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HIV in South America

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By the end of 2003, about 2 million individuals in South America and the Caribbean were living with HIV/AIDS[1] and there were more than 100,000 deaths in that year. Haiti is the worst affected country, with a national prevalence of 5.6%, but in many other countries a low national prevalence disguises higher prevalences in subgroups.

Transmission and epidemiology

In most of South America, HIV infection seems to have spread slowly initially and has been concentrated in high-risk populations rather than generalized. Originally, two main patterns of transmission emerged – intravenous drug use, and sex between men. However, heterosexual and mother-to-child transmission are now becoming more common and are particularly features of transmission in Central American and Caribbean countries.

- Initially in Brazil and Argentina, transmission was principally between intravenous drug-users. In Brazil, HIV seroprevalence is less than 1% in antenatal clinics, but prevalences of up to 60% have been reported in injecting drug-users. In Argentina, up to 92% of some urban drug-user populations are HIV positive, compared with 3% of female sex-workers and 0.9% of pregnant women.
- In the Andean region (Chile, Peru, Venezuela, Colombia), the epidemic was originally largely restricted to men who have sex with men. Prevalences have remained high in this group; in Bogotá, Colombia, up to 18% is reported, in association with low condom use. Subsequent transmission to the heterosexual population may be increased by anal sex between young males who subsequently have sex with women. In a survey of sexual practices in Peru, 9% of young men aged 18–29 years indicated that at least one of their last three sexual partners was a man and that condoms were not used in 70% of those contacts. Heterosexual anal intercourse, which is partly used as a birth control strategy, is also associated with increased risk of HIV transmission.
- In contrast, in much of the Caribbean, Central America, Haiti and the Dominican Republic, heterosexual and associated perinatal transmission predominated early. HIV infection is common in commercial sex-workers; 4% of pregnant women in urban Guyana and 44% of female sex-workers in the capital are HIV positive. In some countries, this is related to trade in drugs such as cocaine, and to marginalized populations forced to migrate for work.
- HIV infection in prisoners is an increasing problem. Seroprevalences of 7% were reported in a study of urban prisons in Honduras; less than 10% of these men used condoms regularly.

In Argentina, Bolivia, Colombia, Costa Rica, Mexico and Peru, HIV infection remains principally confined to men who have sex with men or, in some areas, intravenous drug-users. However, the prevalence in the heterosexual population is increasing, particularly on the Caribbean coast and in Central America; 1–4% of adults in Belize, Honduras and Guatemala are HIV seropositive.

There are wide geographical variations in HIV seroprevalence and associated transmission from high-prevalence to low-prevalence areas. HIV tends to be most prevalent in urban and, particularly, densely populated coastal regions, in both of which high-risk activities and international travel tend to be more common. This is illustrated by data from Haiti and Peru, where 8% and 0.3% of adults in urban areas are HIV seropositive, but only 4% and 0.04% in rural areas, respectively. In Brazil and Guatemala, a high prevalence of HIV infection has spread inland from more developed and densely populated coastal regions.

Opportunistic infections

Tuberculosis (TB) is the most important opportunistic infection in AIDS in the developing world. Directly observed therapy short-course (DOTS) is the mainstay of effective treatment. Despite model DOTS programmes in some countries (e.g. Peru), HIV and TB co-infection carries a poor prognosis (typically 10–50% mortality within 6 months of starting therapy). In addition, multi-drug-resistant (MDR) TB is found in up to 40% of isolates in hospitals in some areas. TB culture and sensitivity testing are of limited availability, and second-line TB chemotherapy is expensive, so MDR TB is often unrecognized and inadequately treated. Because of these factors, and the scarcity of isolation facilities to reduce nosocomial transmission, it is likely that the incidence of MDR TB will increase. Recent developments in low-cost, rapid testing for MDR TB and low-technology sample collection from patients unable to produce adequate sputum samples may improve diagnosis, and natural ventilation may be used as an inexpensive means to reduce the risk of nosocomial TB transmission.

Chagas disease is caused by *Trypanosoma cruzi* and occurs throughout South and Central America, except for southern parts of Argentina and Chile. It is an important opportunistic infection in Argentina and Brazil. Acute infection usually causes nonspecific symptoms. Chronic infection or reactivation in HIV co-infected individuals most commonly causes acute meningoencephalitis with one or more mass lesions in the brain. The clinical features are similar to those of toxoplasmic encephalitis, but trypanomastigotes may be seen on CSF smears. The typical features of

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Chagas disease in immunocompetent individuals may also be seen in those with HIV; namely, cardiac involvement (acute heart failure and dysrhythmias) or, less commonly, mega-oesophagus or megacolon. Treatment with benznidazole or nifurtimox is unsatisfactory, because peripheral neuropathy and neutropenia may be dose-limiting. About 50% of patients die within 3 weeks despite therapy. Life-long secondary prophylaxis is required in those who respond. Environmental measures to reduce exposure to the insects that transmit Chagas disease are reducing the incidence of new infections, and screening of blood products in endemic areas reduces iatrogenic transmission.

Histoplasmosis and coccidioidomycosis are rare causes of self-limiting pneumonia in immunocompetent individuals. Co-infection with HIV may lead to severe pneumonia and disseminated systemic infection that is usually fatal without specific antifungal therapy. Diarrhoea caused by *Cryptosporidium parvum* is common in both immunocompetent and HIV-infected individuals. The coccidian parasite *Cyclospora cayetanensis* was first identified as a common cause of diarrhoea in children and in adults with HIV infection in Peru, and is now recognized as an important opportunistic pathogen worldwide. Infections with organisms of the genus *Bartonella* were initially identified only in parts of South America, but are now recognized worldwide as the cause of cat-scratch disease and HIV-associated bacillary angiomatosis.

Other infections common in South America (e.g. cutaneous leishmaniasis, neurocysticercosis) appear to have no strong associations with HIV. HTLV-1 and HIV co-infection appears to worsen the prognosis of AIDS and of associated TB. Most other opportunistic infections in South America are similar to those elsewhere. Patients with HIV are more susceptible to common bacterial pathogens (e.g. *Pneumococcus*, *Salmonella* spp.). *Pneumocystis jirovecii* (formerly known as *P. carinii*) pneumonia is less common than in industrialized nations, but sufficiently common that use of co-trimoxazole primary prophylaxis is widespread. This has been associated with a reduced incidence of *Toxoplasma gondii* encephalitis and retinitis. Cryptococcal meningitis is an important cause of morbidity and mortality. Kaposi's sarcoma, *Mycobacterium avium intracellulare* and local/disseminated cytomegalovirus infection are diagnosed less commonly than in industrialized countries, but may be underdiagnosed because laboratory facilities are limited.

Management

In Latin America, there is wide variation in access to services, cost of antiretroviral drugs and coverage. Countries such as Brazil, Argentina, Colombia, Mexico and Chile are committed to universal antiretroviral coverage in populations in need, irrespective of ability to pay, and provide significant levels of free antiretroviral therapy. Others countries, including Paraguay and Nicaragua, are advancing towards this aim. Programmes mixing government and private sector support have facilitated antiretroviral drug provision in several countries. The cost of treating an HIV patient for 1 year in countries where therapy is not provided free of charge ranges from $2400 in Nicaragua to $148 in Ecuador. Financial prioritization of HIV/AIDS varies from 0.22% of the health-care budget in Ecuador to 5% in Belize and Paraguay.

In striking contrast to other less developed countries, Brazil has achieved widespread, free provision of combination antiretroviral drugs to almost all of its 135,000 individuals with AIDS. This policy almost halved the number of AIDS deaths between 1996 and 1999, reduced the incidence of opportunistic infections by 60–80% over the same period, and saved an estimated $270 million in treatment costs. It is partly achieved by local, relatively inexpensive production of drugs outside the patent restrictions that are enforced in most countries. This has been expensive, but is an important model for the provision of effective AIDS care in the developing world, disproving the often-cited opinion that highly active antiretroviral therapy is practicable only in industrialized countries.

In other South American countries, economic and patent issues have prevented widespread use of antiretroviral drugs, though there are signs of improvement following implementation of the Global Fund to fight AIDS, TB and malaria.

Control strategies

Priorities for reducing transmission of HIV infection in South America are similar to those elsewhere – encouraging condom use, voluntary counselling and HIV testing, diagnosis and treatment of sexually transmitted infections, and reducing sharing of needles between intravenous drug-users. By 2005, projected annual expenditure on the prevention of HIV/AIDS is $590 million in Central and South America, compared with $1560 million in Sub-Saharan Africa and $1440 million in South/South East Asia. However, differences in the prevalence of HIV infection and population sizes complicate these comparisons.

Transmission of HIV by blood products has become rare in South America, because of widespread screening for HIV antibodies. As the epidemic spreads to heterosexual populations, there is increasing emphasis on voluntary testing of pregnant women, to prevent infection of neonates. In Peru and several other countries, free HIV testing is offered to all pregnant women, and HIV-positive women are offered free antiretroviral therapy to cover childbirth, greatly reducing the risk of HIV transmission to the newborn. Education is vital, and has been associated with high rates of condom use in several areas. However, four surveys in Latin America in 1994–1998 showed that about 25% of 15–19-year-olds did not know how to protect themselves against HIV. A study in Honduras showed that marketing of condoms to high-risk groups has an impact on the epidemic, yet such interventions may be impeded by stigma and discrimination, further marginalizing high-risk groups and driving the epidemic 'underground'. In addition, there are more than 40 million street children in Latin America, who are at risk of 'sex-for-survival' on a background of rising sex tourism. Local governments must protect these children, who are increasingly vulnerable to HIV infection.

To control the increasing epidemic, countries must learn from other countries in the region, most notably Brazil, and collaboration must be reinforced both by governments and by international institutions in Latin America and the Caribbean. ◆

REFERENCE

1 UNAIDS. *2004 report on the global AIDS epidemic: 4th global report.* Geneva: UNAIDS, 2004.

FURTHER READING

WHO, Pan-American Health Organization. *HIV infection and AIDS in the Americas 2003.*
(Available in English and Spanish at www.PAHO.org, www.UNAIDS.org and www.WHO.int)