AIDS can take on the appearance of many ordinary, treatable diseases; the converse is also true - many ordinary diseases can mimic AIDS. In this issue, we examine some of the diagnostic dilemmas faced by health practitioners, particularly in relation to pediatric AIDS. This is for two reasons. Firstly, diagnosing AIDS in a sick baby, in regions where poverty related illnesses are endemic, is highly problematic. One reader from Kenya wrote: "we need to know how to distinguish AIDS in young children from the common syndrome of failure to thrive - due to gastroenteritis, or food shortages..."

Secondly, increasing numbers of women are becoming infected with HIV; thus, increasing numbers of pediatric AIDS cases can be expected, since the major route of infection in children is via the placenta during pregnancy.

In many cases, it is a sick child who is the first in a family to present with HIV infection. A mother may originally bring her baby to a clinic to obtain treatment for its diarrhoea. The doctor may not suspect HIV infection until later when it becomes apparent that the child is not responding well to treatment.

Serological confirmation of a clinical diagnosis of AIDS in the young child is complicated. The mother should first be properly counselled about the implications of testing the child's blood for HIV antibodies. If the result is positive, the mother is almost certainly infected (unless the baby has received an infected blood transfusion, or there is some other risk unrelated to the mother). By implication, the mother's sexual partner is also likely to be infected. Suddenly, a child's diarrhoea has turned into a family crisis - both parents need supportive advice.

In addition, the doctor may not be able to tell the mother whether she has passed the virus on to her child until the infant is at least 15 months old, because all babies born to HIV positive mothers test positive for HIV antibodies at birth. The mother's antibodies (but not necessarily the virus itself) are automatically passed on to the baby through the placenta. The risk of the mother passing on the virus to her unborn child is probably between 25% and 30%.

In an infant diagnosed with HIV infection, the doctor is faced with another dilemma: should the child be immunised? There is some concern that a live vaccine might adversely affect the health of an immunosuppressed individual. However, there are potential benefits of protecting HIV infected children from common diseases before their immune system is damaged. WHO recommends that these vaccines should be given to infected infants: all children should be immunised with all the EPI vaccines, with the exception of children already showing symptoms of AIDS, who should not be given BCG.

But, whatever the medical dilemmas behind the question; 'does this child have AIDS?' there are far more important questions facing health care workers: 'How can we help set up an adequate family counselling service? How can we ensure the best medical care possible?' With the right motivation, and lobbying for resources, practical answers to these questions can be found.
Children, HIV infection and AIDS

‘How are children infected with AIDS?’

There are two important routes of infection with HIV which account for almost all paediatric AIDS cases. One is vertical infection (transmission from mother to child either before or just at birth); the other is infection through transfusion with HIV infected blood or use of infected blood products (for example, many haemophiliac children were infected in the early stages of the epidemic). Widespread screening of blood and careful selection of donors in industrialised countries has virtually eliminated this risk. However, infection by blood transfusion still remains a substantial problem in developing countries; screening of blood for antibodies is often not available outside main hospital or laboratory centres.

‘What is the risk of an HIV infected mother passing the disease on to her baby?’

For mothers who are infected but essentially well, the risk of passing HIV infection on to an unborn child is around 25%-30%. Where the mother is showing signs of AIDS or AIDS-Related Complex (ARC) the risk increases somewhat.

‘How can I tell if a child is HIV infected?’

This is much harder than in adults, especially in young children under 15 months old. WHO has adopted a paediatric clinical case definition (figure one). However, when evaluated in Africa [1] and Europe (with African children) [2] it was found to lack some specificity (i.e. it showed that some children were infected when they were not) and to have poor sensitivity (i.e. it failed to identify some children who were infected).

In older children considered to be at risk (perhaps because of a transfusion with infected blood) a test for HIV antibodies will usually reveal whether the child is infected, if carried out at least two to six months or more after exposure.

Diagnosis is much more difficult with babies born to HIV antibody positive mothers. Antibodies from the mother automatically pass into the baby’s blood while it is in the womb, and can persist for up to 15 months or more after birth. Since most conventional tests show whether or not HIV antibodies, rather than the virus itself, are present, a positive result in a child aged up to around 15 months may simply represent antibodies from, and hence infection in, the mother rather than the child. It is often not possible to tell a mother whether she has passed the disease on to her child or not, until the child is well into the second year of life.

‘What does AIDS look like in children?’

In older children the disease is similar to adult AIDS, apart from the first sign i.e. growth faltering. In babies and toddlers infected before, or just at birth, the disease may advance much more quickly than in adults, with some babies dying in the first few weeks of life. Others may not become ill until after six months of age. A few show either no evidence of their infection or have symptoms that only emerge years later. The earliest signs are failure to thrive (growth faltering) and chronic diarrhoea. Diagnosis is complicated by the fact that signs and symptoms associated with HIV infection are similar to those of other treatable diseases common to children in developing countries, such as TB, chronic diarrhoea or malnutrition.

As yet, signs, symptoms and case definitions for paediatric AIDS are ill-defined — there is no wholly reliable case definition. It is therefore especially important when treating children with symptoms that could indicate HIV infection, to treat all other possible causes of their symptoms.

‘Is there risk of infection through breastfeeding?’

Current evidence suggests that breastfeeding is not a significant route of infection. A very few cases have been reported where transmission through breastfeeding seems to have occurred; however these were in unusual circumstances, mostly where the mother was infected at the time of birth by a blood transfusion. These mothers ‘sero-converted’ whilst breastfeeding and therefore were unusually infectious. The World Health Organisation advises mothers to continue breastfeeding, even where HIV infection in the mother is indicated, especially in cases where the risks of bottle feeding far outweigh the small theoretical risk of the child becoming infected with HIV via breast milk (see WHO Report).

‘Can my child catch AIDS from other infected children?’

HIV infection, and thus AIDS, cannot be caught from sharing normal daily contact with infected children or adults. In families where one child is infected, normal family life (including the usual hugging, kissing, playing and fighting) has carried on without the infection spreading any further.

Figure One: Clinical case definition of paediatric AIDS

The presence of two major and two minor signs, in the absence of other known causes of immunosuppression:

**MAJOR:**
- Weight loss or abnormally slow growth;
- Chronic diarrhoea for more than one month;
- Prolonged or intermittent fever for more than one month

**MINOR:**
- Generalised lymph node enlargement;
- Oropharyngeal candidiasis (thrush in the mouth);
- Recurrent common infections;
- Generalised dementia (strange, disturbing behaviour, poor and worsening psychological development);
- Persistent cough for more than one month;
- Confirmed infection with HIV in the mother.

Children cannot catch AIDS from sharing cups, toilet seats, or by playing in dirt.

‘Can children catch AIDS from immunisations?’
There is no evidence to show that this has happened with immunisations or injections given properly by trained health workers using sterile equipment. However, in developing countries needles are often reused. There has been a worry that AIDS could be transmitted in this way if sterilisation of syringes and needles is not carried out properly. Children should only receive injections from trained health workers who are carrying out adequate sterilisation. Where disposable needles are used the rule is: ‘one sterile injection — one sterile needle’.

‘Can health workers catch AIDS from mothers and children?’
AIDS is a relatively uninfected disease and there is no risk from ordinary contact in the hospital, clinic, dispensary or home. Since it is often impossible to tell if a child or adult is infected, it is crucial that the normal rules for handling blood and body fluids (such as faeces, amniotic and tissue fluids) should be followed with great care and applied to all patients.

For those health workers attending childbirth, in areas where AIDS is known to be present, the following additional precautions should be taken:
- Procedures involving body fluids (vaginal examinations and the birth itself) should be conducted with waterproof gloves and gown to protect against splashes;
- Any cuts on the hands of the health care worker should be covered with a plaster;
- After the birth the baby can be washed with soap and water, as well as the mother;
- The placenta should be carefully disposed of (see page 8);
- All areas heavily contaminated with blood or body fluids must be cleaned with a suitable disinfectant (e.g. 0.5% hypochlorite solution — freshly made up). Equipment used for deliveries must be properly disinfected and all other equipment should be wiped with fresh 0.1% hypochlorite; (See also AIDS Action WHO Report, issue 3).

O all births should be handled in the same way. Where health workers are not yet supplied with the equipment to follow these rules they should:
- Cover their cuts with bandages (changed after every birth);
- Use clean sheets or other material as gowns;
- Wash hands more often and thoroughly than usual.

‘How can we stop more children being infected?’
The way to prevent paediatric AIDS through vertical transmission is to prevent infection in the parents.

To prevent infection after birth, special attention should be paid to blood transfusions. Even where screening of blood is not yet available, risks can be greatly reduced by:
- First ensuring that the transfusion is really necessary — treating the underlying cause of illness where possible, and in particular preventing and treating many of the conditions causing anaemia, such as malaria, infestation and malnutrition — including giving nutritional supplements (iron, in the case of anaemia) may eliminate the need for transfusion;
- When transfusion is essential, using blood from an individual whose behaviour makes them unlikely to be at risk of infection — e.g. grandparents from the same family.

Finally, it is important to remember that the young patients of today are the sexually active adolescents of tomorrow. Education about AIDS and AIDS prevention should be part of all health education with children.

Dr Angus Nicoll, African Medical and Research Foundation Tanzania, and Dr Festo Machera, Bugando Medical Center, Mwanza, Tanzania.

Note: A more thorough clinical case definition was produced by the Centers for Disease Control (USA) and WHO in 1987. However this only becomes useful where there is access to sophisticated diagnostic facilities.

The ‘Bar of Soap’ test

This is the first in an occasional series on appropriate new tests for blood screening in developing countries. Monica Cheesbrough describes key features of the Du Pont HIV CHEK — sometimes known as the ‘bar of soap’ test due to the appearance of the equipment used. The test can be performed individually (no batch testing required) and is recommended for its simplicity of technique and reading.

<table>
<thead>
<tr>
<th>What is detected</th>
<th>HIV-1 antibody, HIV-2 to be added to same test in March 1989</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle and type of test</td>
<td>Known as a Membrane capture assay. HIV antigen (pENV-9 recombinant protein) is adsorbed on a membrane fitted in the recess of a block of plastic. Serum or plasma is added and allowed to soak through to the membrane. Any HIV antibody remains on the membrane and joins to the HIV antigen. A buffer and wash solution are passed through the membrane. Protein-A gold conjugate is added. This red reagent joins to the HIV antibody and is seen as a red spot on the membrane. If there is no HIV antibody the red reagent soaks through and there is no red spot on the membrane.</td>
</tr>
<tr>
<td>Time taken for test</td>
<td>Five to ten minutes</td>
</tr>
<tr>
<td>Technique</td>
<td>1. Write test number on test block</td>
</tr>
<tr>
<td></td>
<td>2. Add three drops of buffer</td>
</tr>
<tr>
<td></td>
<td>3. Add one drop of fresh serum or plasma</td>
</tr>
<tr>
<td></td>
<td>4. Add two drops of buffer</td>
</tr>
<tr>
<td></td>
<td>5. Add two drops of wash solution</td>
</tr>
<tr>
<td></td>
<td>6. Add two drops of protein-A gold conjugate</td>
</tr>
<tr>
<td></td>
<td>7. Add three drops of wash solution</td>
</tr>
<tr>
<td></td>
<td>8. Read results: Positive = Red spot Negative = No red spot</td>
</tr>
<tr>
<td>Specificity and sensitivity</td>
<td>Good. Compared to the Western blot technique, the sensitivity of HIV CHEK has been shown to be 99.3% and specificity to be 98.4%. The test is therefore good for screening donor blood because of low false negatives. Very occasionally false positives occur (as in most other HIV tests).</td>
</tr>
<tr>
<td>Additional equipment required</td>
<td>None. All the plastic bulb pipettes are provided in the kit. Small volumes of distilled water are needed to reconstitute the reagents and controls.</td>
</tr>
<tr>
<td>Shelf-life and storage</td>
<td>No refrigeration of kits is required during transit. Refrigeration at 2° to 10° Centigrade is recommended for storage of kits to lengthen the life of the reagents and controls, which are stable in dry form for at least six months at normal room temperature from the date of manufacture. After reconstitution the protein-A gold conjugate can be used for one month when refrigerated and for five days if left at room temperature (25° Centigrade). Ten vials are supplied in each 100 test kit. Each vial is sufficient for ten tests. The shelf-life of the other reagents and controls are also adequate even if only a few tests are performed each week. The shelf-life of the test blocks is at least six months at room temperature.</td>
</tr>
<tr>
<td>Cost and availability</td>
<td>A special reduced price for this test is available through a number of charitable or non-profit organisations assisting blood screening programmes in developing countries. Information from: AHRTAG, 1 London Bridge St, London SE1 9SG, UK.</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>Not the cheapest test on the market. As with all other HIV antibody tests, this test does not detect the virus itself. False negatives will occur when testing blood which is infected, but where HIV antibodies have not yet been produced. See AIDS Action, issue 3.</td>
</tr>
</tbody>
</table>

Monica Cheesbrough FIMLS Tech RMS, Director, Tropical Health Technology, 14 Bevills Close, Doddington, Cambs, PE15 0TT, UK.
Uganda: paediatric AIDS

A young mother appears at a small clinic in the outskirts of Kampala. She is carrying a baby, which suffers from chronic diarrhoea and has oral thrush. Does this child have AIDS? In many cases, it is the child who is the first in a family to present with HIV infection. Professor Ndugwa and Dr Friesen look at the emerging picture of paediatric AIDS in Uganda.

AIDS has been reported in all districts in Uganda, particularly in the south and west and from Kampala. The disease is primarily affecting young adults, including women of childbearing age. Heterosexual intercourse has been the most important mode of HIV transmission. In paediatric AIDS cases, vertical transmission (mother to child during pregnancy) has been the most important route of infection.

Transfusion with HIV infected blood is another important route of infection for both adults and children. The AIDS Control Programme (ACP) reported in May 1988 that 65% of all blood transfusions were given to children below the age of five years, in most cases to treat anaemia caused by malaria. Of the transfusions given to adults, 75% were received by women, in most cases due to complications related to pregnancy and childbirth. All blood transfused in Kampala and other major hospitals is screened for HIV antibodies.

By 31 May, 1988, 359 cases of AIDS in children had been reported to the Uganda ACP. Most cases were diagnosed during the first two years of life. Only 12 cases have been reported between 5 and 14 years of age (if casual contact played a significant role in HIV transmission, higher numbers of AIDS in children in the latter age group would be expected). Information was available on 244 (68%) of the mothers. Of these, 102 (42%) had developed AIDS Related Complex (ARC) or AIDS. Eighty-five out of the 87 mothers where serological information was available were found to be HIV seropositive.

In the young child serological results must be interpreted with care, since HIV antibodies (but not necessarily the virus itself) from an infected mother are automatically passed into the baby’s blood through the placenta during pregnancy (see editorial). In general, the persistence of HIV antibodies beyond the first 15 months of life has been an accurate means of identifying HIV infected infants, as by this time, maternal antibodies will have disappeared. If infected, the infant will be producing its own antibodies to the virus, after 15 months. However, some children with AIDS symptoms have persistently tested negative for antibodies. In these cases, a clinical — rather than serological — diagnosis must be relied upon. (Confirmation is only possible by testing for antigen or virus culture).

Figure one shows the percentage of paediatric AIDS cases showing symptoms reported to the AIDS control programme as of May, 1988. These symptoms occur in many diseases common to developing countries, such as chronic gastroenteritis and tuberculosis. For this reason, it is difficult to develop a definitive clinical picture of paediatric AIDS; the WHO clinical case definition for AIDS in children (see page two) is currently used as a base for diagnosis.

Common signs and symptoms

The most common symptoms of HIV infection in children in Uganda are weight loss, failure to thrive and chronic diarrhoea. Oral thrush which frequently recurs after treatment can be the first indication of HIV infection.

Symptoms common to many other treatable diseases tend to be more persistent and severe in HIV infected infants, for example, recurrent fever and diarrhoea, repeated attacks of oropharyngeal candidiasis (chronic thrush), otitis media (painful inflammation of the middle ear), and generalised dermatitis. Moreover, HIV infected children do not respond as well to treatment for these conditions (for example, they may not grow or put on weight even with adequate feeding) and are also more likely to suffer from life-threatening diseases such as septicaemia and meningitis.

Research into paediatric AIDS may provide more answers to problems faced by health care workers and women of childbearing age in the future. It is becoming increasingly important to develop a working clinical case definition of paediatric AIDS — careful follow-up of children born to HIV seropositive mothers will be one way of doing this.

Professor C M Ndugwa, Head of Department, Paediatric and Child Health, Mulago Hospital, Uganda and Dr H Friesen, Paediatric AIDS Coordinator, Uganda AIDS Control Programme, Save the Children Fund.
Pneumocystis carinii pneumonia (PCP)

In 1981, the first reports of AIDS in the United States (USA) described a number of male patients who had all developed a previously rare form of pneumonia, caused by Pneumocystis carinii. It was already known that this organism only causes disease in people with defective cell-mediated immunity — the same form of immune deficiency seen in AIDS. In fact, it was Pneumocystis carinii pneumonia (PCP) that first indicated the nature of the immune deficiency in AIDS. Today, PCP is the most common opportunistic infection in AIDS patients in the USA, Europe and other temperate regions — although its prevalence has yet to be established in much of the developing world.

Pneumocystis carinii has until recently been regarded as a protozoan, but genetic analysis now indicates that it may be a fungus. Serological studies suggest that people are exposed to this organism in early life, developing antibodies without any recognisable illness. It was thought that the organism could remain latent in an individual for many years, like Mycobacterium tuberculosis (TB) and later re-emerge to cause disease if the individual developed defective cell-mediated immunity. Where the organism is generally prevalent in the environment, it is now thought that it can simply re-infect a susceptible host, more like Candida albicans (thrush).

Current evidence suggests that PCP is relatively uncommon in tropical regions. However the difficulty of confirming PCP diagnosis without using invasive procedures could contribute to this low estimate, as could the fact that, in tropical regions, tuberculosis seems to be a more common pulmonary opportunistic pathogen, and may present earlier in the course of immunodeficiency than PCP.

It is, however, becoming increasingly important to determine the prevalence of PCP in developing countries and to define a more practical approach to diagnosis and therapy.

The likely incidence of PCP in patients with AIDS in different regions of the world can be assessed by:
- community-based seroprevalence studies;
- direct investigation of the infection profile of representative patient groups, both in life and at post-mortem (including laboratory analysis of the lung).

Symptoms

In AIDS patients, PCP develops very gradually, with symptoms emerging over several weeks or even months. Early features may include symptoms similar to AIDS Related Complex (ARC) such as general malaise, weight loss and fever. There may be no signs of pulmonary disease. In due course, patients usually experience:
- a dry non-productive cough and gradually increasing shortness of breath on exertion — either or both of these symptoms may be present;
- sputum production (secretions coughed up from the respiratory passages) — less common, unless there is an additional opportunistic bacterial infection;
- inability to take a full breath;
- occasional mild pleuritic chest pain (painful and difficult breathing).

Other physical signs and symptoms may include fever and increased respiratory rate.

Diagnosis

Chest X-ray may show interstitial shadowing in advanced disease, characteristically in a perihilar distribution, sparing the periphery; but sometimes shadowing may be present in more localised forms. In the earlier stage of the disease, even with a patient with pulmonary symptoms, the X-ray may be normal. Early changes in pulmonary function include:
- a fall in forced vital capacity (FVC) and carbon monoxide transfer (TLCO — a measure of exchange of gases in the lung, indicating lung ‘efficiency’);
- a reduction in arterial pO₂ (possible in later stages).

Sputum is usually difficult to obtain for examination, but some investigators have encouraged sputum production by giving nebulised (fine spray) hypertonic saline. With very careful cytological (cell) examination of sputum, Pneumocystis can be identified. However, in many cases the definitive diagnosis can only be made by bronchoscopy (invasive examination using sophisticated equipment) with broncho-alveolar lavage (washing) or transbronchial biopsy (the removal of lung tissue for laboratory examination).

The development of newer diagnostic tests using induced sputum may make diagnosis easier, but in some developing countries diagnostic facilities may not be available, posing serious problems for diagnosis.

Treatment

In the first instance, the following drugs can be used to treat PCP (all three week courses):
- co-trimoxazole (trimethoprim 20mg/kg/day and sulphamethoxazole 100mg/kg/day in divided doses); or
- dapsone 100mg daily with trimethoprim 20mg/kg/day; or
- intravenous pentamidine 4mg/kg/day.

The first two therapies can initially be given intravenously, followed by oral doses — or orally throughout if the patient’s condition is good. Clinical response to treatment may take three to seven days, involving: reduced fever, cough and breathlessness; and falling pulse and respiratory rate.

Chest X-ray may show little initial improvement compared to the clinical response and may even show deterioration in the first few days of treatment.

Side effects

Adverse drug reactions, or side effects, are common, and include allergic skin rashes or fevers and leucopenia (reduction in number of white blood cells). Patients and health workers should be aware that:
- co-trimoxazole can cause severe nausea and vomiting;
- pentamidine can cause malaise,
hypotension (low blood pressure), hypoglycaemia (low blood sugar) and subsequent glucose intolerance;  
- dapsone may exacerbate the myelotoxicity (damage to bone marrow and related tissue) of zidovudine (AZT — an anti-viral drug sometimes used in the treatment of AIDS).

Some patients show a very rapid progression of disease despite treatment and become critically hypoxic (when the body is unable to absorb sufficient oxygen). A short course of high-dose methylprednisolone (40mg three times daily for three or four days) has been a valuable additional therapy, but should not be continued for longer because of the drug’s immunosuppressive effects. Pentamidine has recently been used by inhalation for treatment, but its efficacy and tolerance have yet to be defined; patients who are severely hypoxic are usually unable to tolerate its bronchial irritant effects.

Prevention

Since PCP is a common infection in patients with AIDS in many countries and recurs quite frequently some months after treatment, primary and secondary prophylaxis (preventive treatment) would seem logical. However, the high rate of adverse reactions to the drugs used poses problems. The options currently being explored are:
- Daily low-dose co-trimoxazole or dapsone;  
- Weekly doses of Fansidar (sulfa- 
doxine/pyrimethamine) or dapsone/pyrimethamine;  
- Fortnightly inhaled pentamidine.

However, the risk/benefit ratio for all of these has yet to be defined in large studies. The appropriateness of prophylaxis must be determined from a knowledge of the incidence of PCP in AIDS in a given population. Much work remains to be done to define PCP’s contribution to AIDS morbidity and mortality in tropical regions. Options for successful treatment are increasingly available but the optimal prophylactic regime still remains to be established.

Mary’s Hospital Medical School, and Consultant Immunologist, St Mary’s Hospital Medical School, London, UK.

Tuberculosis

It has been said that medical textbooks will need to be rewritten as a result of the HIV epidemic. AIDS has certainly altered the clinical picture of a number of diseases common to developing countries. Tuberculosis is a good example. In patients infected with HIV, tuberculosis usually causes fever, weight loss, and cough for more than three weeks, sometimes coughing up blood. A chest X-ray reveals cavities in one or both upper zones and sputum microscopy contains lots of bacilli visible on staining with Ziehl-Neelsen’s technique.

However, people infected with HIV who then develop tuberculosis have less specific signs and symptoms. Fever and weight loss are usually present, but these symptoms occur in many other diseases too, especially those associated with HIV. Cough and coughing blood, are less common. Chest X-rays rarely show cavities and can even be confused with lobar pneumonia. Extrapulmonary disease is more frequent, especially of the lymph nodes. Sputum is less likely to be positive on microscopy. The tuberculin test (Mantoux, Heat, or Tine tests) is less likely to be positive. The diagnosis of tuberculosis is thus more difficult in the presence of HIV.

Diagnosis is obviously complicated. How should medical practitioners deal with this?

Firstly: if you suspect tuberculosis, ask yourself if HIV could also be present by considering the patient’s overall health, and any risk factors. If you strongly suspect HIV infection, a blood test for HIV antibodies may be considered.

If you suspect AIDS or HIV infection, ask yourself if tuberculosis is present. In countries where tuberculosis is common, most adults are infected with the bacillus, although they often do not develop the disease. If they then get HIV infection, the tuberculous infection is more likely to develop into the disease. Tuberculosis is one of the most common ways in which AIDS presents in developing countries.

Secondly: if sputum microscopy for TB is negative, consider sending sputum to a laboratory for culture. In many developing countries it is possible to do this, although you may have to send the sputum to the capital. Even if it takes a week to get there, any TB bacillus will probably still grow. If the patient has an abscess, you can do the same with the pus.

If large lymph nodes are present it is worth aspirating one and looking for the bacillus with the Ziehl-Neelsen stain. Many more organisms are found in AIDS patients with tuberculosis than in non-HIV infected lymph node tuberculosis. Bone marrow aspiration or liver biopsy may also be helpful — if facilities for this exist.

Thirdly: you may be confronted with an HIV positive patient in whom you suspect tuberculosis, but chest radiography does not reveal the classical signs of upper zone consolidation with cavities and fibrosis. Hilar or paratracheal lymph node enlargement may be the only radiological evidence for tuberculosis. Lobar consolidation is often seen just as you would expect in acute lobar pneumonia; but unlike lobar pneumonia there is no response to penicillin and usually acid fast bacilli are found in the sputum. A common situation is the discovery of fluffy white nodules on X-ray. A common situation is the discovery of fluffy white nodules on X-ray. A common situation is the discovery of fluffy white nodules on X-ray. A common situation is the discovery of fluffy white nodules on X-ray. A common situation is the discovery of fluffy white nodules on X-ray.
cause for the illness. It is then reasonable to start a trial of anti-tuberculous treatment based on the culture result. It is then reasonable to start a trial of anti-tuberculous treatment, e.g. leishmaniasis, bacterial pneumonia, histoplasmosis, or even lymphoma. If no visible improvement is seen after four weeks of anti-tuberculous treatment, you are probably dealing with one of these other infections, and the anti-tuberculous treatment should be stopped. Even if HIV is present, tuberculosis normally responds to treatment.

A word of warning: severe skin reactions seem more common in HIV-positive patients being treated for tuberculosis. They may be due to thioacetazone. If a severe skin reaction occurs, all drugs should be stopped until the reaction recovers and then reintroduced one by one, starting with the drug least likely to be responsible.

The HIV epidemic now also means that children are probably at increased risk of catching tuberculosis. BCG, the vaccine against tuberculosis used in most developing countries, is recommended to be given at or near birth as part of the WHO Expanded Programme on Immunisation, even in areas where HIV is common. However, children who are already ill with AIDS should not be given this live vaccine (see editorial p.1).

Dr Paul Nunn, Wellcome Trust Research Laboratories, PO Box 43640, Nairobi, Kenya.

COUNSELLING HINTS
Using condoms

For maximum protection against sexually transmitted diseases, including HIV infection, condoms must be used correctly. Health workers and safer sex counsellors should not assume that people know how to use condoms. All condom users should receive very clear and explicit instructions:

- use a new condom every time you have penetrative sex*
- do not put the penis near the vagina before putting on the condom
- take the condom out of the packet carefully, without damaging the thin rubber
- do not try to put on the condom until the penis is hard (erect)
- hold the tip of the condom (the last bit of the closed end — sometimes there is a little 'teat' at the end) between a finger and thumb to expel trapped air and to make room for the semen
- with the other hand, unroll the condom down the length of the penis by pushing down the round rim — if this is difficult, it is because the condom is 'inside out'. Turn the condom the other way round and take hold of the other side of the tip (repeat as above)
- when the rim of the condom is at the base of the penis (near the pubic hair) penetration can begin. If lubrication is needed, use water-based lubricants — not petroleum-based (such as Vaseline) and not saliva
- if the condom breaks during sex, take it off immediately and put on a new one
- after ejaculation*, withdraw the penis while it is still erect, holding the bottom rim of the condom to avoid it slipping off.

- dispose of the used condom carefully; by wrapping in waste paper before throwing away, or burying, or flushing down a lavatory.
* See also Safer Sex Guidelines AIDS Action issue 4.

HEALTH PRECAUTIONS
Disposal of placenta

The placenta can create a health risk in areas where HIV is prevalent. This is because it may contain HIV infected blood and body fluids. A number of readers have asked for information on the safe disposal of placenta in maternity units and by traditional birth attendants (TBAs). Sister Maura O'Donohue, Coordinator for AIDS Programmes at the Catholic Fund for Overseas Development (CAFOD), has investigated this area with experts in virology, epidemiology and environmental health. The following is a summary of her recommendations:

- Placenta should always be handled according to the principles of safe practice in handling blood (see AIDS Action/WHO Report issue 1)
- In countries where burial has been the usual method of disposal, this practice should be continued. Addition of disinfection or lime is not necessary. However, care should be taken to ensure that the placenta is buried deeply enough to avoid being dug up by animals and left exposed.
- Where it is traditional for family members to take the placenta home for burial, appropriate education regarding safe handling and disposal should be given.
- Disposal should comply with local Control of Infection Guidelines.

Sr. Maura O'Donohue, CAFOD, 2 Romero Close, Stockwell Road, London SW9 9TY, UK

Managing editor: Kathy Attawell  Executive editor: Hilary Hughes  Production officer: Katherine Miles

Editorial advisory group (as of September 1988): Dr K Fleischer (FRG), Dr P Kataaha (Uganda), Professor K McGaum (UK), Professor L Mata (Costa Rica), Dr A Meyer (WHO), Dr D Nabarro (UK), Dr P Nunn (Kenya), Dr A Pinching (UK), Dr P Poore (UK), Dr W Almeida (Brazil), Dr T K Sinyangwe (Zambia), Dr M Wolff (FRG).

Produced and distributed (free of charge to developing countries) by AHRTAG, 1 London Bridge St., London SEI 9SG, UK.
With support from Memisa Medicus Mundi, Misereor, ODA, Oxfam, Save the Children Fund, SIDA and WHO/GPA.

Printed by Bourne Offset Ltd ISSN 0953-0096
Breastfeeding, breast milk and human immunodeficiency virus (HIV)


In view of the importance of breast milk and breastfeeding for the health of infants and young children, and of the increasing prevalence of the human immunodeficiency virus (HIV) infection in many parts of the world, a Consultation on Breastfeeding, breast milk, and HIV infection was organised by the Global Programme on AIDS and the Division of Family Health in June 1987. Its purpose was to review currently available information on the possible relationship between breastfeeding, or breast milk, and HIV transmission, and to identify further research needs in this area. Twenty participants from fifteen countries attended the consultation. The participants represented the fields of epidemiology, immunology, virology, paediatrics and nutrition. The conclusions of the consultation are summarised below.

Transmission of HIV from infected mothers to their infants may occur before, during or shortly after birth. Evidence concerning the transmission of HIV from infected mothers to their infants suggests that between 25% and 50% of all offspring will be infected*. The risk of transmission may depend on a number of factors, including:

- the timing of the mother's HIV infection;
- the mother's immunologic and overall health status, including intercurrent infections;
- the number of children previously given birth to by the mother;
- other possible factors.

The possibility that HIV could be transmitted through breastfeeding, or breast milk, is supported by a report that HIV can be cultured from breast milk of mothers who are themselves infected.

At present, the risk of HIV infection from mothers to infants through breastfeeding has not yet been defined, but available information suggests that if such transmission occurs, the relative contribution of this route is very small, as compared with in utero and intrapartum transmission (before, or during, birth). For example, a substantial number of infants born to infected mothers have been breastfed without their having any evidence of acquiring HIV infection. On the other hand, there are few reported cases where mothers became infected post-partum through blood transfusions, and where their infants, in turn, became infected, possibly through breastfeeding. This does not necessarily imply, however, that such transmission occurs among mothers who are infected with HIV before or during pregnancy.

Breast milk is also important in preventing recurring infections which accelerate progression of HIV-related disease in already infected infants. The importance of breast milk and breastfeeding for the survival and development of infants and young children, as well as for child-spacing

*Editors' note: Current evidence suggests that the transmission rate is between 25% and 30%.

Breast still best!
The immunologic, nutritional, psychosocial and child-spacing benefits of breastfeeding are well-recognised. They have been reflected increasingly in national and international policies on child and maternal health.

The risk of HIV transmission through breast milk is small compared with the risk of transmission during pregnancy.

AIDS: a worldwide effort will stop it
and hence maternal health, should continue to be emphasised in all health and nutrition policies.

In many circumstances . . . breastfeeding by the biological mother should continue — irrespective of HIV infection status

Additional epidemiologic and laboratory research is needed on the risks of HIV transmission through breast milk and on the potential benefits of breast milk in situations where infants have been exposed to HIV or are already infected.

Recommendations

In the interim:

- Breastfeeding should continue to be promoted, supported and protected in both developing and developed countries. The overall immunologic, nutritional, psychosocial and child-spacing benefits of breastfeeding to infants and their mothers continue to be important factors in determining the overall health of mother and child.

- If, for whatever reason, the biological mother cannot breastfeed or her milk is not available, and the use of pooled human milk is considered, the report of isolation of HIV in breast milk should be taken into account. Pasteurisation at 56 degrees Centigrade for 30 minutes has been reported to inactivate the virus. Further research on the effectiveness of different methods of pasteurisation, however, is needed. As an additional precaution, the possibility of screening donors (in accordance with WHO criteria on HIV screening) should be considered, especially in areas where the prevalence of HIV infection is known to be high. Similarly, if, for whatever reason, the biological mother cannot breastfeed, or her milk is not available, and where wet-nursing is the next obvious choice, care may need to be taken in selecting the wet-nurse, bearing in mind her possible HIV infection status and that of the infant who is to be fed.

- In individual situations where the mother is considered to be HIV-infected, and recognising the difficulties inherent in assessing the infection status of the new-born, the known and potential benefits of breastfeeding should be compared to the theoretical, but apparently small, additional risk to the infant of becoming infected through breast-feeding. Consideration should be given to the socio-economic and ecological environment of the mother-child pair and the extent to which alternatives to human milk can safely be used. In many circumstances and, particularly, where safe and effective use of alternatives is not possible, breastfeeding by the biological mother should continue to be the feeding method of choice, irrespective of HIV infection status.
Consultation on AIDS and the Workplace

A Consultation on AIDS and the Workplace was convened in Geneva by the World Health Organisation’s Global Programme on AIDS (GPA) in association with the WHO’s Office of Occupational Health and the International Labour Office (ILO) from 27-29 June 1988. Thirty-six participants from 18 countries attended, including representatives of government, unions, business, public health, medical, legal and health education.

Three themes were addressed by the Consultation:

O risk factors associated with HIV infection in the workplace;
O responses by business and workers to HIV/AIDS;
O use of the workplace for education activities.

The following is an excerpt from policy statements endorsed at the Consultation:

I. General statement

Today there are 2.3 billion economically active people in the world. The workplace plays a central part in the lives of people everywhere. A consideration of HIV/AIDS and the workplace will strengthen the capacity to deal effectively with the problem of HIV/AIDS at the local, national and international levels.

In addition, concern about the spread of HIV/AIDS provides an opportunity to examine the workplace environment. It provides workers, employers and their organisations, and where appropriate, governmental agencies and other organisations, with an opportunity to create an atmosphere conducive to caring for and promoting the health of all workers. This may involve a range of issues and concerns, not only individual behaviour, but also addresses matters of collective responsibility. It provides an opportunity to re-examine working relationships in a way that promotes human rights and dignity, ensures freedom from discrimination and stigmatisation, and improves working practices and procedures.

2. Introduction

There is no evidence to suggest that HIV transmission involves insects, food, water, sneezing, coughing, toilets, urine, swimming pools, sweat, tears, shared eating and drinking utensils or other items such as protective clothing or telephones. There is no evidence to suggest that HIV can be transmitted by casual, person-to-person contact in any setting. HIV infection and AIDS are global problems. At any point in time, the majority of HIV infected persons are healthy; over time, they may develop AIDS or other HIV related conditions or they may remain healthy. It is estimated that approximately 90% of the 5-10 million HIV infected persons worldwide are in the economically productive age-group. Therefore, it is natural that questions are asked about the implications of HIV/AIDS for the workplace.

In the vast majority of occupations and occupational settings, work does not involve a risk of acquiring or transmitting HIV between workers, from worker to client, or from client to worker. This document deals with workers who are employed in these occupations. Another consultation to be organised by the Global Programme on AIDS will consider those occupations or occupational situations, such as health workers, in which a recognised risk of acquiring or transmitting HIV may occur.

3. Policy principles

Protection of the human rights and dignity of HIV infected persons, including persons with AIDS, is essential to the prevention and control of HIV/AIDS. Workers with HIV infection who are healthy should be treated the same as any other worker. Workers with HIV related illness, including AIDS, should be treated the same as any other worker with an illness.

Most people with HIV/AIDS want to continue working, which enhances their physical and mental well-being and they should be entitled to do so. They should be enabled to contribute their creativity and productivity in a supportive occupational setting.

The World Health Assembly Resolution (WHA41.24) entitled ‘Avoidance of discrimination in relation to HIV infected people and people with AIDS’ urges member states:

(1) To foster a spirit of understanding and compassion for HIV infected people and people with AIDS...

(2) to protect the human rights and dignity of HIV infected people and people with AIDS... and to avoid discriminatory action against, and stigmatisation of them in the provision of services, employment and travel;

(3) to ensure the confidentiality of HIV testing and to promote the availability of confidential counselling and other support services..."

The approach taken to HIV/AIDS and the workplace must take into account the existing social and legal context as well as national health policies and the Global AIDS Strategy.
4. **Policy development and implementation**

Consistent policies and procedures should be developed at national and enterprise levels through consultations between workers, employers and their organisations, and where appropriate, governmental agencies and other organisations. It is recommended that such policies be developed and implemented before HIV related questions arise in the workplace.

Policy development and implementation is a dynamic process, not a static event. Therefore, HIV/AIDS workplace policies should be:

(a) communicated to all concerned;

(b) continually reviewed in the light of epidemiological and other scientific information;

(c) monitored for their successful implementation;

(d) evaluated for their effectiveness.

5. **Policy components**

A. Persons applying for employment:

Pre-employment HIV/AIDS screening as part of the assessment of fitness to work is unnecessary and should not be required. Screening of this kind refers to direct methods (HIV testing) or indirect methods (assessments of risk behaviours) or to questions about HIV tests already taken. Pre-employment HIV/AIDS screening for insurance or other purposes raises serious concerns about discrimination and merits close and further scrutiny.

B. Persons in employment:

1. **HIV/AIDS screening:** HIV/AIDS screening, whether direct (HIV testing) or indirect (assessment of risk behaviours) or asking questions about tests already taken, should not be required.

2. **Confidentiality:** Confidentiality regarding all medical information, including HIV/AIDS status, must be maintained.

3. **Informing the employer:** There should be no obligation on the employee to inform the employer regarding his or her HIV/AIDS status.

4. **Protection of the employee:** Persons in the workplace affected by, or perceived to be affected by HIV/AIDS, must be protected from stigmatisation and discrimination by co-workers, unions, employers or clients. Information and education are essential to maintain the climate of mutual understanding necessary to ensure this protection.

5. **Access to service for employees:** Employees and their families should have access to information and educational programmes on HIV/AIDS, as well as to relevant counselling and appropriate referral.

6. **Benefits:** HIV infected employees should not be discriminated against including access to and receipt of standard social security benefits and occupationally related benefits.

7. **Reasonable changes in working arrangements:** HIV infection by itself is not associated with any limitation in fitness to work. If fitness to work is impaired by HIV related illness, reasonable alternative working arrangements should be made.

8. **Continuation of employment relationship:** HIV infection is not a cause for termination of employment. As with many other illnesses, persons with HIV related illnesses should be able to work as long as medically fit for available, appropriate work.

9. **First aid:** In any situation requiring first aid in the workplace, precautions need to be taken to reduce the risk of transmitting blood-borne infections, including hepatitis B. These standard precautions will be equally effective against HIV transmission.

---

**WHO Employment Opportunities: Health Promotion**

The World Health Organisation (WHO) Global Programme on AIDS (GPA) plans to advertise posts in the following areas: AIDS health promotion materials (network of centres and newsletters) and educational systems (schools, workplaces etc); health education strategy development and implementation; communication research and evaluation; condom services promotion (including social marketing). Graduate studies and significant experience required. For copies of post announcements please write to: Post Announcements, GPA/HPR, World Health Organisation, 1211 Geneva 27, Switzerland

---

Any questions about the content of the WHO Report should be sent to WHO/GPA/HPR, 20 Avenue Appia, 1211 Geneva 27, Switzerland.