



# CHILDREN AND HIV

## **HOW SERIOUS IS HIV FOR CHILDREN?**

Where antiretroviral medications (ARVs) and good medical care for pregnant women are available, new infections of children are rare. Anyone age 13 or younger is counted as a child in US health statistics. In 1992, almost 1,000 children were infected. By 2002, there were just 92 new infections. African-American newborns are much more likely to be infected than children of other races.

Most children with HIV were born to mothers with HIV. Others got a transfusion of infected blood. In the developed world, blood for transfusions is screened and most pregnant women are taking ARVs. See fact sheet 611 for more information on pregnancy and HIV.

Infected mothers can pass HIV to their newborns. This happens where mothers do not get good medical care while they are pregnant. It also happens where ARVs are not available, or where blood for transfusions is not always screened.

## **HOW ARE CHILDREN DIFFERENT?**

Children's immune systems are still developing. They have a different response to HIV infection. CD4 cell counts (see fact sheet 124) and viral load counts (see fact sheet 125) are higher than in adults. An infant's viral load usually declines until age 4 or 5. Then it stabilizes.

Children also respond differently to ARVs. They have larger increases in CD4 cell counts and more diverse CD4 cells. They seem to recover more of their immune response than adults.

Infants have more fat and water in their bodies. This affects the amount of medication available. Children have a very high rate of metabolism. This gradually slows as they mature.

The liver processes drugs and removes them from the body. It takes several years to mature. As it matures, drug levels in children can change a lot.

Bones develop quickly during the early years of life. ARVs can weaken bones in adults. This was also seen in children. See Fact Sheet 557 for more information on bone problems in HIV.

## **RESEARCH ON CHILDREN**

The US government supported the Pediatric AIDS Clinical Trials Group to study AIDS in children. In Europe, the Pediatric European Network for Treatment of AIDS does similar work.

It is very difficult to recruit children into HIV clinical trials. In the US, many children with HIV have already been in more than one research study. With falling infection rates, there are very few new cases of pediatric HIV. The US has considered ending support for its pediatric trials network. Important research questions may be studied in adults.

A recent study found that children with HIV who were doing well on treatment had more behavioral problems and lower developmental scores than normal.

## **TREATMENT FOR CHILDREN**

HIV-infected children should be treated by a pediatrician who knows about HIV.

Antiretroviral therapy (ART) works very well for children. The death rate of children with AIDS has dropped as much as for adults. However, manufacturers were not required to study their products in children until very recently in the US. As a result, very few ARVs have been studied in children. Still, 12 ARVs are approved for use by children.

The correct doses are not always known. Children's doses are sometimes based on their weight. Another method is body surface area. This formula considers both height and weight. As mentioned above, several factors affect drug levels in children. Dosing may have to be adjusted several times as a child develops.

The doses of some medications for infants and very young children can be individualized. They come in liquid or powder form. Others come in a granular form. Some pills can be crushed and added to food or liquids. Some clinics teach children how to swallow pills. Children who can swallow pills have more medication options.

Doctors sometimes try to cut adult tablets into smaller pieces for children. However, this can result in doses that are too low. Some tablets are difficult to cut. Also, the

medication may be unevenly distributed in the tablet

It is difficult to know when to start treatment for children. Immediate treatment might prevent immune system damage. Delayed treatment may provide better quality of life for several years. However, HIV-related diseases show up much faster in untreated children than in adults. Without treatment, about 20% of children die or develop AIDS within one year. Most HIV-infected children in the US start ART before they are 3 months old. US Guidelines for ART in children were last updated in November 2005. They can be found on the Internet at <http://www.aidsinfo.nih.gov/Guidelines/>

## **CHILDREN AND ADHERENCE**

Adherence (see fact sheet 405) is a major challenge for children and infants. Both the child and the parents may need extra help. Many children do not understand why they should put up with medication side effects.

Their parents are usually HIV-positive. They may have their own difficulties with adherence. Their children may take different medications, on a different schedule. Many ARVs taste bad or have a strange texture. A feeding tube directly into the stomach may be necessary if an infant refuses to swallow medications.

## **THE BOTTOM LINE**

Where ARVs and good medical care for pregnant women are available, new infections of children are rare.

Treatment of HIV-infected children is complicated. Not all ARVs are approved for use by children. The correct dosing is not always known. Children may have a difficult time tolerating medications and taking every dose as scheduled.

However, because children's immune systems are still developing, they might have a better chance of fully recovering from damage caused by HIV.

Children with HIV should be treated by a pediatrician with experience in HIV.

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