

HIV drives children's pneumonia in sub-Saharan Africa

Pneumonia in HIV-positive children is proving to be a challenge across sub-Saharan Africa. Claire Keeton reports from Cape Town.

Nokhwezi Hoboyi knows about the devastation of pneumonia after losing her first two babies to the disease.

The 27-year-old mother from Cape Town saw her first child die of pneumonia at four months of age. Her second child started coughing at two months and was diagnosed with pneumonia. She was hospitalized, became ill at three months and did not respond to antibiotics.

Hoboyi, an AIDS activist, said: "The doctor asked me if he could test her for HIV and I agreed. She tested positive. She developed pneumonia and had to be transferred to intensive care. Her health deteriorated and she also passed away."

Last November Hoboyi, who has since been put on antiretroviral therapy, cried tears of joy when her third baby, Qhayiya, tested negative for HIV.

Pneumonia is a common cause of illness and death among children aged less than five years and those with HIV – particularly infants – are especially vulnerable.

Children with HIV are at higher risk of contracting pneumonia, becoming ill from it and dying than children who are HIV negative. And they fare worse on treatment, which is further complicated by the need for a wide range of antibiotics to counter numerous opportunistic infections. This makes treatment more expensive and increases the risk of bacterial resistance to the drugs prescribed.

More lives are saved, however, by early identification of children with the potentially lethal combination and by putting them on appropriate preventive treatment, rather than treating HIV-positive children once they have contracted pneumonia.

Dr Andrew Mbewe, regional adviser for Child and Adolescent Health and Development at the Regional Office for Africa of the World Health Organization (WHO), says that in sub-Saharan Africa four diseases or conditions are responsible for more than



Nokhwezi Hoboyi with treasured baby Qhayiya.

Ambrose Peters

70% of deaths among children less than five years of age: diarrhoea, malaria, malnutrition and pneumonia. "This [toll] is worse where HIV is prevalent."

One sign of HIV that health workers following WHO's Integrated Management of Childhood Illness guidelines are advised to look out for is persistent and recurrent pneumonia.

With the rise of HIV in South Africa, pneumonia cases among children have soared. The children's wards in South Africa's biggest hospital, the Chris Hani Baragwanath in Soweto, are full of children with this potentially lethal combination.

"The incidence of hospitalization for pneumonia has increased exponen-

tially in tandem with the increase in the HIV epidemic over the past two decades,” says Professor Shabir Madhi, co-director of the Respiratory and Meningeal Pathogens Research Unit of Witswatersrand University, which is based at Baragwanath Hospital.

“Currently 50% of children who are hospitalized for pneumonia in South Africa are HIV infected, even though they make up less than 5% of the childhood population,” Madhi says, adding: “HIV-infected children have an increased risk of being colonized with pneumococcus and a 40-fold greater risk of developing several invasive pneumococcal diseases.”

The case fatality rate for HIV-infected children with pneumonia in hospital is about 7% compared to about 1.5% for children who are not infected, he says.

Children with HIV generally get worse, more protracted and recurrent pneumonia than those who are HIV negative, according to Dr Tammy Meyers, director of the Harriet Shezi Children’s Clinic at Baragwanath Hospital.

Dr Prakash Jeena, head of Paediatric Pulmonology at the Nelson Mandela School of Medicine, has also seen a marked increase in the incidence of pneumonia among children. About 70% of children at the Durban hospital with “very severe pneumonia”, diagnosed according to WHO criteria, are HIV positive and about one in four or five of them will not survive.

Only 54% of HIV-infected children respond to standard therapy for pneumonia, compared with 80% of children who are not HIV positive.

The paediatric HIV/AIDS service at Groote Schuur Hospital in Cape

Town faces similar challenges, with its inpatients and children attending two community clinics in the outlying townships.

Director of the paediatric HIV/AIDS service, Dr Paul Roux, who is also co-founder of the HIV care and treatment organization Kidzpositive, says that he has seen *Pneumocystis jiroveci* pneumonia almost exclusively in infants who are HIV positive.

Speedy treatment is critical when it comes to treating these infants. “They need to be identified early,” Meyers says. “All babies exposed to HIV should be tested for HIV at four to six weeks. If they are positive they should be started on Bactrim [sulfamethoxazole-trimethoprim] prophylaxis. This can significantly reduce pneumonia and other diseases.” She adds that babies infected with HIV should be put onto live-saving antiretroviral therapy as early as possible. This practice is standard at the Harriet Shezi clinic and other big centres, but less common at outlying clinics with fewer resources.

Jeena says that children with HIV experience more severe bouts of pneumonia that are more difficult to treat. The chief cause of pneumonia among children with HIV is *Streptococcus pneumoniae*. Madhi and his team have evaluated a vaccine which targets this and *Haemophilus influenzae* type b, which can also cause pneumonia. The vaccine helps to prevent hospitalization for severe pneumonia.

Children with HIV are at risk of being infected by a broader range of bacteria, viruses and other pathogens than those who are HIV negative. As a result, Madhi says: “You need to use antibiotics which are broader in their activity. This, in turn, is associated with

higher cost as well as a greater chance of pathogens becoming resistant to the antibiotics.”

Jeena adds that it is currently not possible to diagnose some of these pathogens in rural areas due to their limited access to sophisticated laboratory facilities, so they are developing a diagnostic tool to assist health professionals.

Meyers says it is important to also check for tuberculosis among children with respiratory infections, but that it is hard to diagnose. Roux says doctors also need to look out for the “second wave” of children with HIV, who were well at birth but now, at seven or eight years old, are presenting with complications.

Caring for babies and children with HIV has come a long way since Roux and his colleagues started their paediatric service in 2002; they now have 650 children on antiretrovirals.

“In the old days, all we could offer was care and 24-hour access. If a mother [of a child with HIV] picked up an infection, she had to come straight to us.” Roux urges health-care workers to acknowledge mothers as equal partners in caring for their children.

“It is not just enough to have the staff and the building; the clinic has to be friendly. The mother must want to come and be recognized as a member of the team. They see their child every day. Once a child is on antiretrovirals, we see them once every three months.”

Roux says that the effective treatment of HIV-positive children is not only about access to medicines. “Time and time again in Africa, it is not just about access to antiretrovirals. It is about access to health care.” ■

Controversial funding mechanism to fight pneumonia

New financing methods show promise in fight against pneumonia, the biggest killer of children. Theresa Braine reports from Mexico.

More than two million children aged less than five years die of pneumonia every year worldwide. Most of these deaths occur in the poorest nations where treatment is not always readily available and where vaccines are hard to come by. Now there is a big global push to prevent the infections that cause

pneumonia using unique financing mechanisms to develop and purchase new vaccines.

Vaccines exist against some strains of pneumococcus bacteria, which can cause childhood pneumonia as well as meningitis and otitis media. But these vaccines are often too pricey for

developing countries or they do not protect against the strain prevalent in a given country.

Public health experts and government officials have developed an innovative financing approach, called Advanced Market Commitment (AMC). Under this scheme, donor nations finance the purchase of new pneumococcal vaccines at a pre-agreed price if demanded by countries in need and if the vaccines meet certain product characteristics. The aim is to drive investment into late-stage vaccine development and building