

Chapter 02



OVERVIEW OF THE GLOBAL AIDS EPIDEMIC

An estimated 38.6 million [33.4 million–46.0 million] people worldwide were living with HIV in 2005. An estimated 4.1 million [3.4 million–6.2 million] became newly infected with HIV and an estimated 2.8 million [2.4 million–3.3 million] lost their lives to AIDS.

Introduction

Overall globally, the HIV incidence rate (the annual number of new HIV infections as a proportion of previously uninfected persons) is believed to have peaked in the late 1990s and to have stabilized subsequently, notwithstanding increasing incidence in a number countries. In several countries, favourable trends in incidence are related to changes in behaviour and prevention programmes. Changes in incidence along with rising AIDS mortality have caused global HIV *prevalence* (the proportion of people living with HIV) to level off (see Figure 2.1). However, the *numbers* of people living with HIV have continued to rise, due to population growth and, more recently, the life-prolonging effects of antiretroviral therapy. In sub-Saharan Africa, the region with the largest burden of the AIDS

epidemic, data also indicate that the HIV incidence rate has peaked in most countries. However, the epidemics in this region are highly diverse and especially severe in southern Africa, where some of the epidemics are still expanding.

New survey data underscore the disproportionate impact of the AIDS epidemic on women, especially in sub-Saharan Africa where, on average, three women are HIV-infected for every two men. Among young people (15–24 years), that ratio widens considerably, to three young women for every young man.

Among the notable new trends are the recent declines in national HIV prevalence¹ in two sub-Saharan African countries (**Kenya** and **Zimbabwe**), urban areas of **Burkina Faso** and

¹Other countries have reported declines in HIV prevalence among young pregnant women (15–24) in capital cities but these declines have not yet affected overall national adult prevalence (refer to country specific text in this chapter and 'Progress in countries' chapter).

similarly in **Haiti**, alongside indications of significant behavioural change—including increased condom use, fewer partners and delayed sexual debut. In the rest of sub-Saharan Africa, the majority of epidemics appear to be levelling off—but at exceptionally high levels in most of southern Africa.

HIV prevalence has also been declining in four states in **India**, including Tamil Nadu, where prevention efforts were scaled up in the late 1990s. In **Cambodia** and **Thailand**, steady ongoing declines in HIV prevalence are continuing. However, HIV prevalence is increasing in some countries, notably **China, Indonesia, Papua New Guinea, and Viet Nam**, and there are signs of HIV outbreaks in **Bangladesh** and **Pakistan**.

The majority of people living with HIV in eastern and central Asia are in two countries: the **Ukraine**, where the annual number of new HIV diagnoses keeps rising, and the **Russian Federation**,

which has the biggest AIDS epidemic in all of Europe.

Meanwhile, evidence continues to emerge of resurgent epidemics in the **United States of America** and in some countries in Europe among men who have sex with men, and of largely hidden epidemics among their counterparts in Latin America and Asia.

More than 1.3 million people were receiving antiretroviral therapy in low- and middle-income countries by December 2005, up from approximately 400 000 people two years earlier. In sub-Saharan Africa, the number of people receiving treatment increased more than eight-fold (from 100 000 to 810 000) between 2003 and 2005, and more than doubled in 2005 alone. Most of that trend is due to increased treatment access in a few countries (notably **Botswana, Kenya, South Africa, Uganda** and **Zambia**). The number of people receiving antiretroviral therapy in Asia increased almost three-fold, to 180 000 in 2005.

UNDERSTANDING THE LATEST HIV AND AIDS ESTIMATES

The latest UNAIDS and WHO estimates are lower than those published in the *AIDS epidemic update—December 2005*, even though the new estimates of the number of adults living with HIV (and of adults with new infections and of AIDS mortality) featured in this report are no longer restricted to those in the 15–49-year age group. Historically, UNAIDS and WHO restricted the estimates to this age group to ensure comparability across countries, especially for HIV prevalence. However, it is now evident that a substantial proportion of people living with HIV are 50 years and older, as shown in age distributions of HIV and AIDS case reports, community studies and population-based surveys. Accordingly, UNAIDS and WHO now present estimates of adults living with HIV, new infections and AIDS deaths among adults for all adults '15 years and older'. In addition, we continue to provide estimates of HIV prevalence for 'adults 15–49 years', to continue to allow for comparisons across countries. Analysis of the difference between all adults and adults aged 15–49 shows that around 2.8 million adults aged 50 years and older were living with HIV in 2005. UNAIDS and WHO also estimate trends among children 'less than 15 years of age'.

ESTIMATING HIV AND AIDS TRENDS

Why are the global HIV and AIDS estimates for 2005 in this report lower than previously published estimates?

UNAIDS and WHO estimates of the HIV epidemic show a downward revision in the current report as compared to estimates published in the *AIDS epidemic update—December 2005*. The lower estimates are partly due to genuine declines in HIV prevalence in several countries, as discussed elsewhere in this report. However, most of the differences between the estimates published in the *AIDS epidemic update—December 2005* and those published in this report are due to revisions based on new data that have become available.

Different sources of data are used to calculate estimates of HIV prevalence for *generalized* (where adult HIV prevalence exceeds 1% in the general population and transmission is mostly heterosexual) and *concentrated* (low-level—where HIV is concentrated in groups with behaviours that expose them to a high risk of HIV infection) epidemics. In countries with *generalized* epidemics, estimates of HIV prevalence are primarily based on surveillance among pregnant women attending antenatal clinics (ANC). In the absence of population-based surveys that include testing for HIV antibodies, HIV prevalence among pregnant women attending antenatal clinics generally provides a good proxy for HIV prevalence in the general population. For countries with low-level or *concentrated* epidemics, HIV estimates are based on studies among key populations who are at higher risk of HIV exposure—such as injecting drug users, sex workers and their clients, or men who have sex with men.

The growing number of population-based HIV prevalence surveys in sub-Saharan Africa, new and improved HIV surveillance data globally and improved analyses in countries indicate that HIV prevalence in several countries is lower than had previously been estimated. National population-based surveys have been conducted in 20 countries since 2000. Nineteen of these are in sub-Saharan Africa, and they include some of the region's most populous countries (such as **Ethiopia** and **South Africa**). In countries that have conducted such surveys, the survey results have been incorporated into our analysis to generate the updated estimates in this report.

For countries with a recent national survey, Table 1 (below) shows HIV prevalence among pregnant women attending antenatal clinics, HIV prevalence in the national household survey, as well as the estimates published in the *Report on the global AIDS epidemic 2004* and in the current publication, the *Report on the global AIDS epidemic 2006*. It shows clearly that, except for **Uganda**, these new national surveys have consistently indicated lower HIV prevalence compared to HIV estimates derived from antenatal clinic data. Information and insights gleaned from these surveys, notably that HIV prevalence in urban areas is on average 1.7 times higher than in rural areas, have also informed new estimates for several other populous countries (such as the **Central African Republic**, the **Democratic Republic of the Congo**, **Nigeria**). The methods used to derive the current estimates are described in greater detail in a series of papers in *Sexually Transmitted Infections 2006* (in press).

In addition to the new data from national population-based surveys, the quality and coverage of sentinel surveillance in many countries have improved over time. In several countries, recent surveillance has expanded into rural areas where prevalence is known to be lower. That has resulted in lower estimates of overall HIV prevalence in some countries (such as **Burkina Faso, Ethiopia, Lesotho and Nigeria**).

HIV estimates have also been revised in some countries outside of sub-Saharan Africa. Of particular note is **China**, where a process conducted over several months in 2005 in each of the country's provinces enabled an improved analysis of the epidemic, and resulted in a more reliable, albeit lower, estimate of the number of people living with HIV.

Between March 2005 and April 2006, UNAIDS and WHO conducted 12 regional workshops, training staff from over 150 countries responsible for HIV estimates in the specific tools and methodologies used to produce the estimates in this report. In addition UNAIDS and WHO participated in 10 country-specific consensus meetings on HIV estimates.

FIGURE 2.1 Adult (aged 15–49 years) HIV prevalence (%) in countries in sub-Saharan Africa which have conducted population-based HIV surveys in recent years						
Country	Median HIV prevalence (%) among women attending antenatal clinics 2003–2004*	Population-based survey prevalence (%) (year)	2003 HIV prevalence (%) reported in 2004 Report on the global AIDS epidemic	Adjusted 2003 HIV prevalence (%) in current report	2005 HIV prevalence (%) in current report	Trend in prevalence
Botswana	38.5	25.2 (2004)	38.0	24.0	24.1	Stable
Burkina Faso	2.5	1.8 (2003)	4.2	2.1	2.0	Decline in urban areas
Burundi	4.8	3.6 (2002)	6.0	3.3	3.3	Decline in capital city
Cameroon	7.3†	5.5 (2004)	7.0	5.5	5.4	Stable
Ethiopia	8.5	1.6 (2005)**	4.4	(1.0–3.5)	(0.9–3.5)	Decline in urban areas
Ghana	3.1	2.2 (2003)	3.1	2.3	2.3	Stable
Guinea	4.2	1.5 (2005)	2.8	1.6	1.5	Stable
Lesotho	28.4	23.5 (2004)	29.3	23.7	23.2	Stable
Rwanda	4.6	3.0 (2005)	5.1	3.8	3.1	Decline in urban areas
Senegal	1.9	0.7 (2005)	0.8	0.9	0.9	Stable
Sierra Leone	3.0	1.5 (2005)	–	1.6	1.6	Stable
South Africa	29.5	16.2 (2005)	20.9	18.6	18.8	Increasing
United Republic of Tanzania	7.0	7.0 (2004)	9.0	6.6	6.5	Stable
Uganda	6.2‡	7.1 (2004–5)	4.1	6.8	6.7	Stable

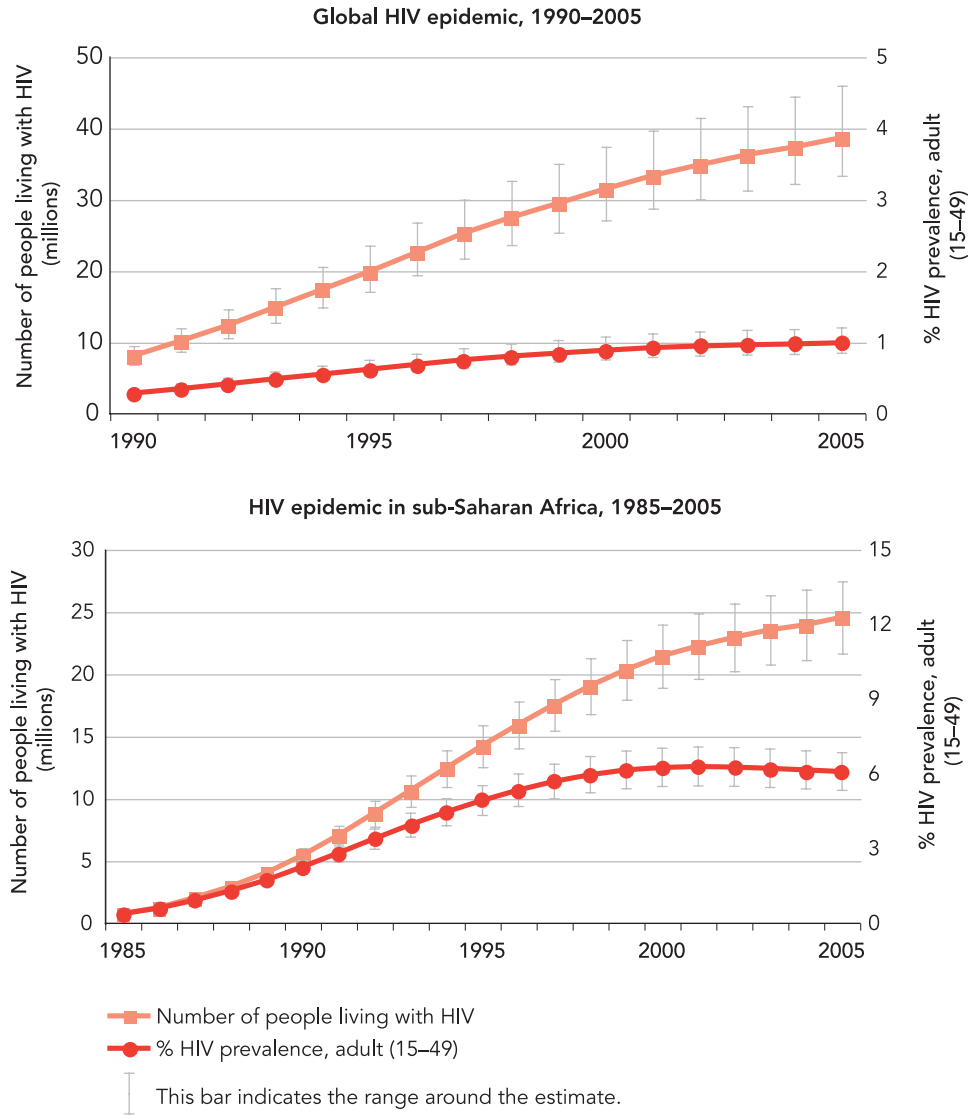
*WHO Africa (2005). HIV/AIDS epidemiological surveillance report for the WHO African region, 2005 Update. Harare.

**Preliminary results. Additional analysis is ongoing.

†Estimate based on country report for 2002 (2003). Ministry of Public Health Cameroon. National HIV sentinel surveillance report 2002.

‡Estimate based on country report 2002 (2003). Ministry of Health Uganda. STD/HIV/AIDS surveillance report. STD/AIDS control programme. Kampala.

FIGURE 2.2 Estimation du nombre de personnes vivant avec le VIH et de la prévalence de l'infection (%) parmi la population adulte dans le monde et en Afrique subsaharienne, 1985–2005²



²Even though HIV prevalence rates have stabilized in sub-Saharan Africa, the actual number of people infected continues to grow because of population growth. Applying the same prevalence rate to a growing population will result in increasing numbers of people living with HIV.

FIGURE 2.3 Regional HIV and AIDS statistics and features, 2003 and 2005				
Country	Adults (15+) and children living with HIV	Adults (15+) and children newly infected with HIV	Adult (15-49) prevalence (%)	Adult (15+) and child deaths due to AIDS
Sub-Saharan Africa				
2005	24.5 million [21.6–27.4 million]	2.7 million [2.3–3.1 million]	6.1 [5.4–6.8]	2.0 million [1.7–2.3 million]
2003	23.5 million [20.8–26.3 million]	2.6 million [2.3–3.0 million]	6.2 [5.5–7.0]	1.9 million [1.7–2.3 million]
North Africa and Middle East				
2005	440 000 [250 000–720 000]	64 000 [38 000–210 000]	0.2 [0.1–0.4]	37 000 [20 000–62 000]
2003	380 000 [220 000–620 000]	54 000 [31 000–150 000]	0.2 [0.1–0.3]	34 000 [18 000–57 000]
Asia				
2005	8.3 million [5.7–12.5 million]	930 000 [620 000–2.4 million]	0.4 [0.3–0.6]	600 000 [400 000–850 000]
2003	7.6 million [5.2–11.3 million]	860 000 [560 000–2.3 million]	0.4 [0.2–0.6]	500 000 [340 000–710 000]
Oceania				
2005	78 000 [48 000–170 000]	7200 [3500–55 000]	0.3 [0.2–0.8]	3400 [1900–5500]
2003	66 000 [41 000–140 000]	9000 [4300–69 000]	0.3 [0.2–0.7]	2300 [1300–3600]
Latin America				
2005	1.6 million [1.2–2.4 million]	140 000 [100 000–420 000]	0.5 [0.4–1.2]	59 000 [47 000–76 000]
2003	1.4 million [1.1–2.0 million]	130 000 [95 000–310 000]	0.5 [0.4–0.7]	51 000 [40 000–67 000]
Caribbean				
2005	330 000 [240 000–420 000]	37 000 [26 000–54 000]	1.6 [1.1–2.2]	27 000 [19 000–36 000]
2003	310 000 [230 000–400 000]	34 000 [24 000–47 000]	1.5 [1.1–2.0]	28 000 [19 000–38 000]
Eastern Europe and Central Asia				
2005	1.5 million [1.0–2.3 million]	220 000 [150 000–650 000]	0.8 [0.6–1.4]	53 000 [36 000–75 000]
2003	1.1 million [790 000–1.7 million]	160 000 [110 000–440 000]	0.6 [0.4–1.0]	28 000 [19 000–39 000]
North America, Western and Central Europe				
2005	2.0 million [1.4–2.9 million]	65 000 [52 000–98 000]	0.5 [0.4–0.7]	30 000 [24 000–45 000]
2003	1.8 million [1.3–2.7 million]	65 000 [52 000–98 000]	0.5 [0.3–0.6]	30 000 [24 000–45 000]
TOTAL				
2005	38.6 million [33.4–46.0 million]	4.1 million [3.4–6.2 million]	1.0 [0.9–1.2]	2.8 million [2.4–3.3 million]
2003	36.2 million [31.4–42.9 million]	3.9 million [3.3–5.8 million]	1.0 [0.8–1.2]	2.6 million [2.2–3.1 million]

FIGURE 2.4 A global view of HIV infection
38.6 million people [33.4–46.0 million] living with HIV, 2005

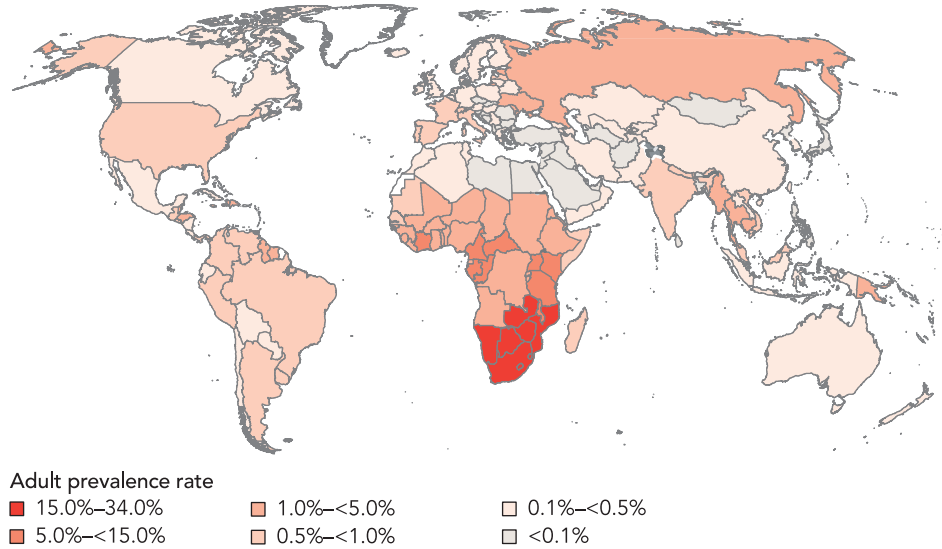
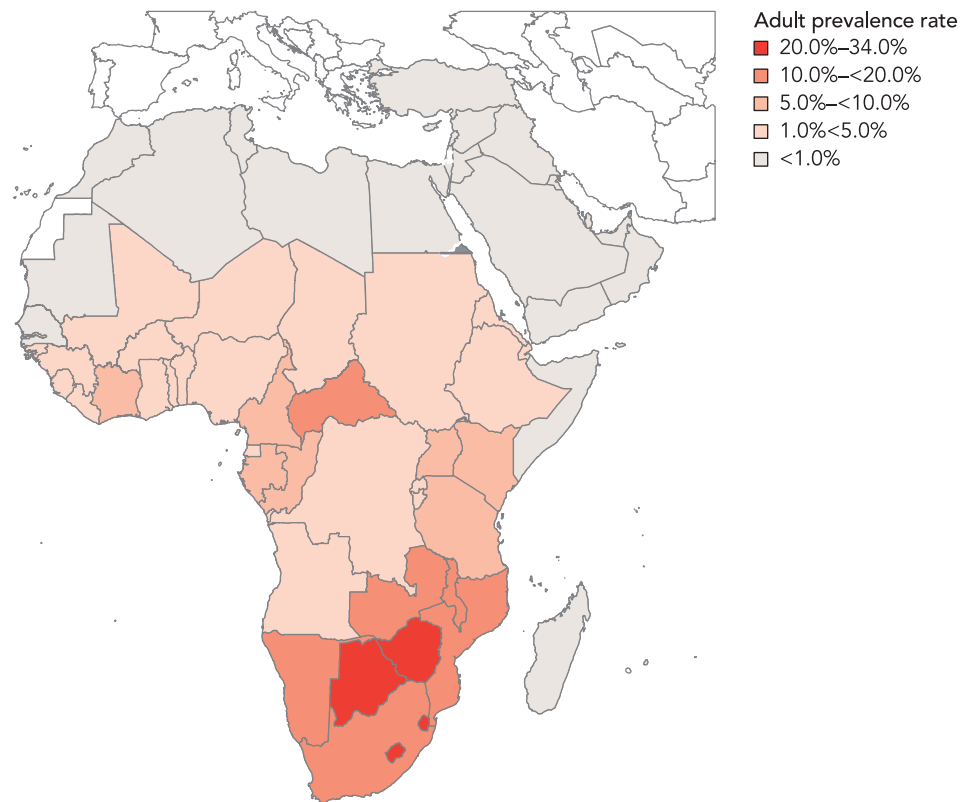


FIGURE 2.5 HIV prevalence (%) in adults in Africa, 2005



Sub-Saharan Africa

Sub-Saharan Africa remains the worst-affected region in the world. Across the region, rates of new HIV infections peaked in the late 1990s, and a few of its epidemics show recent declines, notably in **Kenya**, **Zimbabwe** and in urban areas of **Burkina Faso**.³ Overall, HIV prevalence in this region appears to be levelling off, albeit at exceptionally high levels in southern Africa. Such apparent ‘stabilization’ of the epidemic reflects situations where the numbers of people being newly infected with HIV roughly match the numbers of people dying of AIDS-related illnesses.

A little more than one-tenth of the world’s population live in sub-Saharan Africa which is home to almost 64% of all people living with HIV—24.5 million [21.6 million–27.4 million]. Two million [1.5 million–3.0 million] of them are children younger than 15 years of age. Indeed, almost nine in ten children (younger than 15 years) living with HIV are in sub-Saharan Africa. An estimated 2.7 million [2.3 million–3.1 million] people in the region became newly infected, while 2.0 million [1.7 million–2.3 million] adults and children died of AIDS. There were some 12.0 million [10.6 million–13.6 million] orphans living in sub-Saharan Africa in 2005.

Three-quarters of all women (15 years and older) living with HIV are in sub-Saharan Africa. In most of the region, women are disproportionately affected by AIDS, compared with men—expressions of the often highly unequal social and socio-economic status of women and men. Women comprise an estimated 13.2 million [11.4

million–15.1 million]—or 59%—of adults living with HIV in Africa south of the Sahara.

An estimated 930 000 [790 000–1.1 million] adults and children died of AIDS in southern Africa in 2005—one-third of all AIDS deaths globally. Access to antiretroviral therapy has increased more than eight-fold since the end of 2003, with about 810 000 people on treatment in December 2005. About one in six (17%) of the 4.7 million people in need of antiretroviral therapy in this region now receive it. Progress is uneven, however, with coverage reaching or exceeding 50% in only three countries (**Botswana**, **Namibia** and **Uganda**) but remaining below 20% in most others. **South Africa** accounts for one-quarter of all people receiving antiretroviral therapy in sub-Saharan Africa (WHO/UNAIDS, 2006).

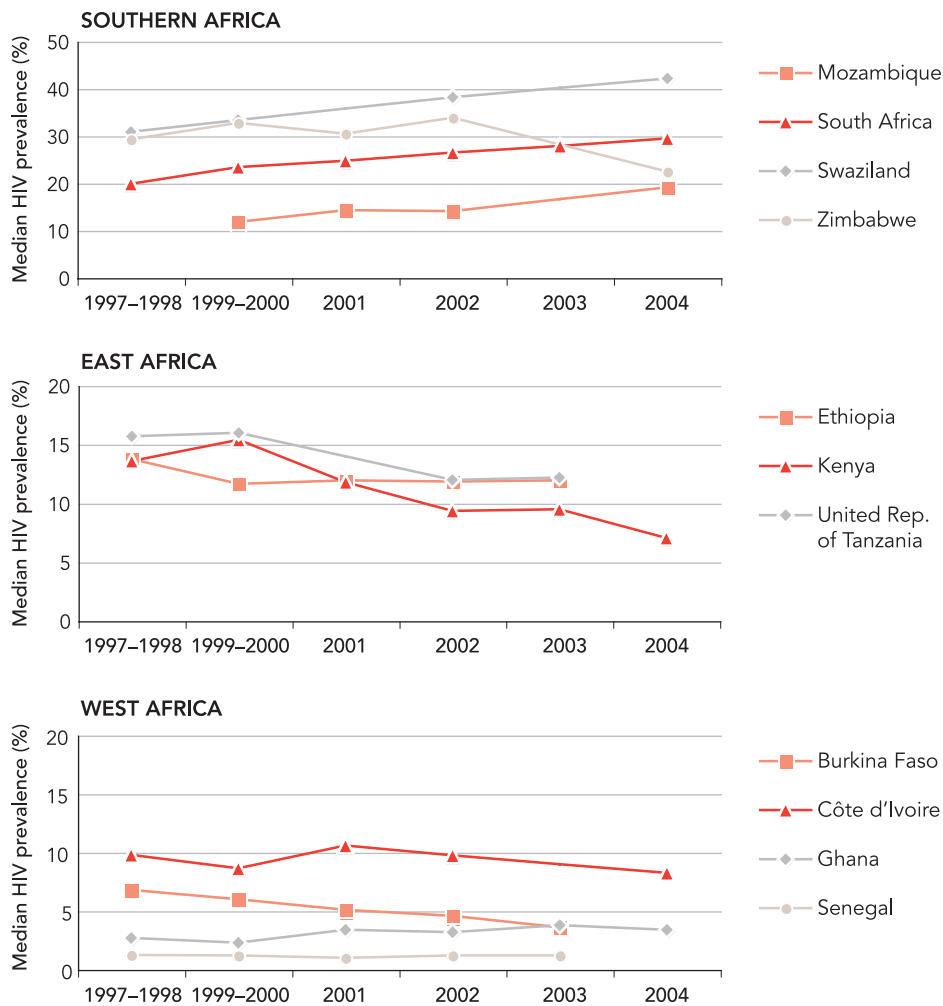
It bears reminding that there is no single, ‘African’ epidemic, and that HIV prevalence varies significantly between and within subregions and countries. Such general trends in HIV prevalence therefore should not obscure the highly varied nature of the AIDS epidemics underway throughout this region.

Southern Africa remains the global epicentre of the epidemic. Almost one in three people infected with HIV globally live in this subregion. About 43% (860 000 [560 000–1.4 million]) of all children (under 15 years) living with HIV are in southern Africa, as are approximately 52% (6.8 million [5.9 million–7.7 million]) of all women (15 years and older) living with HIV.

Except in **Angola**, national HIV infection levels are exceptionally high and show no

³Other countries have reported declines in HIV prevalence among young pregnant women (15–24) in capital cities but these declines have not yet affected overall national adult prevalence (refer to country specific text in Chapter 2 and Chapter 3).

FIGURE 2.6 HIV prevalence (%) among pregnant women attending antenatal clinics in sub-Saharan Africa, 1997/98–2004



Note: Analysis restricted to consistent surveillance sites for all countries except South Africa (by province) and Swaziland (by region).
 Sources: Ministry of Health (Mozambique); Department of Health (South Africa); Ministry of Health and Social Welfare (Swaziland); Ministry of Health and Child Welfare (Zimbabwe); Adapted from Asamoah-Odei, et al. HIV prevalence and trends in sub-Saharan Africa: no decline and large subregional differences. *Lancet*, 2004 (Ethiopia); Ministry of Health—National AIDS/STD Control Programme (Kenya); Ministry of Health (United Republic of Tanzania); Conseil national de lutte contre le sida et les IST (Burkina Faso); Centers for Disease Control and Prevention (CDC)—GAP—Côte d'Ivoire (Côte d'Ivoire); Ghana Health Service (Ghana); Conseil National de Lutte Contre le SIDA (Senegal).

signs of abating. (In Angola’s case, isolation and inaccessibility of the population during the country’s prolonged conflict may have served to restrict the spread of HIV.) However, in **Zimbabwe**, data from national sentinel surveillance, and national and local community-based surveys show a declining trend in HIV prevalence. National adult HIV prevalence is estimated

at 20.1% [13.3%–27.6%], down from 22.1% [14.6%–30.4%] in 2003. HIV prevalence among pregnant women attending antenatal clinics fell from 32% in 2000 to (a still-very-high) 24% in 2004, while in Harare it declined from 35% in 1999 to 21% in 2004 (Mahomva et al., 2006; Hargrove et al., 2005; Mugurungi et al., 2005). In the eastern province of

Manicaland, HIV prevalence in young women (15–24 years) in the general population fell by half—from 16% in 1998 to 8% in 2003 (Gregson et al., 2006). The same study showed more women and men were delaying their sexual debut and were avoiding casual sex liaisons. Nationally, there appears to have been a substantial increase in condom use since the early 1990s. Such behavioural change is likely associated with a combination of AIDS awareness, relatively extensive health infrastructure and a growing fear of AIDS mortality. However, a significant part of the decline in HIV prevalence is attributable to high mortality rates. With 1.7 million [1.1 million–2.2 million] people living with HIV, Zimbabwe needs to sustain the declining trend in HIV prevalence and dramatically improve the provision of antiretroviral treatment if it is to gradually bring its epidemic under control. An estimated 320 000 people needed antiretroviral treatment in 2005, yet about 23 000 were receiving antiretroviral drugs (WHO/UNAIDS, 2006).

South Africa's AIDS epidemic—one of the worst in the world—shows no evidence of a decline. Based on its extensive antenatal clinic surveillance system, as well as national surveys with HIV testing and mortality data from its civil registration system, an estimated 5.5 million [4.9 million–6.1 million] people were living with HIV in 2005. An estimated 18.8% [16.8%–20.7%] of adults (15–49 years) were living with HIV in 2005⁴. Almost one in three pregnant women attending public antenatal clinics were living with HIV in 2004 and trends over time show a gradual increase in HIV prevalence (Department of Health South Africa,

2005). While household surveys with HIV testing in 2003 and 2005 show lower HIV prevalence, they are plagued by high non-response rates (over 40%). The 2005 national household HIV survey found high levels of HIV infection levels among young people (aged 15–24 years), which were about the same as those found in a national young people survey in 2003, a sign that the epidemic has not lost momentum (Shisana et al., 2005; Reproductive Health Research Unit and Medical Research Council, 2004). The 2005 survey also revealed high HIV infection levels among men aged 50 years and older: 14% among those 50–54 years of age, and 8% for those 55–59 years of age. On the positive side, almost one-third of the respondents aged 15 years and older said they had been tested for HIV, and levels of stigma appear to be diminishing (although almost one in three said they would prefer to hide the HIV status of an HIV-positive family member) (Shisana et al., 2005).

While **South Africa's** HIV prevention efforts have not made notable inroads against the epidemic, there has been significant progress on the treatment front. With approximately 190 000 people receiving antiretroviral treatment by the end of 2005, South Africa accounts for a large share of the treatment scale-up in sub-Saharan Africa overall this decade (WHO/UNAIDS, 2006). However, this still means that less than 20% of the almost one million South Africans in need of antiretroviral treatment were receiving it in 2005 (WHO/UNAIDS, 2005).

There are no clear signs of declining HIV prevalence elsewhere in southern Africa—including in **Botswana**,

⁴UNAIDS' HIV prevalence estimates describe the percentage of adult men and women (15–49 years) living with HIV nationally. These estimates incorporate a variety of HIV data, including those gathered in household HIV surveys and at antenatal clinics. Antenatal clinic HIV data, meanwhile, reflect only HIV prevalence in pregnant women who use public antenatal facilities. Comparisons between these two sources of data have shown that antenatal clinic-based HIV estimates tend to be higher than those based on household HIV surveys.

Namibia and **Swaziland**, where exceptionally high infection levels continue. In **Swaziland**, national adult HIV prevalence is estimated at 33.4% [21.2%–45.3%]. HIV prevalence among pregnant women attending antenatal clinics rose from 4% in 1992 to 43% in 2004 (Ministry of Health and Social Welfare Swaziland, 2005). Although many young women report delaying their sexual debut, once women do have unprotected sex, the odds of acquiring HIV are dauntingly high. Sexual aggression appears to be widespread: in a study among high school students, almost one in five (18%) of the sexually active female students said their first sexual experience had been coerced (Buseh, 2004).

Botswana's epidemic is equally serious, with national adult HIV prevalence estimated at 24.1% [23.0%–32.0%] in 2005. Among pregnant women attending antenatal clinics, prevalence in 2004 was 34% overall, and close to 50% among women 30–34 years of age. Prevalence among pregnant women generally has remained at 34%–37% since 2001 (National AIDS Coordinating Agency Botswana, 2003 and 2005). According to a recent national household survey, HIV knowledge still lags: only about one in ten survey participants knew three ways of preventing sexual transmission of HIV (National AIDS Coordinating Agency, 2005).

Lesotho's epidemic seems to be relatively stable at very high levels, with an estimated national adult HIV prevalence of 23.2% [21.9%–24.7%]. High infection levels of 27% were observed among antenatal clinic attendees in 2004, when over one-third (36%–38%) of pregnant women 25–34 years of age tested HIV-positive. In urban areas, HIV prevalence among pregnant women remains on the increase (Ministry of Health and Social Welfare Lesotho, 2005a). Worryingly, knowledge about the

epidemic still lags among young people: only 26% of women and 18% of men aged 15–24 years demonstrated comprehensive knowledge of AIDS when surveyed in 2004 (Ministry of Health and Social Welfare, 2005).

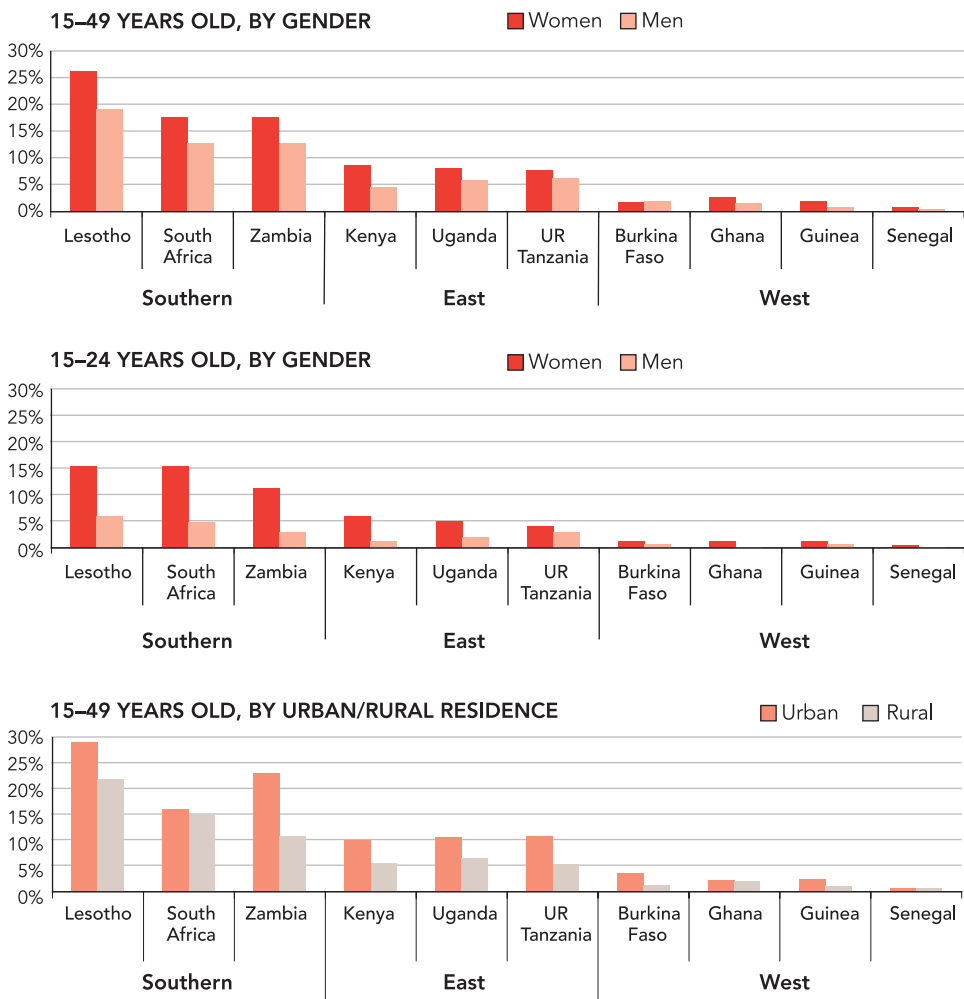
In parts of sparsely populated **Namibia**, the epidemic is as intense as in some of its neighbours, with HIV prevalence estimated at 19.6% [8.6%–31.7%] among adults nationally. In antenatal clinic attendees, HIV prevalence is surpassing 42% in Katima Mulilo (in the Caprivi Strip flanked by Angola, Botswana and Zambia) and ranging between 22% and 28% in the port cities of Luderitz, Swakopmund and Walvis Bay (Ministry of Health and Social Services Namibia, 2004). To the north, **Angola** remains an anomaly, with HIV prevalence much lower than in any other country in this subregion. An estimated 3.7% [2.3%–5.3%] of adults were HIV-positive in 2005. Although the country's HIV surveillance system has improved dramatically in recent years, it remains difficult to discern clear trends in the epidemic (Ministerio da Saude do Angola, 2004). Where comparable data do exist—in the capital, Luanda, for example—prevalence rose from 0.3% in 1986 to 4.4% in 2004.

On the eastern coastline, a dynamic epidemic is underway in **Mozambique**, where the estimated national adult HIV prevalence is 16.1% [12.5%–20.0%]. HIV is spreading fastest in provinces linked by major transport routes to **Malawi**, **South Africa** and **Zimbabwe**. High infection levels are being found in Gaza (from where large numbers of migrants working in South Africa originate) and Sofala provinces (which is traversed by Zimbabwe's main export route) (Ministry of Health Mozambique, 2005). In neighbouring

Malawi, national adult HIV prevalence is estimated at 14.1% [6.9%–21.4%]. HIV prevalence among antenatal clinic attendees provides insight into the long-term trends and has stayed relatively stable at around 20%. Most HIV infections are concentrated in the country’s southern tip, where HIV prevalence as high as 33% has been found among pregnant women at some sites (Ministry of Health and Population Malawi, 2003). **Zambia**’s epidemic appears not to be relenting either, with

adult HIV prevalence estimated at 17.0% [15.9%–18.1%]. There is wide geographic variation, though, with HIV infection levels among pregnant women ranging from under 10% in some places (e.g. Kasaba, Macha and Mukinge) to as high as 30% in others (e.g. Matero and Livingstone). Cities and towns with the highest HIV prevalence tend to be clustered along major transport routes—including Kabwe, Livingstone and Ndola (National HIV/AIDS Council Zambia, 2005).

FIGURE 2.7 HIV prevalence (%) by gender and urban/rural residence, selected sub-Saharan African countries, 2001–2005



Sources: Demographic and Health Survey reports (Burkina Faso, Ghana, Guinea, Kenya, Lesotho, Zambia, Kenya, Senegal) (2001–2005). Nelson Mandela Foundation (South Africa) (2005). Ministry of Health (Uganda), 2005. Tanzania Commission for AIDS (United Republic of Tanzania) (2005).

The picture is starkly different in the island nations of southern Africa. National adult HIV prevalence in **Madagascar** stood at an estimated 0.5% [0.2%–1.2%] in 2005, but low levels of HIV knowledge and significant risk behaviour mean this could change. Fewer than one in five Malagasy could name two methods for preventing the sexual transmission of HIV when surveyed in 2003–2004, and only about one in 10 young men and one in 20 young women (aged 15–24 years) said that they had used a condom the last time they had sex with a casual partner (Ministère de l'Économie, des Finances et du Budget, 2005). Meanwhile, high levels of transmission of HIV among injecting drug users (with estimated HIV prevalence of 10%–20%) and significant infection levels (3%–7%) among female sex workers in **Mauritius** indicate that larger HIV outbreaks are possible there.

In the countries of East Africa, HIV prevalence has either decreased or remained stable in the past several years. Here, too, women face considerably higher risk of HIV infection than men, especially at younger ages. The epidemics are varied, with HIV prevalence among pregnant women ranging from approximately 2% in **Eritrea** to 7% and higher in **Kenya**, **Uganda** and **United Republic of Tanzania** (Ministry of Health Eritrea, 2006; Ministry of Health Uganda, 2005; National AIDS Commission Tanzania, 2005; Ministry of Health Kenya et al., 2003).

While **Burundi** and **Uganda**'s epidemics appear to have stabilized, HIV prevalence among pregnant women in **Kenya** has been declining, especially in urban areas (Cheluget et al., 2006; WHO, 2005a; Baltazar, 2005). As a result, national adult HIV prevalence is estimated to have fallen from 10% in the late 1990s to about 7% in 2003

(Ministry of Health Kenya, 2005). Various behavioural surveys show the proportion of adults with more than one sexual partner is shrinking, more women are delaying their sexual debut, and condom use is rising. Increased mortality and the saturation of infection among people most at risk also appear to be the factors associated with the decline in HIV prevalence (Cheluget et al., 2006). But there are troubling trends, too. Very high HIV prevalence has been found in women attending some antenatal clinics (including in Busia and Chulaimbo, in the west, and Suba, on the coast), where prevalence ranged from 14% to 30% (Baltazar, 2005). In addition, injecting drug use is a factor in the epidemics in some cities and large towns—including Nairobi, where 53% of injecting drug users (mostly heroin users) have tested HIV-positive (Beckerleg et al., 2005).

In **Uganda**, which saw a steep decline in HIV prevalence during the mid- and late-1990s, adult HIV prevalence was an estimated 6.7% [5.7%–7.6%] in 2005. New HIV surveillance data indicate that HIV prevalence continues to decline among pregnant women in the capital, Kampala, and has remained stable elsewhere, including in most rural areas since 2001. However, a 2004–2005 national household survey found condom use was erratic (only about half the men and women surveyed reported using a condom the last time they had sex with a casual partner), and almost one in three men said they had had more than one sexual partner in the previous year (Ministry of Health Uganda, 2005).

Overall, **Rwanda**'s epidemic has been stable in recent years, with 190 000 people [180 000–210 000] (3.1% of adults [2.9%–3.2%]) estimated to live with HIV in 2005. Observed national



In Burundi, HIV infection levels have declined from 13% in 2000 to 9% in 2004 among 15-24-year-old pregnant women in Bujumbura and in urban areas generally.

HIV prevalence has declined since the late 1990s, but improved HIV surveillance methodology probably accounts for an important part of that trend.

However, there are signs of declining HIV prevalence in pregnant women in some urban areas, including Kigali, where prevalence nevertheless was 13% in 2003 (Kayirangwa et al., 2006). HIV trends in neighbouring **Burundi**, where adult HIV prevalence is estimated at 3.3% [2.7%–3.8%], are also ambiguous. HIV infection levels have declined among 15–24-year-old pregnant women (from 13% in 2000 to 9% in 2004) in Bujumbura and in urban areas generally.

However, HIV prevalence has been rising in rural and periurban areas, and varies strikingly from place to place (from below 1% to almost 13%) (Ministère de la santé publique Burundi, 2005).

On the mainland of the **United Republic of Tanzania**, an estimated 1.4 million people [1.3 million–1.6 million] (6.5% of adults [5.8%–7.2%]) were living with HIV in 2005, highlighting the challenges of improving prevention efforts and substantially expanding access to treatment and care. HIV infection trends suggest a relatively stable epidemic, but

prevalence has increased markedly in older age groups, reaching 13% among women aged 30–34 years (Tanzania Commission for AIDS, 2005). Injecting drug use is increasing here, too—not only in Dar es Salaam, but also on the island of Pemba (Beckerleg et al., 2005).

In **Ethiopia's** urban areas, HIV prevalence among women seeking antenatal care has remained stable at high levels since the late 1990s (almost 15% in Addis Ababa and 12% in other urban areas in 2003), the exception being among 15–24-year-old pregnant women where prevalence fell from 15.0% in 2000 to 11.5% in 2003. (Hladik et al., 2006; Federal Ministry of Health Ethiopia, 2004). Meanwhile, the epidemic appears to have intensified in some rural areas in recent years, with rising HIV infection levels in women attending antenatal clinics (2.6% in 2003, up from 1.9% in 2000) (Hladik et al., 2006; Federal Ministry of Health Ethiopia, 2004). A recent household survey and new data from a larger number of rural surveillance sites has helped to re-assess HIV prevalence levels in this predominantly rural country where fewer than half of pregnant women attend antenatal clinics (and where previous HIV estimates based on antenatal clinic

data therefore provided an incomplete picture of the epidemic). Meanwhile, neighbouring **Eritrea**'s epidemic appears to be stable, with adult HIV prevalence having remained at 2.4% [1.3%–3.9%]. However, infection levels are considerably higher in the south of the country and in 2005 exceeded 7% in Assab town (Ministry of Health Eritrea, 2006).

Less is known about HIV trends in **Djibouti** and **Somalia**. The former has a serious epidemic, with national adult HIV prevalence estimated at 3.1% [0.8%–6.9%] in 2005. An earlier population-based HIV survey found HIV infection levels of 4%–6% among 20–34-year-olds in the capital, Djibouti (Ministère de la santé Djibouti, 2002). In **Somalia**, a 2004 survey indicated that the virus was present in most of the country, but HIV prevalence among pregnant women nationally was still low, at 0.6% (WHO, 2005b). However, the higher HIV infection levels (4% and over) found among people seeking treatment for sexually transmitted infections are not surprising, given that knowledge of HIV transmission is very poor, and condom use uncommon (17 out of 20 men and 19 out of 20 women aged 15–24 years had never used a condom, according to one survey) (WHO, 2005b).

West Africa is less severely affected than other parts of sub-Saharan Africa, with national adult HIV prevalence estimates lower than 2% in several countries. The highest adult prevalence in the region is in **Côte d'Ivoire** at 7.1% [4.3%–9.7%]. Significant declines in HIV prevalence among pregnant women have been observed in urban areas of **Burkina Faso**, and in Abidjan, **Côte d'Ivoire**, and Lomé, **Togo**, (WHO, 2005). However, in Dakar, **Senegal**, and Accra,

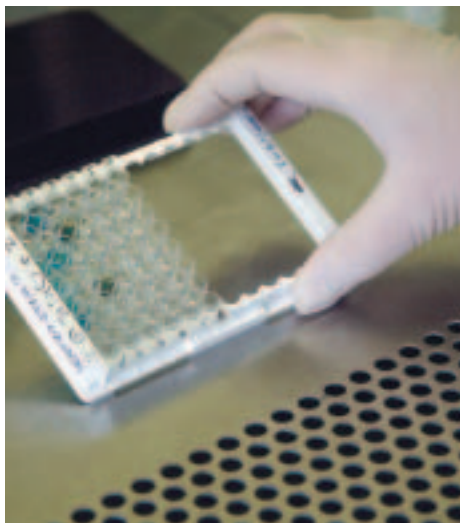
Ghana, infection levels have been rising among antenatal clinic attendees (WHO, 2005). **Nigeria** has the third-largest number of people living with HIV—2.9 million [1.7 million–4.2 million]—in the world. The median HIV prevalence among antenatal clinics has levelled off at around 4%, but infection levels vary radically across this large country (from 2.6% in the South West to 6.1% in the North Central zones) (Federal Ministry of Health Nigeria, 2006). **Côte d'Ivoire**'s epidemic also appears to have stayed relatively stable for almost a decade. However civil conflict has been preventing the gathering of new, national HIV-related data. In **Guinea**, adult HIV prevalence was estimated at 1.5% [1.2%–1.8%] in 2005. A national survey with HIV testing in 2005 found HIV prevalence was about twice as high in women than men (1.9% and 0.9%, respectively).

Senegal's epidemic, meanwhile, still pivots mainly on the sex trade, and there is an ongoing danger of HIV spreading more widely from sex workers and their clients to lower-risk sections of the population. HIV prevalence among female sex workers has remained high (at around 20% in Dakar and 30% in Ziguinchor) for almost a decade (Gomes et al., 2005; WHO, 2005a). National HIV prevalence was estimated at 0.9% [0.4%–1.5%] in 2005, although one survey has found adult HIV prevalence of around 3% in the south of the country (Centre de recherche pour le développement humain et MEASURE DHS+, 2005). Sex work is also a driving factor in **Ghana**'s epidemic, where adult HIV prevalence is estimated at 2.3% [1.9%–2.6%]. HIV prevalence in women attending antenatal clinics has risen to just under 4% (3.6%) since the turn of the century. **Togo** has very limited HIV surveillance data to

ascertain levels and trends, but appears to have an epidemic similar in size to that in neighbouring Ghana (WHO, 2005a; Ministère de la santé Togo, 2004). Adult HIV prevalence in Togo is estimated at 3.2% [1.9%–4.7%].

A different trend is visible towards the north of those two countries, in **Burkina Faso**, where HIV prevalence among young pregnant women (15–24 years) attending antenatal clinics in urban areas has dropped from almost 4% in 2001 to just under 2% in 2003 (Présidence du Faso, 2005; Ministère de l'économie et du développement, 2004). This could reflect the effects of increasing HIV prevention efforts over the past decade; sex with non-regular partners has decreased and condom use in such liaison has increased, especially among young people. Adult HIV prevalence is estimated at 2.0% [1.5%–2.5%]. In **Sierra Leone**, with an estimated 1.6% [0.9%–2.4%] adult prevalence, a recent population-based survey showed that HIV prevalence did not differ much between men and women (Ministry of Health and Sanitation Sierra Leone, 2005).

More serious epidemics appear to be underway in some central African countries, notably **Cameroon**, where adult HIV prevalence is estimated at 5.4% [4.9%–5.9%] in 2005. A national household survey in 2004 found female HIV prevalence to be considerably higher than male prevalence (6.8% and 4.1% respectively) (Ministère de la santé publique Cameroon, 2004). The estimated adult HIV prevalence in the **Central African Republic** is 10.7% [4.5%–17.2%], although HIV data there are limited. As many as 120 000 people [75 000–160 000] are living with HIV in the **Congo** (estimated adult HIV prevalence of 5.3% [3.3%–7.5%]) (Ministère de la Santé République du Congo, 2004). In the



Democratic Republic of the Congo, an estimated 1.0 million people [560 000–1.5 million] were living with HIV in 2005 (adult HIV prevalence of 3.2% [1.8%–4.9%]). HIV surveillance among pregnant women indicates that approximately 4% of women attending antenatal clinics nationally were HIV-positive in 2004, but HIV prevalence as high as 7% was found among pregnant women in Lubumbashi (Ministère de la Santé République Démocratique du Congo, 2004). However, HIV surveillance data are unavailable for many parts of this large country.

In southern and east Africa, as well as in parts of central Africa, AIDS epidemics will continue to have serious consequences for at least another generation. Prevention and treatment strategies—and the support provided by the rest of the world—need to take that into consideration, as well as the massive hindrances of frail health systems and weakened public sector capacities.

Asia

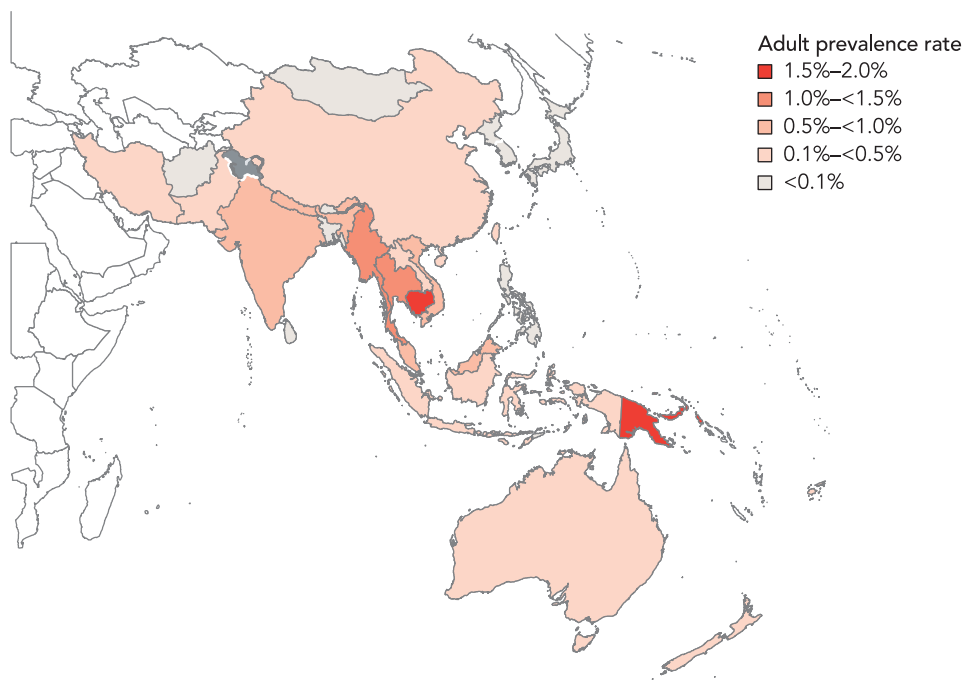
Latest estimates show some 8.3 million [5.7 million–12.5 million] people (2.4

million among adult women [1.5 million–3.8 million]) were living with HIV in Asia at the end of 2005—more than two-thirds of them in one country, **India**. In Asia, an estimated 180 000 [75 000–390 000] children were living with HIV. Approximately 930 000 [620 000–2.4 million] people were newly infected with HIV in 2005, while AIDS claimed approximately 600 000 [400 000–850 000] lives.

The number of people receiving antiretroviral therapy rose from 70 000 in 2003 to 180 000 at the end of 2005. About one in six people (16%) in need of antiretroviral treatment in Asia are now receiving it. While progress has been strongest in **Thailand**, coverage still remains well below 10% in **India** (which has more than 70% of the region’s total treatment needs).

Expanded HIV surveillance and improved estimation methods are enabling a clearer picture to be assembled of the AIDS epidemic in **China**. Approximately 650 000 [390 000–1.1 million] people in China were living with HIV in 2005 (Ministry of Health China, 2006). Injecting drug users (of whom there are at least one million registered in the country) account for almost half (44%) of the people living with HIV (Ministry of Health China, 2006; Ruan et al., 2005). Almost one-half of China’s injecting drug users share needles and syringes, and one in ten also engage in high-risk sexual behaviour (Ministry of Health China, 2006). In some areas of Xinjiang, Yunnan and Sichuan provinces, HIV prevalence among injecting drug users exceeds 50% (MAP, 2005a). China has established 128 methadone clinics and 91 needle and syringe exchange pilot sites. Coverage

FIGURE 2.8 HIV prevalence (%) in adults in Asia and Oceania, 2005



however will need to be expanded considerably to make a significant impact.

On current evidence, the overlap between paid sex and injecting drug use could spark more serious HIV outbreaks. Available research indicates that a large proportion of injecting drug users buy sex, and that at least half of female drug users have at some stage also sold sex (Liu H et al, 2006; Yang et al., 2005). In some provinces (such as Sichuan) a small but significant percentage of sex workers also inject drugs (MAP, 2005a). Sex workers who also inject drugs face very high risks of HIV infection: they tend to have a high number of clients, low levels of condom use and high rates of sharing needles (MAP, 2005a; MAP, 2005b). As HIV spreads from drug users, sex workers and their clients to the general population, the proportion of sexually transmitted HIV infections is growing, and with it the proportion of HIV infections in women. In 2004, women constituted 39% of reported HIV cases (compared with 25% just two years earlier). In parts of Yunnan, Henan and Xinjiang provinces, HIV prevalence already exceeds 1% among pregnant women and those receiving premarital and clinical HIV testing (Ministry of Health China, 2006).

Although stepped up in recent years, basic elements in China's AIDS response still need to be improved. AIDS awareness is unacceptably low and mass media education has been of limited scope and effectiveness. Priorities include strengthening training for prevention, treatment and care; increasing the provision of antiretroviral drugs to patients in rural areas and low-income patients in urban areas; expanding testing and education of high-risk groups; and further improving the

country's monitoring system (Ministry of Health China, 2006; Yang et al., 2005).

In the world's second-most populous country, **India**, an estimated 5.2 million people in the 15–49-year-age range were living with HIV in 2005, as estimated by the National AIDS Control Organization (NACO). National adult HIV prevalence was 0.9% [0.5%–1.5%]. HIV prevalence tends to be higher in the industrialized peninsular states (with the exception of Kerala), with infection levels of over 1% found in pregnant women in Andhra Pradesh, Karnataka and Maharashtra in 2004 (NACO, 2004a). Especially affected is the Mumbai-Karnataka corridor, the Nagpur area of Maharashtra, the Nammakkal district of Tamil Nadu, eastern districts of Andhra Pradesh, and parts of Manipur and Nagaland (in the north-east of India) (Kumar et al., 2005). However, HIV is spreading into rural areas: in Karnataka and Nagaland; upward of 1% of pregnant women in rural areas tested HIV-positive in 2004.

On a positive note, HIV prevalence for 15–24-year-old pregnant women in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu, combined, declined from 1.7% in 2000 to 1.1% in 2004 (Kumar et al., 2006). The latter two states were among the earliest in India to respond to the AIDS epidemic, and the current trends reflect their sustained HIV prevention efforts over the past several years.

Overall, most HIV infections (more than 80% of reported AIDS cases) (NACO, 2005) are due to unprotected heterosexual intercourse, and a significant proportion of them are in women. Injecting drug use is the main driver of the HIV epidemics in the north-east

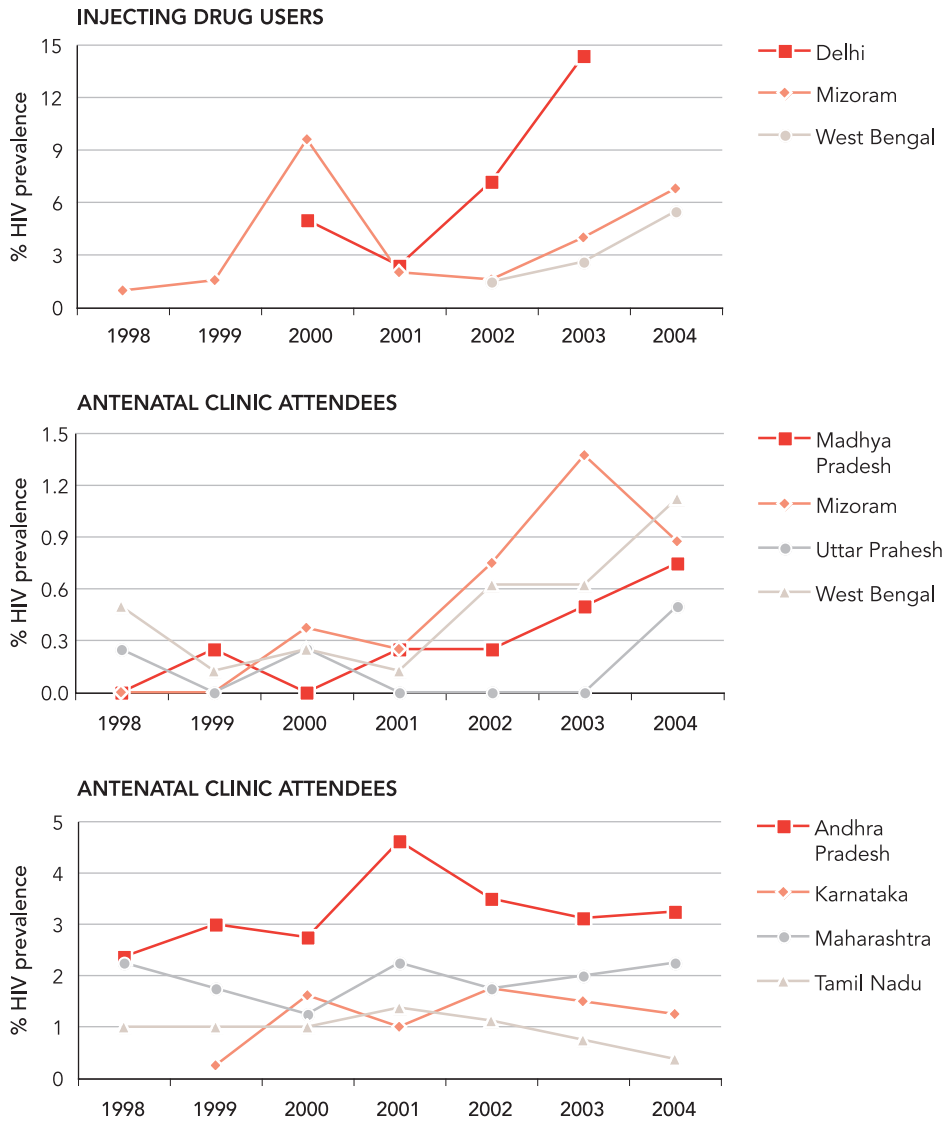
(especially in the states of Manipur, Mizoram and Nagaland, where prevalence among pregnant women is also over 1%), and increasingly elsewhere, including in the major cities Chennai, Mumbai and New Delhi (Solomon et al., 2004; NACO, 2004a; MAP, 2005a, NACO, 2005). There is a substantial overlap between injecting drug use and paid sex in those parts of the country—so much so that in Tamil Nadu, for example, HIV prevalence of 50% has been found among some sex workers (Solomon et al., 2004; NACO, 2004b). Meanwhile, little is known about the role of sex between men in India's epidemic, although available information indicates that sex between men is not uncommon. In Chennai (Tamil Nadu), for example, 6% of men living in slum neighbourhoods said they had had sexual intercourse with another man (Go et al., 2004). The future size of India's HIV epidemic will depend particularly on the effectiveness of programmes for sex workers and their clients, men who have sex with men (and their other sexual partners), and injecting drug users (and their sexual partners) (Kang et al., 2005).

The overlapping risks of injecting drug use and unprotected sex feature in several other epidemics in Asia (MAP, 2005a). An example is **Viet Nam**, where HIV has spread to all 59 provinces and all cities. Approximately 260 000 [150 000–430 000] people were living with HIV in 2005, more than double the number in 2000. National adult HIV prevalence was an estimated 0.5% [0.3%–0.9%] in 2005. Official estimates are that almost 40 000 people are being infected with HIV each year (Ministry of Health Viet Nam, 2005). Injecting drug users and sex work are the main factors driving the epidemic, phenomena that

have grown as a consequence of the opening of the country's markets and borders (Grayman et al., 2005). With needle-sharing commonplace, HIV prevalence among injecting drug users increased from 9% in 1996 to 29% in 2002 and 32% in 2003, and HIV infection levels as high as 40% have been found in some cities (Ministry of Health Viet Nam, 2005; Hien et al., 2004). Among the many injecting drug users who also buy sex, condom use is erratic: less than half of them consistently use condoms with sex workers (USAID et al., 2001). Large proportions of sex workers also inject drugs (20% of street-based sex workers in Ho Chi Minh City and 43% in Hanoi), and they are least likely to use condoms when having sex (Tran et al., 2005; Hien et al., 2004b; MAP, 2004). In a Hanoi study, HIV infection levels were 1.6% among non-injecting sex workers, compared with 33% among those who injected drugs—highlighting the need to make sex workers who also inject drugs a major focus of HIV prevention efforts (Tran et al., 2005). There is an urgent need for strategies that reduce needle-sharing and sexual risk-taking quickly and on a wide scale. Unfortunately, the stigmatization and outlaw status of sex workers and injecting drug users pose an enormous challenge, particularly to ensuring universal access to HIV prevention, treatment and care options (Tran et al., 2005).

The epidemics in **Cambodia** and **Thailand** have evolved largely around the sex trade. Both countries have seen their prevention efforts rewarded with diminishing epidemics over the past decade, as fewer men bought sex and condom use rates rose (MAP, 2005b). At 1.6% [0.9%–2.6%], adult national HIV prevalence in **Cambodia** was one-third lower

FIGURE 2.9 HIV prevalence (%) trends in India among injecting drug users and pregnant women, selected areas, India, 1998–2004*



*Data from consistent surveillance sites only.
Source: National AIDS Control Organization (NACO) (2005).

in 2005 than in the late 1990s—due mainly to a combination of rising mortality rates and HIV prevention efforts that helped reduce unprotected paid sex (National Center for HIV/AIDS, Dermatology and STIs, 2004). Nonetheless, the country remains burdened with one of the worst AIDS epidemics in Asia (Mills

et al., 2005). The fact that women constitute a growing share of people living with HIV (an estimated 47% in 2003, compared with 37% in 1998) suggests that significant numbers of women are being infected by husbands and boyfriends who probably acquired the virus during paid sex (National

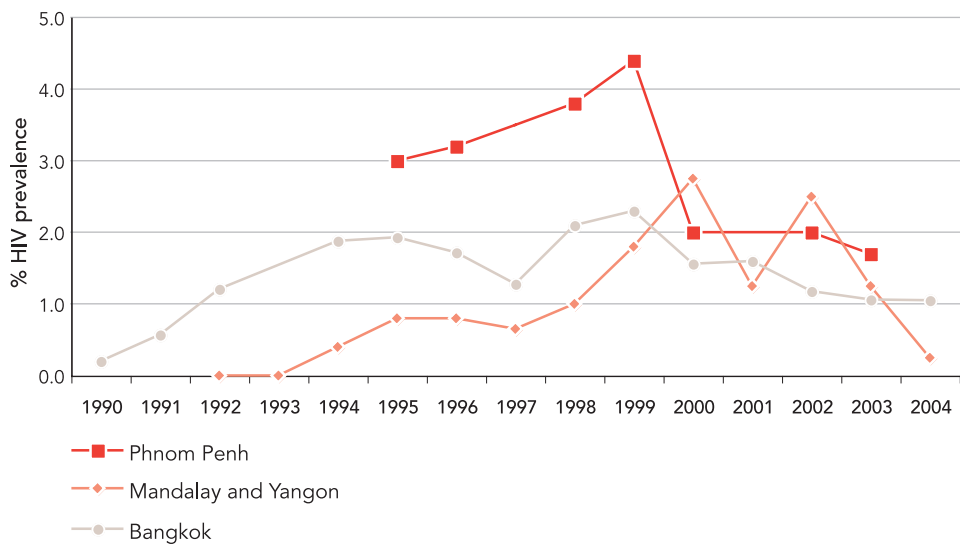
Center for HIV/AIDS, Dermatology and STIs, 2004). In addition, there are signs that more men are again buying sex, along with evidence of increasing injecting drug use, including among sex workers, in the capital, Phnom Penh. There are also indications of increasing HIV infections among street youth who use amphetamine-type stimulants (National Centre for HIV/AIDS, Dermatology and STIs, 2005; Burrows, 2003). A 2005 survey found that 28% of such street youth were HIV-positive, more than double the 12% reported a year earlier in a similar survey (Mills et al., 2005).

In neighbouring **Thailand**, national adult HIV prevalence was estimated at 1.4% [0.7%–2.1%] in 2005. Declining levels of HIV and other sexually transmitted infections have been recorded in **Thailand** since the late 1990s. However, Thailand's prevention efforts appear not to be matching recent changes in its epidemic. According to the Ministry of Health, more than one-third of HIV infections in 2005 were among women who had been infected by their long-term partners, and about one-fifth were among men who have sex with men. Premarital sex has become more commonplace among young Thais, including women, with condom use typically rare (only 20% to 30% of sexually active young people are using condoms consistently) (Punpanich et al., 2004; UNDP, 2004). Meanwhile, condom use during paid sex is on the wane. A study among female sex workers (in Bangkok, Chiang Mai and Mae Hong Son) found that condoms were used in only 51% of commercial sex encounters. That finding agrees with an earlier household survey in which less than one-third of young men in northern Thailand said they consistently used condoms with sex workers (Bucking-

ham et al., 2005; UNDP, 2004). HIV infection levels in sex workers, injecting drug users and men who have sex with men have remained high—over 10% of brothel-based female sex workers were living with HIV in 2003, as were 45% of injecting drug users who attended treatment clinics (Punpanich et al., 2004). Among men who have sex with men in Bangkok, HIV prevalence rose from 17% in 2003 to 28% in 2005—and among those younger than 21 years of age, HIV prevalence tripled in the same period (Van Griensven et al., 2006). Not only are safer sex campaigns in clear need of an overhaul, but sex between men, like injecting drug use, is still largely neglected in Thailand's HIV prevention programme. Meanwhile, heartening progress has been made on the treatment front. Official figures indicate that an estimated 80 000 HIV-positive Thais had received antiretroviral treatment by end-2005. The roll-out of antiretroviral treatment in recent years has coincided with a drastic drop in the number of officially reported AIDS-related deaths—from 5020 in 2004 to 1640 in 2005.

In 2005, an estimated 360 000 [200 000–570 000] adults and children were living with HIV in **Myanmar**, and national adult HIV prevalence stood at 1.3% [0.7%–2.0%]. **Myanmar's** initial, limited response to its AIDS epidemic allowed HIV to spread relatively freely for more than a decade, leaving the country with one of the most serious epidemics in Asia. More recently, that response has been augmented—on current evidence, to encouraging effect (Thwe, 2004). National HIV prevalence in pregnant women declined from 2.2% in 2000 to 1.8% in 2004, while infection levels among both men and women seeking treatment for other sexually

FIGURE 2.10 HIV prevalence (%) trends among pregnant women in major cities in Cambodia, Myanmar and Thailand, 1990–2004



Source: National AIDS Control Sources: Cambodia National Center for HIV/AIDS, Dermatology and STDs (Phnom Penh); Myanmar Ministry of Health (Mandalay and Yangon); Thailand Ministry of Public Health (Bangkok), 2005.

transmitted infections dropped significantly in the same period (from 7% to 3% for men, and 12% to 6% for women) (Wiwat et al., 2005). On the other hand, large proportions of people who engage in high-risk behaviour have been infected: it is estimated that one in four female sex workers and one in three injecting drug users were HIV-infected in 2004. Given that HIV transmission in population groups such as those remains a major factor in Myanmar’s epidemic, harm reduction programmes along with social programmes that mitigate high-risk behaviour can help reduce HIV spread. More and improved HIV-related data (especially regarding infection patterns among men who have sex with men) are needed to gain a more comprehensive understanding of Myanmar’s epidemic.

In **Pakistan**, approximately 85 000 [46 000–210 000] adults and children were

living with HIV in 2005. The country will need to improve its prevention efforts if it is to avoid more serious HIV outbreaks. Almost one in four injecting drug users tested in Karachi was HIV-positive in 2004; less than a year earlier the same community yielded only one HIV-positive case (Altaf et al., 2004). Many of these injecting drug users move from city to city, and large proportions of them share injecting equipment (48% in Karachi and 82% in Lahore had shared in the previous week). There is significant overlap between injecting drug use and sex work—against a backdrop of dismal AIDS knowledge among persons at high risk of infection. In Karachi, one in four injecting drug users had never heard of AIDS, while one in five sex workers could not recognize a condom, and one in three had never heard of AIDS. A mere 2% of female sex workers said they had used condoms with all their clients in

the previous week (Ministry of Health Pakistan, DfID, Family Health International, 2005; MAP, 2005b).

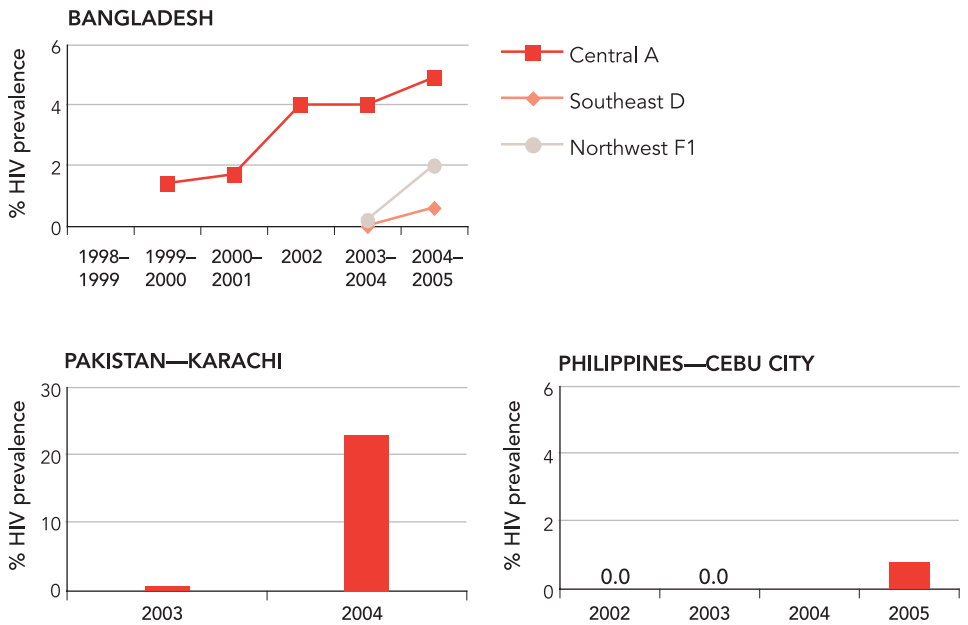
An estimated 170 000 [100 000–290 000] adults and children were living with HIV in **Indonesia** in 2005. Although national adult HIV prevalence there remains very low at 0.1% [0.1%–0.2%], the country faces the prospect of a rapidly expanding AIDS epidemic in some areas. An especially troubling situation has emerged in the westernmost province of Papua, which borders on **Papua New Guinea**, where a serious HIV epidemic is underway. In Papua, HIV has spread beyond sex workers and their clients, and almost 1% of adults in five villages have tested HIV-positive in a serosurvey (MAP, 2004). Meanwhile, HIV prevalence as high as 48% has been found in injecting drug users at rehabilitation centres in Jakarta and even higher infection levels have been reported in Pontianak (on the island of Borneo) (Riono and Jazant, 2004; MAP, 2005a). Here, too, the overlap between injecting drug use and paid sex is strong. Of the one in five injecting drug users in Jakarta who bought sex, three-quarters did not use condoms when doing so, according to one study (Center for Health Research and Ministry of Health, 2002). Generally, too, condom use during paid sex is not the norm. In Jakarta, three-quarters of sex workers operating out of massage parlours and clubs in 2004, and 85% of their counterparts in brothels, said they had not used condoms with any of their clients in the previous week (MAP, 2005b).

National adult HIV prevalence in **Malaysia** stood at an estimated 0.5% [0.2%–1.5%], and approximately 69 000 [33 000–220 000] adults and children were living with HIV in 2005. Injecting drug

use is the main driving force in Malaysia's epidemic, although sexual transmission accounts for a growing share of HIV infections: 17% in 2002, compared with 7% in 1995 (Ministry of Health Malaysia and WHO, 2004; Huang and Hussein, 2004). HIV prevalence of 41% and 31% has been found among injecting drug users in Keleantan and Terengganu, respectively, while in parts of Kuala Lumpur up to 10% of female sex workers have tested HIV-positive in studies (Ministry of Health Malaysia and WHO, 2004).

In **Bangladesh**, national adult HIV prevalence is still extremely low at under 0.1% [<0.2%] partly due to focused prevention efforts, which have probably helped keep HIV prevalence below 1% among men who have sex with men and among female sex workers. About 11 000 [6400–18 000] adults and children were living with HIV in 2005. However, unsafe injecting drug practices have caused HIV infection levels in injecting drug users to increase from 1.7% to 4.9% between 2000–2001 and 2004–2005 in a central surveillance site. HIV infection was also detected among injecting drug users in two out of 15 other sites. Given that at least one-half of injecting drug users in three regions said they used non-sterile equipment the last time they injected drugs, those HIV trends could persist. A large proportion of injecting drug users (as many as one in five in some regions) report buying sex and among them, fewer than one in ten consistently used a condom during commercial sex in the previous year (Ministry of Health and Family Welfare Bangladesh, 2005). The quality and coverage of prevention initiatives aimed at reducing transmission through injecting drug use and commercial sex require strengthening.

FIGURE 2.11 HIV prevalence (%) trends among injecting drug users in Bangladesh, Pakistan and the Philippines, 1998–2005*



*Other sites in Bangladesh and Pakistan continue to show very low HIV prevalence in their latest surveillance surveys (0% in 13 sites in Bangladesh, and 0.5% in Lahore, Pakistan).

Sources: 2005 Integrated HIV Behavioral and Serologic Surveillance Findings, Summary Report. National Epidemiology Center, Department of Health (Philippines); National HIV Serological Surveillance, 2004–2005, 6th Round Technical Report. National AIDS/STD Programme, Ministry of Health and Family Welfare (Bangladesh); National Study of Reproductive Tract and Sexually Transmitted Infections, Survey of High Risk Groups in Lahore and Karachi, 2005. National AIDS Control Program, Ministry of Health (Pakistan).

The **Philippines**, too, is experiencing a very limited epidemic, with national adult HIV prevalence of under 0.1% [$<0.2\%$] and an estimated 12 000 [7300–20 000] adults and children living with HIV in 2005. Routine screening of sex workers for sexually transmitted infections, along with the provision of other HIV prevention services, has probably helped to keep HIV prevalence at very low levels (MAP, 2005b; Mateo et al., 2004). However, this could change, given infrequent use of condoms during paid sex (especially among indirect sex workers), high levels of sexually transmitted infections in several population groups, and very high rates of needle-sharing among drug injectors in some areas (77% in Cebu City, for example) (Mateo et al., 2004; Wi et al., 2002; Department of Health Philippines,

2003). While HIV prevalence among female sex workers has remained very low (0.1%, 0.02% and 0.16% in 2002, 2003 and 2005, respectively), surveillance among injecting drug users in Cebu city in 2005 for the first time detected the presence of HIV in this group, although only at 1% prevalence (Department of Health Philippines, 2005).

A similar situation exists in **Lao People’s Democratic Republic**. At 0.1% [0.1%–0.4%], national adult HIV prevalence is still very low overall, but young men are becoming more sexually active. In Vientiane, the capital, almost two in three young men said they had had several female partners in the previous six months, and one in three reported paying for sex (Toole et al., 2005). Prevalence of

gonorrhoea is high (13%–14%) among ‘service women’ (who work in venues that also offer paid sex) (Phimphachanh and Sayabounthavong, 2004). This indicates a clear need for a comprehensive AIDS programme that includes a 100% condom use programme and improved treatment services for sexually transmitted infections.

Oceania

Papua New Guinea’s relatively young but already-serious epidemic accounts for more than 90% of all HIV infections reported in Oceania to date (excluding Australia and New Zealand) (Secretariat of the Pacific Community, 2005). Overall, an estimated 78 000 people [48 000–170 000] in Oceania were living with HIV at the end of 2005, including the 7200 [3500–55 000] people who acquired HIV in that year. Regional adult HIV prevalence was approximately 0.3% [0.2%–0.8%], mainly due to the epidemic in Papua New Guinea. Fewer than 3400 [1900–5500] people are believed to have died of AIDS in the region in 2005—which mainly reflects widespread treatment access in the countries with mature epidemics.

The epidemic in **Papua New Guinea** is growing at a dismaying pace: HIV diagnoses have been increasing by about 30% annually since 1997. An estimated 60 000 [32 000–140 000] Papua New Guineans were living with HIV in 2005, with HIV prevalence estimated at 1.8% nationally [0.9%–4.4%]. Several factors are associated with the growing epidemic. Sociocultural norms discriminate heavily against women and high levels of sexual violence against women have been reported. Both paid and casual sex liaisons feature prominently, and condom use is

generally erratic (National AIDS Council Papua New Guinea, 2004). Seroprevalence surveys have found HIV prevalence of 2.5% and 2% among women seeking antenatal care in Lae and Goroka, respectively. Among people seeking treatment for sexually transmitted infections in the capital, Port Moresby, 20% tested HIV-positive in 2004, as did 6% in Mount Hagen (National AIDS Council and National Department of Health Papua New Guinea, 2004; Secretariat of the Pacific Community, 2005). Recent efforts to improve access to HIV prevention knowledge notwithstanding, most young people still lack access to prevention education and counselling (National AIDS Council and National Department of Health Papua New Guinea, 2004). Papua New Guinea’s AIDS response needs to improve radically if it is to restrain its epidemic.

Meanwhile, **Australia’s** much older AIDS epidemic is not dissipating either. There, an estimated 16 000 [9700–27 000] adults and children were living with HIV in 2005. After declining in the late 1990s, annual new HIV diagnoses are approaching earlier levels again, and numbered some 820 in 2004. Newly acquired HIV infections (largely attributable to unprotected sex, mostly between men) are also increasing, which plausibly reflects a revival of sexual risk behaviour (National Centre in HIV Epidemiology and Clinical Research, 2005). Thus, a study among gay men in Sydney found a ten-fold rise in syphilis cases from 1999 to 2003 (Fairley et al., 2005). Although national HIV infection trends appear to be generally similar among Indigenous and non-Indigenous people, a recent study revealed marked discrepancies in western Australia. While HIV notifications among non-Indigenous Australians



In Vanuatu, more than 40% of pregnant women have been found to have at least one sexually transmitted infection, as did 43% of pregnant women in Samoa's capital, Apia.

decreased in 1985–2002, those among Indigenous men and women increased. Indigenous women were found to be 18 times more likely to be HIV-infected than non-Indigenous women, and three times more likely than non-Indigenous men (Wright et al., 2005). Unsafe injecting drug use accounts for one in every five HIV diagnoses in Indigenous Australians (compared with about 2% for non-Indigenous people) (National Centre in HIV Epidemiology and Clinical Research, 2005). These trends underline the need to revamp prevention, diagnosis and treatment efforts so that they reach all at-risk and affected sections of the population.

Annual, new HIV diagnoses in **New Zealand** have more than doubled since 1999—from fewer than 80 to 183 in 2005—but national adult HIV prevalence remains very low at under 0.2% (Ministry of Health New Zealand, 2006). Much of the recent trend is attributable to an increase in HIV diagnoses among men who have sex with men. Unlike HIV infections acquired during sex between men, most of the heterosexual HIV infections diagnosed in recent years were

acquired abroad (Ministry of Health New Zealand, 2006).

HIV-infection levels are very low in the rest of Oceania, but this could change. In many places, behaviour that favours the spread of sexually transmitted infections is common enough to spark HIV outbreaks if the virus establishes a presence. On **Vanuatu**, for example, more than 40% of pregnant women have been found to have at least one sexually transmitted infection, as did 43% of pregnant women in **Samoa's** capital, Apia (Sullivan et al., 2003; Sullivan et al., 2004). In Dili, **Timor-Leste**, 60% of sex workers have tested positive for HSV2, as have almost 30% (29%) of taxi drivers and men who have sex with men (Pisani and Dili STI survey team, 2004).

Eastern Europe and Central Asia

The epidemics in eastern Europe and central Asia continue to expand. Some 220 000 [150 000–650 000] people were newly infected with HIV in 2005, bringing to about 1.5 million [1.0 million–2.3 million] the number of

people living with HIV—a twenty-fold increase in less than a decade. Between 2003 and 2005, the number of adults and children living with HIV in this region increased by more than one-third.

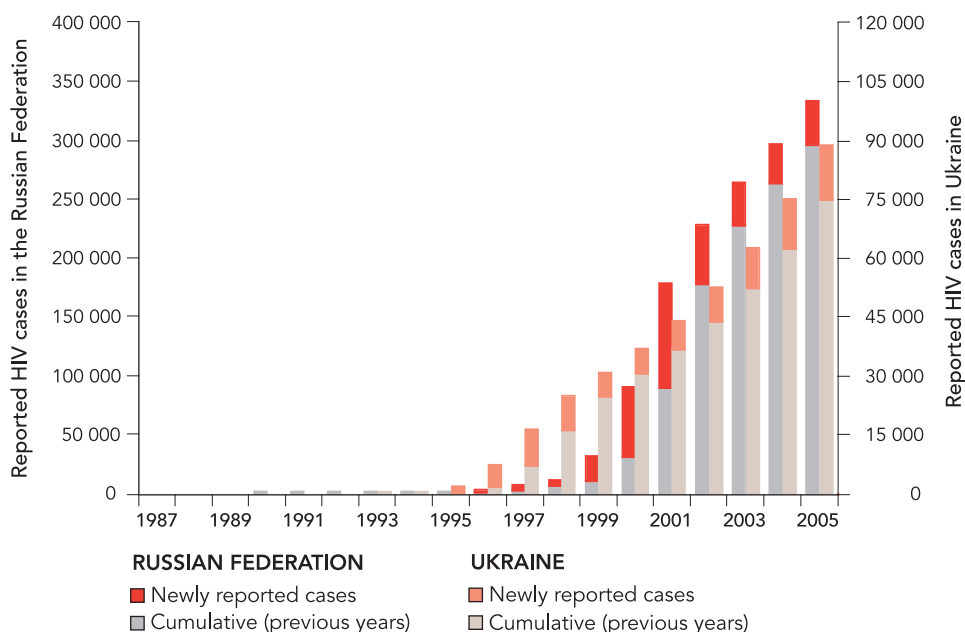
The epidemic’s death toll is rising sharply, too. AIDS killed an estimated 53 000 [36 000–75 000] adults and children in 2005—almost twice as many as in 2003. Increasingly large numbers of women are being infected with HIV. In 2005, an estimated 420 000 [270 000–680 000] women aged 15 years and older were living with HIV—one-third more than the 310 000 [200 000–490 000] in 2003.

National responses need to be boosted to meet the combined challenges of HIV, injecting drug use and sexual risk behaviour—especially among young people—if they are to have a significant impact on

the epidemics in this region. Antiretroviral therapy coverage remains inadequate in this region, with only 21 000 of the estimated 160 000 people in need of antiretroviral treatment receiving it at the end of 2005. Injecting drug users account for more than 70% of HIV cases in this region, but represent only about 24% of the people receiving antiretroviral therapy (WHO/UNAIDS, 2006).

The majority of people living with HIV in this region are in two countries: **Ukraine**, where the annual number of new HIV diagnoses keeps rising, and the **Russian Federation**, which has the biggest AIDS epidemic in all of Europe. After reaching their highest level to date in 2001, new annual HIV diagnoses in the Russian Federation have remained relatively steady in recent years. More recent epidemics are underway in **Kazakhstan, Tajikistan** and **Uzbekistan**,

FIGURE 2.12 Increase in reported HIV cases in the Russian Federation and Ukraine 1987–2005



Sources: Russian Federal AIDS Centre; Ukrainian AIDS Centre and Ministry of Health of Ukraine.

where the annual number of new HIV diagnoses has been rising steeply.

By the end of 2005, some 350 000 HIV cases had been officially registered in the **Russian Federation** since its epidemic began (Ladnaya, 2005). The actual number of infections is much higher: an estimated 940 000 people [560 000–1.6 million] were living with HIV in the country at the end of 2005. National adult HIV prevalence was an estimated 1.1% [0.7%–1.8%]. As the Russian Federation's epidemic matures, AIDS mortality rates are likely to contribute to the country's ongoing demographic decline.

The **Russian Federation's** AIDS epidemic is associated with factors rooted in the socioeconomic and socio-political upheavals of the 1990s, when economic and social dislocation created a climate in which drug markets, drug use and related HIV risk thrived (Rhodes and Simic, 2005). Large numbers of people inject drugs, many of them young and unemployed. At least three in every four new HIV infections so far this decade have been in people younger than 30 years, with unsafe drug injecting practices the main cause of infection (Pokrovskiy, 2005; EuroHIV, 2005). In St Petersburg, for example, HIV infection levels of 30% were found among injecting drug users recently, and prevalence of 12%–15% has been found in provincial cities such as Cherepovets and Velikiy Novgorod (Verevochkin et al., 2005; Smolskaya et al., 2005). Harm reduction programmes can cut the odds of unsafe injecting practice and HIV transmission among injecting drug users (Rhodes et al., 2004; Des Jarlais et al., 2002; Gibson et al., 2001). In the cities of Pskov and Tomsk, for example, injecting drug users *not* participating in local harm reduction projects

were found to be at least three times more likely to share injecting equipment compared with those who did take part (Eroshina et al., 2005). A rapid assessment of harm reduction programmes in 15 cities of the Russian Federation has made similar findings (Open Health Institute, 2004). More syringe exchange projects are being introduced, but they are still too few in number to curb the epidemic's growth. At the same time, vast geographic disparities in HIV prevalence among injecting drug users have been observed, suggesting substantial variations in risk behaviour.

Disenfranchised people living on the margins of society appear to be especially at risk of HIV infection. A study among juvenile detainees, homeless persons and women at a temporary detention centre in Moscow has found HIV prevalence 30–120 times higher than in the general population (Shakarishvili et al, 2005). The Russian Federation's prison system is disproportionately affected by the epidemic, with HIV prevalence estimated to be at least four times that found in the wider population.

Increasingly, HIV is spreading from (mostly male) injecting drug users to their sexual partners and beyond, with more women becoming infected. At 210 000 [110 000–370 000], the estimated number of adult women (aged 15 years and over) living with HIV in 2005 was almost one-third bigger than two years earlier. About 38% of total registered HIV cases were in women in 2004—a larger share than ever before. The trend is marked among young women, especially those in their late teens (15–20 years), who accounted for a larger share of newly reported HIV cases in 2004 than did men in that age group. Some of

those women were infected through injecting drug use (indeed female injecting drug users have become more numerous in the past decade); but many acquired HIV during unprotected sex with infected men (Federal Service of the Russian Federation in Consumer Rights Protection and Human Welfare, 2005). Effective prevention efforts will need to be expanded—particularly among injecting drug users and their sexual partners, as well as among sex workers and their clients.

As the epidemic in the Russian Federation matures, the need for antiretroviral treatment access grows. In 2005, a mere 5000 of the estimated 100 000 people in need of antiretroviral therapy were receiving it (WHO/UNAIDS, 2006). High costs of antiretroviral drugs are a major hurdle. So, too, is the shortage of technical capacity, which is thwarting not only treatment access but the entire AIDS response.

Ukraine's epidemic continues to grow. Annual HIV diagnoses have almost doubled since 2000, reaching 12 400 in 2004, a figure that substantially understates the actual scale of the epidemic since it only reflects infections among people who have been in direct contact with official testing facilities (Ukrainian AIDS Centre, 2005a; EuroHIV, 2005). National adult HIV prevalence was estimated at 1.4% in 2005 [0.8%–4.3%]—or 410 000 [250 000–680 000] people.

A combination of unsafe injecting drug use and unprotected sex is fuelling Ukraine's epidemic. In cities such as Odessa and Simferopol, for example, 58%–59% of injecting drug users have tested HIV-positive (Ukrainian AIDS Centre, 2005b). In Odessa, 67% of sex workers who also injected drugs were

HIV-positive, as were 35%–50% in Donetsk, Lutsk, Poltava and Simferopol (Ukrainian AIDS Centre, 2005b). Partly as a result of such patterns, sexual transmission of HIV has become more common, and accounted for one in three new HIV diagnoses in 2004 (compared with 14% during 1999–2003) (Ukrainian AIDS Centre, 2005a). Some of those new infections were acquired from sexual partners who probably had been infected when injecting drugs. An increasing number of new, sexually transmitted HIV cases involve people who do not have a history of injecting drug use (Grund et al., 2005), indicating that HIV has spread into the population at-large. More women are being infected: in 2004, 42% of new HIV diagnoses were among women (Ukrainian AIDS Centre, 2005a).

As in the Russian Federation, HIV is also prevalent in Ukraine's prison system, where inmates' knowledge of HIV tends to be poor. In one recent survey, only 39% of prisoners knew how to prevent the sexual transmission of HIV (Ukraine UNGASS Report, 2005). Also hidden from the public gaze is the role of sex between men in the epidemic. Although scant, the available research data are troubling. Just more than half (55%) of the men surveyed in seven Ukrainian cities said they had used a condom the last time they had sex with another man (Ukraine AIDS Centre, 2005b). In Odessa, 28% of men who have sex with men tested HIV-positive in a recent study (Ukrainian AIDS Centre, 2005b). Prevention activities overall, and particularly among prisoners and men who have sex with men, need to be intensified and scaled up. Some pilot projects (including harm reduction projects) are making headway, but they are too few in number and too limited in scope to slow the growth rate of the epidemic.



A total of 330 000 [240 000–420 000] people are living with HIV in the Caribbean, 22 000 [9 800–43 000] children younger than 14 years old.

Ukraine's epidemic has reached the stage where AIDS deaths have begun to increase. In the first seven months of 2005, 1138 people died of AIDS-related illnesses, almost one-fifth of the total number of reported AIDS-related deaths to date (Ukrainian AIDS Centre, 2005a). In the last two years, Ukraine has begun to scale up HIV treatment and the number of people on antiretroviral therapy has risen from less than 200 in July 2004 to more than 3000 in December 2005. These efforts will need to continue expanding to keep pace with the growing number of people who need treatment. As in many other countries, scale-up requires measures to ensure that people who inject drugs benefit from antiretroviral therapy (WHO, 2005; WHO/UNAIDS, 2006).

In **Belarus**, where an estimated 20 000 [11 000–47 000] adults and children were living with HIV in 2005, the spread of HIV appears not to be slowing. National adult HIV prevalence stood at 0.3% [0.2%–0.8%]. Sexual transmission now accounts for the largest share of new HIV diagnoses (55% in 2004) (Ministry of Health Belarus, 2005). In **Uzbekistan** the number of new HIV diagnoses rose from 28 in 1999 to 2016 in 2004. Inject-

ing drug use (and, to a lesser extent, paid sex) fuels this epidemic, which is concentrated in and around the capital Tashkent (EuroHIV, 2005; Todd et al., 2005). A similar combination of risk behaviours underpins the epidemic in **Kazakhstan**, where an estimated 12 000 people [11 000–77 000] were living with HIV in 2005. National adult HIV prevalence was 0.1% [0.1%–3.2%]. Very high HIV prevalence has been found among injecting drug users: 56% in a recent study in Kashgar City, for example (Ni et al. 2006). **Tajikistan's** smaller epidemic is also rapidly evolving. The annual number of reported HIV diagnoses had been less than 50 before 2004, but rose to 198 in 2004. An estimated 4900 [2400–16 000] people were living with HIV in 2005, and national adult HIV prevalence was approximately 0.1% [0.1%–1.7%]. A study among injecting drug users in the capital, Dushanbe, showed HIV prevalence of 12%, while 77% of women in this study reported having traded sex for drugs or money (Beyer et al., 2006). The epidemics in the Caucasus appear to be growing less rapidly than many of those elsewhere in the former Soviet Union (EuroHIV, 2005). However, conditions in **Armenia, Azerbaijan and Georgia**

favour a possible surge in HIV. In Armenia, injecting drug use has emerged as a major route of HIV transmission, while significant HIV prevalence is being found in injecting drug users and sex workers in Baku, Azerbaijan's capital (EuroHIV, 2005). South-eastern Europe's epidemics are even more low-key, but there, too, injecting drug use and sexual risk behaviour in several countries could start HIV outbreaks. Worst-affected in that subregion is **Romania**, where a cumulative total of 6200 HIV infections were diagnosed by the end of 2004, and where most new infections are attributed to unprotected sex (EuroHIV, 2005).

Caribbean

A total of 330 000 [240 000–420 000] people are living with HIV in the Caribbean, 22 000 [9800–43 000] of them children younger than 15 years. An estimated 37 000 [26 000–54 000] people became infected with HIV in 2005. Women comprise 51% of adults living with HIV. The Caribbean's epidemics—and countries' AIDS responses—vary considerably in extent and intensity. HIV infection levels have

decreased in urban parts of **Haiti**, and have remained stable in neighbouring **Dominican Republic**. As well, expanded access to antiretroviral treatment in the **Bahamas** and **Barbados** appears to be reducing AIDS deaths. However, such progress has not been enough to undo the Caribbean's status as the second-most affected region in the world. AIDS is the leading cause of death among adults (15–44 years) and claimed an estimated 27 000 [19 000–36 000] lives in 2005. Overall, less than one in four (23%) persons in need of antiretroviral therapy was receiving it in 2005 (WHO/UNAIDS, 2006).

National adult HIV prevalence exceeds 2% in **Trinidad and Tobago**, and 3% in the **Bahamas** and **Haiti**, while in **Cuba** it is 0.1% [<0.2]. Unfortunately, inadequate HIV surveillance still blurs the picture of recent epidemiological trends in many Caribbean countries (and especially in rural areas).

As in many other parts of the world, the region's epidemics occur in a context of deep impoverishment and gender inequalities. Unprotected heterosexual intercourse is the main mode of HIV transmission,

Young Haitians are becoming sexually active at earlier ages. The average age at first sex for men and women declined by approximately one year between 1994 and 2000. Condom use among 15–24-year-olds has become less frequent.



and women (particularly young women) are increasingly prone to HIV infection. In **Trinidad and Tobago**, for example, females in their late teens (15–19-years-old) were six times, and in Jamaica two-and-a-half times, more likely to be HIV-infected, compared with males of the same age (Inciardi et al., 2005; MAP, 2003). These patterns are caused mainly by a combination of girls' and young women's physiological susceptibility, and the relatively common practice of younger women establishing relationships with older men (who, by virtue of their age, are more likely to have acquired HIV). Generally overlooked, though, is the fact that more than one in ten (12%) reported HIV infections in this region is attributable to unprotected sex between men. Homophobia and strong sociocultural taboos that stigmatize same sex relations mean that the actual proportion could be somewhat larger (Inciardi et al., 2005). Except for **Bermuda** and **Puerto Rico**, injecting drug use plays a minor role in the Caribbean's epidemics.

Cuba, with adult HIV prevalence of 0.1% [$<0.2\%$] and about 4800 [2300–15 000] people living with HIV, remains an anomaly in the region. The country's HIV prevention of mother-to-child transmission programme is among the most effective in the world, and has kept the total number of HIV-infected babies to date below 100, while universal, free access to antiretroviral therapy has limited both AIDS cases and deaths (Susman, 2003; Caribbean Technical Expert Group, 2004). Still, AIDS epidemics can change, and Cuba will need to be sensitive to emerging social changes that could spur wider HIV spread (Inciardi et al., 2005).

Overall, with a few exceptions, the Caribbean's epidemics have stayed relatively

stable in recent years. **Haiti** is home to more people living with HIV than any other country in the region: 190 000 [120 000–270 000]. National adult HIV prevalence in 2005 was estimated at 3.8% [2.2%–5.4%]. However, the percentage of pregnant women found to be HIV-infected declined by half from 1993 to 2003–2004. The decline has been most marked in urban areas, where prevalence fell from 9.4% in 1993 to 3.7% a decade later. HIV prevalence declines in semi-urban and rural areas have been slight, by comparison (Gaillard et al., 2006). Haitians are generally well-informed about AIDS and there is evidence of increasing condom use, abstinence and fidelity, as well as a reduction in the number of occasional partners, especially in urban areas. However, HIV incidence began declining before those behaviour changes became evident (Gaillard et al., 2006). Thus a recent analysis has attributed Haiti's trend of diminishing HIV prevalence also to AIDS-related mortality and to improvements made in blood safety during the early stages of the epidemic (Gaillard et al., 2006). Moreover, there are warning signs that trends could reverse again. Young Haitians are becoming sexually active at earlier ages—median age at first sex has declined by approximately one year for women and men in 1994–2000—and condom use among 15–24-year-olds has become more infrequent (Gaillard et al., 2004).

In the **Dominican Republic**, which shares Hispaniola Island with Haiti, HIV prevalence in pregnant women began decreasing in the mid-1990s—especially in the capital, Santo Domingo—but has been relatively stable overall in recent years (Secretaria de Estado de Salud Pública y Asistencia Social de Republica Dominicana, 2005). Adult national HIV

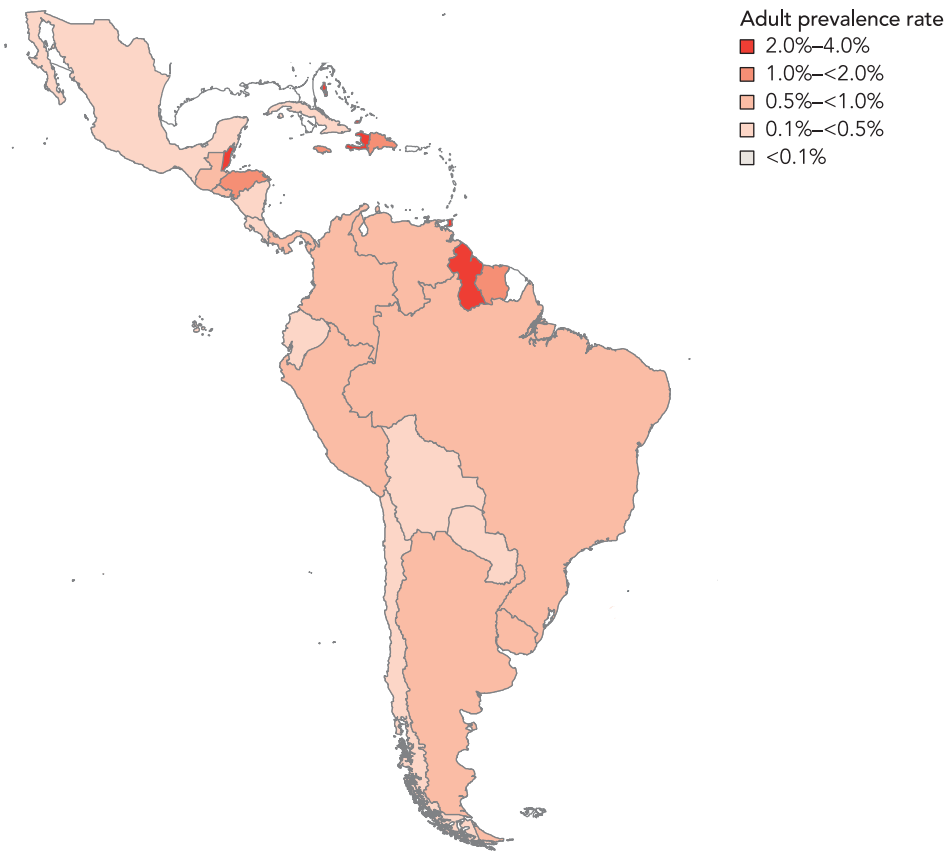
prevalence was estimated at 1.1% [0.9%–1.3%] in 2005. The trend seen in Santo Domingo is possibly linked to sustained efforts to promote consistent condom use and safer behaviour among sex workers and their clients. Higher HIV infection levels have been found among pregnant women in other parts of the country (over 2% in San Juan and La Romana, for example, in 2004) and in some *bateyes* (the impoverished communities of mainly Haitian sugar plantation workers) (Secretaria de Estado de Salud Pública y Asistencia Social de Republica Dominicana, 2005). HIV infection levels of 11% have been found in three cities among men who have sex with men (Toro-Alfonso, Varas-Diaz, 2005).

In **the Bahamas**, where an estimated 6800 [3300–22 000] adults and children were living with HIV in 2005, national adult HIV prevalence was 3.3% [1.3%–4.5%], among the highest in the region. HIV prevalence among pregnant women has declined from 4% in the mid-1990s to less than 3% in 2005. Improved management and treatment of AIDS appears to have reduced the number of annual deaths attributable to AIDS (Department of Public Health The Bahamas, 2004). The latter trend has also been seen in **Barbados**, where annual AIDS deaths were halved in 1998–2003 (Caribbean Epidemiology Centre, PAHO, WHO, 2004; Caribbean Epidemiology Centre, PAHO, WHO, 2003). New HIV diagnoses among pregnant women decreased by half between 1999 and 2003 (Kumar and Singh, 2004). Expanded counselling and testing services, along with the provision of anti-retroviral regimens have reduced mother-to-child transmission of HIV in both these countries (Department of Public Health The Bahamas, 2004; St John et al., 2003).

Evidence of similar progress is not yet visible in **Trinidad and Tobago** (where national adult HIV prevalence is estimated at 2.6% [1.4%–4.2%]), nor in **Guyana** and **Suriname**, where serious epidemics have been observed in urban areas (Duke et al., 2004). AIDS has become the number one cause of death in Guyana among people aged 25–44 years, and national HIV prevalence stood at an estimated at 2.4% [1.0%–4.9%] in 2005 (UNAIDS/WHO, 2004). High HIV infection levels among men and women seeking treatment for other sexually transmitted diseases (12%–15%) and the rising trend in officially reported HIV infections underscore the need to improve Guyana's AIDS response (Caribbean Technical Expert Group, 2004). Similar urgency is required in **Suriname**, where an estimated 1.9% [1.1%–3.1%] of adults were living with HIV in 2005.

Meanwhile, national HIV infection levels in **Jamaica** appear to have stabilized, although there are signs that HIV prevalence is receding slightly in some places (such as the parishes of St. Ann and St. James), amid indications that more Jamaicans are protecting themselves against HIV infection (Ministry of Health Jamaica, 2004; Caribbean Technical Expert Group, 2004). In 2005, national adult HIV prevalence was 1.5% [0.8%–2.4%], and an estimated 25 000 [14 000–39 000] adults and children were living with the virus. Signs of progress in some countries' responses are shadowed by several unmet challenges. The incomplete and inconsistent nature of HIV and behavioural surveillance in many countries presents a major obstacle to prevention efforts. Especially lacking is accurate information about behaviour patterns and trends among at-risk sections of the population (such as sex workers and men who have sex with men). With

FIGURE 2.13 HIV prevalence (%) in adults in Latin America and the Caribbean, 2005



the exception of **Cuba** and, to a lesser degree, the **Bahamas** and **Barbados**, antiretroviral treatment access is highly uneven, particularly in some of the worst-affected countries in the Caribbean. In **Haiti** and the **Dominican Republic**, for example, fewer than 20% of people needing antiretroviral treatment were receiving it in 2005 (WHO/UNAIDS, 2006).

Latin America

In Latin America, some 140 000 [100 000–420 000] people were newly

infected with HIV in 2005, bringing to 1.6 million [1.2 million–2.4 million] the number of people living with the virus. There are about 32 000 [19 000–59 000] children younger than 15 years living with HIV. In 2005, AIDS claimed some 59 000 [47 000–76 000] lives. Approximately 294 000 people were receiving antiretroviral therapy in this region at the end of 2005—73% of the estimated 404 000 people in need of treatment (WHO/UNAIDS, 2006).

However, in contrast to **Argentina**, **Brazil**, **Chile**, **Costa Rica**, **Mexico**, **Panama**, **Uruguay** and **Venezuela** (where notable gains have been made)

the poorest countries of Central America and those in the Andean region of South America are struggling to expand treatment access in the face of affordability barriers (PAHO, 2005).

The region's biggest epidemics are in the countries with the largest populations, notably **Brazil** which is home to more than one-third of the people living with HIV in Latin America. The most intense epidemics, however, are underway in the smaller countries of **Belize** and **Honduras**, in each of which 1.5% or more of adults were living with HIV in 2005.

In several Latin American countries, high levels of HIV infection (between 2% and 28%, depending on the place) are being found in men who have sex with men—a pattern that is generally not reflected in their HIV prevention strategies. In most countries, HIV transmission between female sex workers and their clients is another significant, though less prominent factor in the spread of HIV. As the epidemics mature, increasing numbers of women are being infected, with those living in impoverished conditions appearing to be especially at risk. More effective programming that takes the epidemic's pattern into account, especially among men who have sex with men, could significantly curb the continued growth of the epidemics in this region (Montano et al., 2005).

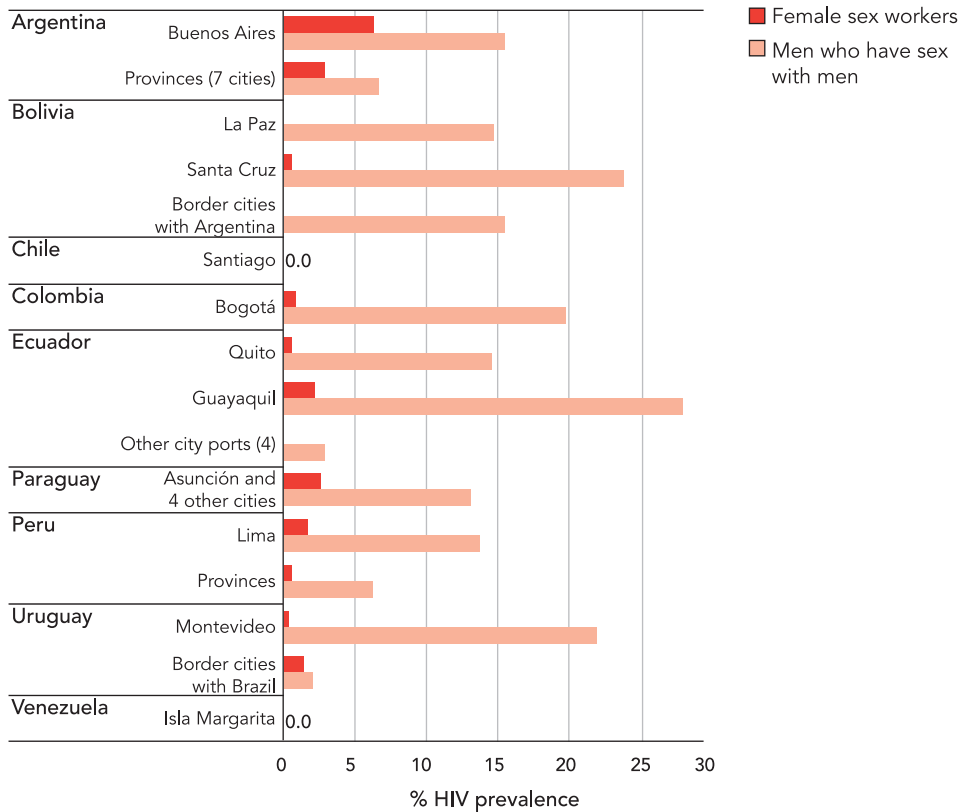
Brazil's AIDS response continues to be commendable. The national adult HIV prevalence was 0.5% [0.3%–1.6%] in 2005, HIV infections related to unsafe injecting drug use are on the decline in several cities, and treatment access is widespread. About 170 000 of the 209 000 Brazilians needing antiretroviral therapy were receiving it in 2005, including 30 000 injecting drug users (WHO/

UNAIDS, 2006). However, the highest HIV infection levels are still being found in injecting drug users. The country also seems to exemplify a trend seen elsewhere in the region: women are increasingly affected, and this increase has taken place in recent years. Other recent developments warrant concern. Survey data from 2004 indicate, for example, that more young people are having sex at earlier ages and with more partners. At least one in three (36%) Brazilians aged 15–24 said they were sexually active before their 15th birthday, and one in five said they had had sex with more than ten partners so far in their lives (Ministerio da Saude do Brasil, 2005). These trends underline the need to sustain and fine-tune HIV prevention efforts.

In **Argentina**, national adult HIV prevalence stood at 0.6% [0.3%–1.9%] in 2005, and there were an estimated 130 000 [80 000–220 000] adults and children living with HIV. Prisoners in major urban jails are among the worst-affected population groups: in 2004, between 17% and 28% of prisoners surveyed in Buenos Aires province were found to be HIV-infected. That trend possibly reflects the fact that injecting drug use and unprotected sex between men remain important drivers of the country's epidemic. For example, almost one in two (44%) injecting drug users tested in Buenos Aires have been found to be HIV-positive (Weissenbacher et al., 2003). HIV infection levels of 7%–15% have been recorded in recent years among men who have sex with men (Segura et al., 2005; Bautista et al., 2004; Pando de los et al., 2003).

Largely centred on unprotected sex between men, **Chile's** epidemic is becoming more varied as increasing numbers of

FIGURE 2.14 HIV prevalence (%) among female sex workers and men who have sex with men in Latin America, 1999–2002



Source: Montano SM et al., JAIDS (2005).

HIV-infected men transmit the virus to their female partners (National AIDS Commission Chile, 2003). Some of those characteristics are shared by other Andean countries, including **Bolivia**, where HIV prevalence as high as 24% has been found among men who have sex with men in Santa Cruz. In **Peru**, too, HIV prevalence as high as 23% has been recorded among men who have sex with men in Lima, and prevalence between 6% and 12% has been found in several other cities (Montano et al., 2005; Ministerio de salud de Peru, 2005). Paid sex is another factor that might lead to an expanding epidemic in Peru. Levels of HIV infection in female sex workers have been low, but almost half (44%) of

surveyed young (18–29-year-old) urban men acknowledged paying for sex, and condom use among them was uncommon (Ministerio de Salud, 2004). Sex between men is a salient factor also in **Ecuador**'s small but growing epidemic. HIV prevalence of 17% and 23% has been found in Quito Pichincha and Guayaquil Guayas, respectively, among men who have sex with men (Ministerio de Salud de Ecuador, 2005). National adult HIV prevalence in all these countries was estimated to be well under 1% in 2005.

Partly due to social taboos, many men who have sex with men also maintain sexual relationships with women (who

might be unaware of the entirety of their partners' sexual lives). In **Ecuador**, for example, where HIV infection levels among female sex workers are low (under 2%), a significant number of women with HIV appear to have been infected by husbands or regular partners who acquired the virus during unprotected sex with another man (Montano et al., 2005). **Colombia** exhibits similar trends. Much higher HIV infection levels have been found in groups of men who have sex with men (as high as 20% in Bogotá) than among female sex workers (less than 1% in Bogotá) (Montano et al., 2005; Khalsa et al., 2003; Mejía et al., 2002). Yet, increasing numbers of women are becoming infected, especially along the Caribbean coast and in the north-east of the country. It would appear that many of the women acquired the virus from male partners who also have sex with other men (Prieto, 2003). Among women testing HIV-positive at projects aimed at preventing mother-to-child transmission of HIV, 72% were in stable relationships (García et al., 2005).

There is an urgent need to improve HIV surveillance in **Central America**, where available data indicate that the epidemics

are mainly associated with unprotected sex. One of the worst-affected is **Honduras**, with about one-sixth of the 380 000 [270 000–680 000] people living with HIV in Central America, and where the epidemic seems to typify those in the subregion. An estimated 1.5% of Hondurans [0.8%–2.4%], or 63 000 people [35 000–99 000], were living with HIV in 2005, and AIDS is the leading cause of death for Honduran women (UNAIDS/WHO, 2004). Although HIV is circulating relatively freely in the wider population, paid sex and sex between men are the epidemic's driving factors. One in 12 female sex workers have tested HIV-positive in the capital, Tegucigalpa, and prevalence of 8% and 16% has been found there and in San Pedro Sula, respectively, among men who have sex with men (Proyecto Acción SIDA de Centroamérica, 2003).

With an estimated 61 000 people living with HIV [37 000–100 000], **Guatemala**'s epidemic is similar to that of **Honduras**. National adult HIV prevalence was 0.9% [0.5%–2.7%] in 2005. Available information on HIV, though incomplete, indicates that HIV transmission mainly occurs in urban areas,

In the United States, more people than ever were living with HIV in 2005: 1.2 million [720 000–2.0 million] people. Meanwhile, more women are being infected—and not only during unprotected sex.



especially those straddling major transport routes (Ministerio de Salud Pública y Asistencia Social de Guatemala, 2003). Other factors associated with HIV include unprotected paid sex (HIV prevalence of up to 15% has been found among street-based female sex workers) and sex between men (HIV infection levels of almost 12% have been found in Guatemala City among men who have sex with men) (Ministerio de Salud Pública y Asistencia Social de Guatemala, 2003; Proyecto Acción SIDA de Centroamérica, 2003). Sex between men is also a hidden but powerful factor in the epidemics of **Belize, El Salvador, Nicaragua** and **Panama**, and a clear driving factor in that of **Costa Rica** (UNAIDS/WHO, 2004; various Ministries of Health, 2003). Adult HIV prevalence in **Mexico** is low, 0.3% [0.2%–0.7%] but its large population means that approximately 180 000 [99 000–440 000] people were living with HIV in 2005—as many as two-thirds of them men who are believed to have been infected during unprotected sex with other men (Magis-Rodríguez et al., 2002). There are signs that heterosexual transmission of HIV is on the increase, as more women are infected during intercourse with male partners who also have sex with men. (Magis-Rodríguez et al., 2004).

North America, Western and Central Europe

Overall in these regions, approximately 65 000 [52 000–98 000] people were newly infected with HIV in 2005, bringing to 2.0 million [1.4 million–2.9 million] the number of people living with HIV. AIDS deaths in 2005 were comparatively few, about 30 000 [24 000–45 000]—a consequence of widespread

access to antiretroviral therapy. However, AIDS responses are not matching shifts in the epidemics of many countries in North America, western and central Europe. In particular, there is an urgent need for improved prevention, diagnosis and treatment services for immigrants and migrants, ethnic minority groups and men who have sex with men.

In the **United States**, more people than ever were living with HIV in 2005: 1.2 million [720 000–2.0 million] people. Nationally, adult HIV prevalence was an estimated 0.6% [0.4%–1.0%]. The increase reflects mixed results in the USA's efforts to combat its epidemic. On the one hand, more people with HIV are living longer due to antiretroviral treatment (which averted or delayed deaths for between 33 000 and 42 000 people in 1995–2002) (Holtgrave, 2006). On the other hand, the early gains made on the prevention front have not been sustained. The number of new, recorded HIV cases in the 33 states with confidential, name-based reporting has varied only slightly since the late 1990s. Half of all HIV infections (in men, women and children) diagnosed during 2004 were in men who have sex with men, and several studies have reported evidence of resurgent risk behaviour in this population group (US Centers for Disease Control and Prevention, 2006 and 2004a). In the city of Baltimore, for example, HIV *incidence* of 8% has been found in men who have sex with men. Almost two in three (62%) of the men testing HIV-positive in that city were unaware that they had been infected (US Centers for Disease Control, 2005b).

Meanwhile, more women are being infected with HIV—and not only during unprotected sex. About one in four

*As in the rest of Europe, unprotected sex between men remains an important factor in the **United Kingdom**, contributing about one-third of new HIV diagnoses (2214 in 2004).*



American women newly diagnosed with HIV in 2003 had been infected while injecting drugs (overall about 20% of new HIV infections are attributable to injecting drug use) (US Centers for Disease Control, 2004a). However, for many of the women who acquired HIV during sex, the main risk factor appears to have been the risk behaviour of their male partners (such as injecting drug use, commercial sex or sex with other men) (McMahon et al., 2004; Valleroy et al., 2004; Montgomery et al., 2003). For example, in a Centers for Disease Control survey, 65% of men who have ever had sex with men also had sex with women (Valleroy et al., 2004). In addition, as in Latin America, women living in impoverished and marginal circumstances appear to be at disproportionate risk of HIV infection. One recent study in North Carolina, for example, found that HIV-positive women were considerably more likely to be unemployed, requiring public assistance and exchanging sex for money and gifts (Leone et al., 2005).

Also of importance is the concentration of HIV infections among African Americans and Hispanic Americans. African Americans make up just over 12% of the

USA population (according to the 2000 census), but account for 50% of new HIV diagnoses in the 35 areas with long-term, confidential name-based HIV reporting. Hispanics, who comprise 14% of the population in the USA and Puerto Rico, account for about 18% of new HIV diagnoses (US Centers for Disease Control and Prevention, 2005a). Among African-Americans and Hispanics, most men with HIV were exposed to the virus during sex with other men (49% and 59%, respectively), while most women with HIV became infected during heterosexual intercourse (78% and 73%, respectively) (US Centers for Disease Control and Prevention, 2005c). African American women are up to a dozen times more likely to be infected with HIV than their white counterparts. AIDS is the leading cause of death among African American women aged 25–34 years and ranks in the top three causes of death for African American men aged 25–54 years (US Centers for Disease Control and Prevention, 2004b). Moreover, African Americans are about half as likely to be receiving antiretroviral treatment, compared with other population groups (Walensky et al., 2005). In 2003, almost twice as many African Americans died of

AIDS, than did whites (US Centers for Disease Control, 2004a). In the USA, the challenge of slowing the rate of new HIV infections overlaps with a need to provide diagnosis, treatment and care services more equitably (US Centers for Disease Control and Prevention, 2005b).

Canada's much smaller epidemic is also in flux. Although reported new annual HIV infections have remained at about 2500 since 2002 (having risen in the preceding years), the relative composition of HIV diagnoses keeps changing. Unprotected sex between men remains the single-most prominent mode of HIV transmission (43% of new diagnoses in the first six months of 2005), and more women are also being infected. In 2004, women accounted for more than one-quarter (27%) of new HIV diagnoses (compared to just over one-tenth in 1995). Driving that trend is unprotected sex (accounting for about two-thirds of positive HIV test reports) and unsafe injecting drug use (Public Health Agency of Canada, 2005). Also significant is the epidemic's disproportionate impact on Aboriginal persons—who represent just over 3% of Canada's population, but comprise 5%–8% of people living with HIV and 6%–12% of new HIV infections. Almost half the HIV diagnoses among Aboriginal persons are in women (Public Health Agency of Canada, 2004).

Across the Atlantic, an estimated 720 000 [550 000–950 000] were living with HIV in 2005 in western and central Europe, where heterosexual intercourse has become the main mode of transmission of new HIV infections in several countries. Accordingly, a growing proportion of new HIV diagnoses are in women—roughly one-third in those countries with new data for 2004 or later.

A considerable share of those diagnoses are among people originating from countries with serious epidemics, chiefly in sub-Saharan Africa (Hamers and Downs, 2004; EuroHIV, 2005). A case in point is the **United Kingdom**, where annual, new HIV diagnoses have doubled since 2000, exceeding 7200 in 2004 and possibly reaching 7700 in 2005 (Health Protection Agency United Kingdom, 2005). Most of that increase was attributable to a steep rise in the number of heterosexually acquired HIV infections, which totalled more than 4300 in 2004 (60% of all new diagnoses). More than three-quarters (77%) of newly diagnosed HIV infections in 2004 were contracted in high-prevalence countries (Health Protection Agency United Kingdom et al., 2006; Dougan et al., 2005). Similar trends are being observed in **Belgium, Denmark, France, Germany** and **Sweden**, where at least one-third of HIV infections attributable to heterosexual contact were probably acquired abroad, mostly in sub-Saharan Africa. Many immigrants and migrants living with HIV are unaware of their serostatus, and many of them are women, indicating a need for increased HIV prevention outreach as well as diagnosis, treatment and care services.

As in the rest of Europe, unsafe sex between men remains an important factor in the **UK**, contributing about one-third of new HIV diagnoses (2214 in 2004) (Health Protection Agency et al., 2006). Studies have shown that high-risk sexual behaviour among men who have sex with men in the UK has not decreased, emphasizing the need to overhaul prevention efforts in this population group (Elford et al., 2005). A similar challenge confronts **Germany**, where the recent rise in newly diagnosed HIV infections

has been largely restricted to men who have sex with men (Marcus et al., 2005). One in every two (49%) new HIV diagnoses in Germany is attributable to unsafe sex between men, compared with just over one in three (37%) in 2001 (Robert Koch Institut, 2005; EuroHIV, 2005). Sex between men remains a prominent factor in the epidemics of most other western European countries, including the **Netherlands** and **Spain**, where the evidence points to a revival of unprotected intercourse in recent years (Van de Laar and Op de Coul, 2004; Vall Mayans et al., 2004; EuroHIV, 2005).

Meanwhile, harm reduction programmes have helped to reduce the spread of HIV among injecting drug users. Following the introduction of methadone treatment and needle-exchange projects in **Spain** in the 1990s, HIV diagnoses among injecting drug users decreased markedly. The 2400 new diagnoses in 2004 among injecting drug users in **Portugal** were less than half the number in 2000. Along with sustaining such gains, countries where injecting drug users features strongly in their epidemics also need to act to curb HIV transmission from infected injecting drug users to their sexual partners (EuroHIV, 2005).

The epidemics in central Europe remain small. Most new HIV diagnoses are in **Poland**, which exhibits the only noteworthy new HIV trends. Annual HIV diagnoses there have been increasing steadily since 2001, reaching 656 in 2004 (EuroHIV, 2005). Unprotected sex—heterosexual and between men—is the main cause of this increase (National AIDS Centre, 2005).

Among the Baltic states, **Estonia** is the worst-affected, with national adult HIV

prevalence of 1.3% [0.6%–4.3%]. There, the cumulative number of reported HIV cases exceeded 5000 by end-2005 (Health Protection Inspectorate Estonia, 2006). The cumulative number of HIV diagnoses in **Latvia** keeps rising, too, and reached 3311 in 2005—although the rate of new infections has slowed, as it has also in **Lithuania**'s smaller epidemic (AIDS Prevention Centre, 2006; Lithuanian AIDS Centre, 2006).

Middle East and North Africa

Except for **Sudan**, national adult HIV prevalence in the countries of the Middle East and North Africa is very low, and does not exceed 0.1%. However, available data suggest that the epidemics are growing in several countries—including in **Algeria**, **Islamic Republic of Iran**, **Libyan Arab Jamahiriya** and **Morocco**. Across the region, an estimated 64 000 [38 000–210 000] people were newly infected with HIV in 2005, bringing the total number of people living with the virus to some 440 000 [250 000–720 000]. **Sudan** accounts for fully 350 000 [170 000–580 000] of those people. Against a backdrop of uneven access to antiretroviral treatment in this region, AIDS killed an estimated 37 000 [20 000–62 000] adults and children in 2005. Just 5% of the estimated 75 000 people needing antiretroviral therapy were receiving it at the end of 2005 (WHO/UNAIDS, 2006).

In **Sudan**, national adult HIV prevalence was an estimated 1.6% [0.8%–2.7%] in 2005. The epidemic is most severe in the country's southern areas (which are flanked by countries with comparatively high HIV prevalence). HIV prevalence of 2.2% was found at antenatal clinics in



*Unprotected sex (including during paid sex and sex between men) is one of the major drivers in the Middle East epidemics—especially in countries such as **Egypt, Morocco and Saudi Arabia.***

White Nile state in 2005, for example (Ministry of Health Sudan, 2006). Recent surveys among adults in the community and among pregnant women found HIV prevalence levels of 4.4% and 3%, respectively, in the town of Yei (which lies close to the Ugandan border) and 0.4% and 0.8% in Rumbek (which is further inland) (Kaiser et al., 2006). There are recent signs of significant HIV spread in Khartoum, in the north (Ministry of Health Sudan, 2005). Among displaced pregnant women seeking antenatal care in Khartoum in 2004, for example, HIV prevalence of 1.6% was found, compared to under 0.3% for other pregnant women (Ministry of Health Sudan, 2005).

The main mode of HIV transmission in this region is unprotected sexual contact—although injecting drug use is an increasingly important factor, especially in the epidemics in the **Islamic Republic of Iran** and **Libyan Arab Jamahiriya**. With risk behaviour widespread among Iran's large population of injecting drug users, high HIV infection levels are being found: when tested, 15% of male injecting drug users attending Tehran drug treatment centres were HIV-positive. Most of the injecting drug

users were sexually active, and exchanging money for sex was common; yet, only about half had *ever* used a condom (Zamani et al., 2005; Ministry of Health and Medical Education Iran, 2004). In Marvdasht, two in three injecting drug users seeking treatment reported sharing needles, and one in five said they had done so in prison (Day et al., 2005). Indeed, an important risk factor for HIV infection among injecting drug users appears to be incarceration (Rahbar et al., 2004). Given that a large proportion (almost half, by some estimates) of the total prison population in Iran comprises persons detained for drug-related offences, there is an urgent need to expand HIV prevention (including methadone maintenance therapy) programmes, especially in correctional settings (Zamani et al., 2005).

A similar challenge confronts the **Libyan Arab Jamahiriya**, where HIV prevalence of 18% has been found among prisoners (Sammud, 2005). This is not surprising, given the ten-fold increase in HIV infections in young men in Libya since the turn of the century; unsafe drug injecting practices were responsible for about 90% of those infections. Risk behaviour

associated with injecting drug use boosts the likelihood of HIV outbreaks among injecting drug users in several other countries, as well. According to various studies, in **Algeria** some 41% of injecting drug users shared injecting equipment, as did 55% in **Egypt** and 65% in **Lebanon** (Mimouni and Remaoun, 2005; Elshimi et al., 2004; Khoury and Aaraj, 2005).

Unprotected sex (including during paid sex and sex between men) is the other major factor in the region's epidemics—in countries such as **Egypt**, **Morocco** and **Saudi Arabia**, for example. About half the HIV infections detected during a study in the **Saudi Arabian** capital, Riyadh, occurred during heterosexual intercourse. There, the majority of women with HIV were married and probably acquired the virus from their husbands, who were most likely infected during paid sex (Abdulrahman et al., 2004). Sex work is a significant risk factor in several countries: 9% of female sex workers tested in Tamanrasset, **Algeria**, in 2004 were HIV-positive, while in **Morocco**, studies have found HIV prevalence of

1.9% (in 2004), and in **Sudan**, 4.4% (in 2002) among female sex workers (Fares et al, 2004; Ministère de la santé Maroc, 2005; Federal Ministry of Health, Sudan, 2002). Algeria's epidemic has expanded into the wider population, with HIV among women in antenatal care in parts of the south exceeding 1% (Institut de Formation Paramédicale de Parnet, 2004).

Very little is known about the spread of HIV in other countries in the region, due to the limited information about the patterns of HIV transmission and behaviour (especially the roles of sex work and of sex between men in the epidemics). It is possible that hidden, localized epidemics could be occurring undetected in some places. HIV-related prevention information and services are in short supply across the region. Knowledge of AIDS tends to be poor, and preventive practices rare, even among populations most at risk of becoming infected. HIV prevention strategies and services need to be strengthened to curb the mostly nascent epidemics in this region, and major efforts are needed to tackle stigma and discrimination, which hamper current efforts.