

# Infectious Diseases in Low Resource Settings

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# FANTASTIC BEASTS AND HOW TO AVOID THEM



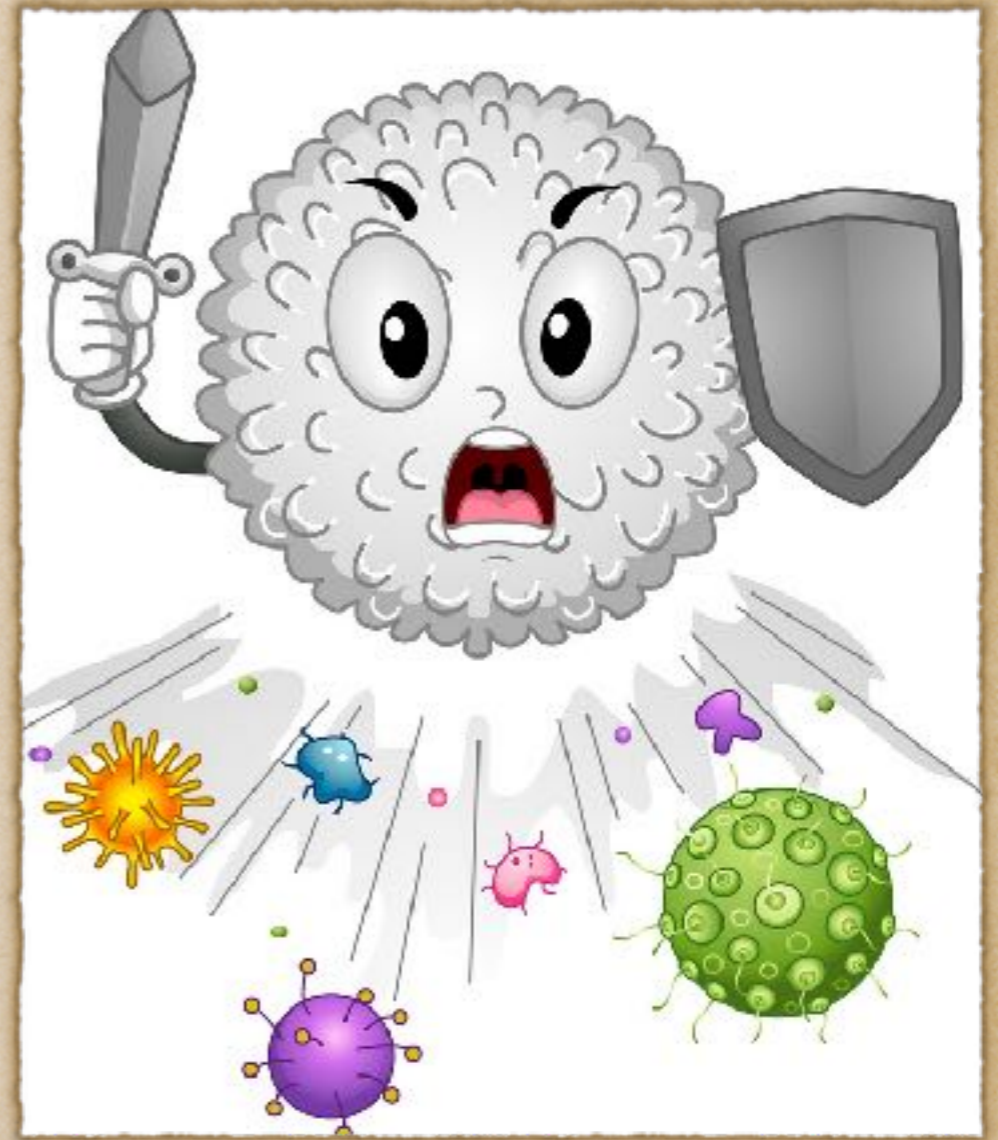
# Challenges



- ◆ Unknown context
- ◆ Keeping yourself safe
- ◆ Keeping others safe

# Overview

- ◆ Know your enemy
  - ◆ Mechanisms for disease transmission
  - ◆ Common diseases
- ◆ Prepare for battle
  - ◆ Prevention Tips
  - ◆ Tools in your arsenal





No disclosures or financial interest in  
any of the products mentioned

# Mechanisms of Disease Transmission

- ◆ Water-borne
- ◆ Vector-borne
- ◆ Penetration through the skin
- ◆ Body fluid contact
- ◆ Fecal oral

# Common problems

- ◆ Giardía
- ◆ Hookworms
- ◆ Diarrhea
- ◆ Malaria
- ◆ Dengue

# Giardia

- ◆ Commonly acquired from drinking from streams, fecal/oral
- ◆ S/S: cramps, persistent, foul-smelling diarrhea
- ◆ Rx: Tinidazole single dose
- ◆ Notes: Need higher concentration of chlorine (2-4 drops)





# Hookworms



- ◆ Acquired via larval penetration of the foot
- ◆ S/S: often none, can cause anemia, severe pulmonary or GI infections as larvae migrate
- ◆ Rx: single dose Mebendazole or Albendazole
- ◆ Notes: Do not walk barefoot!

# Diarrheal Disease

## Non-Bloody

- ◆ Non-invasive *E. coli* (among others)
- ◆ Rx:
  - ◆ Start antibiotics early (after 4th stool in one day) — cipro x 3d
  - ◆ Supportive care (Oral Rehydration Solution)
  - ◆ Rehydration with sips of water



Open it

Peel it

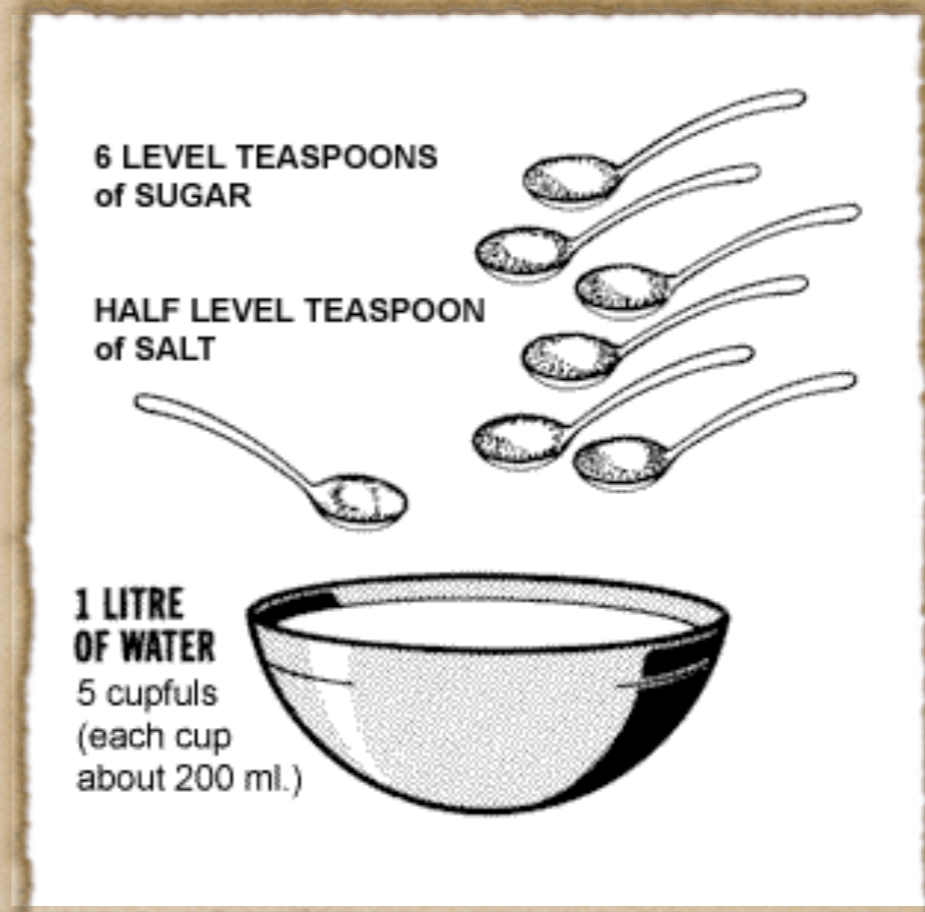
Boil it

or

Forget it

# Oral Rehydration Solution (ORS)

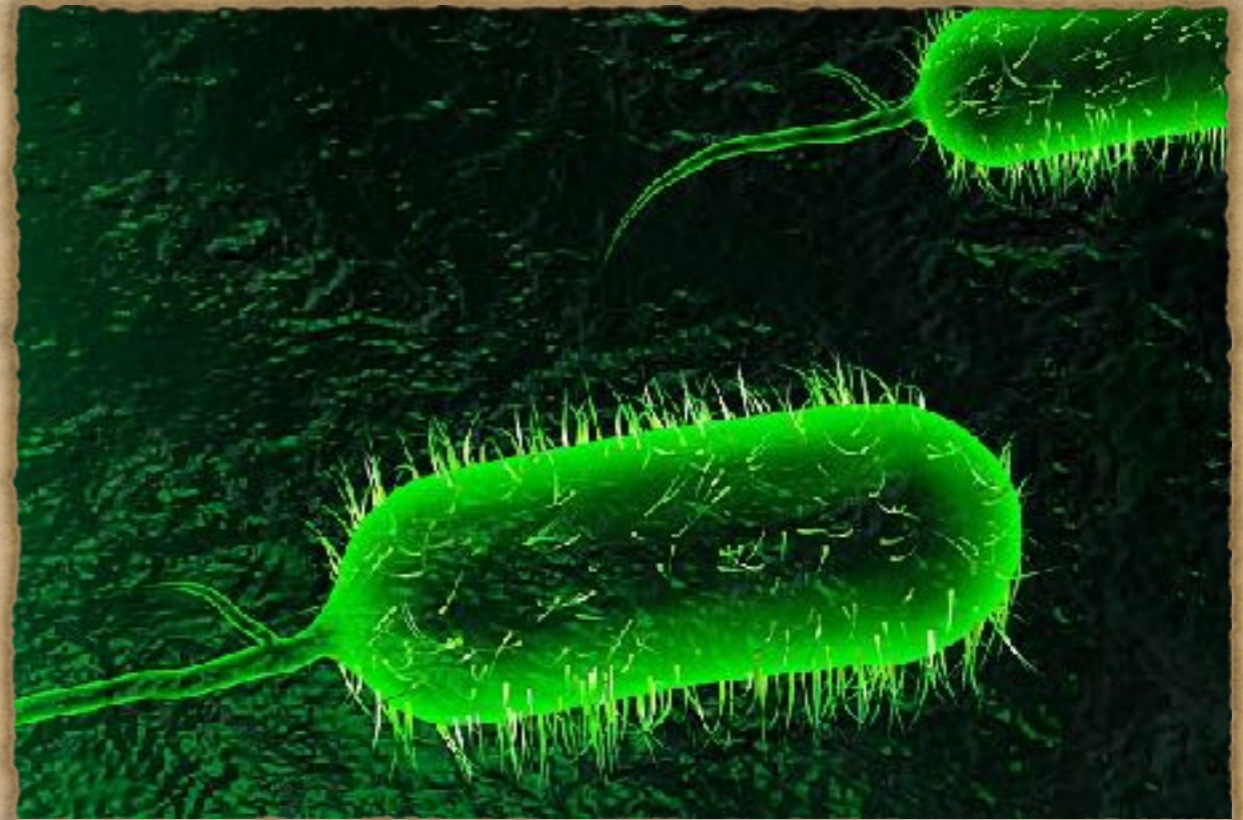
- ◆ 1/2 level tsp of salt
- ◆ 6 level tsp of sugar
- ◆ 1 Liter of clean water



# Diarrheal Disease

Non-Bloody, High Volume

- ◆ Think Cholera
- ◆ S/S: “rice water stool”, high volume

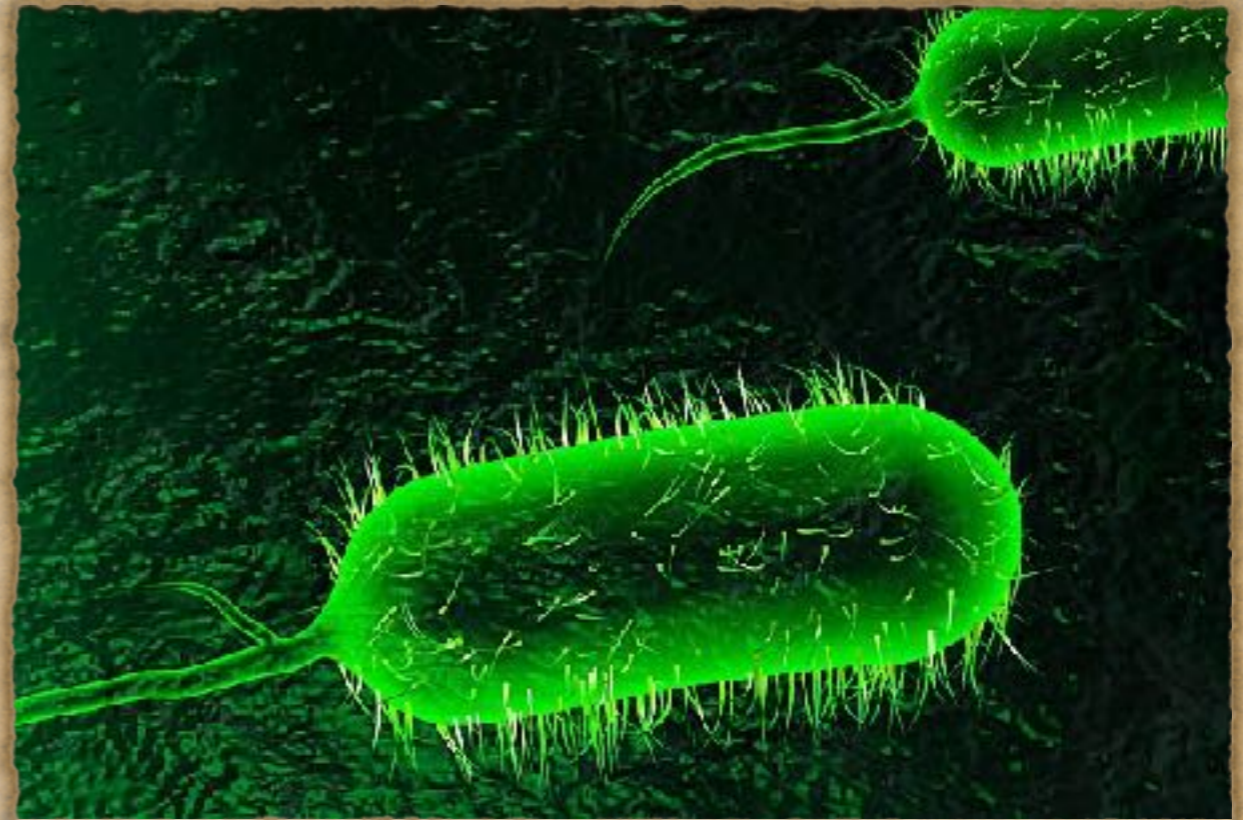




# Diarrheal Disease

Non-Bloody, High Volume

- ◆ Think Cholera
- ◆ S/S: “rice water stool”, high volume
  - ◆ But it can also be mild!
- ◆ Supportive care early is mainstay
- ◆ Hand-washing/bleach treatment of linens, dead bodies



# CHOLERA AMA KIPINDUPINDU INAUWA !

Unafika na wewe ikuuwe ? Hapana ! Kwa hiyo :

Nitakunywa tu maji ya  
bomba, ya kupigwa  
(dakika 30), ama maji  
ya kuliwa dawa



Nitazawa vizuri mikono  
na sabuni ama maji tu  
kiisha kutoka chooni  
na pia mbele ya kula



Nitaenda **haraka** ku  
CTC nikiharisha maji  
yenyi kufanana na  
rangi ya maji ya  
mchele



Dawa ya maji na Antibiotiki havipeleleli  
shida, ama kila wakati

Kipindupindu ama cholera iko hapa Baraka. **Tupo katiaka  
hatari ya magonjwa hiyo. Vitambaa hivi vinatufasiria kama  
tupo katika kipindi gani cha magonjwa.**

### Episidemo

Magonjwa yanayopita  
marakisho ku CTC kwa kugeta  
marakisho kwa kama hali wapo kwa  
ya 24

### Morio

Magonjwa yanayopita  
kwa CTCT kwa  
kupata matibali kwa gani hii  
wapo +255 24 20

### Vigilance

Hakuna magonjwa  
yanayopita ku CTC kwa  
gani na

## C.T.C - BARAKA



# Diarrheal Disease

## Bloody

- ◆ Invasive bacteria or amoebas like Salmonella (typhoid), Shigella, Entamoeba

- ◆ Do not give loperamide (Immodium) if someone has bloody diarrhea

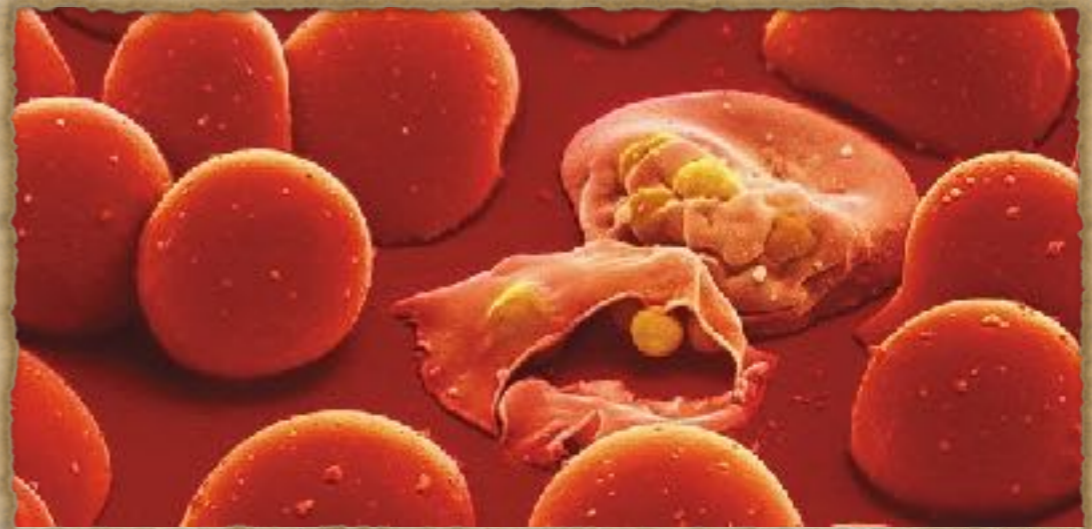
- ◆ Rx: supportive care

- ◆ Most are self-limited, but need to see a physician to determine further treatment

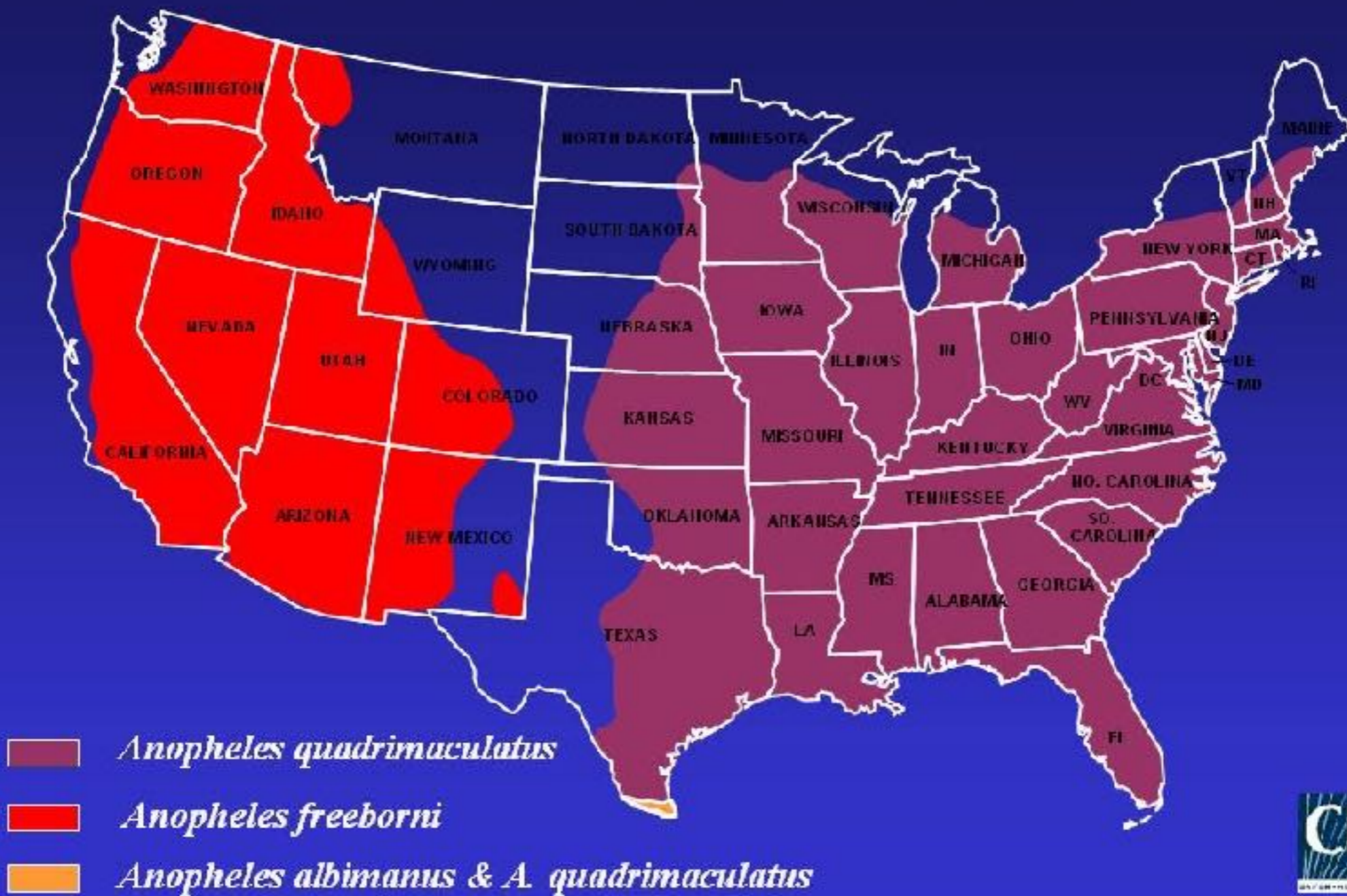


# Malaria

- ◆ Mosquito-borne
- ◆ S/S: fever, chills, n/v/d, myalgias
- ◆ Rx:
  - ◆ Prevention!!
  - ◆ Antimalarials
- ◆ Tip: All fever from a malaria-endemic region is malaria until proven otherwise!



# Potential Malaria Vectors in the United States



Source: [www.cdc.gov/malaria](http://www.cdc.gov/malaria)

# Dengue

- ◆ Mosquito-borne
- ◆ First episode is called “break-bone fever”
- ◆ Second can be hemorrhagic
- ◆ Rx:
  - ◆ Prevention!
  - ◆ Supportive



Other scary stuff?

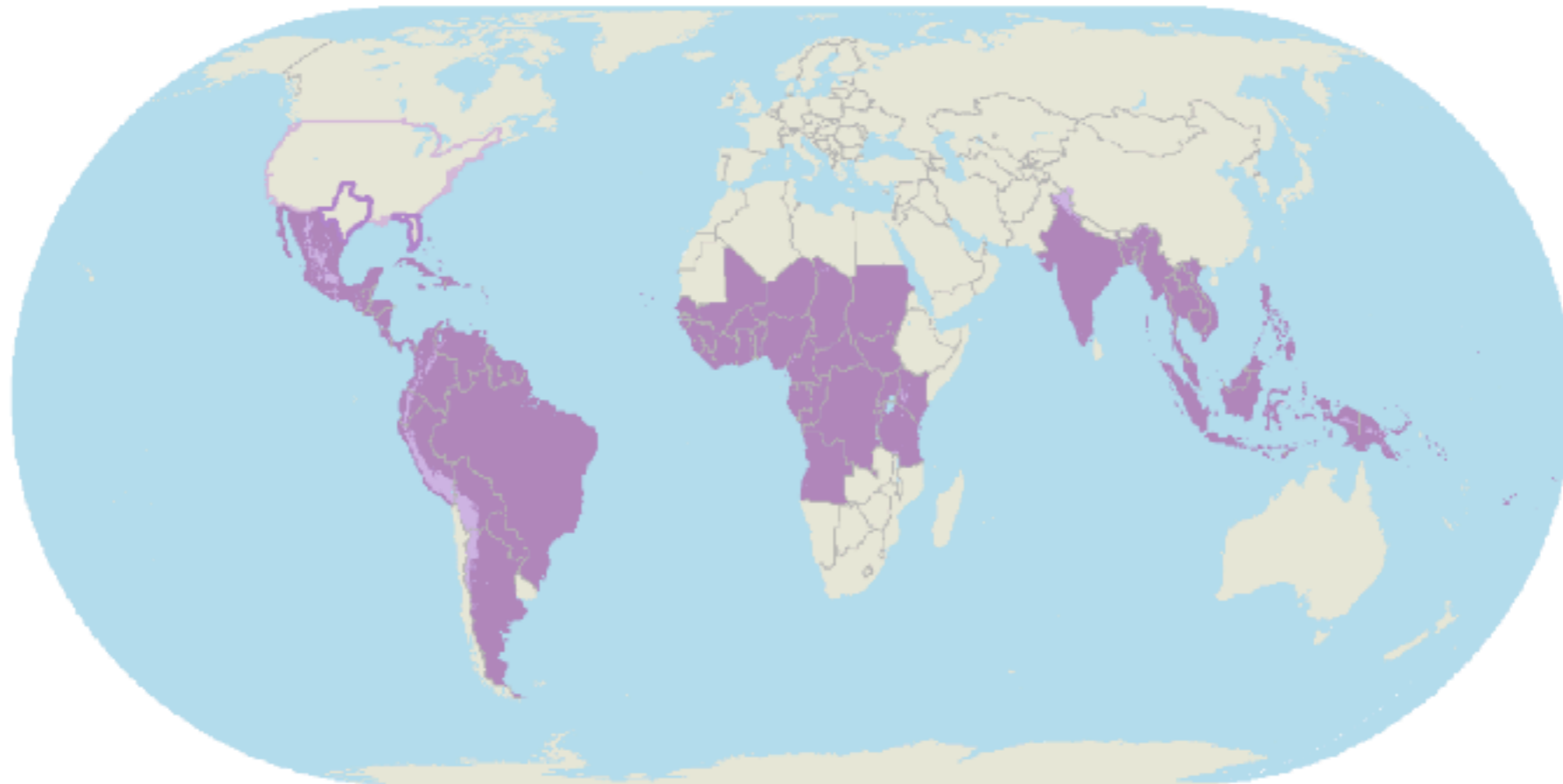
# Zika

- ◆ Mosquito-borne—same mosquito as Dengue
- ◆ Often mild or asymptomatic
- ◆ Fever, rash, joint pain, red eyes, muscle pain, headache
- ◆ Rx:
  - ◆ Prevention!
  - ◆ Supportive

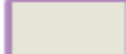


# Spread of Zika

World Map of Areas with Risk of Zika





## Domestic areas

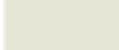
State Reporting Zika: 

No Known Zika: 

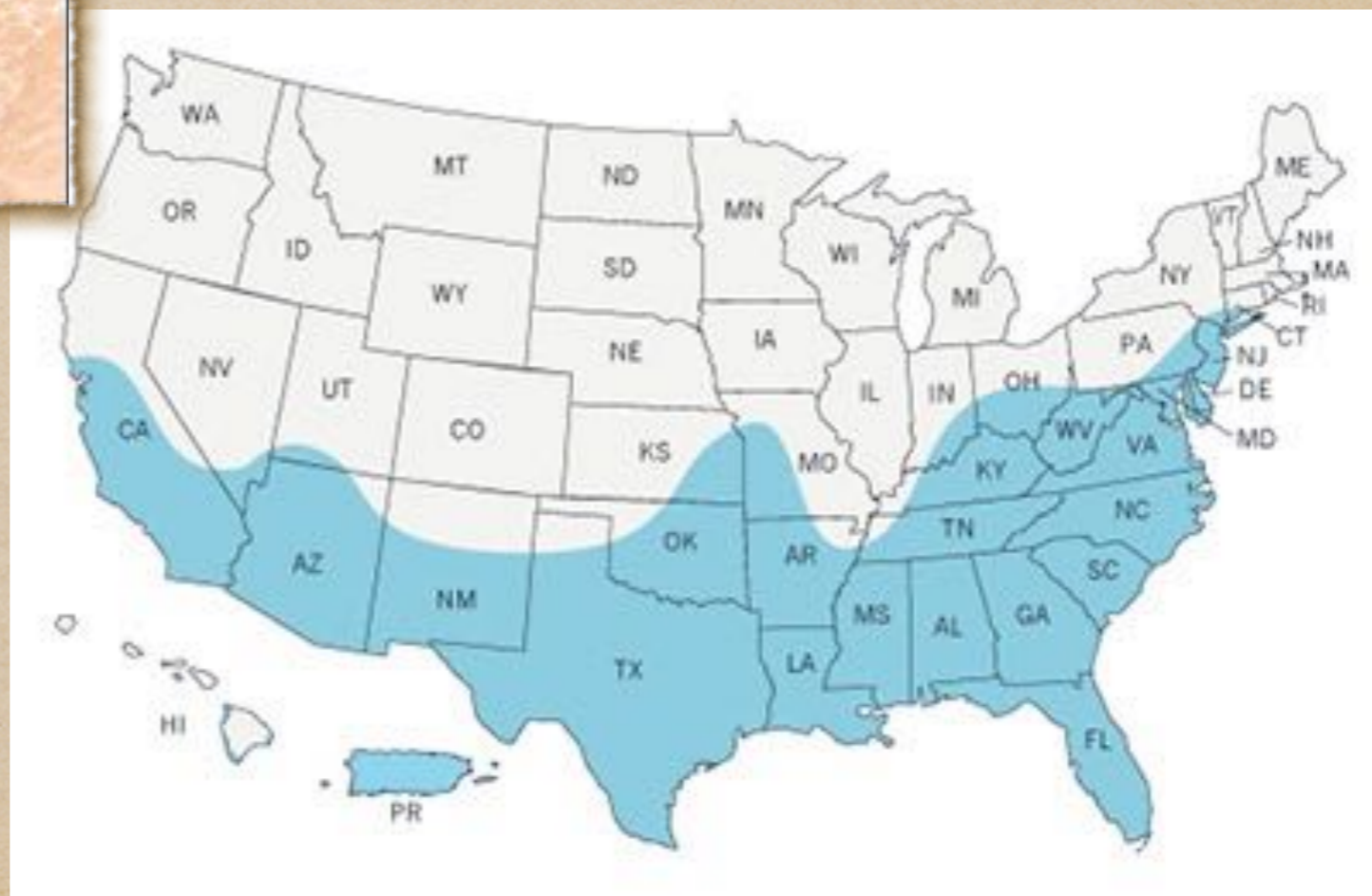
## International areas

Zika Travel Recommendation:  Low elevation

 High elevation

No Known Zika: 

# Aedes in the US





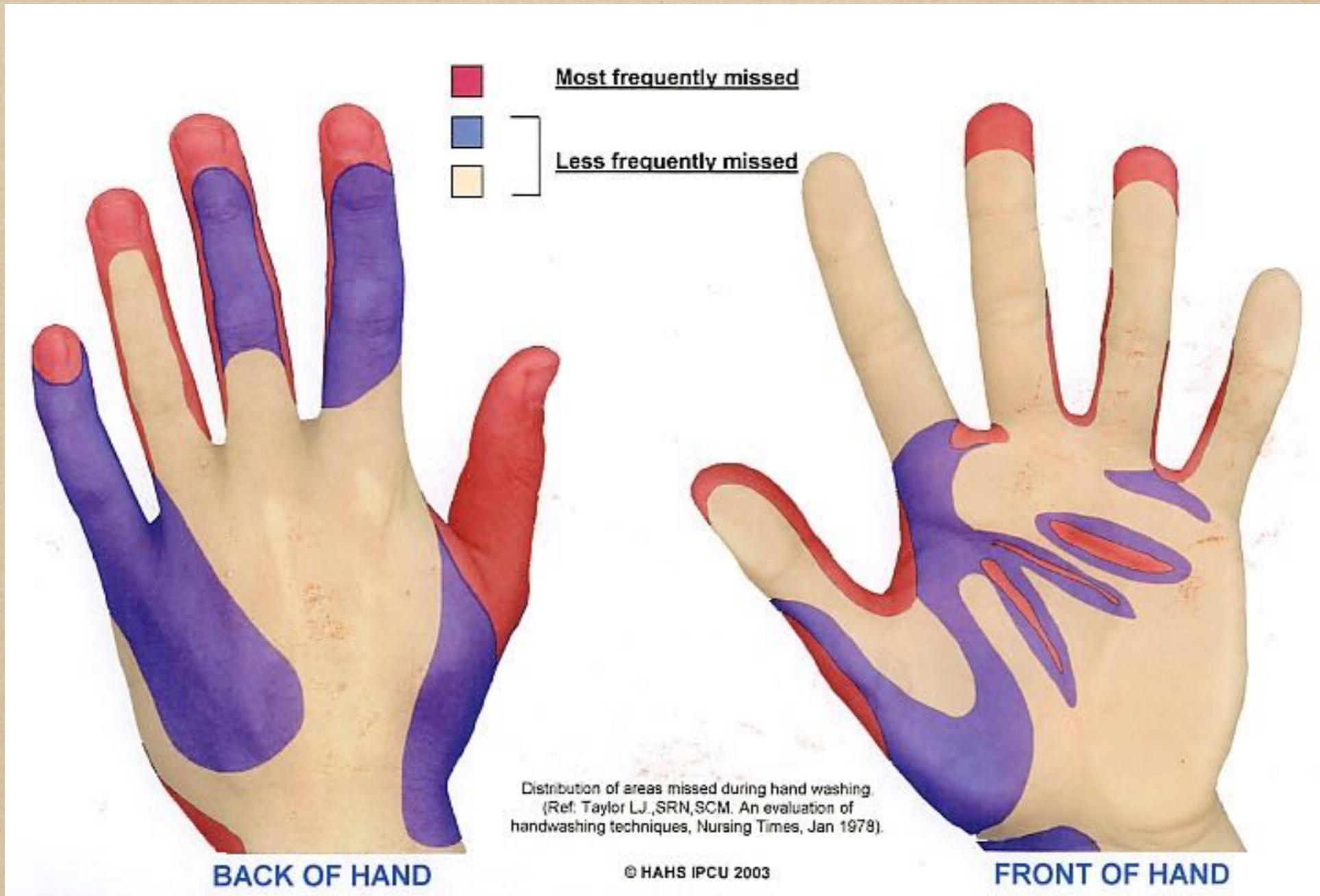
# Ebola and friends

- ◆ Symptoms can be very non-specific
- ◆ Times to be concerned:
  - ◆ Fever plus:
    - ◆ Petechiae
    - ◆ Bleeding



# Tools: Prevention

- ◆ Hand Washing!
- ◆ Hand sanitizer and wipes  
(flushable so they  
decompose)



# Tools: Prevention

- ◆ Hand Washing!
  - ◆ Hand sanitizer and wipes  
(flushable so they decompose)
- ◆ Protection from Mosquitos

# Tools: Mosquito avoidance



<https://www.epa.gov/insect-repellents/find-insect-repellent-right-you>

# Tools: Prevention

- ◆ Hand Washing!
  - ◆ Hand sanitizer and wipes  
(flushable so they decompose)
- ◆ Protection from Mosquitos
- ◆ Cooking/Peeling food
- ◆ Water purification

# Tools: Water Purification

- ◆ Filter cloudy water or allow to settle
- ◆ Safest method: boil
- ◆ Chemical
  - ◆ 2-4 drops of unscented bleach (5.52% Cl) (to cover Giardia, add more if cold)
  - ◆ Iodine (5 drops of tincture of iodine per quart/liter)
- ◆ UV



# Tools: Prevention

- ◆ Hand Washing!
  - ◆ Hand sanitizer and wipes (flushable so they decompose)
- ◆ Protection from Mosquitos
- ◆ Cooking/Peeling food
- ◆ Water purification
- ◆ Shoes
- ◆ Condoms
- ◆ Avoidance of vectors
- ◆ Bring food, in case there isn't any





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- ◆ Condoms
- ◆ Avoidance of vectors
- ◆ Bring food, in case there isn't any
- ◆ Vaccinations

# What if someone else gets sick?

## ◆ Tips:

- ◆ Do not give Immodium (loperamide) if:
  - ◆ There is localized stomach pain
  - ◆ The person is not passing gas
  - ◆ If they haven't had a bowel movement recently
  - ◆ The person is having bloody diarrhea
- ◆ Finish all antibiotics if you start them
- ◆ If you have been in a place that has malaria, any fever is malaria until proven otherwise. Period.

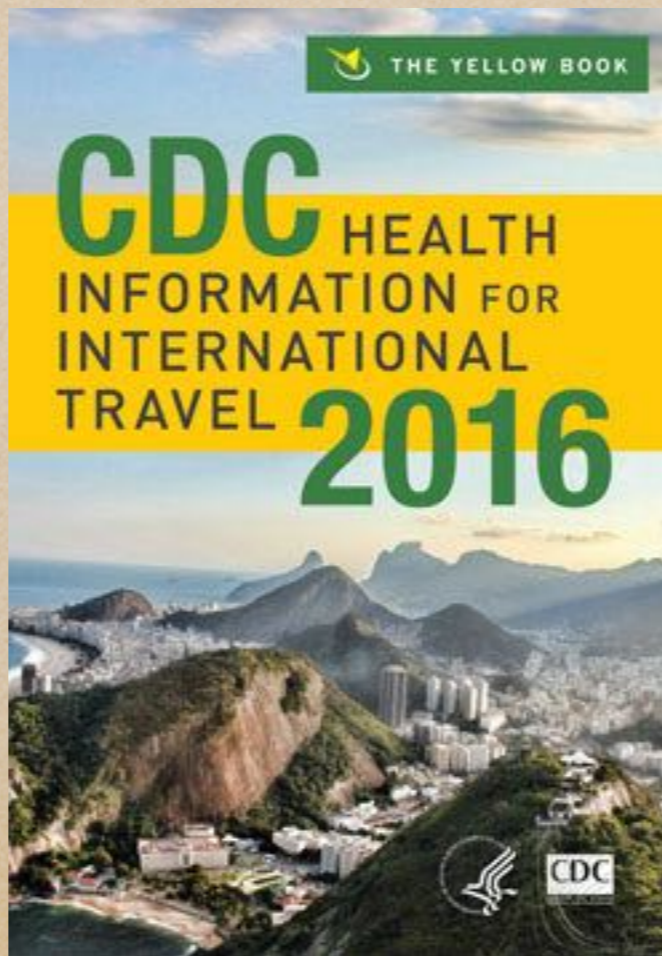
# What if someone else gets sick?

## ◆ Tips (continued)

- ◆ Rehydrate with slow sips of water/ORS
- ◆ Have 48 hours of essentials with you in your carry-on
- ◆ Keep important meds and prevention in your “go bag”

Learn about where *you* are going

- ◆ CDC's website and Yellow Book
- ◆ Travel clinics



Be prepared!

Chance favors  
the prepared  
mind.

-Louis Pasteur



# Be prepared!



- ◆ Your luggage will get lost
- ◆ Have a “Go” Bag
- ◆ Medications and Vaccinations

What should I  
bring?





Moderately low	Extremely low resource	Potential for violence	Medical Kit
Reliable bright flashlight	Water purification tabs	Leg passport holder	Benadryl
Headlamp	Flint	Cash, distributed	Antibiotic ointment
Mosquito repellent	Cotton balls/vaseline	Cash belt	"Pepto" tabs
Inflatable, solar lantern	Paracord	Short-wave radio	Simethicone
Phone charging bank	Dry bag	Emergency blanket	Tums
Hand sanitizer	Mosquito net	Personal GPS	Dental adhesive
Hand wipes	Sleep sheet	Waterproof backpack	Ibuprofen/Tylenol
Toilet paper	Ear plugs		Sudafed
Mini-leatherman	Camping Matches		Gauze/Bandaids
Water straw	Silicone Kettle		Gloves
Copy of Passport	Travel can opener		Loperamide
Copy of travel insurance	Spork		Antifungal cream
Handkerchief	UV pen		Tick Key
Citronella wash	Mosquito net fan		Tweezers
Sink Stop/Clothesline			Thermometer
Water bottle			Blister bandages

Thank you!

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