



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Prevention of Travel-Related Infectious Diseases in Families of Internationally Adopted Children

Elizabeth D. Barnett, MD^{a,b,*}, Lin H. Chen, MD^{c,d}

^a*Maxwell Finland Laboratory for Infectious Diseases, Room 503, Boston Medical Center, 774 Albany Street, Boston, MA 02118, USA*

^b*Department of Pediatrics, Boston University School of Medicine, Boston, MA 02118, USA*

^c*Travel Medicine Center, Division of Infectious Diseases, Mount Auburn Hospital, 330 Mount Auburn Street, Cambridge, MA 02238, USA*

^d*Department of Medicine, Harvard Medical School, Boston, MA 02115, USA*

Prevention of travel-related infectious diseases for adoptive families starts before and extends beyond the travel period. Many families adopting internationally travel to their child's birth country at least once before bringing their new family member home. Most commonly, families are traveling to the republics of the former Soviet Union, China, Guatemala, or other developing countries in Asia, Central or South America, or Africa. Family members who travel and family and close contacts of the child who remain at home all need information about protecting themselves during travel and preventing acquisition of diseases that could be transmitted by the internationally adopted child after arrival in the United States.

Travel for adoption presents risks that are different from those encountered by the tourist or business traveler or those travelers who travel to visit friends and relatives (VFR travelers). Although the application to adopt internationally usually requires at least 1 or 2 years of preparation, families may be notified about travel within 2 to 3 weeks of departure. Adoptive families may not have a choice in their travel destination or itinerary, the time of travel, or accommodations during the trip. They may not speak the local language or have regular

* Corresponding author. Maxwell Finland Laboratory for Infectious Diseases, Room 503, Boston Medical Center, 774 Albany Street, Boston, MA 02118.

E-mail address: ebarnett@bu.edu (E.D. Barnett).

access to interpreters and may be apprehensive about accommodations, visa requirements, and overseas procedures. They may be inexperienced first-time parents or may be traveling with other children who require attention to their own needs.

Travel for adoption may lead to prolonged and unexpected stays in the country, possibly with accommodation in nontourist facilities, such as local apartments, hostels, or their child's orphanage. Because of a desire to please the many individuals with power over the adoption process (eg, facilitators, interpreters, court and government officials, agency and orphanage personnel), families may accept risks they would ordinarily avoid, such as eating local foods or drinking potentially unsafe water, drinking more or different types of alcohol, seeking medical care in rural health facilities, or using local means of transport without seat belts or car seats. Families may be exposed to extreme air pollution, farm animals, second-hand cigarette smoke, or infectious agents, such as tuberculosis, that they might otherwise avoid were it not for the adoption process.

As the field of travel medicine evolves, distinct groups of travelers with specific risks have been identified, such as VFR travelers. It is possible that the families and close contacts of internationally adopted children comprise such a group. Better description of these risks through systematic study may lead to improved interventions in this population in the future. This article addresses the current body of knowledge and recommendations for preventing travel-related illness in this group (see Appendix).

Preparation for international travel

Individuals traveling to arrange adoptions or pick up their child should receive standard travel advice appropriate for their destination (including stops along the way), length of travel, immunization history, medical history, and types of exposures that might occur. It is helpful to elicit as much information as possible about type of accommodation expected, mode of travel between destinations, and anticipated activities. Many sources of pretravel advice are available (Table 1) [1–3]. The US Centers for Disease Control and Prevention (CDC) make their recommendations available in print or on line (www.cdc.gov/travel) [4]. Adoptive families may also receive information from agencies, travel agents, airlines, and embassies; it is prudent for families to verify any information about possible outbreaks or other local situations with reliable and authoritative sources such as the CDC or World Health Organization (WHO). For example, a measles outbreak in a Chinese orphanage led the CDC to suspend adoptions from the affected orphanage temporarily [5]. During the severe acute respiratory syndrome (SARS) outbreak in 2003, the CDC provided up-to-date information and released travel advisories that were instrumental in informing families and adoption agencies about the status of the epidemic. Although the SARS outbreak resulted in suspension of adoptions from several countries, disruption of plans

Table 1
On-line resources to guide families planning international adoption

Web site	Highlight
http://travel.state.gov/family/adoption/adoption_485.html	International adoption booklet; information on US visa requirements; travel warnings
http://www.cdc.gov/nie/menus/groups.htm#intl	General health information regarding international adoption
http://www.immunize.org/adoption/index.htm	Link to journal articles and recommendations on international adoption; link to numerous resources for parents and providers
http://www.istm.org	Travel clinic directory
http://www.cdc.gov/travel	Travel health warning and precautions; outbreaks; travel health recommendations

of many adoptive families, and household isolation of some newly adopted children, no cases were reported in internationally adopted children.

Immunizations for international travel

The two steps involved in providing immunizations for international travel are updating routine immunizations and providing immunizations specific for the travel destination (Table 2). Immunization records of each traveler should be reviewed to assess if the individual is up to date with routinely recommended vaccines. For adopting parents, attention should be paid to updating the 10-yearly tetanus-diphtheria (Td) booster, verifying immunity to measles and varicella, and providing vaccine to those who are susceptible [6]. For children who may travel, routine and catch-up recommendations are also available [7,8]. Missing doses or booster doses that are due can be administered at this time.

Additional doses of some routine vaccines may be needed for international travel depending on presence of diseases or outbreaks in the destination country. For example, travelers to Asia have required preparation for exposure to measles; adult travelers to West Africa, India, and other countries where polio still occurs should receive a booster dose of polio vaccine [4]; and individuals susceptible to complications of influenza should receive this vaccine per current recommendations [9]. Today's travelers to Asia may need information about avoiding exposure to avian influenza. In the past, diphtheria outbreaks in the newly independent republics of the former Soviet Union, the SARS epidemic, and outbreaks of meningococcal meningitis have led to a need for specific travel advice for families traveling to affected countries.

Recommendations for travel vaccines are based on the destination countries, length of travel, medical history, and types of exposures that might occur. Hepatitis A vaccine is recommended for almost all individuals traveling to arrange adoptions or pick up children outside the United States, because the risk of hepatitis A is intermediate to high in most countries from which children are adopted [4]. Hepatitis A vaccine is highly effective, and a two-dose schedule

Table 2
Vaccines for families adopting internationally

Vaccines for those who travel	Standard dose/route	Comment
Update all childhood vaccines for any children in household		
Routine vaccines for adults (administer as needed according to standard schedules and recommendations)		
Hepatitis B	1.0 mL IM, 3 doses at 0, 1, 6 months	
Influenza	0.5 mL IM, according to season	
Measles, mumps, rubella	0.5 mL SC, documented 2 doses separated by ≥ 1 month	
Pneumococcal polysaccharide	0.5 mL SC or IM	
Polio	0.5 mL SC	For travel to areas with transmission of polioviruses
Td or TdaP	0.5 mL IM	
Varicella	0.5 mL SC, 2 doses separated by 4–8 weeks	
Special vaccines for travel to high- or intermediate-risk areas		
Hepatitis A	1.0 mL adult/0.5 mL pediatric IM, 2 doses at 0, 6 months	
Typhoid	0.5 mL IM or 4 capsules PO	
Travel to high-risk areas or required by destination		
Japanese encephalitis	0.5 mL ages 1–2, 1.0 mL ages ≥ 3 SC, 3 doses on days 0, 7, 30	For travel to parts of Asia
Meningococcus	0.5 mL SC	For travel to endemic and outbreak areas
Rabies	1.0 mL IM, 3 doses on days 0, 7, 21 or 28	For longer term travel, remote destinations
Yellow fever	0.5 mL SC	For travel to parts of South America and Africa

Abbreviations: IM, intramuscular; PO, by mouth; SC, subcutaneous; Td, tetanus diphtheria; TdaP, tetanus-diphtheria-acellular pertussis.

offers long-term protection [10]. Adults who need protection against hepatitis A and B may receive the combination vaccine Twinrix (Hepatitis A Inactivated and Hepatitis B [Recombinant] vaccine; Glaxo SmithKline, Research Triangle Park, North Carolina) [11,12]. Typhoid vaccine should be considered for travel to many of these countries, because this disease is also contracted by exposure to contaminated food and water [4]. Protection afforded by typhoid vaccines is incomplete, however, and all travelers to countries where a risk of contracting diseases associated with contaminated food and water is present should be counseled about appropriate dietary precautions. These include drinking only boiled or safe drinking water (chlorinated water, bottled water from a reliable source, or carbonated water), eating only cooked or freshly peeled fruits and vegetables, and avoiding raw or undercooked meat and seafood [13].

Other travel vaccines are destination specific. Individuals traveling to parts of South America or Africa where yellow fever is present are candidates for yellow fever vaccine. A single dose of vaccine administered at least 10 days before travel and documented on the WHO International Certificate of Immu-

nization is valid for 10 years [14]. Yellow fever vaccine must be administered at a Yellow Fever Vaccine Center. Consultation with a travel medicine provider can be helpful in determining which travelers are candidates for this vaccine.

Japanese encephalitis vaccine may be indicated for travel to some destinations in Asia. The risk to short-term (<4 weeks) travelers and those who remain in urban centers is low, and the disease is seasonal in occurrence. Adoptive parents who may spend extended periods of time in rural areas, make repeated trips to endemic areas in transmission season, or plan extended travel in the region, especially to rural areas, may be candidates for this vaccine. The three-dose series is given on days 0, 7, and 30, and the series should be completed at least 10 days before travel because of the rare occurrence of delayed allergic reactions to vaccine requiring medical attention. An accelerated schedule is available for those with imminent departures [15].

Meningococcal vaccine may be indicated for some travelers, especially in areas where outbreaks are occurring. Yearly outbreaks take place in sub-Saharan Africa, and sporadic outbreaks may occur in other areas. Consultation with a travel medical provider may be helpful in providing the most recent information. Information about disease outbreaks is available (<http://www.cdc.gov/travel/outbreaks.htm>).

Malaria prevention

Travelers to destinations where malaria is present should receive detailed information about malaria, including methods of prevention, signs and symptoms of disease, and when to seek medical attention. Malaria chemoprophylaxis should be offered, with a detailed description of the options of medications available for the destination, how to take the drug, and adverse events potentially associated with the medication. Many excellent sources of information about malaria prevention are available [16–18]. Brochures are available from the CDC suitable for patient handouts, giving detailed information about malaria and options for prevention and treatment [19]. Adherence to an appropriate regimen of chemoprophylaxis is the most important determinant of successful malaria prevention.

The drug of choice for prevention of malaria for travelers to regions of the world where chloroquine resistance is absent is chloroquine. The dose for adults is base, 300 mg (salt, 500 mg) once weekly beginning 1 to 2 weeks before travel, continuing during travel, and for 4 weeks after return. Chloroquine is usually tolerated well, but minor gastrointestinal disturbance, headache, and other symptoms may occur; these usually do not require stopping the medication. Chloroquine may exacerbate psoriasis.

Options for prevention of malaria for those traveling to chloroquine-resistant areas include atovaquone-proguanil, mefloquine, and doxycycline. Mefloquine is taken weekly, whereas the others require daily dosing. Decisions about appropriate antimalarials involve attention to the medical history of the traveler, desti-

nation, and length of travel. A fourth option, primaquine, is available to travelers who do not have G6PD deficiency and are unable to tolerate other alternatives; consultation with travel medicine experts is recommended if this alternative is considered [16].

Children traveling to meet new siblings require pretravel preparation as well. Similar attention should be paid to updating routine immunizations according to current schedules and risk of diseases at their destination, and travel vaccines should be administered according to current recommendations [20,21]. For some children, this may mean administering some primary or booster doses at shortened intervals or according to accelerated vaccine schedules [7,8]. For example, a sibling traveling to meet the adopted child should receive two doses of measles-containing vaccines administered at least 4 weeks apart; a sibling who is less than 12 months of age and has not received the first dose of measles, mumps, and rubella (MMR) vaccine should receive a dose of measles vaccine if traveling to an area where exposure to measles may occur [4].

General advice

Although the focus of much of a pretravel consultation is on administration of vaccines and prevention of malaria, accidents and other infectious diseases, such as diarrhea and upper respiratory infections, are more common causes of morbidity during travel. All travelers can benefit from information about dietary precautions, oral rehydration, general safety precautions, sun protection, jet lag, motion sickness, animal hazards, swimming hazards, road safety, seat belt and car seat use, and what medical supplies to bring with them. Traveling to receive a child puts additional burdens on travelers, especially those becoming parents for the first time, who may never have traveled long distances with a small child. When siblings travel, attention must be paid to their needs as well as to those of the new adoptee. Bringing along another adult to care for siblings is often helpful, especially if only one parent is traveling [22]. Many sources of detailed travel advice for children are available [20–28].

Traveler's diarrhea affects approximately 50% of travelers to less developed parts of the world [29]. Prevention of diarrhea depends on careful attention to food and water precautions. Travelers can be advised to drink boiled water or carbonated beverages and to avoid tap water, ice, and bottled water from questionable sources. Piping hot food and thick-skinned fruits that are peeled by the traveler are safest; raw seafood, vegetables and fruits like lettuce and berries with surfaces that can contain infectious organisms, and unpasteurized dairy products are least safe. Food that has been sitting at room temperature for prolonged periods or that could be set on by flies or other insects should also be avoided.

Treatment of traveler's diarrhea in adults can be accomplished with oral rehydration, antimotility agents, and judicious use of self-treatment with antibiotics [2,29,30]. For mild diarrhea that does not affect usual activities, main-

taining hydration status is the most important step. When there are mild or moderate symptoms and one to two loose stools per day without blood in the stool, an antimotility agent can be added. When distressing symptoms or more frequent stools are present, an antibacterial agent can be added to the regimen. Antibacterial agents shown to be effective in traveler's diarrhea include the fluoroquinolones, although resistance rates are increasing in some areas and antibiotic-associated diarrhea is a potential side effect of concern. Azithromycin and rifaximin are also effective treatments for traveler's diarrhea [31–33]. If self-treatment does not result in improvement or if there is continued high fever, blood in the stool, dehydration, persistent vomiting, copious diarrhea, or abdominal pain, travelers must seek medical attention.

Those traveling to adopt a child may be faced with managing diarrhea in their new child or in siblings who have traveled with them. Antimotility agents are not recommended for infants or children less than 6 years of age and should be used judiciously in older children [23]. Instead, oral rehydration is the mainstay of therapy for mild to moderate symptoms. Antibacterial agents that can be used for children are limited by resistance rates to common antibacterial agents and lack of approval of fluoroquinolones in children. At this time, azithromycin is the drug of choice for treatment of most traveler's diarrhea in children, and a dose of 10/mg/kg/d for up to 3–5 days is a reasonable option, although no studies have been done to ascertain the optimal dose or length of therapy. Parents should monitor the child's condition carefully. If high fever, blood in the stool, persistent symptoms, or worsening dehydration occurs, families should seek immediate medical attention. Parents should also be aware that diarrhea in the adopted child may represent infections or conditions other than acute traveler's diarrhea, such as chronic diarrhea related to parasitic infections or malabsorption syndromes. Medical care should be sought for acutely ill children in the country where the adoption is occurring. Additional evaluation for causes of chronic diarrhea can be undertaken during the child's initial medical assessment in the United States.

Jet lag occurs almost universally in travelers who cross two or more time zones, and symptoms can last a week or more. Families may find it helpful to know that it may take approximately 1 day for each hour of time change for full acclimatization to the new time zone. Although there are no documented curative remedies, many approaches have been reported as helpful for some travelers, including light exposure, adjusting the sleep-wake cycle, and melatonin [2,34]. If possible, adding a few days to their travel itinerary for adjustment to the new time zone may be helpful for families when traveling for the purpose of adoption so as to maximize alertness for negotiating legal and bureaucratic tasks and caring for the child.

Parents traveling to meet and bring home their child should receive some preparation about what to do if their child is ill or becomes ill. Meeting with a pediatrician before the trip can be helpful in preparing a family for such an event. New parents want to know tasks, such as how to take a child's temperature, count the child's respiratory rate, and monitor a child's hydration status. Information

can be given to parents about health care providers in the area of travel, available through the directory of the American Academy of Pediatrics or from the US consulate in major cities. A means of communication with a physician in the United States, available at all hours, is reassuring for parents. Families may also find it helpful to arrange with a relative or friend to be available at all times in the United States throughout their trip. This person can then track down medical contacts, legal advice, or travel help or can take care of other time-consuming tasks that are difficult to manage from outside the United States. Although the availability of electronic mail and international telephone service has improved dramatically as a result of enterprises like Internet cafes, families traveling to remote regions may find it helpful to rent a satellite telephone for the duration of their trip.

Additional travel advice about sun protection, swimming hazards, and insect precautions should be provided pertinent to the destination country [1]. All travelers should be provided information about general safety, including animal bites, use of car seats and seat belts, and personal safety. Parents may be able to find out from other recently traveling families or the adoption agency whether car seats are available or can be used. In many countries, their use may be limited by lack of seat belts in available vehicles. Emergency evacuation insurance is recommended for families, especially for prolonged trips, although whether or at what point the policy would cover the adopted child should be clarified with the insurance company. Similarly, parents should inquire from their health insurance

Box 1. Medical supplies for adoptive family members traveling to meet child

Oral antibiotic for traveler's diarrhea
Antimotility drug
Anti-inflammatory/antipyretic
Antihistamine
Decongestant
Topical antibiotic, steroid, antifungal
Scabicide
Adhesive bandages
Thermometer
Insect repellent
Sunscreen (if indicated)
Hand sanitizer
Oral rehydration packets
Needles/syringes/oral syringes
Bulb syringe, nasal saline spray
Pediatric formulations of medications
First time parents: consider medical kit for adopted child

plan (and get in writing) assurances of the exact date or point in the adoption process that the child becomes eligible for emergency medical coverage.

Most families, especially those who are becoming first-time parents, request guidance about what medical supplies to bring for themselves and for their child. Parents and accompanying travelers should bring all the medications and equipment they would normally use for their own medical needs, such as medications, syringes for insulin, contact lens cleaning solution, and other personal items. Although the availability of these supplies worldwide has improved in the last decade, it is usually far more convenient and reassuring for the traveler to use familiar items.

Suggested supply lists for the needs of the newly adopted child are available from many sources and depend to some extent on the destination and length of the trip [23]. General items include waterless hand sanitizer, a thermometer, diapers, oral rehydration packets, sunscreen (if indicated), insect repellent, diaper rash cream, antibacterial ointment, amoxicillin or azithromycin, oral syringes for measurement of doses and administration of medications, band-aids, antihistamines, and antipyretics (acetaminophen or ibuprofen) (Box 1).

Travel with a child with special needs

Adoptive parents of a child with special needs can benefit from having a carefully constructed plan (designed with the primary pediatrician or specialist) about expected needs and possible complications. Parents need to obtain from the orphanage a full supply of any chronic medication, such as antiepileptic medications, heart medications, or other drugs taken regularly by the child. Continuing these medications until the child is in the United States is usually more advisable than changing medications because of the risk of allergic reactions, adverse events to new medications, or changes in drug levels attributable to different formulations of the same drug. If there is a need for oxygen on the trip, this must be arranged in advance with the airlines, and parents must provide their own tubing and appropriately sized face masks. A child who needs oxygen for a long flight or at relatively high flow rates needs special tanks, because those routinely available on aircraft are not adequate to meet these needs. Written documentation and advance preparation are almost always required for these arrangements.

Potential for transmission of infectious diseases by internationally adopted children

Internationally adopted children typically are exempted from preimmigration blood tests, radiographic examinations, and immunizations during their overseas visa medical examination. If immunizations are not up to date according to US recommendations, parents must sign a waiver stating that they are going to begin updating immunization within 30 days of arrival in the United States. Newly

adopted children should, however, have a medical evaluation within 2 weeks after arrival and begin immunizations as soon as possible.

Data collected from institutions where significant numbers of internationally adopted children are seen have identified infectious diseases with potential for transmission to the family and community [35–39]. Some of the diseases identified during the health assessment may be reportable to US public health authorities (eg, tuberculosis, *Giardia*, measles) and require investigation of the household. Rarely, such as during the SARS outbreak in 2003, household isolation has been required for internationally adopted children. Preparation for these situations and explanation of the role of the public health system in identifying contacts of the child so as to prevent additional infections are helpful for parents and may reduce anxiety. Health care professionals seeing internationally adopted children should also involve public health authorities in the event of severe or unusual diseases in these children, because the public health authorities may be able to provide additional diagnostic or epidemiologic information in the event of a unique outbreak or new agent, such as SARS or avian influenza.

Hepatitis B, hepatitis A, tuberculosis, measles, and *Salmonella* have been transmitted to family members or close contacts of children adopted internationally [5,40–46]. Those involved in the care of internationally adopted children also describe transmission of *Giardia*, lice, scabies, *Shigella*, pertussis, and cytomegalovirus (CMV) as well as other respiratory, gastrointestinal, and dermatologic conditions (Jerri Jenista, MD, personal communication, 2005). CMV transmission has not been reported formally in families of internationally adopted children, but the high rates of CMV shedding in adoptees and the documentation of child-to-parent transmission suggests that the potential exists for this to occur [35,47,48]. Families may also be at increased risk of pertussis, influenza, and pneumococcal disease, especially if no other young children are living in the household [49–51].

Prevention of disease that may be transmitted by adoptees

Hepatitis A and hepatitis B vaccines should be offered to family members and close contacts (eg, live-in child care providers) before the adopted child arrives in the household (Table 3) [52]. Review of the potential contacts' status of immunity to measles, mumps, rubella, and varicella can provide an opportunity to offer MMR and varicella vaccines to nonimmune individuals. Those who are candidates for pneumococcal and influenza vaccines should receive these vaccines per current recommendations [6].

Avoiding transmission of diseases not prevented by vaccines requires providing information about how these diseases are transmitted and what can be done to prevent them. Prevention of tuberculosis depends on testing, assessment, and treatment of infected individuals. Parents must be informed of the importance of completing recommended treatment for tuberculosis if their child has a positive tuberculin skin test result or has tuberculosis. Currently, the vaccine

Table 3
Vaccines for nontraveling family members and close contacts

Vaccine	Standard dose/route
Update all childhood vaccines for any children in household	
Vaccines for adults (administer as needed according to standard schedules)	
Hepatitis A	1.0 mL adult/0.5 mL pediatric IM, 2 doses at 0, 6 months
Hepatitis B	2.0 mL IM, 3 doses at 0, 1, 6 months
Influenza	0.5 mL IM, according to season
Measles, mumps, rubella	0.5 mL SC, documented 2 doses separated by ≥ 1 month
Pneumococcal polysaccharide	0.5 mL SC or IM
Td or Tdap	0.5 mL IM
Varicella	0.5 mL SC, 2 doses separated by 4–8 weeks

Abbreviations: IM, intramuscular; SC, subcutaneous; Td, tetanus diphtheria; Tdap, tetanus-diphtheria-acellular pertussis.

against tuberculosis, Bacille Calmette-Guérin (BCG), is not used routinely in the United States and is not recommended for adoptive families.

An acellular pertussis vaccine, in combination with tetanus and diphtheria toxoids, was licensed recently in the US and is available in Canada and some European countries. Prevention of pertussis also involves early recognition of disease and timely provision of antibiotic prophylaxis to exposed family members [53]. CMV is usually transmitted by contact with body fluids, especially urine, of children who are carriers. Prevention of transmission involves careful hand washing, especially when changing diapers. Because routine screening for CMV is not recommended for internationally adopted children and a substantial proportion of asymptomatic children may be carriers, such advice should be given to all families. Some experts recommend testing adoptive mothers and providing targeted advice to those who are antibody-negative and who could potentially become pregnant [54].

A number of gastrointestinal pathogens have been identified on screening of internationally adopted children, including *Giardia*, *Salmonella*, *Campylobacter*, *Shigella*, and *Clostridium difficile* [35,38,39]. Transmission to family members is possible for these gastrointestinal pathogens [47]. Prevention of transmission of gastrointestinal pathogens as well as skin infections involves identification of these conditions in the adoptee and treating them appropriately as well as emphasizing hand washing and careful attention to hygiene during this process.

Summary

Pretravel consultation before international adoption must encompass standard advice for those who travel, advice for those who are exposed to the newly adopted child, and information about caring for a new child during travel.

Children who travel to meet siblings may need special accommodations before and during travel. Data on the health of internationally adopted children illustrate the risk of exposing family members and close contacts to some infectious diseases during or after international adoption. Parents, family members, and close contacts of the newly adopted child should be given advice to reduce their own and their child's risk. Targeted preadoption counseling, close attention to hygiene and safety advice, and prompt identification and treatment of infections lead to the safest and most trouble-free adoption travel experience.

Appendix: Checklist for families planning international adoption

Before travel

- Consult international adoption clinic to consider review of child's medical history.
- Consult travel medicine center several months before anticipated travel.
- Choose pediatrician.
- Prepare travel medical supplies.
- Prepare travel supplies for child, including car seat, child carrier, stroller, clothing, diapers, formula and bottles, baby food or snacks, and toys.

During travel

Consult a medical professional if you suspect a serious illness or a contagious disease. Fever, lethargy, the appearance of difficulty in breathing, and severe diarrhea or vomiting with possible dehydration would require immediate medical evaluation.

Basic management if your child is ill

Nasal congestion (commonly caused by viruses)

- Encourage oral fluids.
- For babies, you may use saline nasal spray and bulb syringe.
- For older children, you may use an oral decongestant.
- Seek medical evaluation if your child has a fever or if the symptoms are prolonged (>2 weeks), especially if accompanied by yellow or green discharge.

Cough (commonly caused by viruses)

- Encourage oral fluids.
- For older children, you may administer a cough suppressant.
- Seek medical evaluation if your child has a fever or respiratory difficulty, symptoms seem severe (associated with vomiting), or the cough is prolonged (>2 weeks).

Diarrhea

- Encourage oral fluids.
- Check and change diapers frequently.
- Apply diaper rash ointment to prevent breakdown of skin.
- Seek medical evaluation if your child has a fever, appears lethargic or dehydrated, has abdominal pain, or if the diarrhea is prolonged (>3 days).

Vomiting

- Encourage oral fluids.
- You may use oral rehydration solutions.
- Seek medical evaluation if your child has a fever, appears lethargic or dehydrated, has abdominal pain, or if vomiting lasts longer than 1 day.

Rash

- You may treat localized superficial skin infection with a topical antibiotic.
- You may treat suspected ringworm with a topical antifungal.
- You may treat localized itchy rash that may be allergic in nature with a topical steroid.
- Seek medical evaluation if your child has a fever, the rash is diffuse, or you suspect a highly contagious cause, such as scabies.

Fever

- Seek medical evaluation.
- Encourage oral fluids.
- You may administer pediatric acetaminophen to control the temperature.

After child arrives in the United States

Medical evaluation of child within 2 weeks of arrival

Update immunizations for child within 30 days of arrival

Important telephone numbers

US Consulate _____

International Adoption Clinic _____

Pediatrician _____

Travel Medicine Center _____

Adoption Agency Contact _____

References

- [1] Jong EC, McMullen R. The travel and tropical medicine manual. Philadelphia: Elsevier Science; 2003.
- [2] Ryan ET, Kain KC. Health advice and immunizations for travelers. N Engl J Med 2000; 342:1716–25.
- [3] Spira AM. Preparing the traveler. Lancet 2003;361:1368–81.
- [4] Centers for Disease Control and Prevention. Health information for international travel

- 2005–2006. Atlanta: US Department of Health and Human Services, Public Health Service; 2005.
- [5] Centers for Disease Control and Prevention. Multistate investigation of measles among adoptees from China—April 2004. *MMWR Morb Mortal Wkly Rep* 2004;53:309–10. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm53d409a1.htm>. Accessed July 12, 2005.
 - [6] Centers for Disease Control and Prevention. Recommended adult immunization schedule—United States, October 2004–September 2005. *MMWR Morb Mortal Wkly Rep* 2004;53(45):Q1–4.
 - [7] Centers for Disease Control and Prevention. Recommended childhood and adolescent immunization schedule. *MMWR Morb Mortal Wkly Rep* 2005;53(51/52):Q1–3. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5351-Immunizational1.htm>. Accessed July 12, 2005.
 - [8] Centers for Disease Control and Prevention. Recommended childhood and adolescent immunization schedule for children and adolescents who start late or who are >1 month behind, United States 2005. Available at: <http://www.cdc.gov/nip/recs/child-schedule.htm#catchup>. Accessed July 12, 2005.
 - [9] Centers for Disease Control and Prevention. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep* 2003;52(RR08):1–36.
 - [10] Werzberger A, Mensch B, Kuter B, et al. A controlled trial of a formalin-inactivated hepatitis A vaccine in healthy children. *N Engl J Med* 1992;327:453–7.
 - [11] Anonymous. Twinrix: a combination hepatitis A and B vaccine. *Med Lett Drugs Ther* 2001; 43:67–8.
 - [12] Thoelen S, Van Damme P, Leentvaar-Kuypers A, et al. The first combined vaccine against hepatitis A and B: an overview. *Vaccine* 1999;17(13–14):1657–62.
 - [13] Quick R, Beach M. Centers for Disease Control and Prevention. Risks from food and drink. In: Arguin PM, Kozarsky PE, Navin AW, editors. Health information for international travel 2005–2006. Atlanta: US Department of Health and Human Services, Public Health Service; 2005. p. 29–35.
 - [14] Centers for Disease Control and Prevention. Yellow fever vaccine; recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep* 2002; 51(RR-17):1–11.
 - [15] Centers for Disease Control and Prevention. Inactivated Japanese encephalitis virus vaccine. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep* 1993;42(RR-1):1–15.
 - [16] Parise M, Barber A, Mali S. Centers for Disease Control and Prevention. Malaria. In: Arguin PM, Kozarsky PE, Navin AW, editors. Health information for international travel 2005–2006. Atlanta: US Department of Health and Human Services, Public Health Service; 2005. p. 189–212.
 - [17] Kain KC, Shanks GD, Keystone JS. Malaria chemoprophylaxis in the age of drug resistance part I. *Clin Infect Dis* 2001;33:226–34.
 - [18] Kain KC, Shanks GD, Keystone JS. Malaria chemoprophylaxis in the age of drug resistance part II. *Clin Infect Dis* 2001;33:381–5.
 - [19] Centers for Disease Control and Prevention. Prevention of malaria in travelers. A guide for travelers to malaria-risk areas. Available at: <http://www.cdc.gov/malaria/pdf/travelers.pdf>. Accessed July 12, 2005.
 - [20] Weinberg N, Weinberg M, Maloney S. Centers for Disease Control and Prevention. Traveling safely with infants and children. In: Arguin PM, Kozarsky PE, Navin AW, editors. Health information for international travel 2005–2006. Atlanta: US Department of Health and Human Services, Public Health Service; 2005. p. 434–46.
 - [21] Mackell SM. Vaccinations for the pediatric traveler. *Clin Infect Dis* 2003;37:1508–16.
 - [22] Miller LC. Travel and transition to the adoptive family. In: The handbook of international adoption medicine. New York: Oxford University Press; 2005. p. 135–51.
 - [23] Mackell SM. Travel advice for pediatric travelers: infants, children, and adolescents. In: Jong EC, McMullen R, editors. The travel and tropical medicine manual. Philadelphia: Elsevier Science; 2003. p. 167–85.

- [24] Fisher PR. Travel with infants and children. *Infect Dis Clin North Am* 1998;12(2):355–68.
- [25] Stauffer WM, Konop RJ, Kamat D. Traveling with infants and young children. Part I: anticipatory guidance: travel preparation and preventive health advice. *J Travel Med* 2001;8(5):254–9.
- [26] Stauffer WM, Kamat D. Traveling with infants and children. Part II: immunizations. *J Travel Med* 2002;9(2):82–90.
- [27] Stauffer WM, Konop RJ, Kamat D. Traveling with infants and young children. Part III: travelers' diarrhea. *J Travel Med* 2002;9(3):141–50.
- [28] Stauffer WM, Konop RJ, Kamat D. Traveling with infants and children. Part IV: insect avoidance and malaria prevention. *J Travel Med* 2003;10(4):225–40.
- [29] Ericsson CD. Traveler's diarrhea: epidemiology, prevention, and self-treatment. *Infect Dis Clin North Am* 1998;83:285–303.
- [30] Connor BA. Centers for Disease Control and Prevention. Travelers' diarrhea. In: Arguin PM, Kozarsky PE, Navin AW, editors. Health information for international travel 2005–2006. Atlanta: US Department of Health and Human Services, Public Health Service; 2005. p. 278–87.
- [31] Shanks GD, Smoak BL, Aleman GM. Single dose of azithromycin or three-day course of ciprofloxacin as therapy for epidemic dysentery in Kenya. *Clin Infect Dis* 1999;29:942–3.
- [32] Adachi JA, Ericsson CD, Jiang Z-D, et al. Azithromycin found to be comparable to levofloxacin for the treatment of US travelers with acute diarrhea acquired in Mexico. *Clin Infect Dis* 2003;37:1165–71.
- [33] DuPont HL, Jiang Z-D, Ericsson CD, et al. Rifaximin versus ciprofloxacin for the treatment of traveler's diarrhea: a randomized, double-blind clinical trial. *Clin Infect Dis* 2001;33:1807–15.
- [34] Bezruchka SA. Disequilibrium: jet lag, motion sickness, and heat illness. In: Jong EC, McMullen R, editors. The travel and tropical medicine manual. Philadelphia: Elsevier Science; 2003. p. 112–25.
- [35] Hostetter MK, Iverson S, Thomas W, et al. Medical evaluation of internationally adopted children. *N Engl J Med* 1991;325:479–85.
- [36] Johnson DE, Miller LC, Iverson S, et al. The health of children adopted from Romania. *JAMA* 1992;268:3446–51.
- [37] Albers LH, Johnson DE, Hostetter MK, et al. Health of children adopted from the former Soviet Union and Eastern Europe: comparison with pre-adoptive medical records. *JAMA* 1997;278(11):922–4.
- [38] Miller LC, Hendrie NW. Health of children adopted from China. *Pediatrics* 2000;105(6):e76. Available at: <http://www.pediatrics.org/cgi/content/full/105/6/e76>. Accessed July 12, 2005.
- [39] Saiman L, Aronson J, Zhou J, et al. Prevalence of infectious diseases among internationally adopted children. *Pediatrics* 2001;108(3):608–12.
- [40] Friede A, Harris JR, Kobayashi JM, et al. Transmission of hepatitis B virus from adopted Asian children to their American families. *Am J Public Health* 1988;78:26–9.
- [41] Sokal EM, Van Collie O, Buts JP. Horizontal transmission of hepatitis B from children to adoptive parents [letter]. *Arch Dis Child* 1995;72:191.
- [42] Wilson ME, Kimble J. Posttravel hepatitis A: probable acquisition from an asymptomatic adopted child. *Clin Infect Dis* 2001;33:1083–5.
- [43] Hershov RC, Hadler SC, Kane MA. Adoption of children from countries with endemic hepatitis B: transmission risks and medical issues. *Pediatr Infect Dis J* 1987;6:431–7.
- [44] Centers for Disease Control and Prevention. Measles outbreak among internationally adopted children arriving in the United States, February–March 2001. *MMWR Morb Mortal Wkly Rep* 2002;51:1115–6.
- [45] Curtis AB, Ridzon R, Bogel R, et al. Extensive transmission of *Mycobacterium tuberculosis* from a child. *N Engl J Med* 1999;341:1491–5.
- [46] Centers for Disease Control and Prevention. Multiresistant Salmonella and other infections in adopted infants from India. *MMWR Morb Mortal Wkly Rep* 1982;31:285–7.
- [47] Adler SP. Molecular epidemiology of cytomegalovirus: viral transmission among children attending a day care center, their parents, and caretakers. *J Pediatr* 1988;112:366–72.
- [48] Pass RF, Little EA, Stagno S, et al. Young children as a probable source of maternal and congenital cytomegalovirus infection. *N Engl J Med* 1987;316:1366–70.

- [49] Centers for Disease Control and Prevention. Pertussis in an infant adopted from Russia—May 2002. *MMWR Morb Mortal Wkly Rep* 2002;51:394–5.
- [50] Whitney CG, Farley MM, Hadler J, et al. Decline in invasive pneumococcal disease after the introduction of protein-polysaccharide conjugate vaccine. *N Engl J Med* 2003;348:1737–46.
- [51] Hendley JO, Sande MA, Stewart PM, et al. Spread of *Streptococcus pneumoniae* in families. I. Carriage rates and distribution of types. *J Infect Dis* 1975;132:55–61.
- [52] Chen LH, Barnett ED, Wilson ME. Preventing infectious diseases during and after international adoption. *Ann Intern Med* 2003;139:371–8.
- [53] American Academy of Pediatrics. Pertussis. In: Pickering LK, editor. *Red book: 2003 report of the Committee on Infectious Diseases*. 26th edition. Elk Grove Village, IL: American Academy of Pediatrics; 2003. p. 472–86.
- [54] Hostetter MK. Internationally adopted children and cytomegalovirus. *Pediatrics* 1989;84:937–8.