Hepatitis A among International Adoptees and Their Contacts

Gayle E. Fischer, Eyasu H. Teshale, Claudia Miller, Casey Schumann, Kathleen Winter, Franny Elson, Katherine Horan, Christie M. Reed, Gregory L. Armstrong, and Joseph F. Perz

1National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention and 2National Center for Preparedness, Detection and Control of Infectious Diseases, Centers for Disease Control, Atlanta, Georgia; 3Minnesota Department of Health, St. Paul; 4Wisconsin Department of Health Services, Madison; 5California Department of Public Health, Sacramento; and 6Massachusetts Department of Public Health, Boston

(See the editorial commentary by Miller on pages 815–7)

We identified 27 cases of hepatitis A among international adoptees (5 persons), their direct or indirect contacts (20 persons), and unvaccinated travelers to the adoptees’ countries (2 persons). Most cases occurred among nontraveling contacts of adoptees, suggesting the need to extend prevention guidelines to include hepatitis A vaccination for at-risk nontravelers.

The rate of hepatitis A virus (HAV) infection in the United States has decreased steadily, from 12 cases per 100,000 persons in 1995 to 1.2 cases per 100,000 persons in 2006, the lowest rate ever recorded [1]. This decrease in the incidence may allow for detection of relatively rare risk factors, such as contact with an international adoptee. Because symptoms of hepatitis A depend on age (e.g., 70% of infections in children aged ≤6 years are asymptomatic [2], whereas >70% of infections in older children and adults result in symptoms [3]), HAV infection in young adoptees likely goes unrecognized but contributes to disease in susceptible older children and adults.

In June 2007, Health Department A contacted the Centers for Disease Control and Prevention (CDC; Atlanta, GA) regarding a case of fulminant hepatitis A in a 51-year-old woman. The woman had no commonly identified risk factors for HAV infection, including no recent international travel. However, in early June, 1 month before the onset of symptoms, she had contact with her 1-year-old adopted twin grandchildren, soon after the grandchildren entered the United States from Ethiopia. The children, who were adopted through adoption agency 1, were asymptomatic but tested positive for IgM antibodies to HAV. State Health Department B, in the state where adoption agency 1 was located, was contacted. This health department had previously investigated a case of hepatitis A in a 15-month-old Ethiopian child who was adopted thorough the same agency. The child’s symptoms began in mid-May, and the child was considered to represent the first case identified. The CDC and health departments in 22 states initiated a joint investigation to assess HAV infection among international adoptees and their contacts and to implement infection control measures.

Methods. In our study of HAV infection, we identified families who adopted Ethiopian children from adoption agency 1 during the period from 30 days (i.e., average hepatitis A incubation period) before to 3 months after the onset of symptoms in the first case identified. A standard set of questions was developed at the CDC and implemented by health department personnel to elicit the following information from each household: history of hepatitis A in adoptees; history of hepatitis A and vaccination status for travelers to Ethiopia and for household contacts of adoptees; and history of hepatitis A in nonhousehold contacts of adoptees (e.g., visitors and other caregivers). A follow-up survey was conducted to detect cases that may have occurred up to 50 days (upper limit of incubation period for hepatitis A) after the last adoption was completed among the families identified. In addition, health departments involved in the investigation were asked to review 2006 and 2007 surveillance records for cases of hepatitis A that were linked to international adoptions.

To control HAV transmission, a health advisory describing the initial cluster of cases was sent to health officials, to health care providers of international adoptees, and to parents of recent and prospective international adoptees. In accordance with Advisory Committee on Immunization Practice (ACIP) recommendations for child care settings, which closely resemble the foster care system for adoptees [4], postexposure prophylaxis was recommended for adoptees and was to be considered for unvaccinated household contacts.

Results. Forty-nine families in 22 states adopted Ethiopian children from adoption agency 1 during the period April–June 2007. Forty-three families (88%) participated in the initial survey. Fifty-seven children were adopted by the 43 families. The
Mean and median ages of adoptees were 20 months and 14 months, respectively.

Ninety-five persons (median age, 36 years) traveled to Ethiopia to escort the 57 children back to the United States. Eighty-four travelers (88%) received ≥1 dose of hepatitis A vaccine before traveling, and 1 traveler had previously had hepatitis A. Four travelers (4%) who did not receive vaccine before travel and 7 (7%) who did not know their vaccination or hepatitis A disease history were considered to have been susceptible to infection.

Among the 43 adoptive families, 80 travelers and 49 additional persons (129 persons in total) were considered to be household contacts (i.e., a person who typically spent ≥1 night per week in the adoptee’s home). One-hundred three household contacts (80%) had been vaccinated against hepatitis A, and the remaining 26 (20%) were considered to have been susceptible to infection. Among household contacts who traveled, 78 (98%) had been vaccinated. Of the nontraveling household contacts, 25 (50%) had been vaccinated; the median age of these vaccinated persons was 8 years.

There were 52 nonhousehold contacts who visited the adoptive family’s home within 2 months after the child’s arrival in the United States. Visitors ranged in age from 2 to 76 years (median age, 34 years). In addition, 16 families (37%) had caregivers for adoptees who were considered to be nonhousehold contacts, because they did not typically spend ≥1 night per week in the family home. Most caregivers provided care at the adoptive family’s home. One adoptee attended a day care facility. The vaccination status of nonhousehold contacts was unknown.

Hepatitis A was diagnosed in 4 persons, with the onset of illness occurring between 14 May 2007 and 7 September 2007. These persons included 1 (2%) of 57 adoptees, 1 (4%) of the 26 susceptible household contacts, 1 (2%) of 52 visitors (whose susceptibility to hepatitis A was unknown), and 1 contact of the visiting contact with hepatitis A. No cases occurred among travelers, including the 11 who were considered to be susceptible.

During the period January 2006 through August 2007, 5 states identified 23 additional cases of hepatitis A associated with international adoptions from Ethiopia (17 cases in 2006 and 3 cases in 2007), Panama (1 case in 2006), and The Philippines (2 cases in 2006). Multiple adoption agencies were involved.

If the 4 cases associated with adoption agency 1 are included, the 27 cases were distributed as follows: 5 cases (19%) occurred in adoptees, 2 (7%) occurred in unvaccinated travelers, 13 (48%) occurred in nontraveling contacts of adoptees, and 7 (26%) occurred in contacts of nontraveling contacts of adoptees (figure 1).

**Discussion.** This investigation identified 27 cases of hepatitis A associated with international adoptions during a 21-month period. Current ACIP recommendations state that travelers to countries where HAV infection is moderately or highly endemic should receive preexposure prophylaxis with hepatitis A vaccine or immune globulin before travel, unless they have previously been vaccinated or infected with HAV [5]. This recommendation was followed by most travelers (including 88% of those who used adoption agency 1) to hepatitis A–endemic countries of the adoptees. However, this finding indicates that pretravel immunization rates can still be improved. In addition, most of the identified cases occurred among nontraveling contacts of adoptees and their contacts. Children with acute infection, who are likely to be asymptomatic, may transmit HAV after arriving in the home country of their adoptive parents. Although hepatitis A vaccination rates are increasing as a result of routine childhood vaccination [6], many potential contacts of international adoptees remain susceptible to HAV infection.

In 2005, of the ∼23,000 children adopted internationally by US parents, 47% were from Asia, 29% were from Eastern Europe, 19% were from Central America and the Caribbean, 4% were from Africa, and 2% were from South America. The number of immigrant visas granted to orphan immigrants from Ethiopia, a proxy for the number of adoptions, increased from 135 in 2003 to 1255 in 2006 [7]. In a 1990 serosurvey of Ethiopians, 50% of children aged <5 years had previously been infected with HAV [8]. In addition to being highly endemic in Ethiopia, HAV is thought to be highly endemic in most other countries where international adoptions by Americans originate [4]. In addition to the cases from The Philippines and Panama identified in our investigation, there was a case report of hepatitis A in a parent who, in the year 2000, likely acquired the infection from a recently adopted Russian child [9]. Even though Ethiopians comprise a small proportion of international adoptees, more hepatitis A cases have been associated with

![Figure 1](image-url)
Ethiopian adoptees than with adoptees from other countries. This may be because HAV infection occurs in persons of younger ages in Ethiopia than in other countries where adoptions originate or because cases associated with adoptees from other countries may have gone undetected.

Although the number of cases (n = 27) identified in the 21-month period of this investigation is relatively small if compared with the 3579 cases of hepatitis A reported to the CDC in 2006 [1], it likely represents an underestimation of the burden of hepatitis A associated with international adoptions. International travel is the most commonly reported risk factor for hepatitis A in the United States [1], but the association between hepatitis A and international adoptions may not be recognized, and contact with an international adoptee is not routinely asked as part of hepatitis A surveillance. As a result of this investigation, some states will begin to collect this information.

In summary, our investigation showed that adoptees who arrive in the United States with acute infection may transmit HAV. Current ACIP recommendations do not address potential exposure among nontraveling contacts of international adoptees. Our findings suggest the need to extend ACIP recommendations to include hepatitis A vaccination for nontraveling contacts of adoptees from countries with high- and intermediate-level HAV endemicity.

Acknowledgments

We gratefully thank the following individuals for their assistance with the investigation: Jane Maynard and Sheilah Zarate (California), Therese Rabatsky (Connecticut), Shon Ingram (Washington, DC), Rosanna Boyd (Georgia), Jared Bartschi and Jennifer Tripp (Idaho), Ingrid Trevino (Illinois), George Ghneim (North Carolina), and James Kazmierczak, Kristin King, Diane Rodd, Kathy Stromberg, Jane Tebon, and Eleni Topetes (Wisconsin).

Potential conflicts of interest. All authors: no conflicts.

References