Preparing the Traveler

WRAIR-GEIS Operational Infectious Disease Course

The opinions or assertions contained herein are the private views of the author, and are not to be construed as official, or as reflecting true views of the Department of the Army or the Department of Defense. Research was conducted in an AAALACi accredited facility in compliance with the Animal Welfare Act and other federal statutes and regulations relating to animals and experiments involving animals and adheres to principles stated in the Guide for the Care and Use of Laboratory Animals. NRC Publication, 2011 edition.
Objectives

• DISCUSS THE EPIDEMIOLOGY OF TRAVEL-RELATED ILLNESS
• REVIEW KEY ELEMENTS OF THE PRE-TRAVEL ENCOUNTER
• IDENTIFY USEFUL ONLINE TRAVEL MEDICINE RESOURCES
What Are the Risks?
US Resident Travel Abroad: 2005-2014

Source: "2014 United States Resident Travel Abroad", US Department of Commerce, International Trade Administration, National Travel & Tourism Office
Malaria Cases in US Citizens

GeoSentinel Surveillance Sites

Source: Surveillance for Travel-Related Disease – GeoSentinel Surveillance System, United States, 1997-2011; MMWR, 19 Jul 2013
Figure 2. Proportionate Morbidity among Ill Travelers Returning from the Developing World, According to Region of Travel.
The proportions are shown, not incidence rates, of each of the top 22 specific diagnoses for all ill returned travelers within each of the regions. STD denotes sexually transmitted disease. Asterisks indicate syndromic diagnoses for which specific etiologic diagnoses could not be assigned.
QUESTION:

WHAT IS THE MOST LIKELY CAUSE OF DEATH IN US CITIZENS TRAVELING INTERNATIONALLY?
Causes of Death Among International Travelers

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of deaths</td>
<td>185</td>
<td>2463</td>
<td>247</td>
<td>68</td>
<td>17,988</td>
<td>421</td>
<td>952</td>
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<tr>
<td>Cardiac</td>
<td>8.0</td>
<td>49.0</td>
<td>14.0</td>
<td>15.0</td>
<td>45.0</td>
<td>35.0</td>
<td>68.9</td>
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<tr>
<td>Infection</td>
<td>5.0</td>
<td>1.0</td>
<td>–</td>
<td>3.0</td>
<td>–</td>
<td>2.4</td>
<td>3.6</td>
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<tr>
<td>Other illness</td>
<td>8.0</td>
<td>?</td>
<td>2.0</td>
<td>9.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Accidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road accident</td>
<td>36.0</td>
<td>7.0</td>
<td>13.0</td>
<td>12.0</td>
<td>37.0</td>
<td>28.3</td>
<td>–</td>
</tr>
<tr>
<td>Air crash</td>
<td>5.0</td>
<td>2.0</td>
<td>4.0</td>
<td>12.0</td>
<td>7.0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Drowning</td>
<td>14.0</td>
<td>4.0</td>
<td>4.0</td>
<td>9.0</td>
<td>15.0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Other injuries</td>
<td>23.0</td>
<td>12.0</td>
<td>2.0</td>
<td>11.0</td>
<td>23.0</td>
<td>26.0</td>
<td>20.7</td>
</tr>
<tr>
<td>Unknown</td>
<td>–</td>
<td>25.0</td>
<td>58.0</td>
<td>29.0</td>
<td>–</td>
<td>17.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

PCV, Peace Corps Volunteers (US).

Source: Keystone et al. Travel Medicine. 2004
Objectives

• DISCUSS THE EPIDEMIOLOGY OF TRAVEL-RELATED ILLNESS

• REVIEW KEY ELEMENTS OF THE PRE-TRAVEL ENCOUNTER

• IDENTIFY USEFUL ONLINE TRAVEL MEDICINE RESOURCES
Goals of The Pre-Travel Encounter

• PROTECT TRAVELERS FROM DISEASE AND DEATH ASSOCIATED WITH INTERNATIONAL TRAVEL

• MINIMIZE THE IMPACT OF TRAVEL-RELATED ILLNESS THROUGH THE USE OF SELF-TREATMENT

• PROTECT THE PUBLIC FROM EMERGING PATHOGENS ASSOCIATED WITH INTERNATIONAL TRAVEL
Key Things to Remember

• RISK MAY BE DIFFICULT TO ESTIMATE, BUT RISK ASSESSMENT IS ESSENTIAL NONETHELESS

• GOAL SHOULD BE TO “MANAGE” RISK, NOT “ELIMINATE” RISK

• VACCINES AND CHEMOPROPHYLAXIS ARE WONDERFUL, BUT ONLY GO SO FAR – CONSIDER OTHER PPMS

• ILLNESS CAN OCCUR DURING AND FOLLOWING TRAVEL

• WHAT WE DO FOR THE LEISURE TRAVELER MAY BE DIFFERENT FROM WHAT WE DO FOR THE DEPLOYING INDIVIDUAL OR UNIT
When is a Travel Health Consultation Needed?

Travel Outside the “Safe” Zones

- United States & Canada
- Western & Northern Europe
- Japan, Australia & New Zealand
The Pre-Travel Encounter

• REVIEW OF ITINERARY AND MEDICAL HISTORY
• IMMUNIZATIONS
• MALARIA PROPHYLAXIS
• SELF-TREATMENT MEDICATIONS
• PERSONAL PREVENTIVE MEASURES
Review of Itinerary

- **WHERE?**
  - Country, region, urban/rural, altitude
- **WHEN?**
  - Length of travel, time of year
- **WHY?**
  - Leisure, work, humanitarian
- **WHO?**
  - Travel companions, visiting friends/relatives (VFR)
- **WHAT?**
  - Basic tourism/sightseeing itinerary vs. adventure travel
- **HOW?**
  - Lodging, meals/water, transportation, medical care
Review of Current/Past Medical History

Current Medical Conditions
- Heart disease, pulmonary disease, renal disease, MS, thymus disorder, HTN, DM, immune system disorders, malignancy
- Pregnancy/breastfeeding

Past Medical History
- Psychiatric, cardiac conditions, epilepsy/seizures, DVT, ear/sinus problems

Medications

Allergies
- Medications, vaccines, foods, latex

Vaccination History
The Art of Travel Medicine: Pre-Travel

Risk of the location

Risk of the itinerary/activities/behavior

Risk of the individual traveler

Risk Tolerance of the Traveler

Risk Tolerance of the Provider

Recommended Preventive Measures
- Vaccines
- Chemoprophylaxis
- Self Treatment
- Personal Preventive Measures
The Pre-Travel Encounter

- REVIEW OF ITINERARY AND MEDICAL HISTORY
- IMMUNIZATIONS
- MALARIA PROPHYLAXIS
- SELF-TREATMENT MEDICATIONS
- PERSONAL PREVENTIVE MEASURES
Immunizations for Travelers

• “TRAVEL” VACCINES
  • Widespread Risk
    • Hepatitis A
    • Typhoid
  • Geographic Risk
    • Yellow Fever
    • Meningococcal
    • Polio
    • Japanese Encephalitis
  • Duration/Activity Risk
    • Hepatitis B
    • Rabies

• “Routine” Vaccines
  ➢ Childhood
    • MMR, Varicella, DTap, Polio, HiB, Hep A, Hep B, PCV, Rotavirus, Influenza
  ➢ Adolescent/Adult
    • Tdap
    • Meningococcal
    • HPV
    • Influenza
    • Pneumococcal
    • Varicella/Zoster
    • MMR
Hepatitis A Immunization

Geographic Distribution of Hepatitis A

CDC Health Information for International Travel, 2012
Hepatitis A Immunization

• **HEPATITIS A VACCINE**
  - Inactivated vaccine whole virus vaccine (Vaqta®, Havrix®)
  - 2 dose series (0 & 6 months) provides life-long protection
  - Also available as combination Hep A/Hep B vaccine (Twinrix®)

• **HEPATITIS A IMMUNE GLOBULIN**
  - Rarely necessary; one dose of vaccine anytime pre-travel provides protection in most healthy people
  - Consider for travelers departing within two weeks if:
    - Immune compromised
    - Chronic liver disease
    - Unable to receive hepatitis A vaccine
Typhoid Fever Vaccine

Geographic Distribution of Typhoid Fever

Typhoid Fever Vaccine

• **INACTIVATED INJECTABLE VACCINE (VICPS, TYPHIM VI®)**
  • Single dose; booster every 2 years

• **LIVE ORAL VACCINE (TY21A, VIVOTIF®)**
  • 4 doses, 1 capsule every 48 hours; booster every 5 years
  • Must be refrigerated, take with cool liquids, avoid antibiotics immediately before and after

• **EFFICACY FOR BOTH : 50-80%**
Yellow Fever Vaccine

Geographic Distribution of Yellow Fever

CDC Health Information for International Travel, 2016
Yellow Fever Vaccine

**Vaccine Overview**
- Live virus vaccine (YF-VAX®)
- Single dose; booster every 10 years (but likely to change)
- **Required** for entry into several countries
  - Consider flight itinerary and transit through YF endemic countries
  - Provide waiver for those with vaccine contraindications

**Precautions/Contraindications**
- Caution in travelers > 60 years old
- Avoid in breastfeeding mothers and patients with MS
- Contraindicated in those with egg allergies, immunocompromised, thymus disorders (thymoma or myasthenia gravis), active malignancy
Yellow Fever Vaccine

- **COMPLICATIONS**
  - Vaccine-associated neurotropic disease
    - Meningoencephalitis, bulbar palsy, Bell’s palsy, GBS
    - 0.4 – 0.8 cases per 100,000 vaccine doses
  - Vaccine associated viscerotropic disease
    - Similar to natural YF infection
    - 0.3 – 0.4 cases per 100,000 vaccine doses
    - 1.6/100,000 in first time vaccine recipients > 60 y/o
    - Meningoencephalitis in breastfeeding infants
    - 10x increased risk of multiple sclerosis relapse
Yellow Fever Vaccine

International Certificate of Vaccination

INTERNATIONAL CERTIFICATE OF VACCINATION
AS APPROVED BY
THE WORLD HEALTH ORGANIZATION

CERTIFICAT INTERNATIONAL DE VACCINATION
APPROUVE PAR
L’ORGANISATION MONDIALE DE LA SANTÉ

TRAVELER’S NAME—NOM DU VOYAGEUR

ADDRESS—ADRESSE

[Details filled in with sample text]

CDC 731 (formerly PHS-731)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENETERS FOR DISEASE CONTROL AND PREVENTION

WRAIR

MEDICAL CONTRAINDICATION TO VACCINATION
Contre-indication médicale à la vaccination

This is to certify that immunization against
Je soussigné(e) certifie que la vaccination contre

[Name of disease—Nom de la maladie]

[Name of traveler—Nom du voyageur]

contraindicated because of the following conditions:
contre-indiqués pour les raisons suivantes:

[Signature and address of physician]

[Signature et adresse du médecin]
Meningococcal Vaccine

The “Meningitis Belt”

CDC Health Information for International Travel, 2016
Meningococcal Vaccine

- QUADRIVALENT (A,C,Y,W-135) VACCINE; BOOSTER EVERY 3-5 YEARS

- AVAILABLE AS POLYSACCHARIDE (MENOMUNE®) AND CONJUGATE VACCINES (MENACTRA®, MENVEO®)

- RECOMMENDED FOR TRAVEL TO THE AFRICAN MENINGITIS BELT
  - During high risk periods (Dec – Jun) for typical travelers
  - Year-round for those engaged in healthcare operations

- REQUIRED BY SAUDI ARABIA FOR THOSE ENTERING THE COUNTRY FOR HAJJ OR UMRAH PILGRIMAGE
Polio Vaccine

- **INACTIVATED INJECTABLE VACCINE IS AVAILABLE IN THE US**

- **LIVE ATTENUATED ORAL VACCINE IS STILL USED IN OTHER PARTS OF THE WORLD**

- **SINGLE ADULT POLIO BOOSTER IS A MEDICAL READINESS REQUIREMENT FOR ACTIVE DUTY PERSONNEL**

- **PRIMARY SERIES AND SINGLE ADULT BOOSTER RECOMMENDED FOR TRAVEL TO AREAS WITH RECENT OR ONGOING TRANSMISSION**
Polio Endemic Countries, 1988
Total Global Polio Cases, \(2014-2015\)

Wild Poliovirus & cVDPV\(^1\) Cases\(^2\), 2014

Wild Poliovirus & cVDPV Cases\(^1\), 2015
01 January – 10 November

Data in WHO HQ as of 10 November 2015

\(^1\)Excludes viruses detected from environmental surveillance.
**Japanese Encephalitis Vaccine**

- **JE-VAX NO LONGER AVAILABLE; INACTIVATED VERO-CELL DERIVED VACCINE (IXIARO®) LICENSED IN 2009**
- **2-DOSE SERIES: DAY 0 AND 28; BOOSTER AFTER 1 YEAR**
- **LICENSED FOR USE IN AGE 2 MONTHS AND OLDER**
- **RECOMMENDED FOR:**
  - Prolonged exposure in high risk regions (rural farming areas)
    - Duration > 1 month
    - Frequent short stays to high risk areas
    - Significant outdoor exposure (adventure travelers)
  - Rarely necessary for short itineraries or urban environments.
Geographic Distribution of Japanese Encephalitis

CDC Health Information for International Travel, 2014
Hepatitis B Vaccine

- **INACTIVATED VIRAL ANTIGEN VACCINE**
- **3-DOSE SERIES: 0, 1, AND 6 MONTHS**
- **RECOMMENDED FOR:**
  - Prolonged exposure in high risk regions
    - Duration > 3 months
    - Frequent short stays to high risk areas
  - High risk activities
    - Possibility of new sexual partner
    - Possibility of needing medical or dental care
    - Tattooing, body piercing, acupuncture
    - Healthcare workers
Rabies Vaccine

- **INACTIVATED VIRUS VACCINE**
- **3 DOSE SERIES: 0, 7, AND 21-28 DAYS**
- **POST-EXPOSURE VACCINE STILL REQUIRED AFTER EXPOSURE (2 DOSES)**
- **RECOMMENDED FOR:**
  - Prolonged exposure in high risk regions
  - High risk activities
    - Potential exposure to animals (adventure travelers)
    - Occupational exposure
  - Other considerations
    - Young children
    - Limited access to medical care, remote locations
Routine Childhood Vaccinations

- **INACTIVATED VIRUS VACCINE**
- **3 DOSE SERIES: 0, 7, AND 21-28 DAYS**
- **POST-EXPOSURE VACCINE STILL REQUIRED AFTER EXPOSURE (2 DOSES)**
- **RECOMMENDED FOR:**
  - Prolonged exposure in high risk regions
  - High risk activities
    - Potential exposure to animals (adventure travelers)
    - Occupational exposure
  - Other considerations
    - Young children
    - Limited access to medical care, remote locations
# Routine Adult Vaccinations

## ACIP Recommendations - 2014

### If you are this age, talk to your healthcare professional about these vaccines

<table>
<thead>
<tr>
<th>Age</th>
<th>Flu Influenza</th>
<th>Td/Tdap Tetanus, diphtheria, pertussis</th>
<th>Shingles Zoster</th>
<th>Pneumococcal</th>
<th>Meningococcal</th>
<th>MMR Measles, mumps, rubella</th>
<th>HPV Human papillomavirus</th>
<th>Chickenpox Varicella</th>
<th>Hepatitis A</th>
<th>Hepatitis B</th>
<th>Hib Haemophilus influenzae type b</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 - 21 years</td>
<td>Flu vaccine every year</td>
<td></td>
<td></td>
<td>PCV13</td>
<td>PPSV23</td>
<td></td>
<td>3 doses</td>
<td></td>
<td>2 doses</td>
<td>3 doses</td>
<td>2 doses</td>
</tr>
<tr>
<td>22 - 26 years</td>
<td>Flu vaccine every year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 - 49 years</td>
<td></td>
<td></td>
<td></td>
<td>PCV</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 - 59 years</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>60 - 64 years</td>
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<td></td>
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<td></td>
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<tr>
<td>65+ years</td>
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</tr>
</tbody>
</table>

**Recommended For You:** This vaccine is recommended for you unless your healthcare professional tells you that you cannot safely receive it or that you do not need it.

**May Be Recommended For You:** This vaccine is recommended for you if you have certain risk factors due to your health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.
The Pre-Travel Encounter

• REVIEW OF ITINERARY AND MEDICAL HISTORY
• IMMUNIZATIONS
• MALARIA PROPHYLAXIS
• SELF-TREATMENT MEDICATIONS
• PERSONAL PREVENTIVE MEASURES
Malaria Prevention

• **RISK ASSESSMENT IS IMPORTANT**
  • Risk can vary significantly within regions and countries
  • Risk changes over time

• **NO VACCINE - CHEMOPROPHYLAXIS IS THE KEY!**
  • Consider resistance trends
  • Understand precautions/contraindications
  • Encourage patients to follow dosing/duration

• **OTHER PREVENTIVE MEASURES STILL IMPORTANT**
  • Chemoprophylaxis is not 100% effective
  • Vectorborne diseases other than malaria
Malaria in US Travelers

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting friends and relatives</td>
<td>607</td>
<td>(55.4)</td>
</tr>
<tr>
<td>Tourist</td>
<td>45</td>
<td>(4.1)</td>
</tr>
<tr>
<td>Missionary or dependent</td>
<td>96</td>
<td>(8.8)</td>
</tr>
<tr>
<td>Business representative</td>
<td>78</td>
<td>(7.1)</td>
</tr>
<tr>
<td>Student or teacher</td>
<td>32</td>
<td>(2.9)</td>
</tr>
<tr>
<td>Air crew or sailor</td>
<td>10</td>
<td>(0.9)</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>(0.3)</td>
</tr>
<tr>
<td>Unknown</td>
<td>224</td>
<td>(20.5)</td>
</tr>
</tbody>
</table>

* N=1,095

## Malaria Chemoprophylaxis

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosing</th>
<th>Begin</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atovaquone-proguanil</td>
<td>Daily</td>
<td>1-2 days pre-travel</td>
<td>7 days post-travel</td>
</tr>
<tr>
<td>250mg/100mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mefloquine 250mg</td>
<td>Weekly</td>
<td>2-3 weeks pre-travel</td>
<td>4 weeks post-travel</td>
</tr>
<tr>
<td>Chloroquine 500mg</td>
<td>Weekly</td>
<td>1-2 weeks pre-travel</td>
<td>4 weeks post-travel</td>
</tr>
<tr>
<td>Doxycycline 100mg</td>
<td>Daily</td>
<td>1-2 days pre-travel</td>
<td>4 weeks post-travel</td>
</tr>
</tbody>
</table>

**Primaquine can be used off-label for prophylaxis**
# Malaria Chemoprophylaxis

<table>
<thead>
<tr>
<th>Medication</th>
<th>Precautions/Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atovaquone-proguanil</td>
<td>Pregnancy; breastfeeding a child &lt; 5kg; severe renal impairment</td>
</tr>
<tr>
<td>Mefloquine</td>
<td>Current/recent depression or anxiety; history of SI/HI, psychotic disorder or seizures</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>Pregnancy; age &lt; 8 y/o; women prone to yeast infections</td>
</tr>
</tbody>
</table>
DoD Policy on Mefloquine

HA Policy 13-002 Guidance on Medications for Prophylaxis of Malaria, 15 Apr 2013

- **CHLOROQUINE IS THE DRUG OF CHOICE FOR CHLOROQUINE-SENSITIVE REGIONS**

- **ATOVAQUONE-PROGUANIL OR DOXYCYCLINE ARE ACCEPTABLE FIRST LINE DRUGS FOR CHLOROQUINE-RESISTANT REGIONS**

- **MEFLOQUINE SHOULD BE RESERVED FOR INDIVIDUALS WITH INTOLERANCE OR CONTRAINDICATIONS TO BOTH FIRST LINE DRUGS**

- **BEFORE PRESCRIBING MEFLOQUINE, BE SURE TO IDENTIFY ANY CONTRAINDICATIONS AND ENSURE PATIENT IS PROVIDED FDA-REQUIRED PATIENT INFORMATION HANDOUT**
Chloroquine-Sensitive Regions

- **CARIBBEAN**
  - Dominican Republic, Haiti

- **CENTRAL AMERICA**
  - Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua
Mefloquine Resistance

CDC Yellow Book, 2005-2006

CDC Yellow Book, 2012
The Pre-Travel Encounter

- REVIEW OF ITINERARY AND MEDICAL HISTORY
- IMMUNIZATIONS
- MALARIA PROPHYLAXIS
- SELF-TREATMENT MEDICATIONS
- PERSONAL PREVENTIVE MEASURES
Traveler’s Diarrhea - Causes

• BACTERIA – 80-90%
  • Enterotoxigenic E. coli
  • Campylobacter
  • Shigella
  • Salmonella
  • Aeromonas
  • Plesiomonas

• Virus – 5-8%
  ➢ Norovirus
  ➢ Rotavirus

• Protozoan – <3%
  ➢ Giardia
  ➢ Cryptosporidium
  ➢ Entamoeba histolytica
  ➢ Cyclospora
Self-Treatment for Traveler’s Diarrhea

- **MILD ILLNESS**
  - Bismuth subsalicylate

- **MODERATE TO SEVERE ILLNESS**
  - Loperamide plus antibiotic
    - Combination treatment is safe and effective
    - Safety with invasive disease (fever, blood) a concern
  - Fluoroquinolone: 1-3 days course
  - Azithromycin: 1 g single dose or 500mg daily for 1-3 days
    - 1st line antibiotic for Southeast Asia and South Asia (India, Nepal) due to fluoroquinolone resistance
Chemoprophylaxis for Traveler’s Diarrhea

- **BISMUTH SUBSALICYLATE**
  - 2 oz. of liquid or 2 tablets taken 4 times per day

- **ANTIBIOTICS**
  - Generally NOT recommended
    - Self-treatment often results in rapid improvement
    - May increase risk of side effects (*C. difficile* colitis)
    - May contribute to antibiotic resistance
  - Possible uses
    - Immunosuppressed travelers
    - Medical conditions with risk for complications from TD (Crohn’s disease, ulcerative colitis, chronic diarrhea)
    - Critical travel in which illness would have significant impact
## Traveler’s Diarrhea Medications

<table>
<thead>
<tr>
<th>Use, agent</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prophylaxis</strong></td>
<td></td>
</tr>
<tr>
<td>Bismuth subsalicylate (Pepto Bismol)</td>
<td>Two tablets chewed 4 times per day</td>
</tr>
<tr>
<td>Norfloxacin$^b$</td>
<td>400 mg po daily</td>
</tr>
<tr>
<td>Ciprofloxacin$^b$</td>
<td>500 mg po daily</td>
</tr>
<tr>
<td>Rifaximin</td>
<td>200 mg qd or bid</td>
</tr>
<tr>
<td><strong>Symptomatic treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Bismuth subsalicylate (Pepto Bismol)</td>
<td>1 oz po every 30 min for 8 doses</td>
</tr>
<tr>
<td>Loperamide</td>
<td>4 mg po then 2 mg after each loose stool</td>
</tr>
<tr>
<td></td>
<td>not to exceed 16 mg daily</td>
</tr>
<tr>
<td><strong>Antibiotic treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Fluoroquinolones</td>
<td></td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>400 mg po bid</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>500 mg po bid</td>
</tr>
<tr>
<td>Ofloxacin</td>
<td>200 mg po bid</td>
</tr>
<tr>
<td>Levofoxacin</td>
<td>500 mg po qd</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>1000 mg po once</td>
</tr>
<tr>
<td>Rifaximin$^e$</td>
<td>200 mg po tid</td>
</tr>
</tbody>
</table>

Hill DR. *Clin Inf Dis* (IDSA Guidelines) Dec 2006; 43:1499-1539
Altitude Sickness

- $\text{PO}_2$ at 10,000 feet is 70% of sea level value
- Illness results from mild to moderate hypoxia
- Symptoms can occur at altitudes above 8,000 feet
- Acute mountain sickness is the most common
  - Headache
  - Fatigue
  - Loss of appetite
  - Nausea
  - Insomnia
Altitude Sickness

• **PROPHYLAXIS**: ACETAZOLAMIDE 125MG BID, START 24 HRS BEFORE ASCENT, CONTINUE FOR 48 HRS AT HIGHEST ALTITUDE

• **TREATMENT**: ACETAZOLAMIDE 250MG BID

• **EXPECTED SIDE EFFECTS**: NUMBNESS/TINGLING IN EXTREMITIES, INCREASED URINATION

<table>
<thead>
<tr>
<th>Patient History</th>
<th>Consider Prophylaxis</th>
<th>Prophylaxis Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past history of AS</td>
<td>8,000-9,000 ft</td>
<td>&gt;9,000 ft</td>
</tr>
<tr>
<td>No history of AS</td>
<td>9,000-11,500 ft</td>
<td>&gt;11,500 ft</td>
</tr>
</tbody>
</table>
Jet Lag

• TEMPORARY DISORDER OF THE BODY’S SLEEP-WAKE CYCLE

• SYMPTOMS CAN INCLUDE:
  • Poor sleep, early wakening, fractionated sleep
  • Poor performance of physical and mental tasks
  • Fatigue, headaches, irritability, GI upset

• STRATEGIES FOR PREVENTION/TREATMENT:
  • Adjust sleep time pre-travel
  • Use bright light to adjust sleep-wake cycle
  • Avoid long naps
  • Eat meals appropriate to local time
  • Medications: zolpidem (Ambien®), temazepam (Restoril®)
Other Self-Treatable Conditions

- **MOTION SICKNESS**
  - Antihistamines, scopalamine (oral or transdermal), meclizine, promethazine

- **RECURRING BACTERIAL/FUNGAL INFECTIONS**
  - Urinary tract infection
  - Vaginal yeast infection

- **COMMON MINOR INJURIES/ILLNESSES**
  - Analgesic, decongestant, antibiotic ointment, mild laxative, antacid, throat lozenges
The Pre-Travel Encounter

- REVIEW OF ITINERARY AND MEDICAL HISTORY
- IMMUNIZATIONS
- MALARIA PROPHYLAXIS
- SELF-TREATABLE CONDITIONS
- PERSONAL PREVENTIVE MEASURES
Personal Preventive Measures

- FOOD/BEVERAGE PRECAUTIONS
- HAND HYGIENE
- INSECT PRECAUTIONS
- ANIMAL BITE PRECAUTIONS
- SAFETY/SECURITY
- FRESHWATER AVOIDANCE
- HEAT/COLD INJURIES
- SEXUALLY TRANSMITTED INFECTIONS
Food/Beverage Precautions

• **BOIL IT, PEEL IT, OR FORGET IT!.....BUT IS THAT REALLY POSSIBLE?**
### Lower Risk Foods:

- **Breads**
- **Fully cooked vegetables, beans and rice that are kept and served hot**
- **Boiled or well done meats (lamb, beef, poultry and fish) that are eaten within 2 hours after cooking**
- **Hard-skin fruits and vegetables that you peel yourself (bananas, oranges and limes)**
- **Hot tea**
- **Bottled water or canned carbonated drinks that you open yourself**
Higher Risk Foods:

- Milk and other dairy products (cheese, ice cream and butter)
- Partially cooked or raw meats or fish
- Raw, leafy vegetables
- Leftovers, take-home, or doggie bags
- Opened/unsealed beverage containers
- Ice, iced drinks, frozen desserts and juices
- Locally canned or packaged products
Insect Precautions

Best Insect Repellants: DEET (30-40%) or Picaridin (20%)
Animal Bite Precautions

Army Times

Army News
All Army News
Guard & Reserve
This Week’s Issue
Subscribe to RSS

Fort Drum soldier dies of rabies

The Associated Press
Posted: Sunday Sep 4, 2011 15:14:18 EDT

FORT DRUM, N.Y. — A Fort Drum soldier has died of rabies believed to have been contracted during service overseas.

Officials at the northern New York Army base say Spc. Kevin R. Shumaker died on Wednesday.

According to a statement, the decorated 24-year-old soldier from Livermore, Calif., was from the 10th Mountain Division. He was an Army cook, and was deployed with the 615th Military Police Company in Afghanistan for a year that ended in May.

Exactly how and where he contracted the illness is under investigation. But military officials say he did not get the rabies in New York.

Shumaker is survived by his mother and stepfather.
Animal Bite Precautions

- **AVOID ANIMALS!**
  - Rabies can be highly prevalent in feral dogs and cats
  - Monkeys and bats (spelunking) also a source of exposure
  - Focus education/counseling on children

- **IF BITTEN BY TERRESTRIAL MAMMAL OR BAT:**
  - Immediately wash wound with soap and water for several minutes
  - Seek medical attention as soon as possible
    - Rabies immune globulin plus vaccine needed if no pre-exposure vaccination given
    - Additional doses of vaccine required even if pre-travel vaccine was administered
Safety/Security

Leading Cause of Injury Death to US Citizens in Foreign Countries (2009-2011)

CDC Health Information for International Travel, 2014
Motor Vehicle Safety
Objectives

• DISCUSS THE EPIDEMIOLOGY OF TRAVEL-RELATED ILLNESS

• REVIEW KEY ELEMENTS OF THE PRE-TRAVEL ENCOUNTER

• IDENTIFY USEFUL ONLINE TRAVEL MEDICINE RESOURCES
Travel Medicine Resources

- CDC TRAVEL HEALTH SITE (THE YELLOW BOOK)
  - www.cdc.gov/travel

- SHORELAND® TRAVAX
  - https://mhs.health.mil/TRAVAX/travax.cshtml

- NATIONAL CENTER FOR MEDICAL INTELLIGENCE
  - https://www.ncmi.detrick.army.mil

- DHA IMMUNIZATION HEALTHCARE BRANCH (MILVAX)
  - www.vaccines.mil
U.S. Department of Defense

- Report Builder 2.0
- Destinations
- Resources
- Resource Map
- Medical Library
- What's New
- Logout

Find Hospitals Near Me
Enter Itinerary

Select from Country List then click "Add" button to add to Itinerary List (or double-click name).

Country List
- Afghanistan
- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia
- Aruba
- Australia
- Austria
- Azerbaijan
- Azores
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus

Itinerary List
- Ecuador
- Peru
- Bolivia
Travax® Malaria Risk Map for Ecuador

Issues for Medical Providers to Consider

Factors favoring chemoprophyaxis
- Adventure travel
- Risk-averse travelers
- Vulnerable travelers
- Immigrants visiting friends and relatives
- Flexible itineraries
- Travel longer than 1 month
- Unreliable medical expertise and/or treatment drugs at destination

Factors against chemoprophyaxis
- Air-conditioned hotels only
- Urban areas only
- Non-transmission season
- Minimal nighttime exposure
- Travel shorter than 3 days

See the “Technical Explanation of Malaria Mapping” document for more information.

KEY for Malaria Protective Recommendations
- Evening and nighttime insect precautions are essential in areas with any level of transmission.

- Chemoprophylaxis is recommended for all travelers*
- Chemoprophylaxis is recommended for certain travelers; see Issues to Consider inset above
- Insect precautions only are recommended* (negligible transmission reported)
- No protective measures are necessary (no evidence of malaria transmission exists)

* FARE EXCEPTIONS APPLY. SEE THE TECHNICAL EXPLANATION OF MALARIA MAPPING DOCUMENT FOR MORE INFORMATION.

- City where protective recommendations are the same as the surrounding region
- City where insect precautions only are recommended* (negligible transmission reported)
- City where insect precautions only are recommended in central urban areas*, at city outskirts protective recommendations are the same as the surrounding region
- City where no protective measures are necessary (no evidence of malaria transmission exists)
- National capital (no protective measures are necessary)
## (U) Force Health Protection
(U) Click here for general force health protection recommendations based on this assessment, developed under the auspices of the Joint Preventive Medicine Policy Group.

## (U) Guide to Possible Causes of Nonspecific Fever
(U) Click here for a guide to possible causes of nonspecific fever in U.S. forces based on this assessment.

## (U) Disease Outbreaks
(U) Click here to view assessed outbreaks for this country.

## (U) Table 1. Disease Summary Table

**UNCLASSIFIED**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Risk* (Operational Impact)</th>
<th>Typical Risk period</th>
<th>Typical severity**</th>
<th>Potential attack rates per month in the absence of countermeasures for personnel who consume non-approved local food, water, or ice</th>
</tr>
</thead>
</table>
| Diarrhea - bacterial  
Last Updated on 04 December 2009 | High                         | Year-round          | Mild               | Potentially 11-50%                                                                                                                |
| Hepatitis A  
Last Updated on 04 December 2009 | High                         | Year-round          | Severe             | A small number of cases (less than 1%)                                                                                           |
| Diarrhea - protozoal  
Last Updated on 04 December 2009 | Intermediate                 | Year-round          | Moderate           | A small number of cases (less than 1%)                                                                                           |
| Brucellosis  
Last Updated on 08 January 2010 | Intermediate                 | Year-round          | Severe             | Rare cases (less than 0.1%)                                                                                                       |
| Typhoid / paratyphoid fever  
Last Updated on 04 December 2009 | Intermediate                 | Year-round          | Moderate           | Rare cases (less than 0.1%)                                                                                                       |
| Hepatitis E  
Last Updated on 26 March 2011 | Low                          | Year-round          | Severe             | Disease assessed as present, rare cases possible - see details (see map)                                                        |
(U) Malaria

See also: Details on Assessment Methodology

(U) Potential Risk to U.S. Personnel: No

- Indigenous transmission recently eliminated - no current risk among personnel exposed to mosquito bites, primarily at night. (see map below)
- Debilitating febrile illness typically requiring 1 to 7 days of inpatient care, followed by return to duty.

(U) Risk Period:
(US) Not applicable

(U) Risk Distribution:
(US) Not applicable. (see map)

(U) Typical Incubation Period:
(US) 7 to 14 days (maximum range: 7 to 30 days)

(U) Surveillance and Survey Data (Human):

(U) Indigenous malaria transmission has been controlled in Syria, although cases continue to be imported into potentially suitable environments, especially along the borders with Turkey and Iraq. Syria recorded its last indigenous malaria case in Al Malkeh District of Al Hasakeh Province in 2004.

(U) The following cases (likely an underestimate of true case numbers) have been officially reported:
- 2010: no indigenous cases, 23 imported cases
- 2009: no indigenous cases, 38 imported cases
- 2008: no indigenous cases, 51 imported cases
- 2007: no indigenous cases, 37 imported cases
- 2006: no indigenous cases, 34 imported cases
- 2005: no indigenous cases, 28 imported cases
- 2004: 1 indigenous case, 12 imported cases
- 2003: 2 indigenous cases, 16 imported cases
- 2002: 15 indigenous cases, 22 imported cases
- 2001: 63 indigenous cases, 16 imported cases
- 2000: 6 indigenous cases, 36 imported cases

(U) Syria: Area which most recently supported malaria transmission
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Dosing Schedule</th>
<th>Route - Dose</th>
<th>Vaccine Type</th>
<th>Required for AFRICOM AOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthrax</td>
<td>0.4w,6,12,18m + annual booster</td>
<td>IM (in deltoid), 0.5ml</td>
<td>Inactivated</td>
<td>N/A</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>0, 4-8w (2 dose) or + serologic testing</td>
<td>SC, 0.5ml</td>
<td>Live</td>
<td>Required if no immunity.</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>0, 6m (2 dose) or + serologic testing</td>
<td>1-18yrs: IM, 0.5ml, &gt; = 19yrs: IM, 1ml, Twinrix &gt; = 18yrs: IM, 1ml</td>
<td>Inactivated</td>
<td>Required.</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>0.1,6m (3 dose) or + serologic testing</td>
<td>0-19 yrs: IM, 0.5ml, &gt; = 20yrs: IM, 1ml, Twinrix &gt; = 18yrs: IM, 1ml</td>
<td>Inactivated</td>
<td>Required.</td>
</tr>
<tr>
<td>Influenza - Seasonal</td>
<td>1 dose annually</td>
<td>Injectable: IM, 0.5ml, Intranasal: 0.2ml</td>
<td>Injectable - inactivated, Intranasal - Live</td>
<td>Required.</td>
</tr>
<tr>
<td>Measles</td>
<td>2 lifetime doses or + serologic testing</td>
<td>MMR: SC, 0.5ml, Measles: SC, 0.5ml</td>
<td>Live</td>
<td>Required.</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Menomune, Menactra, Menevo: if at prolonged risk of disease exposure vaccinate every 5 yrs</td>
<td>Menomune: SC, 0.5ml, Menactra, Menevo: IM, 0.5ml</td>
<td>Inactivated</td>
<td>Required.</td>
</tr>
<tr>
<td>Mumps</td>
<td>2 lifetime doses or + serologic testing</td>
<td>MMR: SC, 0.5ml, Mumps: SC, 0.5ml</td>
<td>Live</td>
<td>Required.</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>High risk: 1 dose, Asplenic: Only: 1 dose + 1 time booster if 5 yrs or greater since 1st dose</td>
<td>SC or IM, 0.5ml</td>
<td>Inactivated</td>
<td>Required for asplenic and other high risk health conditions per ACIP.</td>
</tr>
</tbody>
</table>
## Vaccine Recommendations

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Dosing Schedule</th>
<th>Route - Dose</th>
<th>Vaccine Type</th>
<th>Required for AFRICOM AOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthrax</td>
<td>0.4w, 6, 12, 18m + annual booster</td>
<td>IM (in deltoid), 0.5ml</td>
<td>Inactivated</td>
<td>N/A</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>0.4-8w (2 dose) or + serologic testing</td>
<td>SC, 0.5ml</td>
<td>Live</td>
<td>Required if no immunity.</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Liver infection, death (rare)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease Effects</td>
<td>0, 6m (2 dose) or + serologic testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>Fecal-Oral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbe</td>
<td>Hepatitis A virus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route - Dose</td>
<td>1-18yrs: IM, 0.5ml, &gt;19yrs: IM, 1ml, Twinrix &gt;18yrs: IM, 1ml</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine Type</td>
<td>Inactivated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Reference        | [DAM U.S. AFRICA COMMAND THEATER CAMPAIGN PLAN (TCP) - TAB A TO APPENDIX G TO ANNEX Q TO TCP. Click to view Travel Health Form with vaccination requirements.](

- Hepatitis B
  - 0.16m (3 dose) or + serologic testing
  - 0-19 yrs: IM, 0.5ml, >20yrs: IM, 1ml, Twinrix >18yrs: IM, 1ml
  - Inactivated
  - Required

- Influenza - Seasonal
  - 1 dose annually
  - Injectable: IM, 0.5ml, Intranasal: 0.2ml
  - Injectable - inactivated, Intranasal - Live
  - Required

- Measles
  - 2 lifetime doses or + serologic testing
  - MMR: SC, 0.5ml, Measles: SC, 0.5ml
  - Live
  - Required
Questions?