting complacency (Obermeyer, 2006). Although female and male average ages of marriage are increasing in several countries, sexual health education and health services for young people are limited (DeJong et al., 2005). HIV-related stigma and discrimination remains vigorous in some countries and is hindering AIDS responses. Several other factors also exacerbate women's vulnerability to HIV, including marriage patterns and age differences between spouses, and sociocultural norms that complicate women's access to sexual health and HIV information (Obermeyer, 2006).

Urgently needed throughout North Africa are improved HIV surveillance systems and prevention programmes that focus on most-at-risk populations, together with political and institutional adjustments that will enable their effective implementation. Prevention efforts should include promoting and ensuring greater access to condoms, improving the availability and quality of sexual health education and services, and supporting the implementation of harm reduction programmes that can reduce HIV transmission within and beyond drug-using networks. All this presupposes improved HIV surveillance, including sentinel surveys among most-at-risk populations, which are essential for developing effective prevention and treatment strategies.



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