

CHAPTER 24

HIV/AIDS AND THE PAEDIATRIC SURGEON

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Introduction

Three of every four HIV-positive people in the world live in sub-Saharan Africa.¹ This disease dominates our every activity as doctors, and intrudes into the practice of paediatric surgery in Africa as much as into every other sphere of human endeavour.

AIDS became recognised as a disease entity in the early 1980s, when an increase in the incidence of opportunistic infections was seen in Kinshasa and there were clusters of affected homosexuals in Los Angeles and San Francisco.² In Africa, HIV/AIDS has nothing to do with homosexuality, but may be related to heterosexual promiscuity.³ HIV-1 was defined as the cause of the clinical syndrome called AIDS by French workers in 1983.⁴ In 1985, a new human retrovirus, HIV-2, was identified in AIDS patients in West Africa.⁵

It is likely that HIV infection originated in tropical Africa in the 1930s, making the transition from a simian infection to a human pathogen.⁶ It is a retrovirus that infects the CD4⁺ lymphocyte and monocyte, destroying them, reducing their absolute numbers and global function, thereby exposing the patient to the risks of impaired cellular immunity. There is no cure for the infection, but antiviral therapy has the potential to suppress the virus and restore immune function.

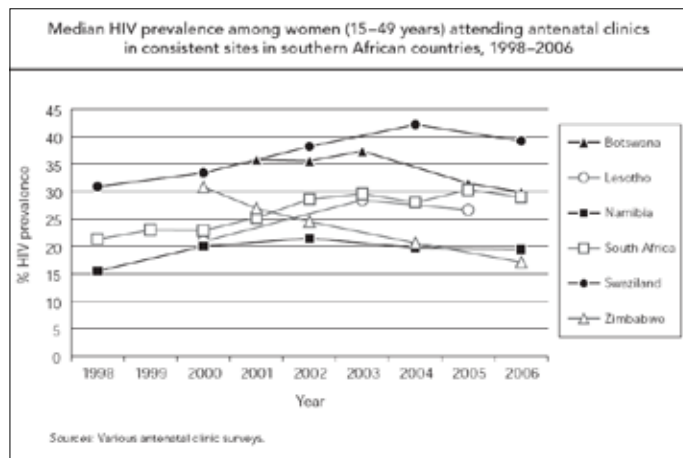
Demographics and History

By 2001, 20 million HIV-infected people lived in sub-Saharan Africa, of whom only a trivial number were receiving effective treatment. In 2007, 1.6 million people in Africa died of AIDS; more than 11 million children have been orphaned by the disease.⁷ Figures 24.1 and 24.2 show the prevalence of HIV in Southern Africa and in West and Central Africa, respectively. Effective treatment against these retroviruses was known in the last decade, but proved to be too expensive for developing countries that were struggling with other important health issues and lacked the infrastructure to deliver the treatment in a sustainable fashion.⁸

In the face of these difficulties, the South African government initially denied any association between HIV and AIDS,⁹ but later sought to parallel import generic antiviral drugs. Drug manufacturers were keen to protect their profits and intellectual capital, but the scale of the humanitarian disaster precluded the continuation of this precept, and at the World Trade Organisation (WTO) meeting in Doha in 2001, a resolution of the impasse was negotiated.¹⁰

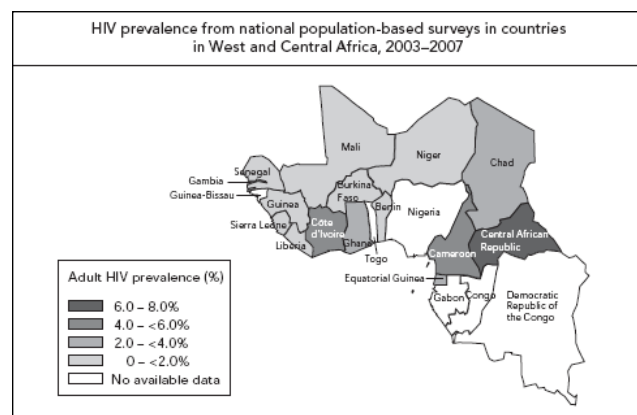
In 2001, the Global Fund to Fight AIDS, Tuberculosis and Malaria was established, and in 2003, President Bush's President's Emergency Plan for AIDS Relief (PEPFAR), as well as private agencies such as the Bill and Melinda Gates Foundation, increased the money available to counter the scourge and to support necessary infrastructure development.⁸ In 2004, antiretroviral drugs became available in South Africa, and currently, about 28% of the patients in need are on treatment.⁷ Prior to 2004, there was little point in testing for HIV, as all that could be offered was symptomatic treatment, and such palliation did not require formal diagnosis.

Concomitant with the HIV pandemic are the TB pandemic¹¹, the lymphoma pandemic¹², the Kaposi pandemic,¹³ the orphan pandemic,¹⁴ and myriad evil social, ethical, and economic consequences, all of which complicate management decisions.



Source: Reproduced by permission from UNAID.

Figure 24.1: HIV prevalence in Southern Africa.²⁰



Source: Reproduced by permission from UNAID.

Figure 24.2: HIV prevalence in West and Central Africa.²⁰

It should be emphasized that whilst some aspects of HIV/AIDS, such as the prevention of vertical transmission and the impact of breast-feeding, have been well studied,^{15,16} and entire libraries of reports have been compiled on epidemiological studies and papers attempting to define and alter African sexual traditions,^{3,17,18} paediatric surgeons have been slow to formally study the impact of this disease on their practices.¹⁹ Much is not known.

Route of Infection

Most children become infected during gestation or delivery. The rate of transmission can be reduced from around 35% to less than 10% by offering perinatal nevirapine to the mother and child and may be further reduced by dual therapy with zidovudine and nevirapine.²¹ Elective Caesarean section may even further reduce the transmission rate to around 2%.^{21,22}

Confirmation of HIV infection in babies can be difficult because routine antibody tests may detect a maternally derived antibody that can persist for up to 18 months in the absence of active viral disease, and therefore polymerase chain reaction (PCR) testing is necessary.²³

In many countries, blood transfusion remains a hazard due to inadequate screening of donors, and children requiring multiple transfusions of blood or blood products (e.g., haemophiliacs or sicklers), are at particular risk.^{24, 25}

In addition, a myth that HIV can be cured by having sex with young girls has increased the spread of the virus through rape and other sexual abuse.²⁶

Risk to Health Workers

Occupational infection with HIV is rare amongst health care workers. Certain categories of health workers (e.g., surgeons, dentists, and operating theatre staff) are at greater risk, but even following documented needle stick injury and exposure to blood from HIV positive patients this risk is small.²⁷ This is not to say that sensible precautions should not be taken. The risk of seroconversion can be minimised by postexposure prophylaxis with zidovudine.²⁷ Employers are required to provide adequate protection to employees, and all staff should be aware of the local policy for postexposure prophylaxis and report all injuries.²⁸

Stages of the Disease

Like many malignant diseases the principles of management depend upon the stage of disease. In HIV/AIDS, the stage of disease is determined by CD4⁺ counts, the percentage of the total lymphocyte count represented by CD4⁺ cells, the viral load, and, most important, the general condition of the patient.²⁹ It must be remembered that children normally have higher CD4⁺ counts than adults, but this count declines with age, making absolute numbers difficult to interpret;³⁰ thus, the count is usually expressed as a percentage of the total lymphocyte count.³¹ HIV-infected children may be identified by a low CD4⁺ count and decreasing percentage count as early as 3 months after birth.³¹

The formal diagnosis of AIDS requires the application of criteria established by the World Health Organization (WHO; see Table 24.1) or the Centers for Disease Control and Prevention (CDC). In children, unfortunately, these criteria are neither precise nor predictive,³² and they are constantly being revised to include both clinical and laboratory parameters. Resources for the laboratory confirmation of HIV infection are not universal in developing countries, however, so a clinical approach is more generally useful, although difficult to quantify.

Table 24.1: World Health Organization temporary definition of AIDS in developing countries (the Bangui definition).

Major criteria	Minor criteria
Weight loss or slow weight gain	Generalised lymphadenopathy
Chronic diarrhoea (more than 1 month)	Oro-pharyngeal candidiasis
Fever (more than 1 month)	Repeated common infections (e.g., otitis)
	Persistent cough
	Pruritic dermatitis
	Confirmed maternal HIV infection

Surgical Approach

The paediatric surgeon may encounter HIV positive patients in a number of scenarios:

1. The patient may present with an unrelated pathology such as inguinal hernia, and may be coincidentally HIV infected. The immediate management of the patient will depend upon the stage of the HIV disease.
2. The patient may present, unaware of his or her HIV status, for management of a disorder that is likely to be HIV related, such as tuberculosis or fasciitis. Such patients should be offered serological testing so that antiviral therapy can be provided if necessary.

3. The patient may be referred for assistance in diagnosis of lymph node enlargement, particularly the differentiation between lymphoma and tuberculosis in an HIV-infected individual.

4. The patient may present de novo with an AIDS-defining pathology, such as spontaneous rectovaginal fistula,^{33,34} or neonatal CMV enteritis,³⁵ among others.

5. The patient may be a neonate with an emergency condition, born to an HIV-infected mother, in whom the HIV status cannot be rapidly determined, or may be an older child with an emergency in whom the status cannot be determined.

The merit of the dictum that all patients, irrespective of age or clinical diagnosis, should be regarded as HIV positive is clear, and “universal precautions” against needle-stick and contact with body fluids should become routine.

It is apparent that asymptomatic HIV-infected individuals carry no greater surgical risk than noninfected patients, either in the general ward or the intensive care unit (ICU).³⁶ Other than referral for subsequent antiviral treatment no modification of surgical protocol is required.

In symptomatic patients, it is important to remember that it is the patient who requires treatment, not merely his surgical pathology. Any treatment plan must be modified according to the clinical and haematological status of the patient, but it is the clinical status of the patient that should determine the management approach, not the patient's HIV status. Patients in a poor clinical condition should not undergo elective surgery, no matter what their HIV status. Patients who are well should be offered surgery as needed, no matter what their HIV status.

Symptomatic HIV-infected patients exhibit a spectrum of clinical conditions from apparently well to moribund. Generally speaking, the least possible surgical intervention should be performed that “buys time” for the patient's general condition to be improved by medical interventions. Surgeons have been making these determinations for generations, long before the HIV pandemic arose; however, a new critical factor in management decisions is the availability of antiviral therapy for the patient. Untreated AIDS remains a lethal disease.

Thus, an asymptomatic HIV-infected individual with an uncomplicated inguinal hernia would be a candidate for an immediate herniotomy. A similar patient who has AIDS, severe wasting, candidiasis, encephalopathy, and any other comorbidity might be better served by a period of medical treatment that may include antiviral treatment.

Antiviral Treatment

Antiviral treatment is not without hazard, which is why it should be offered only within a structured programme that includes long-term follow-up and continued supervision. It should be remembered that HIV treatment is lifelong; this fact must be emphasized to caregivers who tend to discontinue treatment when wellness has been achieved. Failure to continue with treatment may increase the incidence of viral resistance to therapy, and this fear forms the basis for the strict criteria with which patients must comply before starting therapy.³⁷

Each of the commonly used antiviral drugs has a specific toxicity profile, and continued surveillance for toxic effects is mandatory. Initiation of treatment may also result in clinical deterioration due to the immune reconstitution inflammatory syndrome (IRIS).³⁸ Whilst the exact pathogenesis of IRIS is unknown, it is clearly related to the severity of immunosuppression at the time of the initiation of antiviral therapy.³⁸ As the patient's immune function is restored, the CD4⁺ count rises, the viral load falls, and there is restoration of pathogen-specific immunity. This may recognise viable organisms, particularly tuberculosis, but also other pathogens, and in some patients an associated inflammatory response results in rapid clinical deterioration and, in some cases, death.³⁹ This condition was well recognised by physicians managing patients with disseminated tuberculosis in the pre-AIDS era, but appears to be more common in HIV-infected individuals. In HIV-infected patients with tuberculosis, it is recommended that

antiviral therapy be delayed for several weeks after initiation of tuberculosis treatment in order to minimise the risk of IRIS particularly for those at greatest risk.⁴⁰

Surgical Prophylaxis

Evidence suggests that male circumcision offers some protection against infection with HIV-1,⁴¹ although this evidence is far from being incontrovertible.⁴² All agree, however, that circumcision alone is insufficient to prevent transmission of the disease, and circumcised men must still be advised to engage only in safe sexual practices, including condom use. The acceptability of this form of potential partial preventative measure by individuals as well as to populations has yet to be determined.

Ethical Issues

The considerable stigma associated with HIV may stem from its original recognition in male homosexuals, as well as in the personal nature of human sexuality.⁴³ The stoning to death of Gugu Dlamini by members of her own community in South Africa after she had announced that she was HIV-infected was an extreme example of the stigmatisation of this disease.⁴³ Certainly at some point HIV became treated differently from other sexually transmitted diseases, presumably, amongst other reasons, due to the inability of governments to offer treatment and the dated perception that the condition was inevitably lethal. Clearly, patient confidentiality is paramount, but the singling out of HIV as a disease apart from all others adds to the stigmatisation that patients experience.

Every patient has a right to know his or her HIV status, and testing should be offered to all who are unaware.⁴⁴

Key Summary Points

1. HIV is a retrovirus that infects and destroys the CD4⁺ lymphocyte and monocyte, exposing the patient to risks of immune deficiency.
2. Incidence of HIV/AIDS is high in Africa.
3. Most children become infected during gestation or delivery, and this risk may be reduced by perinatal antiviral therapy.
4. In asymptomatic neonates, PCR testing is more accurate than routine antibody testing.
5. The occupational HIV risk to health care workers is low, and is further reduced with universal precautions and postexposure prophylaxis with antiviral therapy.
6. There is no difference in the surgical risk for asymptomatic HIV-infected patients and noninfected patients.
7. In symptomatic patients, the clinical status—and not the HIV status—dictates the management of the patient.
8. The toxic effects of antiviral treatment dictate its use within a structured programme.
9. Circumcision alone is not an adequate prophylaxis for HIV.

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