

**Guidance for United States Government In-Country
Staff and Implementing Partners for a Preventive
Care Package for Children Aged 0-14 Years Old
Born to HIV-Infected Mothers* - #1**

**The President's Emergency Plan for AIDS Relief
Office of the U.S. Global AIDS Coordinator**

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*Please refer to companion Emergency Plan guidance for adults

I. Introduction

As of the end of 2004, about 2.1 million children were living with HIV/AIDS. HIV/AIDS accounts for 7.7 percent of mortality of children less than five years old worldwide, and as much as 40-60 percent in several southern African countries; HIV/AIDS is also the third-leading cause of disability-adjusted life years lost.^{1,2}

The clinical, immunologic, and virologic manifestations of HIV/AIDS in children differ from those in adults. Moreover, children are growing, have different metabolisms, and are dependent on adults. As a result, infants and adolescents have very specific and age-dependent needs that vary with age.

The prevention of HIV infection in children and the care and treatment of HIV-infected children are important priorities of the President's Emergency Plan for AIDS Relief. The purpose of this document is to describe preventive care interventions the Emergency Plan can support for children born to HIV-infected mothers (HIV-exposed children), including children in whom an HIV diagnosis has been confirmed (HIV-infected children). Since other health programs support basic health care and basic social services for children, in many cases, the Emergency Plan should link delivery of these interventions with existing community and health facilities that provide such care, supported by other mechanisms. Emergency Plan programs should also link, where possible, with other Emergency Plan programs, such as those to prevent mother-to-child HIV transmission (PMTCT), those to serve orphans and vulnerable children (OVCs), and those to provide home-based care. In addition, United States Government (USG) teams in countries that are also part of the President's Malaria Initiative (PMI) and/or are recipients of grants for the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), should work closely to integrate Emergency Plan work with activities funded by these two programs. This document does not address antiretroviral treatment for children.

USG teams should request funding for the Preventive Care Package for Children in Country Operational Plans, in appropriate program areas such as: Laboratory; OVC; Palliative Care; TB/HIV; Treatment; and Strategic Information. USG teams in countries that are also part of the PMI and/or are recipients of grants from the GFATM should work closely to integrate Emergency Plan work with activities funded by these two programs.

There is ongoing discussion regarding which interventions Emergency Plan teams should include in a preventive care package. Recognizing that a package cannot be standardized for all situations and countries, interventions within the care package are likely to vary within regions, and even within countries, depending on the setting and the capacity of the partners who are implementing such programs. However, the Office of Global AIDS Coordinator (OGAC) believes it is valuable to offer a "menu" of interventions. Emergency Plan programs should link the preventive components within this document to other key health care, such as routine medical care and voluntary family planning, which play a key role in reducing morbidity and mortality. Those interventions for PLWHA and their families that cannot be funded directly should be considered for

“wrap-around” funding from other sources. Such “wrap-around” services may benefit non-HIV-infected, as well as HIV-infected, persons in the household or elsewhere in the community. Prioritization and selection of the components of a preventive care package must be performed locally, and should be consistent with national guidelines and those sponsored by the World Health Organization (WHO) operative within the country.

II. Activities Supported by the Emergency Plan

1. Diagnosis of HIV infection in infants and young children

Because the clinical course of HIV is rapid in children, early diagnosis is critical to initiating interventions that can prolong life and for providing important information for families.^{3,4,5,6,7} However, diagnosis of HIV infection is more complex in infants and young children than in adults. Standard antibody tests (*e.g.*, HIV rapid tests, ELISA) can be used to diagnose HIV infection in children after 15-18 months of age, but not earlier because of their inability to distinguish between maternal and infant anti-HIV antibodies. However, as a screening test, a negative HIV antibody test in an HIV-exposed infant who was not breastfed or is no longer breastfeeding is a useful indicator of the absence of HIV infection. Virologic tests, including polymerase chain reaction (PCR) that can detect DNA or RNA and p24 antigen testing, are accurate methods for assessing HIV infection before the child is 18 months of age. Sensitivity and specificity of DNA PCR approaches 100 percent in infants and children at four to six weeks after last exposure to HIV.

Emergency Plan funds may support:

- 1) Technical assistance to develop national guidelines for diagnosing HIV infection in infants and young children.
- 2) Training of health care workers who are caring for children on diagnosing HIV infection in children, according to national guidelines.
- 3) Follow-up and referral for diagnosis of HIV-exposed infants and young children at the facility and community level through the network model.
- 4) Purchase of equipment and reagents needed to diagnose HIV infection in infants and young children, according to national guidelines.
- 5) Training of staff to perform testing.
- 6) Support for laboratory programs for infant diagnosis, linked to laboratory national capacity-building.
- 7) Targeted evaluation (including effectiveness and cost-effectiveness) of various algorithms and practical approaches for scaling up testing infants and young children for HIV.

2. Childhood immunizations

Like other children, HIV-exposed children should receive all routine childhood immunizations, according to the national immunization schedule, including live viral vaccines, even if a parent or other household contact is HIV-infected.⁸ HIV-infected children should receive all routine non-live-viral immunizations, as recommended by national immunization programs, although national and international guidelines have special consideration for measles, *Bacille Calmette Guerin* (BCG), and yellow-fever vaccination.⁹

Streptococcus pneumoniae and *Hemophilus influenzae* type b are responsible for the majority of bacterial meningitis and pneumonia in HIV-infected children.^{10,11,12} Both the conjugate *Haemophilus influenzae* type b (Hib) and pneumococcal vaccines are effective, even in HIV-positive children.^{13,14}

Emergency Plan funds may support:

- 1) Technical assistance to develop national policy, guidelines and training for childhood vaccination programs for children living with HIV/AIDS.
- 2) Referral and follow up of HIV-exposed infants and young children for immunizations according to national guidelines at the facility and community level through the network model.
- 3) Linking Emergency Plan programs to routine immunization programs, such as supporting systems to link medical records for following HIV-exposed and HIV-infected children with records for recording childhood immunizations, and development and evaluation of program approaches to assure coverage of HIV-positive and HIV-exposed children who might fail to be reached by routine care.

Emergency Plan funds may not support:

- 1) Purchase of routine vaccines for HIV-exposed and HIV-infected children (funds can support purchase of vaccines for pilot programs and targeted evaluations of new vaccines for HIV-infected children.)

3. Prevention of serious infections

Up to 75 percent of HIV-infected infants develop symptoms in the first two years of life. Recurrent and serious pneumonia, [especially caused by *Pneumocystis jiroveci* (PCP)], TB, malaria, and persistent diarrhea are particularly important problems for HIV-infected children for which effective preventive interventions are available.

Pneumonia, especially PCP, is common and severe in HIV-infected children in Africa.^{15,16,17,18} The risks of PCP, mortality, and hospital admissions decrease when HIV-exposed infants receive trimethoprim-sulfamethoxazole (cotrimoxazole) prophylaxis.^{19,20,21}

Co-infection with HIV and TB is common in children and HIV-infected children are more likely to experience progressive primary TB disease and the more severe forms of extrapulmonary disease, such as meningitis.^{22,23,24} In addition, TB in HIV-infected children is more difficult to diagnose and the severity of disease – and case fatality rate – in infected children is often higher.²⁵ International and national guidelines address the diagnosis and treatment of active TB using Directly Observed Treatment, Short-course (DOTS) for HIV-infected children, and treatment for latent TB infection (LTBI) using isoniazid (INH).

Children under five are especially vulnerable to the effects of *Plasmodium falciparum* malaria infections.^{26,27} One study found malaria to be 1.7-fold more common in HIV-positive children under five years of age compared to HIV-negative children. Moreover, levels of parasitemia during episodes of clinical malaria were higher and disease more severe among HIV-infected children than other children, and HIV infection is associated with a higher incidence of severe, complicated malaria in African children. Insecticide-treated bednets (ITN) have proved effective in reducing the risk of malaria in children who are living in areas with high transmission, especially if programs achieve high coverage.^{28,29,30,31} The average cost of an ITN is \$5, which makes it a low-cost intervention. USG teams in Emergency Plan countries that are also part of the President's Malaria Initiative should coordinate closely and use both funding streams creatively to serve HIV-affected individuals in the distribution of ITNs.

Diarrhea is one of the leading causes of morbidity and mortality among HIV-infected children. Diarrhea incidence, duration, severity and mortality are all higher in HIV-infected than uninfected children and acute and persistent diarrhea is four times more common in HIV-infected children than in uninfected children.^{32,33,34,35} In a study among HIV-infected persons in Uganda, use of safe water decreased diarrheal illness by 36 percent.³⁶ It is believed that careful hand washing and food preparation by caregivers could reduce the incidence of diarrhea in HIV-infected children.^{37,38}

Emergency Plan funds may support:

- 1) Technical assistance to develop national guidelines for preventing pneumonia, TB, malaria, and diarrheal disease in HIV-exposed and HIV-infected children.
- 2) Purchase and distribution of the following drugs and commodities needed to implement programs to prevent pneumonia, TB, malaria, and diarrheal disease in HIV-exposed and HIV-infected children according to national guidelines: co-trimoxazole; isoniazid; ITNs; point-of-use water treatment and safe-water storage vessels; soap; and hand-washing instructions. Where possible, Emergency Plan programs should “wrap around” other health programs, such as malaria, TB, and safe-water programs especially

those funded by the President's Malaria Initiative and the GFATM, so that these other programs are the first option to fund the purchase of commodities for HIV-exposed and HIV-infected children.

3) Training of health care workers who care for children in diagnosis of TB in HIV-infected children, testing for HIV in children with active TB, and investigating potential contacts with people with active TB by HIV-exposed and HIV-infected children.

4) Linking Emergency Plan programs to routine programs delivering these basic preventive interventions, such as development and evaluation of program approaches to assure HIV-positive and HIV-exposed children receive these basic preventive interventions.

Emergency Plan funds may not support:

1) Support for general programs (*i.e.*, not targeted towards HIV-infected or HIV-exposed children) to prevent and treat TB, malaria, and other infectious diseases.

4. Providing nutritional care

HIV-infected children are at increased risk of malnutrition from oral disease (thrush), anorexia associated with illness, malabsorption of nutrients, increased metabolism from HIV infection, and frequently compromised household food security and inadequate childcare because of parental death or illness. Poor nutrition in HIV-infected children weakens the immune system and predisposes children to more severe common and opportunistic infections.^{39,40}

Micronutrient deficiencies are common in HIV-infected and HIV-exposed children. The most common deficiencies are vitamin A, iron, and zinc.^{41,42,43,44,45,46,47,48,49} Several studies have demonstrated that vitamin A supplementation according to WHO prophylaxis and treatment protocols reduces morbidity and mortality in HIV-exposed and infected children.^{50,51} There is also evidence that a 10-14 day course of supplemental zinc for the treatment of acute diarrhea is safe and reduces morbidity in HIV-positive, as well as HIV-negative, children.⁵²

Growth monitoring and promotion is a critical child-survival strategy in resource-poor settings, especially in areas with high rates of both childhood malnutrition and HIV/AIDS, and particularly for children in directly affected households.^{53,54,55} Poor growth is a sensitive indicator of HIV disease and disease progression in HIV-infected children.

Feeding infants born to HIV-infected women is a nutritional issue of special importance to children.^{56,57,58,59,60,61} The WHO Secretariat currently recommends avoidance of all breastfeeding by HIV-infected mothers when (exclusive) replacement feeding is acceptable, feasible, affordable, sustainable, and safe (AFASS). If these conditions

cannot be met, the WHO recommends exclusive breastfeeding, followed by early breastfeeding cessation.⁴¹

Additionally, one option recommended by WHO for infant feeding by HIV-positive mothers is replacement feeding with home-modified animal milks, if a fully-fortified infant formula is not available.⁶² If modified animal milk must be used, daily multiple micronutrient supplements will be needed to prevent malnutrition, since animal milks are extremely low in several essential nutrients.⁶³ Evidence for the impact of daily multiple micronutrient supplementation in breastfed children is currently lacking, but is warranted if infants are weaned early (prior to 2 years of age) to avoid HIV exposure from the breast milk of HIV-infected mothers.

Emergency Plan funds may support:

1. Daily multiple micronutrient supplements (1RDA) for PLWHA, especially pregnant and lactating women and children according to national guidelines where dietary assessment indicates inadequate intake of micronutrients from food. Early weaned infants and young children (<2 years of age) should also be provided with a daily multiple micronutrient supplement.
2. Vitamin A and zinc supplementation for HIV-infected children, according to national guidelines.
3. Nutrition counseling linked to clinical- and home-based care for all HIV-infected persons, especially in areas in which malnutrition is endemic.

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