Traveling with Immunodeficiencies

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We all love to travel!

- 2,900,000 passengers fly everyday in and out of US airports
  - 45,000 average daily flights
  - 19,633 public & private US airports

- Amtrak
  - FY 2016: Boarded ~31.3 million customers
  - Average day: ~85,700 passengers ride more than 300 Amtrak trains

- Public Transportation
  - FY 2019: Americans took 9.9 billion trips
Immunocompromised Travelers

- 1-2% of travelers seen in US travel clinics are immunocompromised
  - Higher risk for travel-related infections
  - Diminished vaccine response rate
  - Live viral vaccines may be contraindicated

Importance of pre-travel consultation
- Assess, communicate, manage risk
- Specific condition
  - Itinerary, timing, reason for travel, travel style, special activities
- Travel medicine specialist for overseas travel

wwwnc.cdc.gov/travel/page/yellowbook-home-2020

Spectrum of immune compromise

Significantly immunocompromising conditions

- HSCT within the past 2 years
- Solid organ transplant within the past year
- Treatment for rejection after solid organ transplant
- Active leukemia or lymphoma; generalized malignancy
- Aplastic anemia
- Graft-versus-host disease
- Congenital immunodeficiency
- Recent radiation therapy or checkpoint inhibitors
- Significantly immunosuppressive medications
- AIDS with CD4 <200/µL

Modified from: Kotton CN et al. Immunocompromised Travelers. In: CDC Health Information for International Travel 2016: The Yellow Book
Key patient education points for the immunocompromised traveler

- Develop an **emergency plan** in case of illness at destination
  - Clinic/hospital able to provide care
  - How to use embassy resources
  - Medical evacuation insurance
- Bring **extra medications** in case of travel delays; ensure medications are labeled
- Avoid taking medications purchased at destination

- [www.primaryimmune.org/travel](http://www.primaryimmune.org/travel)

Traveling with a Primary Immunodeficiency

- Place medications & supplies in your carry-on for TSA screening
  - Keep in original containers; separate before screening begins
    - [www.tsa.gov/traveler-information/what-expect-if-passenger-needs-medication](http://www.tsa.gov/traveler-information/what-expect-if-passenger-needs-medication)
  - Inform TSA office; TSA notification card
  - Letter of medical necessity for medications such as IVIG/SCIG & infusion supplies
    - [www.primaryimmune.org/travel](http://www.primaryimmune.org/travel)
Key patient education points for the immunocompromised traveler

- Nutrition
  - Vigilant food and water precautions
- Hand hygiene
  - Antibacterial hand wipes/alcohol-based hand sanitizer
- Face mask
- Vigilant use of sun protection
- Carry a copy of your insurance card (www.iamat.org)
- Vaccinations
  - www.primaryimmune.org/travel
  - wwwnc.cdc.gov/travel/yellowbook/2020/travelers-with-additional-considerations/immunocompromised -travelers#5635

Vaccinations considered SAFE in the immunocompromised

- Diphtheria
- Tetanus
- Pertussis
- H. influenzae type b
- Pneumococcus
- Hepatitis A
- Hepatitis B
- Meningococcal*
- Rabies
- Inactivated typhoid
- Japanese encephalitis
- Inactivated influenza
- Inactivated polio
- COVID-19 vaccine

*Complement deficiency or use of complement inhibitors
*Anatomic or functional asplenia
*HIV
Vaccinations CONTRAINDICATED in the immunocompromised

- BCG vaccine
- Oral live polio
- MMR
- Varicella
- Live herpes zoster vaccine
- Live oral typhoid vaccine
- Yellow fever
- Live attenuated influenza vaccine

Simple and basic travel advice

<table>
<thead>
<tr>
<th>Don’t forget</th>
<th>Bring your medical journal in case of emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bring</td>
<td>Carry a thermometer</td>
</tr>
<tr>
<td>Carry</td>
<td>Wash hands whenever you touch things in public areas &amp; pack hand sanitizer</td>
</tr>
<tr>
<td>Wash</td>
<td>Keep medicines needing refrigeration in a portable cooler</td>
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<tr>
<td>Keep</td>
<td>Have a list of emergency contacts and your doctors’ phone numbers</td>
</tr>
<tr>
<td>Have</td>
<td>Know the location of the nearest hospital</td>
</tr>
<tr>
<td>Know</td>
<td>Bring healthy snacks and plenty of bottled water</td>
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</tbody>
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Modified from CGD Connections™: Travel made easy with chronic granulomatous disease
Prepare and carry key documents

United States Department of State
TRAVELER’S CHECKLIST
Travel Smart. Travel Safe. Travel Well.
Before traveling abroad, make sure to:

- GET INFORMED about your destination at travel.state.gov/destination and plan for the unexpected at travel.state.gov/crisis.
- GET REQUIRED DOCUMENTS, such as your passport and visas.
- GET ENROLLED in the Smart Traveler Enrollment Program (STEP) at step.state.gov to receive security and emergency alerts.
- GET INSURED for medical, evacuation, and other unexpected expenses.

Carry this card with you when you go abroad.
Before traveling, look up your destination at travel.state.gov/destination and write the address/phone number of the U.S. embassy or consulate in that country below.

Contact them for overseas emergencies, or call Overseas Citizens Services, Washington, D.C.
888-467-7477 (toll-free U.S. and Canada)
+1 202-501-4444 (from overseas)

U.S. Passport Information
917-484-2770 or TDD/TTY 888-874-7793
TravelGov: @TravelGov
travel.state.gov/traveleerschecklist

Immunocompromised Travelers: Demographic Characteristics, Travel Destinations, and Pretravel Health Care from the U.S. Global TravEpiNet Consortium

Brian S. Schwartz, Jessica Rosen, Pauline V. Han, Nareen A. Hynes, Stefan H. Hagemann, Sowmya R. Rao, Emily S. Jentes, Edward T. Ryan, Regina C. LaRocque,* and the Global TravEpiNet Consortium

Travel advice for the immunocompromised traveler: prophylaxis, vaccination, and other preventive measures

Rupa R Patel,1 Stephen Y Liang,1 Pooja Koolwal,2 and Frederick Matthew Kuhlmann1
- National network of travel clinics across the U.S.
- Supported by the Centers for Disease Control and Prevention
- Aimed at improving health for those who travel internationally
Podium to Practice Takeaways

- **It is safe for immunodeficient patients to travel**
  - BUT......plan ahead

- **Pre-travel consultation**
  - Allergist/Immunologist
  - Travel medicine specialist
  - PCP

- **Be familiar with useful resources for patients, families and providers**
  - CDC Yellow Book: Health Information for International Travel
  - Immune Deficiency Foundation resources
  - [www.tsa.gov/traveler](http://www.tsa.gov/traveler)
  - Global TravEpiNet
Disclosures

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- Consulting fees: Nutricia, Nestle
- Royalties: Up To Date
- Deputy Editor for the Annals of Allergy, Asthma and Immunology
- Non-financial: chair of the medical advisory board for the International FPIES Association
Learning objectives

• To describe:
  • Risk of unintentional exposures and reactions to foods at large and during travel
  • Strategies to mitigate the risk

Introduction

In the United Stated, 7.6% of children are affected by food allergies (most common: **peanut**, **milk**, shellfish, tree nuts, egg, fin fish)

At least 10.8% of US adults had at least 1 food allergy (most common: **shellfish**, **milk**, **peanut**, tree nut, fin fish, egg, wheat, soy, sesame)

Anaphylaxis is the most severe clinical manifestation

Quality of life is negatively impacted; increased costs (Epi-Pen, restrictive diet).
Accidental reactions to foods in food allergic individuals are common

• Prospectively collected data in 180 children (a subset of a larger study, response rate 26%, 180/684)
• Median age 7.5 years (IQR 2-15 yrs)
• Over the period of 6 months: 67 (37%) at least 1 reaction; 5 had multiple reactions, total n=75
• Epi use: 8.7%
• Most common triggers: milk, egg, seeds, fish

Patients and caregivers worry about traveling while food allergic

• Disrupted routines, tiredness, rushing, lack of time to read labels
• Increased potential for mistakes
• Increased dependence on commercially packaged foods, restaurants=increased risk of cross-contamination, limited choice of eating establishments
• Access to emergency services: ambulance, hospital
• Foreign travel: language barrier, different/unknown standard of care for management of anaphylaxis in different countries
Allergic reactions during travel

Allergic reactions during air travel: media

- In the U.S., the Federal Aviation Administration requires inclusion of epinephrine in medical kits carried on board.

- In 1999, the US Dept. of Transpiration discussed requiring airlines to implement "peanut free zones", however there were no implementations.

- Between 2002 to 2007, a total of 10,189 medical emergencies were recorded in 32 European airlines, of which 2.3% were for allergic reactions.

- Australian flights carry 90 million passengers each year. About 1-2% of passengers have documented food allergies, of whom 2-10% report having experienced allergic reactions during travel.
Reactions to foods during AIR travel: USA

Self-reported allergic reactions to peanut on commercial airliners

S H Sicherer, T J Furlong, J DeSimone, H A Sampson

- Sixty-two of 3704 National Registry of Peanut and Tree Nut Allergy participants indicated a reaction on an airplane; 42 of 48 patients or parental surrogates contacted confirmed the reaction began on the airplane (median age of affected subject, 2 years; range, 6 months to 50 years).
- 35 reacted to peanuts (4 were uncertain of exposure) and 7 to tree nuts.
- Exposure: ingestion (20 subjects), skin contact (8 subjects), and inhalation (14 subjects).
- Reactions generally occurred within 10 minutes of exposure (32 of 42 subjects), and reaction severity correlated with exposure route (ingestion > inhalation > skin).
- The causal food was generally served by the airline (37 of 42 subjects). Medications were given in flight to 19 patients (epinephrine to 5) and to an additional 14 at landing/gate return (including epinephrine to 1 and intravenous medication to 2), totaling 79% treated.
- Flight crews were notified in 33% of reactions.

Reactions to foods during AIR travel: USA

Allergic reactions to peanuts, tree nuts, and seeds aboard commercial airliners

Sarah S Comstock, Rich DeMera, Laura C Vega, Eric J Boren, Sean Deane, Lori A D Haapanen, Suzanne S Teuber

- Forty-one of 471 individuals reported allergic reactions to food while on airplanes, including 4 reporting more than 1 reaction.
- Peanuts accounted for most of the reactions. Twenty-one individuals (51%) treated their reactions during flight.
- Only 12 individuals (29%) reported the reaction to a flight attendant.
- Six individuals went to an emergency department after landing, including 1 after a flight diversion. Airline personnel were notified of only 3 of these severe reactions.
- Comparison of information given to 3 different investigators by airline customer service representatives showed that inconsistencies regarding important information occurred, such as whether the airline regularly serves peanuts.
A 47-question on-line survey was distributed through the websites and social media outlets of the member organizations of the Food Allergy & Anaphylaxis Alliance.

- 349 reactions were reported among 3273 respondents from 11 countries;
- 13.3% received epinephrine as treatment.
- Flight crews were notified about 50.1% of reactions.
- Sixty-nine percent of all respondents reported making a preflight accommodation request, although just 55% of reactors did so compared with 71.6% of nonreactors ($P < .001$).
- Adjusted odds of epinephrine use were increased with reported gastrointestinal or cardiovascular symptoms or with notifying the crew.

- **Risk-mitigating behaviors associated with lower odds of a reported reaction:**
  1. requesting a peanut/tree nut–free meal
  2. wiping the tray table
  3. avoiding airline pillows or blankets
  4. requesting a buffer zone
  5. requesting other passengers not consume peanut/tree nut–containing products
  6. not consuming airline-provided food
Expert evidence = empirical strategies to reduce risk of exposure and readiness to treat allergic reaction: Air

1. Book an early day flight when aircraft has been cleaned thoroughly
2. Choose a peanut free flight—plan ahead
3. Ask for pre-boarding
4. Bring safe foods and snacks
5. Make sure chronic allergic diseases are under optimal control e.g., asthma, rhinitis, AD
6. Bring emergency medications—consider 2 x 2 packs of epi, supply of oral antihistamines, inhaled bronchodilators
7. Bring an “airport letter” to explain the supply of medications and extra food

“airport letter”

PATIENT:
DATE OF BIRTH:
DOV/DOS:

To Whom It May Concern:
The above named child is my patient, and he suffers from life-threatening food allergies requiring strict dietary avoidance and a restricted diet. THERE IS A RISK FOR ANAPHYLAXIS if the wrong food is ingested. Patients with food allergies may need to carry their own food while traveling.

Anaphylaxis is a severe allergic reaction that makes it medically necessary for my patient/their parent to carry Auvi-Q or EpiPen®, which is an autoinjector of epinephrine, and an antihistamine (for example, liquid Benadryl® and/or Zyrtec®), at all times. Auvi-Q or EpiPen® autoinjectors are prescribed by a licensed medical professional.

My patient must have these life-saving medications at all times, especially during times of travel away from home. In the event of an exposure, a severe allergic reaction may occur. Every minute is critical in using this medication to treat the allergic reaction and to prevent a life-threatening reaction. Further information is available in the emergency action plan I have prescribed.

Please allow my patient to have the emergency medications available at all times.
Please feel free to call our office at 212-263-5940 with any additional questions.

Sincerely,
Summary: plan ahead!

ROAD TRIP CHECKLIST FOR FOOD ALLERGIES
To help you prepare to travel with food allergies, review this list before your trip:

Medications and Forms
- Check the expiration date of epinephrine auto-injectors
- Have extra medication on hand
- Print and pack Food Allergy and Anaphylaxis Emergency Care Plan
- Fill out and print chef card

Traveling
- Pack safe snacks or meals
- Bring wipes for surfaces and hands
- Be sure everyone knows what to do in case of an emergency

THANK YOU FOR YOUR ATTENTION!