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INFECTIOUS DISEASES BOARD REVIEW MANUAL

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This publication has been developed without involvement of or review by the American Board of Internal Medicine.



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Management of HIV Infection in Children and Adolescents

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Cover Illustration by May Cheney

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Management of HIV Infection in Children and Adolescents

I. INTRODUCTION

Worldwide, an estimated 1.2 million children younger than 15 years are living with HIV infection/AIDS as of 1998. The HIV pandemic in children exemplifies a dichotomy of health care worldwide, in which only approximately 5% of HIV-infected children reside in the United States and other developed countries with access to high-quality health care and public health preventive measures. There has been a dramatic reduction in perinatal HIV transmission in the United States—from 1500–2000 HIV-infected infants born 5 years ago to fewer than 300 reported cases in 1999.¹

Despite successes in reducing perinatal transmission, HIV/AIDS is still an important pediatric health issue in the United States. Approximately one fourth of all new HIV infections occur in adolescents, and between 110,000 and 120,000 youths in the United States are estimated to be living with HIV.² Access to effective antiretroviral therapy and advances in health care have extended the life span of HIV-infected infants and children in the United States. Although this review highlights current management of HIV-infected children and adolescents, consultation with an expert in the care of HIV infection should always be undertaken.

II. MANAGEMENT OF THE HIV-INFECTED CHILD

PATIENT 1 PRESENTATION

Patient 1 is a 10-day-old male infant at risk of perinatal HIV infection. He is receiving zidovudine prophylaxis, which was started during the first 8 hours after birth. He is a 34-week, preterm infant whose birth weight was 4 lb 11 oz with no evidence of intrauterine growth retardation. He had no oxygen requirement but was anemic at birth and required transfusion. His newborn physical examination was remarkable for ankle reflexes positive for 4 to 5 beats of clonus, which was thought to be related to his prematurity. The results of HIV DNA polymerase chain reaction (PCR) testing obtained at 24 hours of age are positive.

- What does the detection of HIV during the first 24 hours after birth suggest regarding the child's HIV infection status and prognosis?
- Which diagnostic and therapeutic interventions should be pursued in this patient?

HIV INFECTION IN THE NEONATE

A definition to distinguish in utero from intrapartum transmission of HIV has been proposed by Bryson, et al.³ An infant is considered to have been infected in utero if, within 48 hours of birth to an HIV-infected mother, the HIV-1 genome is detected by DNA PCR testing, HIV antigen (p24 Ag) assay is positive, or HIV-1 virus is isolated by culture techniques; and if these results are confirmed by a second, separate positive test. Intrapartum-acquired infection has been defined by the presence of negative results of blood testing (ie, HIV-1 virus isolation, HIV DNA PCR testing, and serum p24 antigen assays) in the first week of life, but with subsequent positive results of testing after day 7 in an infant who has not been breast-fed.³ HIV DNA PCR assay is the preferred test because of its high sensitivity and specificity, and its ready availability.

Perinatally infected infants have an unusually slow decline in viral burden in comparison to adults with primary HIV. Plasma HIV RNA levels have been reported to peak at 1 to 2 months (median values at 1 and 2 months: 318,000 and 256,000 copies/mL, respectively).⁴ These levels persist through early childhood and decline to a median of 34,000 copies/mL at 24 months of age.⁴ The developmentally immature immune system of infants is thought to account for this slow decline in HIV RNA levels.

Infants and young children referred to as *rapid progressors* exhibit sustained high peak HIV RNA levels associated with destruction of the immune system and early disease manifestations. Prior to the use of antiretroviral combination therapy, many of the rapid progressors

DEDICATION

This volume of the *Infectious Diseases Board Review Manual* is dedicated to the memory of J. Boyd Francis, MD.