Navigating Medical Missions

Michele Walters, DNP, APRN, FNP-BC

Objectives
1. Explore motivations and barriers to medical missions.
2. Discuss ethical and legal considerations surrounding medical missions.
3. Outline guidelines for navigating a medical mission.

Disclosure

No affiliation

Motivations [1,2,3,4]
- Personal
  - Value of giving back
- Religious
- Professional benefits
- Teaching
- Mentoring
- Social engagement

Barriers [1,2,3,4]
- Financial/work obligations
- Take personal vacation time
- Weakness in hosting organization
- Disorganization
- Security
- Misplaced humanitarianism
- Benefiting the people

Ethical & Legal Considerations [1,2,3,4]
- Beneficence
  - What is going to be the greatest benefit to the host? (Vitamins, toothbrushes)
- Respect for autonomy
- Communication with patients: interpreters
- Cultural practices
- Justice
  - Equal fair distribution of resources
- Take pre-packaged expected medications to each site (Do not take all supplies to one site.)
- Plan to leave a “Goody Bag” for individual site (vitas, Tylenol, Motrin)
- Malpractice insurance
- Evacuation Insurance
  - https://www.squaremouth.com/
- Reducing potential liabilities
- Practice within your scope
- Lost passports…Who will be responsible for the added cost?
Pre-Planning

- Host Organization
- Children’s Lifeline
- Power of a Nickel

Goals of trip
- Establish Host perspective on what is needed for the trip.
- Preparation of the volunteers
- Financial planning (travel/supplies)
- Preparation for travel
  - Packing
- Travel vaccines/preventative medication

Pre-Travel Vaccines

- ALL Travelers should have measles-mumps-rubella (MMR) vaccine, diphtheria-tetanus-pertussis vaccine, varicella (chickenpox) vaccine, polio vaccine.
  - Typhoid vaccine: Vivotif DR capsule
  - Live oral vaccine
  - 1 cap every other day X 4 doses
  - Give 1 hour before meal with cold/flukewarm drink
  - Do not crush
  - Repeat every 5 years if continued travel exposure
  - Common Side Effects: Nausea

Pre-Travel Vaccines

- Hep A vaccine (2 dose or 3 dose series)
  - Inactivated vaccine
  - SE: Fever, H/A, fatigue, injection site rx, nausea, anorexia
  - Adverse: seizures, Guillain-Barre syndrome, encephalopathy
- Hep B vaccine (3 dose series)
  - Recombinant vaccine
  - a, b, and 6 months.
  - SE: Fever, H/A, dizziness, fatigue, injection site rx
  - Adverse: seizures, Guillain-Barre syndrome, encephalopathy, Stevens-Johnson syndrome
- Combined hepatitis A and hepatitis B vaccine
  - (Twinrix) at a, b, and 6 months.

Pre-Travel Vaccines

- Cholera (one time dose)
  - Cholera live oral vaccine; 100 mL
  - SE: N/V, diarrhea, abd. pain, H/A, fatigue

Rabies (3 dose series)

- Exposure to wildlife
- Common Side Effects: Injection site reaction, H/A, nausea, abd. Pain, myalgia, diziness

Malaria prophylactic Treatment

**Drug** | **Adult Dose** | **Pediatric Dose** | **Side Effects** | **Special considerations**
--- | --- | --- | --- | ---
Atovaquone-proguanil (Malarone) | 250 mg atovaquone 100 mg proguanil tablet daily | 12.5 mg atovaquone 5 mg proguanil Weight based dosing Not for <15 kg | Begin 1-2 days before travel until 7 days after travel | Take daily at same time
- Contraindicated in renal impairment
- Give with food or milk
- Side Effects: Dizziness, Fatigue, Vomiting, Abdominal pain, headache, anorexia, vivid dreams

Chloroquine phosphate | 300mg tablet (300mg base) weekly | 50mg/kg up to adult dose (300mg weekly) | Begin 1-2 weeks before travel | Take weekly on same day until 4 weeks after travel
- Contraindicated in people with major psychiatric disorder or seizures
- Side Effect: QT prolongation, N/V

Doxycycline | 100mg, one tablet daily | Up to 4 dose up to adult dose (100mg daily) | Begin 1-2 days before travel and until 4 weeks after travel | Take daily at same time
- Contraindicated in pregnant women

Mefloquine | 250mg, one tablet weekly | 19kg-19kg: ¼ tab weekly 19kg-30kg: ½ tab weekly 30kg-45kg: ¾ tab weekly >45kg: 1 tab weekly | Begin 2-3 weeks before travel and until 4 weeks after travel | Take weekly at same time of day
- Contraindicated in people with major psychiatric disorder or seizures
- Side Effect: QT prolongation, N/V

Primaquine | 16.4 mg (15mg base) 30 mg daily (2 tablets) | 0.5mg/kg daily | Begin 1-2 days before travel and until 7 days after travel | Take daily at same time
- Side Effect: QT prolongation, N/V
During the Mission

- Be flexible!!
- Daily itinerary with supply preparations
- Unexpected expectations/costs
  - Agree to care for individuals can mean you paying for x-rays/labs
- Volunteer illness
  - Plan to care for the individuals on your trip.

Malaria [10]

- Most caused by P. falciparum
- Incubation 12-14 days
- Clinically apparent within 1 month after exposure.[3]
- Symptoms: Fever, chills, fatigue, tachycardia, tachypnea, cough, diaphoresis, H/A, nausea, vomiting, diarrhea, arthralgia, myalgias & splenomegaly[3]
- Untreated progress to complicated: P. falciparum
  - Symptom progress: seizures, ARDS, DIC, shock, renal & hepatic failure[3]

Malaria Work Up!!

- CBC: Thrombocytopenia: common with P. falciparum
- CMP: mild elevated AL T
- Plasmodium species, PCR: CPT: 139475 Purple top tube, refrigerate

Malaria Treatment [10]

<table>
<thead>
<tr>
<th>Species</th>
<th>Region</th>
<th>Recommended Adult Dose</th>
<th>Recommended Pediatric Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncomplicated malaria/ P. falciparum or Species not identified</td>
<td>Chloroquine-Sensitive (Central America west of Panama Canal; Haiti; the Dominican Republic; and most of the Middle East)</td>
<td>Chloroquine phosphate (Aralen™ and generics) 400 mg base po immediately, followed by 200 mg base po at 6, 24, and 48 hours Total dose: 1,200 mg base (2,000 mg salt)</td>
<td>Doxycycline (Vibramycin™ and generics) 100 mg base po at 6, 12, 24, and 48 hours Total dose: 400 mg base (500 mg salt)</td>
</tr>
</tbody>
</table>

Probable Dengue

- Live in/travel to dengue endemic area.
- Fever and 2 of the following criteria:
  - Nausea, vomiting
  - Rash
  - Aches and pains
  - Tourniquet test positive
  - Leukopenia

Dengue warning signs leading to severe disease

- Laboratory confirmed dengue with signs of:
  - Abdominal pain or tenderness
  - Persistent vomiting
  - Clinical fluid accumulation
  - Micron bleeding
  - Lethargy, restlessness
  - Line enlargement: cyan
  - Laboratory: increase in HCT concurrent with rapid decrease in platelet count

WHO clinical approach to dengue classification and levels of severity [13]

Probable dengue

- Severe dengue
  - Severe plasma leakage leading to shock
  - Fluid accumulation with respiratory distress (pleural effusion)
  - Severe bleeding
  - Severe organ involvement
  - Liver: AST or ALT > 1,000
  - CNS: Impaired consciousness

Dengue Fever (11,15)

- Most prevalent mosquito-borne viral illness
- Spread by DAY biting mosquito Aedes
- Fever, illnesses caused by Flavivirus
- DENV-1, DENV-2, DENV-3, DENV-4
- Incubation: 3-14 days after exposure
Dengue Fever Work UP!

- CBC: thrombocytopenia
- LFTs: elevated
- DENV IgG & IgM: Serum
  - Yellow top tube
  - Separated within 45 minutes/frozen
- Leukopenia, in combination with a positive tourniquet test, in a dengue-endemic area has a positive predictive value of 70% to 80%. (WHO)

TREATMENT: SYMPTOMATIC
- Prevent dehydration, hemorrhage, reduce fever

Chikungunya Work up!

- Chikungunya IgM & IgG
  - IgM: appears 1-12 days persists up to 3 months
  - IgG: appears at 2 weeks persists for years
- Rule out Dengue
- Treatment: Symptomatic:
  - Acetaminophen until Dengue ruled out / NSAIDs
  - Cold compresses
  - Antihistamines (diphenhydramine)
  - Gabapentin for neuropathic pain
  - Corticosteroids if uveitis, optic neuritis, or encephalomyelitis
- Long term arthritis: DMARDs

Zika WorkUp!

- Zika Virus Comprehensive profile
  - Serum: Yellow top tube; frozen
  - Zika virus TaqMan (R) PCR: Negative/Positive
  - Urine: Aptima urine transport tube; frozen
- Collect Dengue labs.
- Treatment: Symptomatic
  - Acetaminophen until rule out Dengue
  - NSAIDS
  - Pregnancy prevention
  - Asymptomatic Pregnant women should be offered Zika testing during 1st and 2nd trimester after exposure.

Typhoid

- Caused by Bacteria Salmonella Typhi
- Contaminated food & water
- Estimated 5,700 cases occur annually in U.S with 75% from international travel
- Incubation: 6-7 days
- Symptoms:
  - Sustained fever as high as 103° to 104° F
  - Fatigue
  - Abdominal pain, loss of appetite
  - Headache
  - Some cases … rash, rose-colored spots.

Chikungunya

- Viral illness Spread by Aedes mosquito
- Incubation period 1-6 days; Symptoms appear 3 day.
- Symptoms:
  - Fever low grade to greater than 100° F
  - Fatigue
  - Headache
  - Eye pain
  - Muscle/join pain: marked pain in wrists and hands that prevented holding in flexed position.
  - Maculopapular rash: neuropathic quality of burning/stinging, puritic rash

Zika

- Viral illness Spread by Aedes mosquito
- Incubation: 3–12 days
- Symptoms: typically resolve within 4–7 days
  - Fever…May not be present
  - Rash: maculopapular; did not itch, not painful
  - Joint pain/muscle
  - Conjunctivitis / eye pain
  - Headache

Typhoid

- Caused by Bacteria Salmonella Typhi
- Contaminated food & water
- Estimated 5,700 cases occur annually in U.S with 75% from international travel
- Incubation: 6-7 days
- Symptoms:
  - Sustained fever as high as 103° to 104° F
  - Fatigue
  - Abdominal pain, loss of appetite
  - Headache
  - Some cases … rash, rose-colored spots.
**Typhoid workup!**

- Blood & Stool cultures
  - Blood culture is positive 50% of the time!! Negative REPEAT!!
  - Bone marrow culture positive 80%
  - Stool culture is not positive during early phase of disease...
  - There is no definitive serologic test for typhoid

- Treatment:
  - Adults: Ciprofloxacin 500mg BID X 14 days
  - Children: Ofloxacin 20 mg/kg BID X 10 days Max: 400mg/dose

**Travelers’ Diarrhea**

- 60% of individuals returning from less developed countries
- Passage of 3 or more stools in 24 hours
- Most common cause: Escherichia coli strains: (All 3 found in Haiti)
- Enterotoxigenic
- Enteraggregative
- Enteropathogenic
- Cholera: caused by Vibrio cholerae
  - Incubation: 1-4 days
  - Diagnosis: Stool cultures

- Blood culture is positive 50% of the time!! Negative REPEAT!!
  - Bone marrow culture positive 80%
  - Stool culture is not positive during early phase of disease...
  - There is no definitive serologic test for typhoid

- Treatment:
  - Adults: Ciprofloxacin 500mg BID X 14 days
  - Children: Ofloxacin 20 mg/kg BID X 10 days Max: 400mg/dose

**Travelers’ Diarrhea**

- Treatment:
  - Rehydration: electrolyte tabs/ Pedialyte
- E. coli strains and cholera induced TD are susceptible to:
  - Adults:
    - Azithromycin 500mg daily X 3 days
  - Pregnant women:
    - Azithromycin 500mg daily for 3 days
  - Children:
    - Azithromycin 25mg/kg/day for 3 days

- Prophylaxis is not recommended but consider your clients limited access to healthcare while traveling abroad.
- Teach preventions: Eat boiled/fried/peeled foods; do not eat or drink beverages with ice. Do not drink tap water. Do not brush teeth with tap water.

**Summary**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Fever</th>
<th>Rash</th>
<th>Myalgia</th>
<th>Arthralgia</th>
<th>GI</th>
<th>Jaundice</th>
<th>Spleno-megaly</th>
<th>Hemorrhage</th>
<th>Neurological</th>
<th>Respiratory</th>
<th>IX</th>
<th>Hepatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Dengue</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Typhoid</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Zika</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Travelers’ diarrhea</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td></td>
</tr>
</tbody>
</table>

**Reporting**

- Malaria
- Dengue
- Typhoid
- Chikungunya
- Zika: Pregnant women
Return Home

- Evaluate experience
- Did you have the appropriate number of people?
- Did you run out of supplies?
- Did you incur issues with the host organization?
- Illness upon return
- Educate on signs of illnesses may be exposed to during trip
- Post-traumatic stress

Questions??

References