

Travel Medicine & Infectious Diseases

.....discussion and case examples.

(Based on LITFL “Tropical Travel Troubles”)

Today's Plan

- History and Exam for the febrile traveller
- Some case studies

The Febrile Traveller

- A 33 yr male recently returned from overseas, arrives in ED with a fever.....
- What further questions would you like to ask?

- Where travelled to?
 - Rural/urban and for how long
 - Type of habitat
- Exposures
 - Food
 - Water
 - Lakes/rivers
 - Animals
 - Sex
 - Piercings/tattoos/IVDU
 - Mosquito's/insects etc

- Prophylaxis taken / compliance.
- Vaccines

- What did they do after they arrived home?
 - Could this be infection after coming home!?

- Other PMHx/Meds etc

Physical Exam

- Abdomen
 - Hepatosplenomegaly
- Eyes
 - Conjunctivitis, Jaundice.
- Mouth
 - Ulcers/kolpik spots/discoloration/bleeding gums etc
- Lymph nodes
- Skin
 - Spots, maculopap rashes, petechiae/purpura.
- Neuro
 - Mental status

Investigations

- FBC
- Chemistry + LFT's
- Urine
 - UTI?
 - Myoglobin?
- Chest xray
- Other targeted tests
 - Mosquito borne virus panel (Chikungunya, Dengue, Yellow, West Nile, Zika)
 - Thick/thin smears

Case 1

- 30 year old café worker
- 6 days fevers and rigors
- Returned from Bangladesh a week ago.
- Saw GP on arrival who did some blood tests (more on that later!)

-what else would you like to know?

- Other symptoms
 - Mild headache
 - Neck pain
 - Lower abdominal pain
 - No diarrhea – in fact may be constipated.
- No vaccines and no prophylaxis for malaria
- Didn't get up to any mischief!



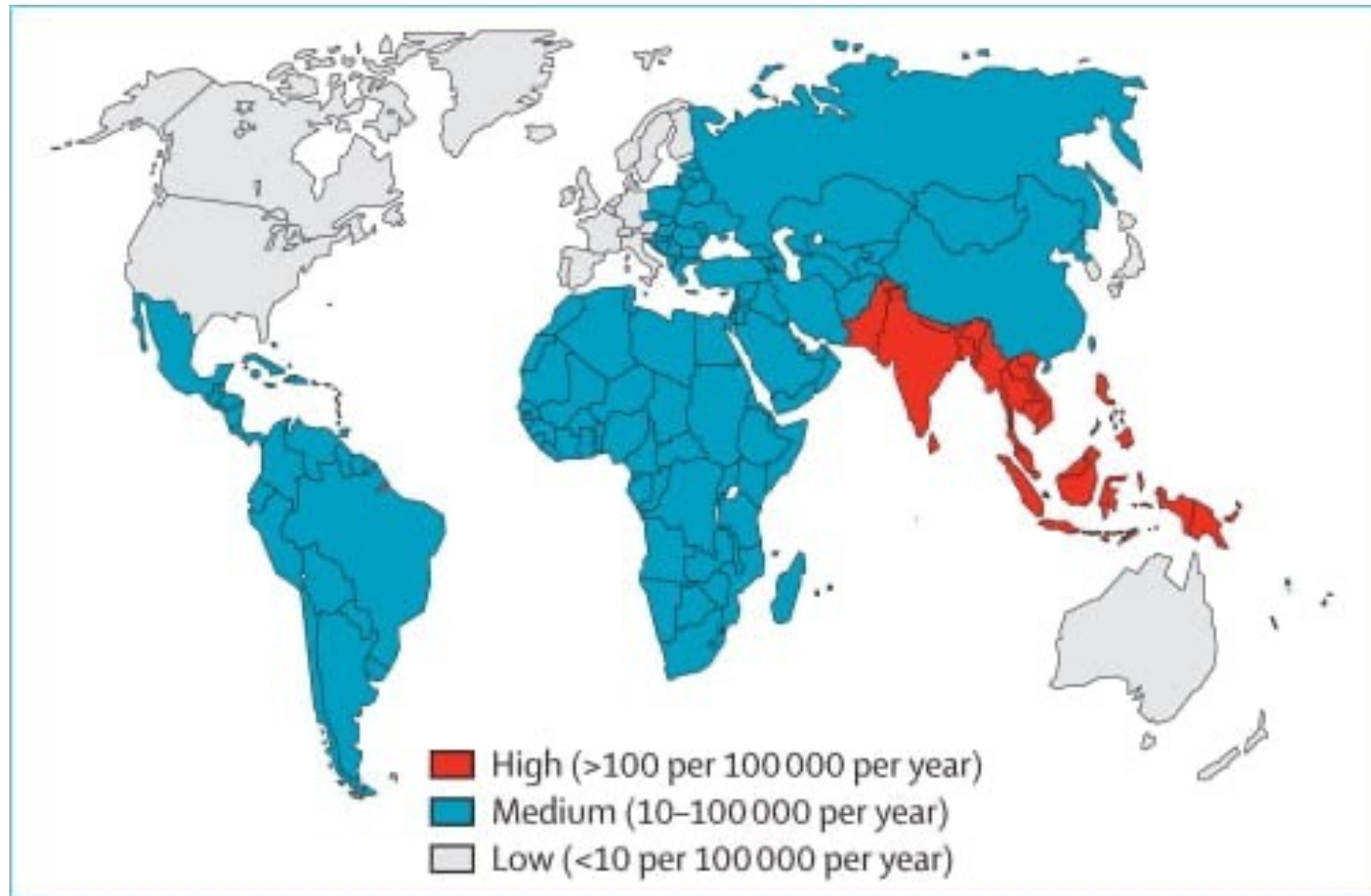


What could this be?

- E Coli
- Non-typhoid Salmonella
- Salmonella Typhi/Paratyphi
- Shigella
- Campylobacter
- Vibrio cholerae
- Klebsiella

TYPHOID

Salmonella Typhi



Transmission

- Contaminated Food and water
- Many people carry the bacteria without symptoms can pass to others

Who?



Treatment

- Ciprofloxacin or 3rd Gen Cephalosporin or Azithormycin

Complications

- GI perforation
- Haemorrhage
- Haemolytic anaemia
- Pneumonia
- Meningitis
- Nephritis
- Abscess
- Arthritis, osteomyelitis, polymyositis.

Next Case

- 23 year old Male
- Recent return from Bali at a mate's wedding
- Got bitten by heaps of mosquitoes

- OE:
- Temp 39.8 HR 115 BP 105.60.
- Blanching maculpap rash over face, thorax, and flexor surfaces



DDx??

- Bacterial
 - Strep, leptospirosis, typhoid, TSS
- Viral
 - 5th, enterovirus, zika, chikungunya, Roseola, EBV, HIV, Adenovirus, Measles, Rubella
- Parasitic
 - Malaria
- Non Infectious
 - Drug reaction, Leukemia...

DENGUE

<https://travelhealthpro.org.uk/countries>



Aedes aegypti



Anopheles

Mosquito transmitted Illnesses

- Aedes
 - Zika
 - Chikungunya
 - Dengue
 - Yellow Fever
 - Mayaro
 - Filariasis
 - West Nile virus
 - Ross River Virus
- Anopheles
 - 450 different subsp.
 - Malaria (10-15 subspecies)
 - West Nile virus
 - filariasis
- Culex
 - West Nile Virus
 - St Louis encephalitis
 - Filariasis
 - Japanese encephalitis

The adult mosquitoes



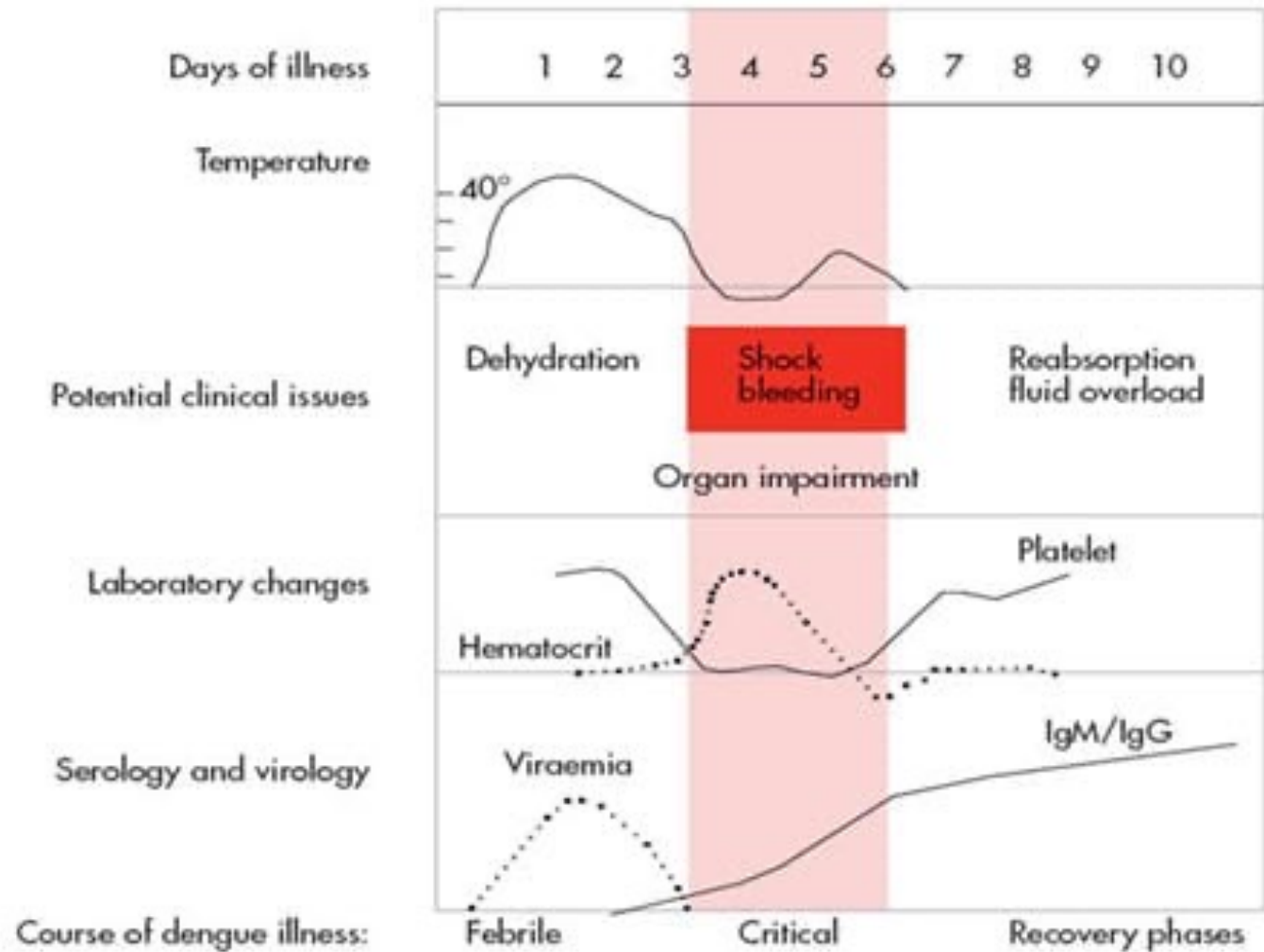
Culex



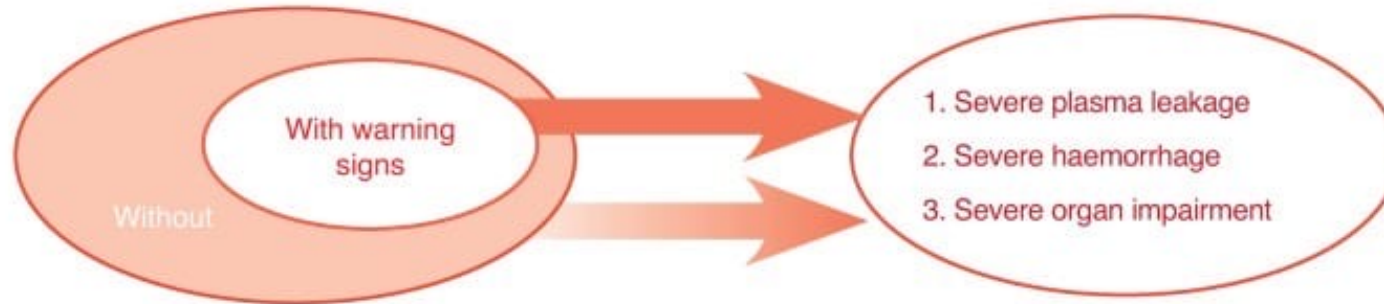
Anopheles



Aedes



DENGUE ± WARNING SIGNS



SEVERE DENGUE

CRITERIA FOR DENGUE ± WARNING SIGNS

Probable dengue

Live in / travel to dengue-endemic area.
Fever and two of the following criteria:

- Nausea, vomiting
- Rash
- Aches and pains
- Tourniquet test positive
- Leucopenia
- Any warning sign

Laboratory-confirmed dengue

(Important when no sign of plasma leakage)

Warning signs*

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy, restlessness
- Liver enlargement >2 cm
- Laboratory: increase in HCT concurrent with rapid decrease in platelet count

*(Requiring strict observation and medical intervention)

CRITERIA FOR SEVERE DENGUE

Severe plasma leakage

Leading to:

- Shock (DSS)
- Fluid accumulation with respiratory distress

Severe bleeding

as evaluated by clinician

Severe organ involvement

- Liver: AST or ALT ≥ 1000
- CNS: impaired consciousness
- Heart and other organs

Diagnosis

- Dengue Antigen's +/- PCR
- IgM and IgG after 4-5 days of illness

Treatment

- Entirely supportive
- Avoid NSAID's, Steroids, AB's and anticoags

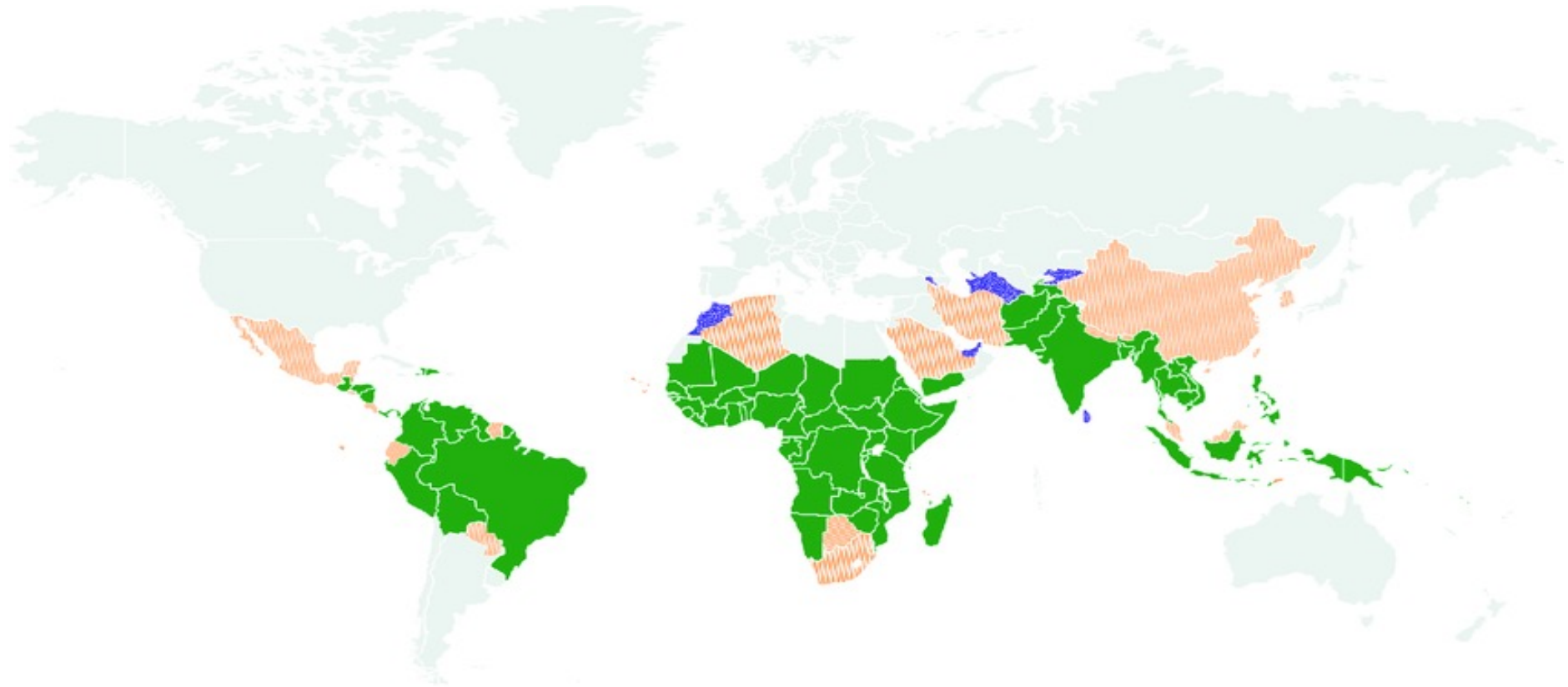
Next case

- 18 year old student returns from Brazil following a church mission
- Had all his travel vaccines, however forgot to get any oral prophylaxis.
- Fever, Sweats, Headache, N+V, Body aches
- Temp 38.7 Pulse 115. BP 134/78 Sats. 100
- Tender RUQ

DDX?

- Hepatitis
 - A, B...C etc
 - Gastro
 - Cholecystitis
- Malaria
- others

Malaria

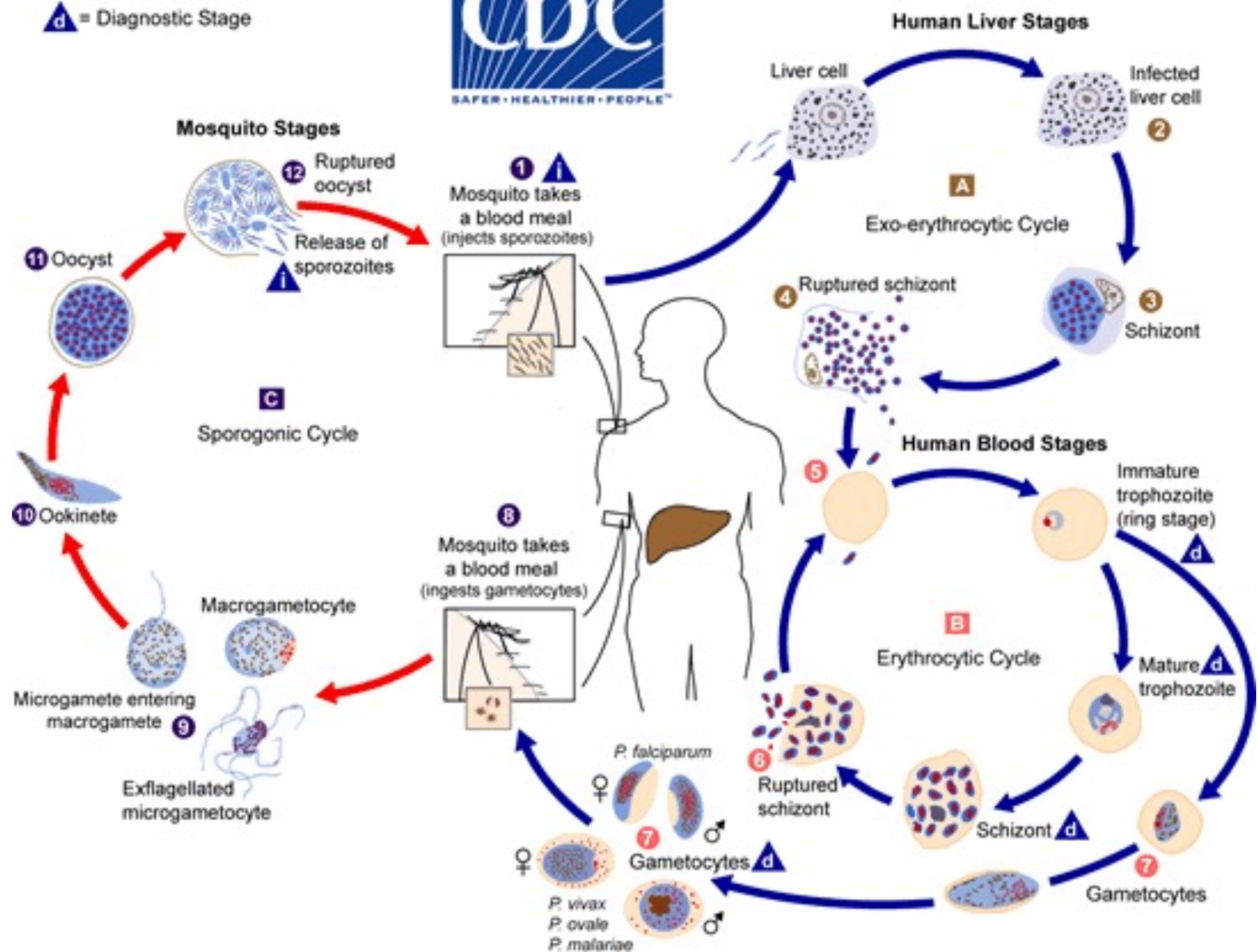


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- Ongoing malaria transmission
 - ▨ 21 countries with the potential to eliminate malaria by 2020
 - Countries certified as malaria-free since 2007

Plasmodium

- Falciparum
 - SEA, PNG, Indo, Africa, Sth America
 - most lethal
- Vivax
 - Sth/Central America, African horn, India/Pal, SEA
- Ovale
 - West Africa
- Malariae and knowlesi
 - Borneo + Malaysia

i = Infective Stage
d = Diagnostic Stage



Symptoms

- Uncomplicated
 - Periodic fevers, flu-like Sx, Jaundice/Haemolysis, Abdo pain
 - “black water fever”
- Severe
 - Mortality nearly 100%
 - AMS, Weakness, Acidosis, Hypoglycaemia, Anaemia, AKI, Bili, APO, Bleeding
- Cerebral Malaria

Diagnosis

- Look for haemolytic anaemia
- Thick and thin films.
- PCR

Rx

- Chloroquine
 - Falciparum resistance
- Mefloquine, Quinine etc
- Docycycline
- Artesunate

Next Case

- Medical student returns from working in a refugee camp in Bangladesh.
- Took malaria prophylaxis, very aggressive mosquito measures.
- Abdominal pain, diarrhoea ++. Not sure if bloody stool
- Look dehydrated, but GCS 15

DDX

- Travellers Diarrhoea
- Cholera
- Giardia

Travellers Diarrhoea

- Enterotoxigenic E. Coli
 - One of the most common
- Enterohaemorrhagic E. Coli
- Shigella
- Salmonella
- Campylobacter
- Vibrio
- Rotavirus
- norovirus
- Cryptosporidium

ix

- Stool spec in ED or not????
- Supportive
- Antibiotics????

What do these have in common?

- Shigella
- Salmonella
- Enterohaemorrhagic E coli

HUS

- More common in Kids
- More severe in Adults

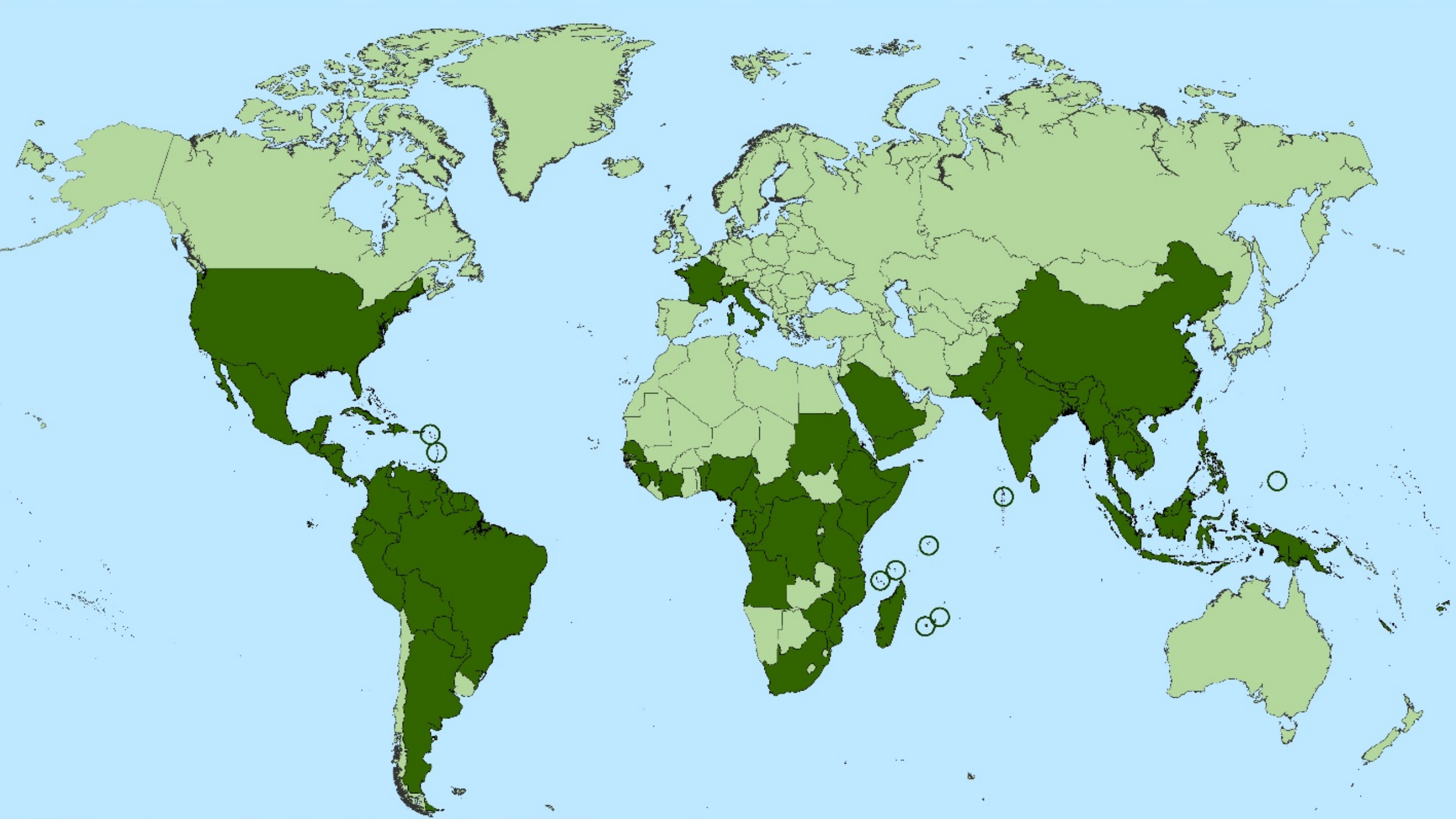
- Shiga-toxin
 - E Coli O157:H7
 - S Pneumo
 - Shigella
 - Salcomella

Next Case

- Husband and wife return from their wedding in Fiji
- Despite their best efforts, were bitten by some mosquitoes
- He has severe joint pains and some joint swelling all over and fever
- She has fever, slight aches and pains and a rash

DDX?

- Dengue
 - Both dengue and Leptospirosis outbreak recently.
- Zika?
- Chikungunya
- Others



Chikungunya

- Transmission
 - Aedes mosquito
- Symptoms
 - Can be similar to Dengue
- Distribution
 - Not in NZ or Aus but throughout the Pacific Islands
- No Vaccine or Cure
- Can be quite debilitating:
 - NSAID's and possibly steroids for severe cases/

Next Case

- The Best Man and wife of the couple who had their wedding in Fiji, went on to travel to Cook Islands.
- She was fastidious about mosquito precautions, but he got a bit annoyed and gave upand got bitten!

- He is febrile (37.9), body aches and mild conjunctivitis.
- Maculopapular rash.
- Headache.

DDX

- Dengue
 - Chikungunya
 - Malaria
 - Parvo B19
 - Measles
- Other viruses...

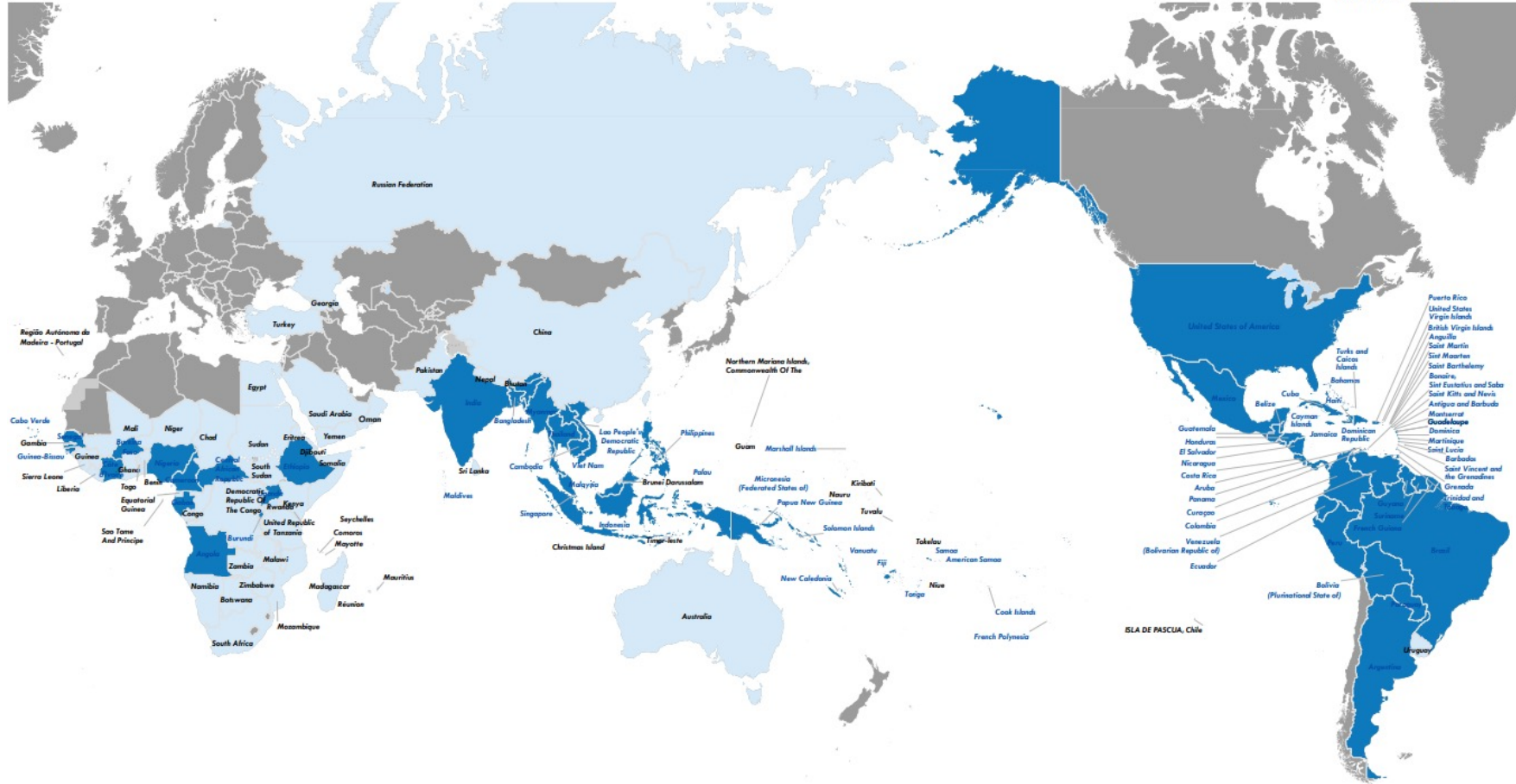
Zika Virus

Countries and territories with current or previous Zika virus transmission



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MAP DATE: 05 June 2019



- Countries and territories with current or previous Zika virus transmission
- Countries and territories with established competent vector, but no known cases of Zika virus infection
- Countries and territories with no known cases of Zika virus infection and no established competent vector

Areas are classified according to country, territory, or subnational area.
 Data as of November 16, 2017.
 Zika virus country classification tables available at:
<http://www.who.int/emergencies/zika-virus/classification-tables/en/>
 Zika virus country classification scheme available on:
<http://apps.who.int/iris/bitstream/10665/254619/1/WHO-ZIKV-SUR-17.1-eng.pdf>

....we are trying to get pregnant.....

Next Case

- A 20 year old man, indigenous to PNG, returns to NZ for a family event.
- Very sore throat, and fever.
- Rx with dex, augmentin and IV fluids and put in OBS.



El Año de los Garrotillos

- The year of strangulations.
- 1613 in Spain
- First described by hippocrates

Diphtheria

- Vaccine preventable illness
- Bacteria
- Sx
 - Fever, sore throat, hoarseness, cough, odynophagia
 - Lymphadenopathy.
 - Fouls smelling breath





- Transmission = respiratory droplets
- Swab of throat for MC+S
- EIA test for diphtheria toxin

- 2/3rd of cases myocarditis, endocarditis and mycotic aneurysms
- 75% develop soft palate paralysis, cranial nerve neuropathies, peripheral neuropathies

Rx

- Erythromycin or Penicillin-G
- Droplet precautions

Next Case

- 35 year old man in Auckland visiting family – travelled from Australia
- one-week history of fever, lethargy, anorexia and generalised arthralgias, with an erythematous eruption and a large plaque with eschar noted on examination
- OE: afebrile, stable obs. Has a rash but no lymphadenopathy.





Tick Typhus

aka Rocky Mountain Spotted Fever

- East Coast of Australia
- Rickettsia – gram negative bacteria
- Transmission = Tick bites



- Presentation

- 2-14 day incubation
- Eschar, fever, headache, confluent erythematous eruption
- Pneumonitis, encephalitis, septic shock death

- Diagnosis

- Immunofluorescence Serology (can be falsely neg) or PCR

- Rx

- Doxycycline 7 days or Azithromycin.

Next Case

- A 23year old Filipino man
- Otherwise fit and well.
- Itchy painful skin on leg, fevers and very tired
- Tried to break up a dog fight and was bitten. This occurred 6 weeks ago

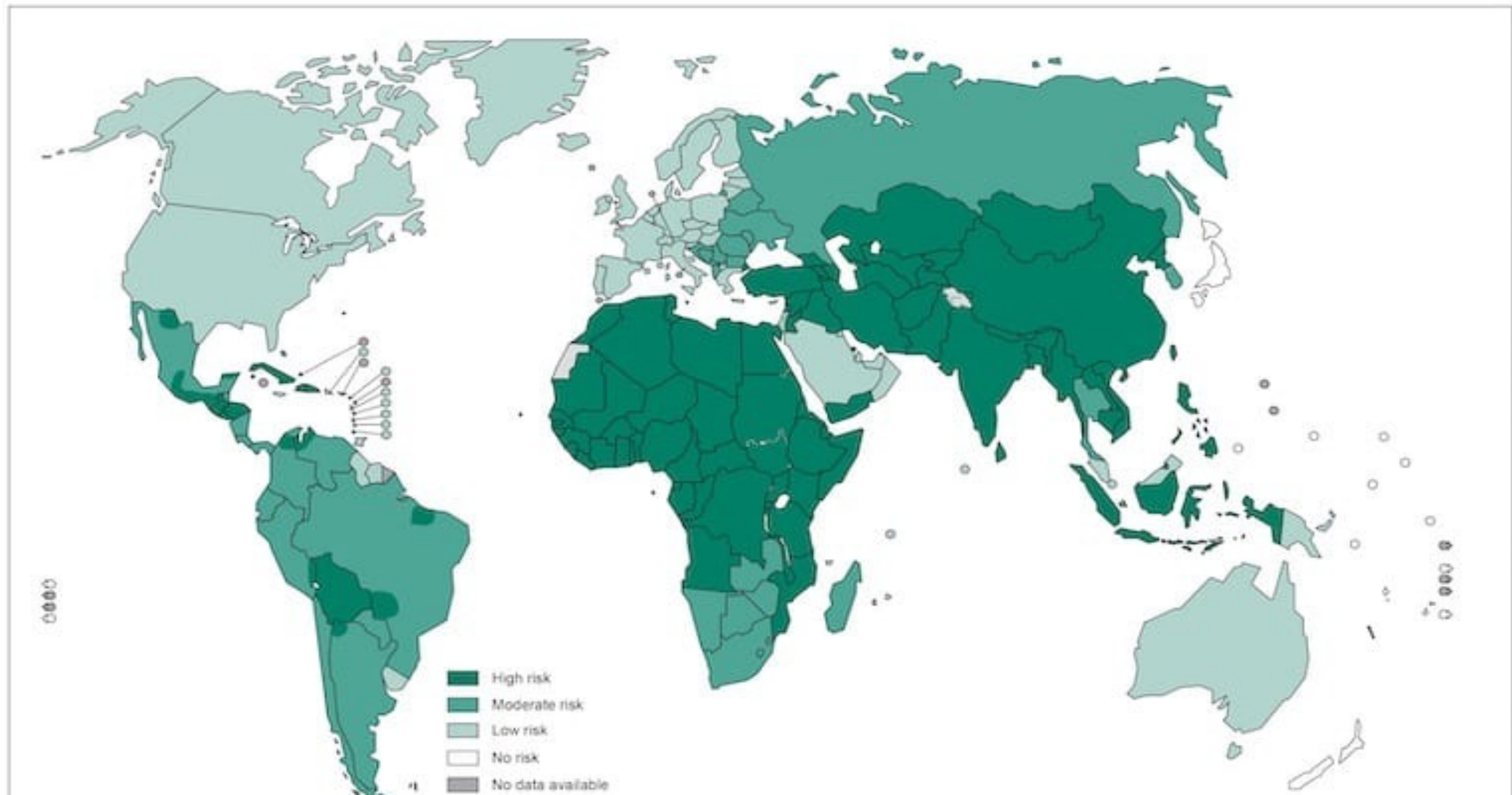


Symptoms

- Itching ++.
- Painful in the location of the bite
- Feverish and tired.

Rabies

Distribution of risk levels for humans contacting rabies, worldwide, 2013



Transmitted by

- Dogs, monkeys, raccoons, foxes, skunks, cattle, wolves, coyotes,
- Bats
 - Including in Australia
- Lyssavirus
- Can develop rabies up to year post bite!
- No Cure

- Pain, paraesthesia, intense itching
- Muscle weakness, headaches, neuropsychiatric sx

- Furious rabies
 - Hydrophobia, resp muscle spasm, laryngospasm, terrors, convulsions, hypersalivation and lacrimation

- Paralytic rabies
 - Flaccid paralysis, pain, fasciculations, paraplegia, loss of sphincter control, resp muscle paralysis.



Next Case

- A 30 year old female has arrived in NZ from the USA.
- Had been on a camping holiday to Yosemite Valley “wanted to experience the fall”
- Didn’t take any precautions – mosquito – and was bitten
- But is vaccinated.

Symptoms

- Fever
- Headache
- Vomiting
- Photophobia
- myalgia



DDX?

- Bacterial Meningitis
- Viral Meningitis
 - Varicella
 - Herpes simplex
- Encephalitis
- Cerebral abscess
- others

West Nile Virus

- Structurally quite similar to dengue
- Bird-mosquito-bird transmission
- Vector – *Culex pipiens*



Culex sp.

- West Nile virus
- St Louis encephalitis
- Japanese encephalitis
- filariasis

West Nile complications

- Encephalitis
- Meningitis
- Poliomyelitis
- Pancreatitis
- myocarditis

List of diseases notifiable by health practitioners and laboratories to the Medical Officer of Health

Diseases Notifiable in New Zealand (include suspected cases)*

Notifiable Infectious Diseases Under the Health Act 1956

Section A – Infectious Diseases Notifiable to a Medical Officer of Health and Local Authority

Acute gastroenteritis **	Campylobacteriosis
Cholera	Cryptosporidiosis
Giardiasis	Hepatitis A
Legionellosis	Listeriosis
Meningoencephalitis – primary amoebic	Salmonellosis
Shigellosis	Typhoid and paratyphoid fever
Yersiniosis	

Section B – Infectious Diseases Notifiable to Medical Officer of Health

Anthrax	Arboviral diseases
Brucellosis	Creutzfeldt-Jakob disease (CJD) and other spongiform encephalopathies
<i>Cronobacter</i> species	Diphtheria
Haemophilus influenzae b	Hepatitis B
Hepatitis C	Hepatitis (viral) not otherwise specified
Hydatid disease	Highly Pathogenic Avian Influenza (including HPAI subtype H5N1)
Invasive pneumococcal disease	Leprosy
Leptospirosis	Malaria
Measles	Middle East Respiratory Syndrome (MERS)
Mumps	<i>Neisseria meningitidis</i> invasive disease
Non-seasonal influenza (capable of being transmitted between human beings)	Novel coronavirus capable of causing severe respiratory illness
Pertussis	Plague
Poliomyelitis	Q fever
Rabies and other lyssaviruses	Rheumatic fever
Rickettsial diseases	Rubella
Severe Acute Respiratory Syndrome (SARS)	Tetanus
Tuberculosis (all forms)	Verotoxin-producing or Shiga toxin-producing <i>Escherichia coli</i>
Viral haemorrhagic fevers	Yellow fever

Section C- Infectious Diseases Notifiable to Medical Officer of Health without Identifying Information of Patient or Deceased Person

Acquired Immunodeficiency Syndrome (AIDS)
 Gonorrhoeal infection
 Human Immunodeficiency Virus (HIV) infection
 Syphilis

Diseases Notifiable to Medical Officer of Health (Other than Notifiable Infectious Diseases)

Notifiable to the Medical Officer of Health

Cysticercosis
 Decompression sickness
 Lead absorption equal to or in excess of 0.48µ mol/l (10µg/dl)***
 Poisoning arising from chemical contamination of the environment
 Taeniasis
 Trichinosis

The End