

# Disparity Between Pediatricians' Knowledge and Practices Regarding Perinatal Human Immunodeficiency Virus Counseling and Testing

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**ABSTRACT.** *Objectives.* This survey of members of the American Academy of Pediatrics (AAP) was initiated by the AAP Committee on Pediatric AIDS to assess the knowledge, attitudes, and behaviors of pediatricians regarding prenatal and neonatal screening as a means to reduce mother-to-child transmission of human immunodeficiency virus (HIV).

*Methods.* The survey consisted of a 4-page, self-administered questionnaire, which was mailed to a random sample of 1647 active US members of the AAP. The original and 5 subsequent mailings to nonresponders were conducted from July to November 2001.

*Results.* Completed questionnaires were received from 982 pediatricians, for a response rate of 59.6%. Nearly all pediatricians (96.6%) agree on the importance of knowing the HIV status of pregnant women, and more than three-fourths (78.5%) do not think that HIV screening during pregnancy or postpartum should be limited to women with perceived risk for infection. Approximately 6 (58.5%) of 10 pediatricians indicate that they counsel or provide education on HIV screening to pregnant women or mothers of newborns whose HIV status is unknown; 41.5% do not. Pediatricians reported evaluating an average of 56 newborns each during the 3 months before the survey. The HIV infection status of the mother was unknown for 40.6% of these cases. During the same time period, pediatricians said that they discussed a newborn or maternal HIV screening test with only 10.4% of the mothers whose HIV infection status was unknown. Reasons given for not counseling mothers with unknown HIV infection status about maternal and/or newborn screening for HIV included low prevalence of HIV in the pediatrician's practice area (65.4%), assessment by the pediatrician that the parents did not fit the profile of those "at risk" for HIV infection (56.1%), fear of offending the parents (50.2%), parental lack of understanding regarding the importance of screening (50.1%), and lack of sufficient time for counseling (44.4%).

*Conclusions.* Pediatricians exhibit a high degree of understanding of the importance of HIV screening as a means to reduce mother-to-child transmission of HIV, but this does not always translate into their clinical practices. *Pediatrics* 2003;112:e367–e370. URL: <http://www.pediatrics.org/cgi/content/full/112/5/e367>; *HIV infection, pregnancy, infant or child.*

ABBREVIATIONS. ZDV, zidovudine; HIV, human immunodeficiency virus; AAP, American Academy of Pediatrics.

Administration of zidovudine (ZDV) to human immunodeficiency virus (HIV)-infected pregnant women and their newborn infants decreases the risk of mother-to-child transmission of HIV by approximately two-thirds<sup>1,2</sup>; maternal highly active antiretroviral therapy may produce even larger magnitude decreases in risk of transmission.<sup>3</sup> The American Academy of Pediatrics (AAP)<sup>4</sup> has recommended documented HIV education and routine testing with consent (which includes consent obtained with patient notification, or "right of refusal" consent) for all pregnant women in the United States since 1995; the US Public Health Service<sup>5</sup> began recommending universal prenatal HIV counseling and testing that same year. Since then, there has been a marked decrease in new US pediatric acquired immune deficiency syndrome cases, from approximately 1500 to between 300 and 400 per year,<sup>6,7</sup> raising the possibility that perinatal HIV infection can be eliminated. The persistence of HIV perinatal transmission reflects the continued occurrence of new HIV infections among women, occasional failures of prophylaxis, and missed prevention opportunities, the most important of which include absence of prenatal care and/or HIV counseling and testing.<sup>8,9</sup>

## METHODS

This was the 50th in a series of Periodic Surveys of Fellows conducted by the Division of Health Policy Research of the AAP. Periodic Surveys are conducted 4 times annually on topics of importance to pediatrics; each survey uses a unique random sample of active, US members of the AAP. An estimated 77% of US board-certified pediatricians are members of the AAP.

The survey questionnaire was developed with the assistance of the AAP Committee on Pediatric AIDS and was approved by the AAP Institutional Review Board for human subjects research. Respondent demographic information, including sex, age, and practice type and location, was obtained. The survey explored pediatricians' awareness of the HIV infection status of mothers of newborns, counseling practices regarding the need for HIV screening when HIV status is unknown, barriers to counseling, and opinions on universal HIV testing of pregnant women as a component of prenatal care.

The 4-page, self-administered, forced-choice questionnaire was mailed to a random sample of 1647 of the 57 000 US members of the AAP from July to November 2001. An original and 5 follow-up mailings were sent. An introductory letter from the Executive Director of the AAP and a business-reply return envelope accompanied each questionnaire. Recipients were given the option of responding by mail or on-line via the AAP Members Only Channel.

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Analyses of attitudes toward perinatal HIV screening and universal HIV testing of pregnant women were based on all respondents. Descriptive analyses of questions pertaining to pediatricians' knowledge of patients' HIV infection status and behavior regarding counseling on HIV screening were based on the responses of pediatricians who provide direct care to newborns.  $\chi^2$  analyses were used to examine relationships between variables.  $P < .05$  was considered statistically significant for these analyses.

## RESULTS

### Characteristics of Respondents

A total of 982 completed questionnaires were returned, for a response rate of 59.6%. A total of 708 pediatricians (72.5% of all respondents) reported providing direct care to newborns. Characteristics of the respondents (Table 1) are similar to other recent Periodic Surveys and reflect characteristics of the AAP membership (Division of Health Policy Research, American Academy of Pediatrics).

### Attitudes Regarding HIV Counseling and Maternal and/or Newborn HIV Screening

Nearly all (96.6%) respondents agreed on the importance of knowing the HIV infection status of pregnant women, and more than three-fourths (78.5%) did not think that HIV screening during pregnancy or postpartum should be limited to women with perceived risk for infection. Approximately half (53.3%) indicated that it is the pediatrician's role to counsel pregnant mothers of current patients regarding HIV screening. Most (87.0%) pediatricians agreed that HIV-infected mothers should be counseled not to breastfeed and that mothers with unknown HIV infection status should not be discouraged from breastfeeding (69.7%). Nearly half (46.2%) of pediatricians believed that when maternal HIV infection status is unknown, newborn HIV testing should not be limited to infants of women perceived to be at risk for HIV, whereas 39% said that testing should be limited to those infants, and 15% were neutral. Pediatricians were divided as to whether they should counsel all mothers with unknown HIV

infection status to have their infants tested (42.6% agreed, 34.7% disagreed, and 22.8% were neutral).

### HIV Counseling, Screening, and Management Practices and Barriers

Approximately 6 (58.5%) of 10 pediatricians indicated that they counsel or provide education on HIV screening to pregnant women or mothers of newborns whose HIV status is unknown; 41.5% do not. Young pediatricians are more likely to counsel regarding HIV screening: 64.7% of pediatricians younger than 43 years and 50.2% of those 43 years or older indicated that they provide such counseling ( $P < .001$ ). Other features associated with a higher likelihood of counseling regarding HIV screening included practice in the inner-city (74.5% of pediatricians in inner-city practices vs 60.2%, 48.3%, and 61.5% in urban, suburban, and rural practices, respectively;  $P < .001$ ), practice in a hospital or a clinic (74.7% hospital/clinic vs 51.7% and 50.3% in solo/2-physician and group practices, respectively;  $P < .001$ ), and having a high proportion of patients covered by public insurance (73.9% of pediatricians with more than half of patients covered by public insurance vs 60.1% and 48.9%, respectively, of those with 25%–50% and <25% with public insurance;  $P < .001$ ).

Pediatricians reported evaluating an average of 56 newborns each during the 3 months before the survey. The HIV infection status of the mother was unknown for 40.6% of these cases. During the same time period, pediatricians said that they discussed a newborn or maternal HIV screening test with only 10.4% of the mothers whose HIV infection status was unknown.

Most pediatricians (80.3%) reported that they had not had any HIV-exposed infants (ie, newborns of mothers who are HIV-infected) in their practices during the 3 months before the survey. Among the pediatricians who had seen HIV-exposed infants during that time, the average number of such infants seen was 3.8 (median response: 1).

One half (49.0%) of pediatricians reported that they have never had an HIV-infected infant in their practice. Male pediatricians were more likely than female pediatricians to have had 1 or more HIV-infected infants in their practices (56.6% vs 45.9%;  $P < .01$ ), as were pediatricians who practice in the inner-city and other urban areas (67.5% for inner-city and 54.5% for urban areas vs 41.2% and 49.0% for suburban and rural areas, respectively;  $P < .001$ ), pediatricians who practice in hospital or clinic settings (66.9% vs 41.2% and 45.8% for solo/2-physician and group practices, respectively;  $P < .001$ ), pediatricians who spend more than half of their time in subspecialty practice (67.6% vs 47.4%;  $P < .001$ ), pediatricians whose practices are located in the South (60.0% vs 52.8%, 40.9%, and 44.1% for the Northeast, Midwest, and West, respectively;  $P < .01$ ), and pediatricians who have a high proportion of patients covered by public insurance (61.9% of those with more than half of their patients covered by public insurance vs 56.9% and 44.3%, respectively, of those with 25%–50% and <25% of their patients cov-

TABLE 1. Characteristics of Survey Respondents ( $n = 982$ )

Sex	
Male	48%
Female	52%
Age	
Mean	43.2 y
<43 y	52%
43 y or greater	48%
Practice setting	
Solo or 2-physician practice	13%
Group practice	39%
Staff model HMO	2%
Hospital/clinic/medical school practice	36%
Other	10%
Practice type	
General pediatrics (50% or more time in general pediatrics)	68%
Subspecialty (<50% time in general pediatrics)	32%
Practice location	
Suburban	34%
Urban, not inner-city	30%
Urban, inner-city	24%
Rural	13%

HMO indicates health maintenance organization.

ered by public insurance;  $P < .01$ ). Pediatricians who had 1 or more HIV-infected infants in their practice at some point were more likely to have discussed a newborn or maternal HIV screening test with mothers whose HIV infection status was unknown (31.2% vs 13.5%;  $P < .001$ ), were more likely to counsel mothers whose HIV infection status was unknown regarding HIV screening (71.6% vs 44.7%;  $P < .001$ ), and were more likely to say that they are comfortable with discussing the need for knowing HIV infection status with mothers of newborns (54.5% vs 33.8%;  $P < .001$ ). Among pediatricians who have had 1 or more HIV-infected infants in their practices, most (78.4%) refer them to a specialist for care.

Pediatricians identified a number of barriers to counseling mothers with unknown HIV infection status regarding maternal and/or newborn screening for HIV. The responses given most frequently are shown in Table 2. Among respondents who did not identify particular items as barriers to counseling, a sizable percentage (approximately 1 in 3 overall) were unsure whether the items represented barriers, and the remainder said that they were not barriers to counseling.

## DISCUSSION

The continued occurrence in the United States of mother-to-child transmission of HIV in many cases represents missed opportunities and barriers to prevention, including continued acquisition of HIV infection by women of childbearing age, unplanned pregnancies, lack of prenatal care and/or prenatal HIV testing, and failure to offer interventions to decrease the risk of mother-to-child HIV transmission.<sup>10</sup> A high percentage of women who are offered HIV testing in the prenatal setting accept it.<sup>11</sup> A number of studies have indicated the importance of counseling and recommendation for testing as a determinant of test acceptance.<sup>12,13</sup> Patient perception that the physician or primary health care provider has a positive view of ZDV prophylaxis is an impor-

tant determinant of acceptance of ZDV by HIV-infected pregnant women.<sup>14,15</sup>

Both the Institute of Medicine of the US National Academy of Sciences<sup>8</sup> and the US Public Health Service<sup>5,9</sup> recommend universal, voluntary HIV testing as part of routine prenatal care for all pregnant women. This recommendation is consistent with existing AAP recommendations for routine, universal prenatal HIV education and testing with consent (including right of refusal consent).<sup>4,16</sup> In recognition of the burden potentially imposed on health care providers by onerous counseling and consent requirements, both the Institute of Medicine and the US Public Health Service have recommended that the process be streamlined. In many settings, this means that HIV testing now is integrated into a standard battery of prenatal tests. The pregnant woman is informed that the HIV test is being conducted and is given the right to refuse the test (so-called patient notification, or right of refusal consent). However, because the purpose of HIV testing is to engage the mother in continuing care for herself and her infant, the mother's knowledge of and consent for testing of herself or her infant is important. Compliance with medical care is likely to be greatest when the woman believes that she has made an informed decision regarding HIV testing and has a relationship of respect and trust with her health care provider. Routine HIV testing with patient notification implies that the woman is provided with information about HIV infection, that the provider recommends the HIV test, and that the test will be performed unless the patient rejects the test. Despite that a streamlined counseling and consent process for HIV testing in the perinatal setting is possible, almost half of the pediatricians who responded to our survey indicated that lack of sufficient time is a barrier to counseling and screening. This may reflect lack of understanding of requirements for HIV counseling and consent, or it may indicate the imposition of unnecessary institutional or local requirements.

Despite national recommendations for universal prenatal HIV counseling and testing, rates vary by state, type of prenatal health care provider, health insurance, and maternal demographic characteristics. Higher rates of testing are reported for black women; younger women; and those who seek care from a public provider, receive Medicaid benefits, or have low income, whereas lower rates of testing are reported for white women or those with health insurance who might be perceived to be at lower risk for HIV infection.<sup>17</sup> These data suggest that physician practices regarding prenatal HIV counseling and testing are influenced by their perceptions of maternal HIV risk factors.

Pediatricians who responded to our survey were nearly unanimous in recognizing the importance of knowing the HIV status of pregnant women, and more than three fourths agreed that HIV screening during pregnancy or postpartum should not be limited to women with perceived risk for infection. Nevertheless, more than 4 of 10 pediatricians indicated that they do not counsel or provide education on HIV screening to pregnant women or mothers of

**TABLE 2.** Barriers to Counseling Regarding Maternal and/or Newborn HIV Screening

	% of Pediatricians Reporting		
	Agree	Neutral	Disagree
Low prevalence of HIV infection in the pediatrician's practice area	65.4	14.8	19.8
Parents do not fit the profile of those "at risk" for HIV infection	56.1	14.7	29.2
Fear of offending the parents	50.2	19.0	31.1
Parental lack of understanding about the importance to the infant of HIV screening	50.1	19.6	30.2
Lack of sufficient time for counseling and consent	44.4	21.2	34.4
Risk of social stigmatization and discrimination	32.5	25.5	41.9
Pediatricians' insufficient knowledge regarding issues surrounding postpartum and newborn HIV screening	31.3	26.2	42.4
Lack of confidence in ability to manage infants with HIV	27.5	21.1	51.3

newborns whose HIV status is unknown, and only approximately half said that it is the pediatrician's role to counsel pregnant mothers of current patients regarding HIV screening. Furthermore, well more than half of the pediatricians listed "low prevalence of HIV in the pediatrician's practice area" and "parents do not fit the profile of those at risk for HIV" as barriers to counseling regarding maternal and/or newborn screening, indicating a degree of selectivity in deciding which patients to counsel and screen.

Programs to identify maternal HIV infection during pregnancy should be a priority. However, HIV testing of the newborn with maternal consent is recommended when maternal HIV infection status has not been determined before delivery. Delay in identification of infant HIV exposure until the newborn period is less than ideal. However, identification of HIV exposure during the immediate newborn period can provide potential benefit for prevention of transmission, and is important for infant management (including initiation of *Pneumocystis carinii* pneumonia prophylaxis and avoidance of breastfeeding). Nevertheless, pediatricians who responded to our survey were almost evenly split as to whether the infants of mothers with unknown HIV infection status should be tested for HIV, and they indicated that in the 3 months before the survey they had discussed a newborn or maternal HIV screening test with only 1 in 10 mothers with unknown HIV infection status.

The continued occurrence of mother-to-child HIV transmission underscores the need to ensure that pregnant women receive adequate HIV counseling and voluntary testing as a component of comprehensive prenatal care. In addition, infected women must have access to HIV-related care and treatment, receive antiretroviral prophylaxis to decrease the risk of HIV perinatal transmission, and be advised to forgo breastfeeding. In 1995, the AAP recommended that all pregnant women receive HIV education and routine prenatal HIV testing with consent (which may include right of refusal consent). This recommendation remains a critical component of pediatric HIV infection prevention. Furthermore, newborn HIV screening with maternal consent is recommended for infants who are born to women with unknown HIV infection status. Pediatricians exhibit a high degree of understanding of the importance of perinatal HIV screening, but additional work is necessary to see that this knowledge is translated into clinical practice with the goal of completely eliminating mother-to-child transmission of HIV.

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#### REFERENCES

- Centers for Disease Control and Prevention. Recommendations of the US Public Health Service Task Force on the use of zidovudine to reduce perinatal transmission of human immunodeficiency virus. *MMWR Morb Mortal Wkly Rep.* 1994;43(RR-11):1-20
- Connor EM, Sperling RS, Gelber R, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type 1 with zidovudine treatment. Pediatric AIDS Clinical Trials Group Protocol 076 Study Group. *N Engl J Med.* 1994;331:1173-1180
- Centers for Disease Control and Prevention. Public Health Service Task Force recommendations for the use of antiretroviral drugs in pregnant HIV-1 infected women for maternal health and interventions to reduce perinatal HIV-1 transmission in the United States. *MMWR Morb Mortal Wkly Rep.* 2002;51(RR-18):1-38
- American Academy of Pediatrics, Provisional Committee on Pediatric AIDS. Perinatal human immunodeficiency virus testing. *Pediatrics.* 1995; 95:303-307
- Centers for Disease Control and Prevention. US Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. *MMWR Morb Mortal Wkly Rep.* 1995;44(RR-7):1-15
- Lindegren ML, Byers RH Jr, Thomas P, et al. Trends in perinatal HIV/AIDS in the United States. *JAMA.* 1999;282:531-538
- Byers RH Jr, Caldwell MB, Davis S, Gwinn M, Lindegren ML. Projection of AIDS and HIV incidence among children born infected with HIV. *Stat Med.* 1998;17:169-181
- Institute of Medicine, Committee on Perinatal Transmission of HIV and Commission on Behavioral and Social Sciences and Education. *Reducing the Odds: Preventing Perinatal Transmission of HIV in the United States.* Washington, DC: National Academy Press; 1999
- Centers for Disease Control and Prevention. Revised recommendations for HIV screening of pregnant women. *MMWR Recomm Rep.* 2001; 50(RR-19):63-85
- Mofenson LM and the AAP Committee on Pediatric AIDS. Technical report: perinatal human immunodeficiency virus testing and prevention of transmission. *Pediatrics.* 2000;106(6). Available at: <http://www.pediatrics.org/cgi/content/full/106/6/e88>
- Henderson SL, Lindsay MK, Higgins JE, et al. Experience with routine voluntary perinatal human immunodeficiency virus testing in an inner city hospital. *Pediatr Infect Dis J.* 2001;20:1090-1092
- Carusi D, Learman LA, Posner SF. Human immunodeficiency virus test refusal in pregnancy: a challenge to voluntary testing. *Obstet Gynecol.* 1998;91:540-545
- Joo E, Carmack A, Garcia-Bunuel E, Kelly CJ. Implementation of guidelines for HIV counseling and voluntary HIV testing of pregnant women. *Am J Public Health.* 2000;90:273-276
- Siegel K, Lekas HM, Schrimshaw EW, Johnson JK. Factors associated with HIV-infected women's use or intention to use AZT during pregnancy. *AIDS Educ Prev.* 2001;13:189-206
- Sowell RL, Murdaugh CL, Addy C, et al. Preventing perinatal human immunodeficiency virus transmission: factors influencing women's intentions toward zidovudine therapy. *South Med J.* 2001;94:1177-1184
- American Academy of Pediatrics and American College of Obstetricians and Gynecologists. Human immunodeficiency virus screening: joint statement of the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists. *Pediatrics.* 1999;104:128
- Centers for Disease Control and Prevention. Prenatal discussion of HIV testing and maternal HIV testing—14 states, 1996-1997. *MMWR Morb Mortal Wkly Rep.* 1999;48:401-404

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