

PAEDIATRIC HIV/AIDS



Every minute of every day, a child under the age of 15 is infected with HIV. AIDS kills 1,400 children every single day, and claims more than half a million young lives every year^[1].

Photo: © Eric Goemare (South Africa)



In rich countries, paediatric HIV/AIDS is largely under control: prevention of mother-to-child transmission is successful, and infants and children have access to diagnostics and antiretroviral therapy. But 88% of the 2.2 million children living with HIV/AIDS grow up in Africa^[2], and the vast majority are beyond the reach of these health services. They are condemned to die due to lack of access to treatment.

Médecins Sans Frontières's experience has shown that diagnosing and treating children infected with HIV/AIDS is much more difficult and expensive than for

adults. The impact of the HIV/AIDS epidemic on children has been, and will continue to be, devastating. By 2003, AIDS had left 15 million children under the age of 18 orphaned in its deadly wake^[3]; most now are in the care of their grandparents and other caregivers, or live in orphanages or in the streets. Children infected with HIV/AIDS are often denied treatment, based on the perception that their deaths are unavoidable.

With no voice to represent them, children are the silent victims of the HIV/AIDS pandemic.

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Transmission

In more than nine times out of ten, children become infected with the HIV virus through mother-to-child transmission. This infection can occur during pregnancy, childbirth, or breastfeeding.

Yet this vertical transmission of the virus from mother to child is easily preventable in rich countries. This is done by giving highly active antiretroviral therapy (HAART) to HIV positive mothers during their pregnancy and to the infant within a few hours of birth, by carrying out elective caesareans, and by providing safe alternatives to breast milk.

By adopting such strategies, wealthy countries have been extremely successful in reducing mother-to-child transmission. Poorer countries are unable to replicate this success because the majority of mothers do not have access to diagnostics to establish their HIV status and so never initiate treatment; nor do they have access to antiretroviral therapy for themselves or their child. Elective caesareans are also rarely performed in developing countries, for practical reasons. Another reason is that even assuming that mothers know the risks, something basic like an alternative to breast milk can be unavailable, or even dangerous due to unsafe water, in more remote locations.

These disparities between North and South explain the gap in paediatric HIV/AIDS today: of the 640,000 children in the world newly infected during 2004, 560,000 live in Africa, and only 100 in either Europe or North America^[4]. But with infections in the developing world rising rapidly, the gap can only widen.

Diagnosis

Diagnosis of HIV infection is crucial so that antiretroviral therapy can be started as quickly as possible. It usually cannot be established on clinical symptoms alone, as these are often not manifest or confused with other typical childhood illnesses. Infection to HIV is commonly diagnosed through an antibody test. Antibodies, part of the body's immune response, appear in the blood within a few weeks following an infection.

But detection of antibodies is ineffective for newborns, because all babies born to women with HIV acquire their mother's antibodies. Establishing whether the child has been infected or not, whether the antibodies are the child's or the mother's, becomes highly complex. These maternal antibodies can remain in the blood as long as 18 months.

These difficulties in diagnosis, causing knock-on delays in the initiation of treatment, are key to understanding why half of all infected babies die before the age of two.

The current strategy for diagnosing children requires high-tech and hugely expensive laboratory equipment that is not available in most developing countries. The current gold standard is to measure the viral load, or the amount of viral particles in the blood stream. But the equipment necessary can cost up to US\$140,000; even the technologies most suitable for use in poorer countries can cost from US\$7,000 to US\$30,000. In addition, each test can cost up to US\$125^[5]. A further constraint is that the laboratory cannot function without highly skilled laboratory technicians and constant electric supply.

Today we need a simple, affordable, and rapid viral load test that can be used in low-tech settings. All that is needed is a qualitative result (a yes or no response), enabling doctors to decide whether to initiate treatment immediately. Multinational diagnostic companies, answering to commercial interests, have so far not shown any interest in addressing this problem. MSF is currently trying to identify and promote projects aiming to develop such new tools.

Treatment

In wealthy countries, infected children and babies – diagnosed rapidly – are treated with antiretroviral therapy, a strategy that has proved successful in reducing illness and death. Until the child is able to swallow tablets, the drugs are commonly administered orally in liquid form, as syrups or as powders to be mixed with water.

These seemingly simple procedures have practical implications that can make them ill-suited to remote or resource-poor settings, however. Some syrups must be refrigerated after opening, implying reliable electricity supply in patients' homes. Those in powder form require clean drinking water. To ensure the correct dosage is given, some drugs must be measured with a syringe before they are given: this can be too complex for caregivers. Some products are also foul tasting.

To address these issues, UNICEF and WHO consulted experts in November 2004 to improve access to appropriate paediatric ARV formulations. They recommended that liquids be used only for infants weighing under 10-12kg, and that solid drugs, such as tablets or capsules, be preferred for



older children^[6]. Such guidance may be welcome, but the solution remains inadequate and fails to fully address the problem.

For a start, the price of liquid and solid drugs in paediatric formulations is higher than that of their adult equivalents. For instance, treating a child weighing 10 kg for one year with stavudine, nevirapine and lamivudine can cost up to US\$816, while treating an adult with the same drugs costs US\$182^[7]. In fact treating a child can be up to four times more expensive than treating an adult. This must change.

Next, the appropriate drugs simply don't exist. Most pharmaceutical companies only produce liquid formulations. Today there are no equivalents for children of the fixed-dose combinations (different drugs combined in a single pill) that exist for adults. FDCs are particularly useful, as they simplify treatment and show excellent clinical, immunological and virological results.

Patient-friendly treatments have become available to adults in the past few years. Only two producers of generics, based in Thailand and India, are in the later stages of developing an FDC adapted for use in children (neither in syrup form); but most pharmaceutical companies have little interest in developing paediatric formulations because wealthier countries are largely successful in preventing mother-to-child transmission. The market for new formulations being mostly limited to the developing world, there isn't enough commercial incentive to stimulate action.

MSF experience on treating children with HIV/AIDS

MSF began treating children with antiretrovirals in December 2000. Today, MSF is treating more than 30,000 patients with ARV in over 55 projects. Amongst these, about 2,000 (or 8%) are children under the age of 15.

Dr Koen Frederix, a paediatrician working for MSF in Malawi describes the daily reality for relatives caring for infected children: "Since companies do not make easy-to-use triple drug combinations for children, I do what most doctors are doing: I try to show caregivers such as grandparents how to crush and break adult tablets, hoping that the children will get the doses they need. It is even more difficult for the youngest children – small children can't swallow tablets so they have to use different syrups in different quantities, which complicates treatment."

Even for doctors the obstacles remain. "There are no simple guidelines or standardised dosing charts to help doctors prescribe the correct dosages," Dr Frederix explains. "Because of this, physicians are often hesitate before treating children – it can seem too difficult."

MSF teams have created innovative tools to help overcome these practical barriers, by supporting health care providers in prescribing ARVs and promoting adherence in children. These include health diaries, treatment calendars, and fairy tales about "Devimmon", a witch that is a metaphor for HIV, in an effort to help children understand and adhere to treatment.



MSF calls for:

WHO to develop a clear strategy to ensure that greater numbers of children receive antiretrovirals:

- Establish a realistic goal of reducing mortality in children with AIDS
- Improve paediatric HIV guidelines to give practical guidance on how to diagnose and treat children
- Develop product criteria for new diagnostic tools – what would a new test need to look like in order to be practical in typical developing country settings
- Call on companies to make paediatric formulations of all their products
- Work with developers/producers of new fixed-dose combinations to ensure that these new treatments are quickly prequalified and reach the children that need them

UNICEF to raise awareness about the fact that children are being excluded from AIDS treatment.

Pharmaceutical companies to facilitate access for children to antiretroviral therapy:

- Pledge that they will make paediatric formulations of all their drugs
- Develop fixed-dose combinations
- Participate actively in WHO's prequalification process for paediatric formulations

[1] Source: Global Summary of the HIV and AIDS Epidemic, December 2004, UNAIDS

[2] UNAIDS, op. cit.

[3] State of the World's Children 2005, UNICEF

[4] UNAIDS, op. cit.

[5] Sources and Prices of Selected Medicines and Diagnostics for People Living with HIV/AIDS; UNICEF/UNAIDS/WHO/MSF; June 2004; Annex 1B

[6] UNICEF/WHO Technical Consultation: Improving Access to Appropriate Paediatric Anti-Retroviral Formulations, 3rd-4th November 2004, Geneva.

[7] "Untangling the web of price reductions: a pricing guide for the purchase of ARVs for developing countries" MSF, 8th edition, pending publication July 2005. The cheapest available WHO prequalified product was taken for this purpose of this example.



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