Travel Conundrums

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AZDHS IMMUNIZATION CONFERENCE
4/24/2024

I have no conflicts to declare

Learning Objectives

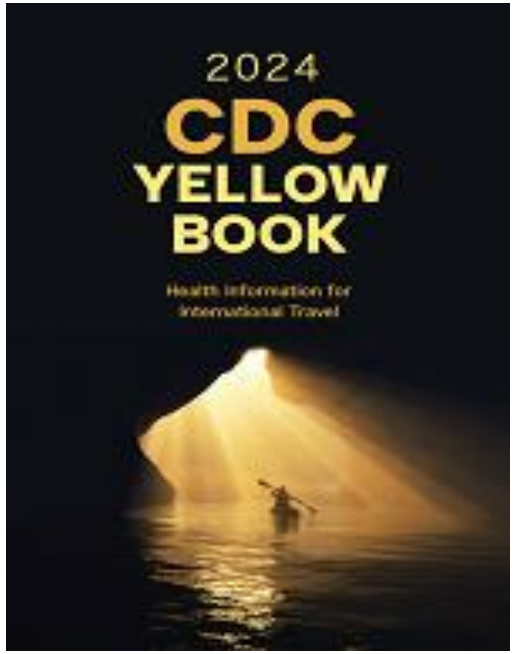
- Review the challenges and conundrums of travel vaccines using case studies.
- Examine travel recommendations for a variety of travel itineraries and ages using a case oriented approach.
- Review pre-travel measures to mitigate common threats to travelers in the developing world.
- Discuss challenging travel scenarios-children, pregnancy, immune compromise

- **Case 1 - traveling children**
- **Case 2 - pregnant traveler**
- **Case 3 - immunocompromised traveler**

- **More depending on timing…**

What's new.. From CISTM18

- Climate change impact on travel
- A few new vaccines/indications
  - Malaria (Ghana, Kenya, Malawi pilot roll out)
  - Cholera , Dengue
  - Chikungunya- recently approved
- More Dengue, West Nile Virus and tick infections
- A new Yellow Book to explore
  - Highly allergic traveler
  - Medical tourism
  - LGBTQ+ traveler



New ‘travel related’ vaccines

- Cholera
- Dengue
- Malaria (Ghana, Kenya, Malawi pilot roll out)
- Chikungunya- approved 2/24
- TBE

Cholera vaccine

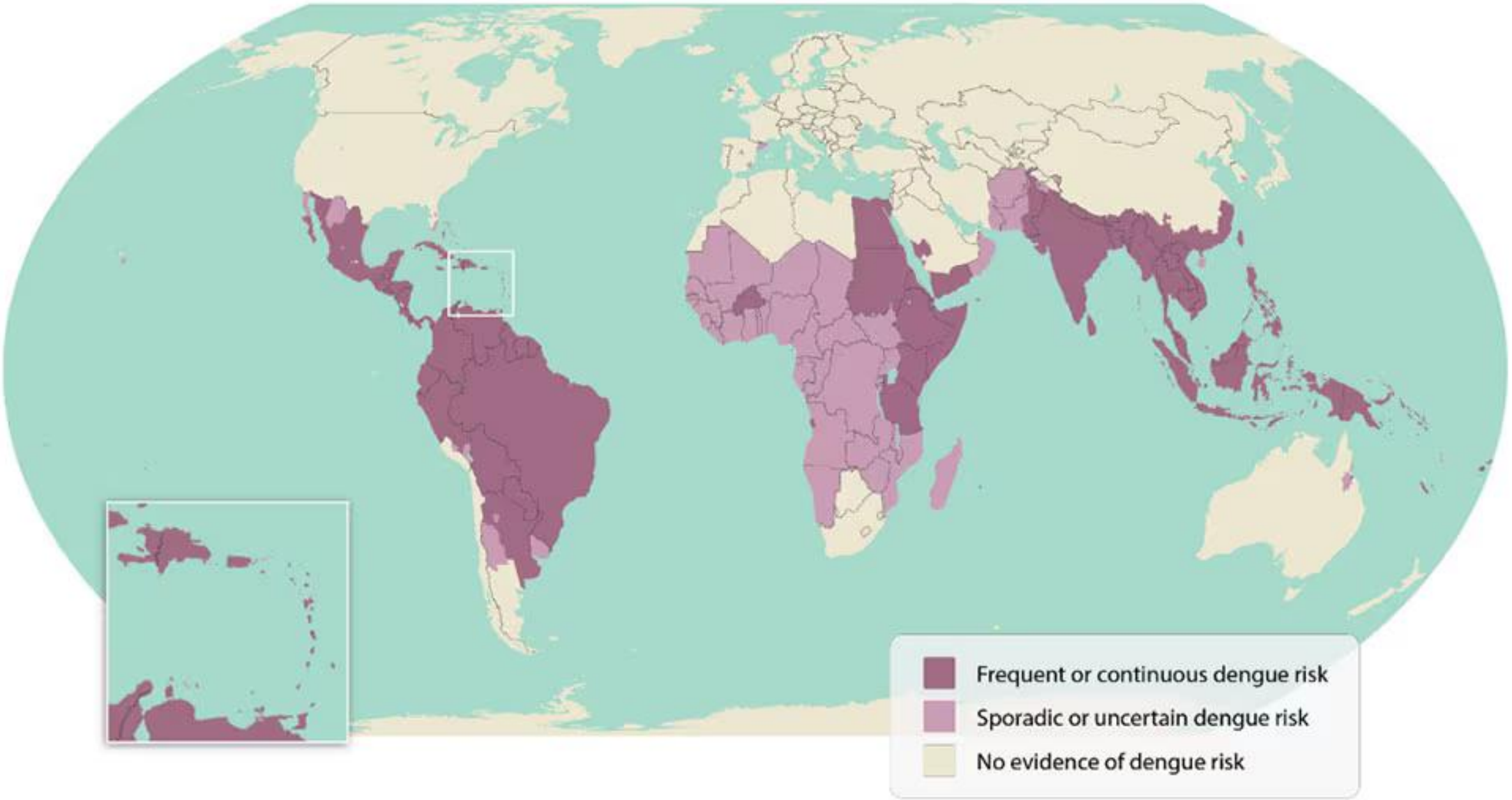
- Single dose live attenuated oral vaccine (CVD 103-HgR)
- Recommended for ages 2-64 yrs to areas with active cholera transmission
- Duration of protection beyond 3 months not studied
- Avoid concurrent chloroquine and oral typhoid vaccine

MMWR 2022

Current areas of active cholera transmission

- Africa: Burundi, Cameroon, Comoros, Democratic Republic of the Congo, Ethiopia, Kenya, Malawi, Mozambique, Nigeria, Republic of the Congo, Somalia, South Africa, Sudan, South Sudan, Uganda,Tanzania, Zambia, Zimbabwe
- Asia: Afghanistan, Bangladesh, India, Pakistan, Philippines
- Middle East: Iraq, Lebanon, Syria, Yemen
- Americas: Dominican Republic, Haiti
- Pacific: none

** Check the CDC destination page for details on whether vaccination should be considered


Frequent or continuous dengue risk
Sporadic or uncertain dengue risk
No evidence of dengue risk

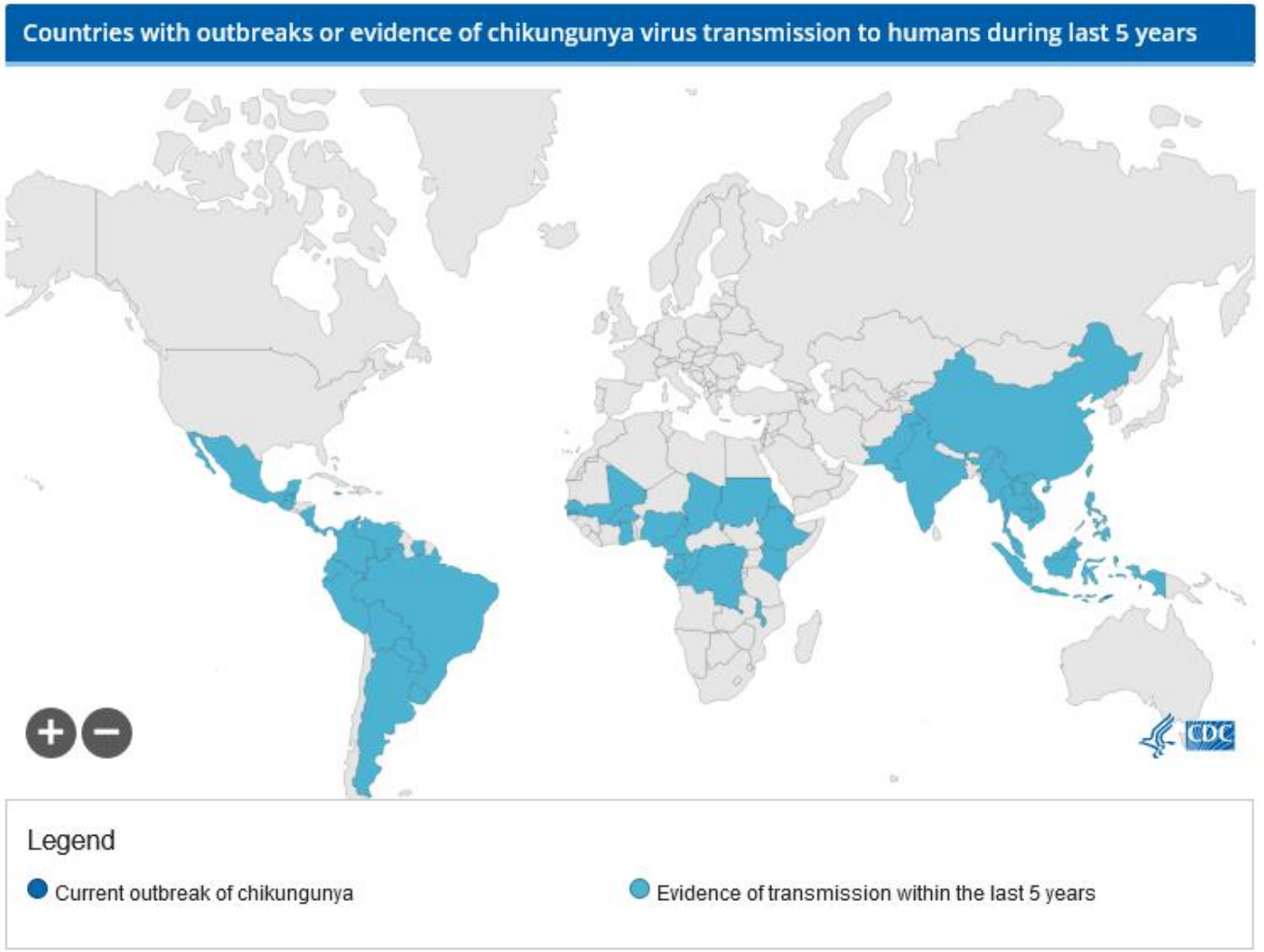
Dengue Vaccine

- Sanofi-Pasteur vaccine (Dengvaxia)
- 2019 approval, limited indications- not for travelers
- 9 -16 yr olds with history of lab-confirmed dengue infection
- Other products in phase 3 trials - stay tuned

- Insect bite avoidance measures !

Chikungunya

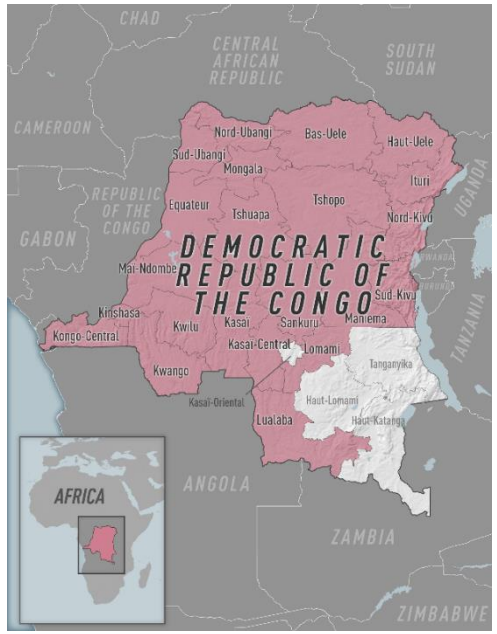
- Arboviral infection similar to dengue, but with often severe post-infectiousarthritis/arthralgia
- Vaccine 2/24
  - >18 yo
  - Travel to outbreak area
  - Long stay (>6 mo) in transmission area
  - >65 yo , with underlying conditions and moderate exposure
- Insect bite avoidance



Mpox vaccine

- **Intradermal or Subcutaneous administration**
- **Any person at risk: 2-dose series, 28 days apart**

- **Outbreak in DRC currently**



Mpox vaccine

Mpox vaccination

Special situations

- **Any person at risk for Mpox infection:** 2-dose series, 28 days apart.

  Risk factors for Mpox infection include:

  - Persons who are gay, bisexual, and other MSM, transgender or nonbinary people who in the past 6 months have had:
    - A new diagnosis of at least 1 sexually transmitted disease
    - More than 1 sex partner
    - Sex at a commercial sex venue
    - Sex in association with a large public event in a geographic area where Mpox transmission is occurring
  - Persons who are sexual partners of the persons described above
  - Persons who anticipate experiencing any of the situations described above

- **Pregnancy:** There is currently no ACIP recommendation for Jynneos use in pregnancy due to lack of safety data in pregnant persons. Pregnant persons with any risk factor described above may receive Jynneos.
- **Healthcare personnel:** Except in rare circumstances (e.g. no available personal protective equipment), healthcare personnel who do not have any of the sexual risk factors described above should not receive Jynneos.

For detailed information, see: www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-10-25-26/04-MPOX-Rao-508.pdf

ACIP2024

Special populations

- Immunocompromised
- Visiting friends and relatives (VFR)
- Seeking health services (transplants, dental, cosmetic surgery)
- Adventure/extreme travel
- Older adult
- Young children
- Students
- Long-stay
- Relief workers

Travel Vaccines and overall consult goals

Immunization

- Routine
- Required (WHO regulated)
- Recommended, itinerary based

Malaria Chemoprophylaxis and Bite Prevention

- Medication choice/delivery/cost/availability/SE
- Repellents, nets, clothing barriers

Traveler's Diarrhea Prevention and management

Travel-related health risks

- Accidents Medical/evac insurance
- Animal bites
- Sunburn, swimming

Case 1

A family of 2 healthy children is going to visit relatives in Ghana for the summer.

- Ages 5 mos, 4 yrs old
- 5 mo old is breastfeeding
- No allergies

The oldest has been there 2 years ago and was hospitalized for severe diarrhea. Parents are anxious about the children getting sick there.

What vaccines would be appropriate for this 5 month old?

0

A Yellow Fever 0%

B MMR 0%

C Typhoid 0%

D DTaP-IPV-HepB 0%

E Rabies 0%

None of the above 0%

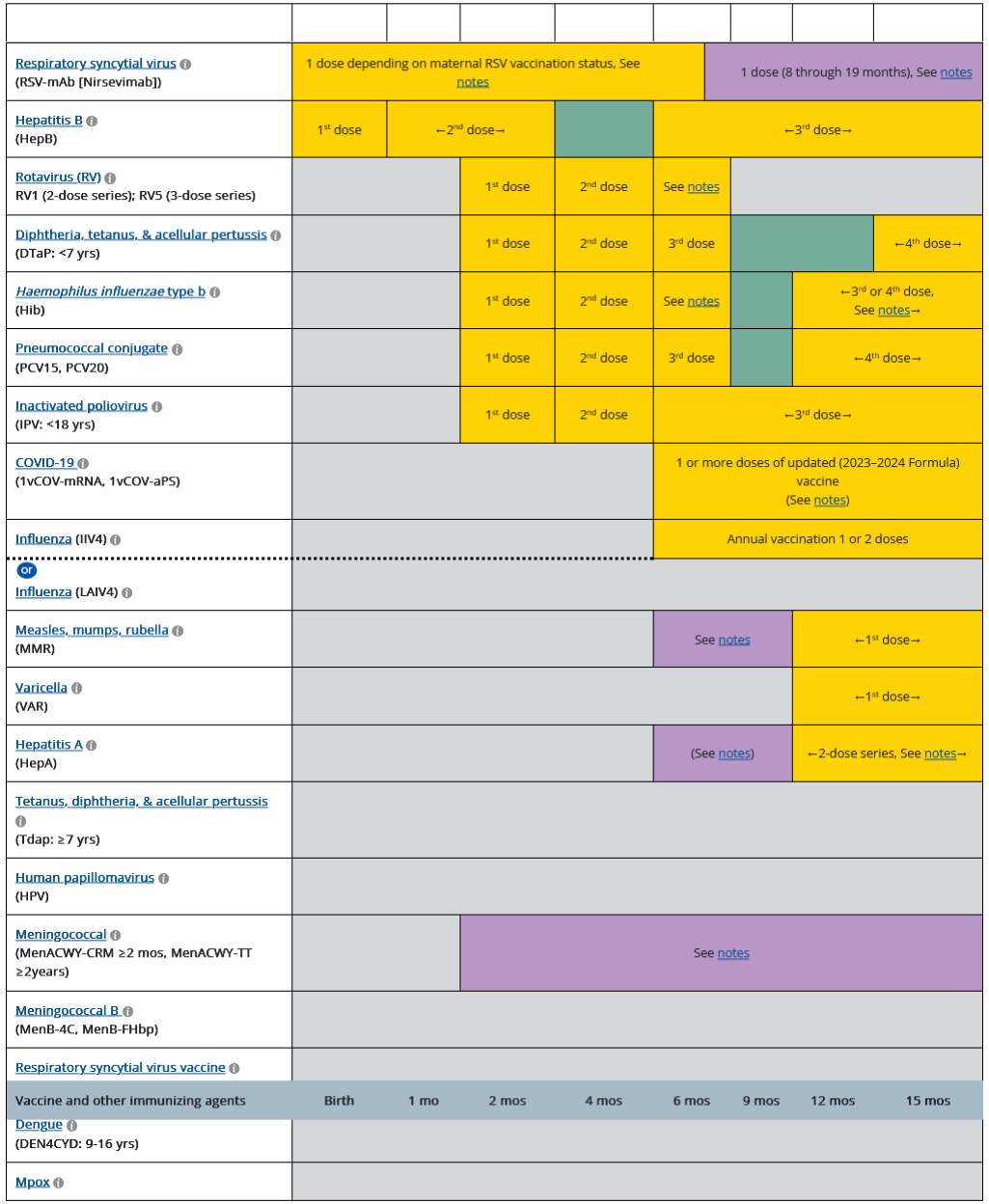
Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

Vaccinating the child traveler

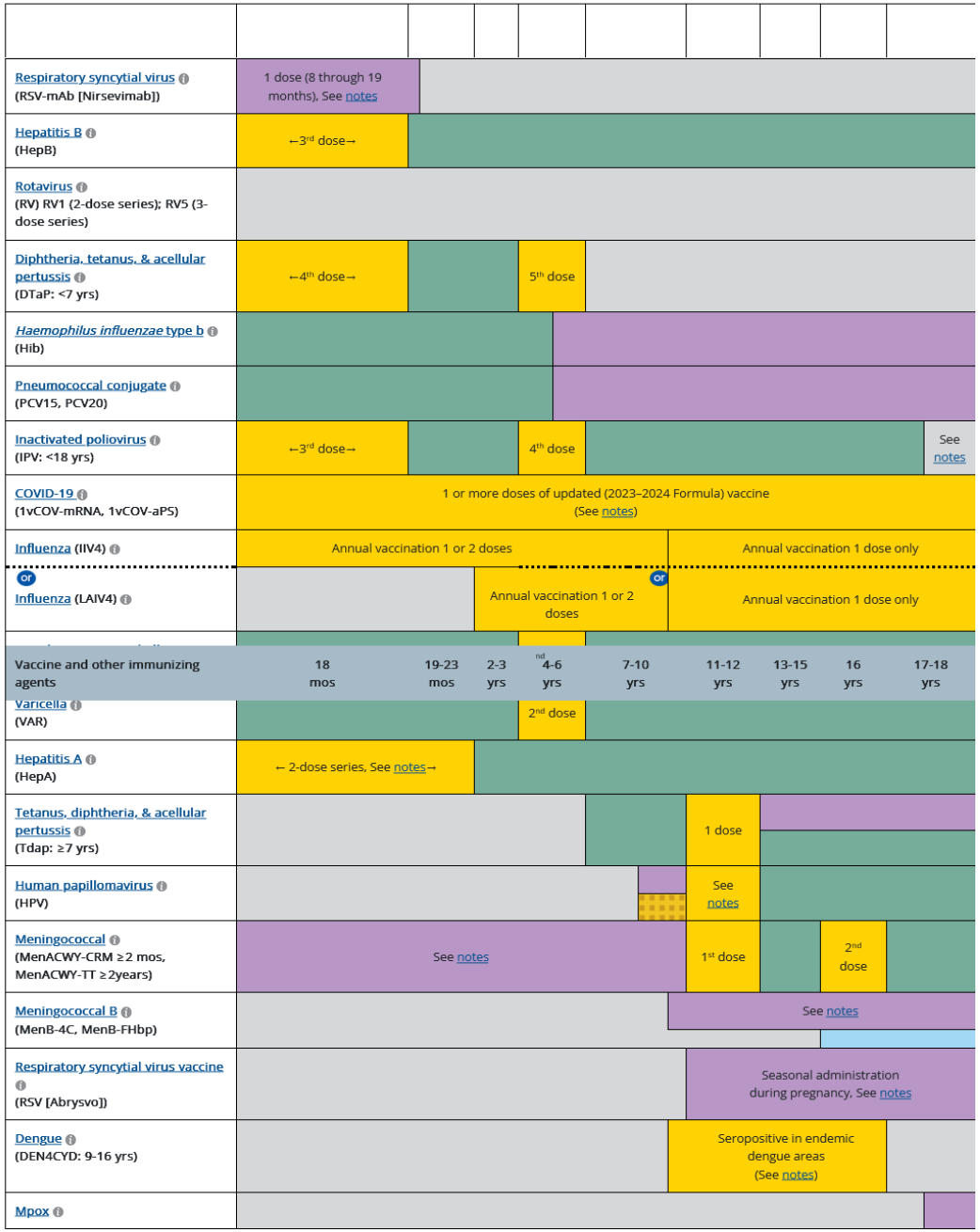
- **Routine vaccines**
  - **accelerate as needed**
  - **update**
- **Required**
- **Recommended**

Birth to 15 Months

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).



18 Months to 18 Years



American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Minimum ages- U.S.

- Yellow fever - 9 months
- Hepatitis A - 6 mo
- Typhoid
  - injectable - 2 yrs
  - oral - 6yrs
- Rabies - no minimum
- Meningococcal meningitis - 2 mo
- Japanese encephalitis - 2 mo
- Influenza - 6 months
- COVID-19 - 6 months

Accelerating routine vaccines

	AGE	MIN INTERVAL
DTaP&IPV	6 wks	4 wks
Hib&PCV15	6 wks	4 wks
Rotavirus	6 wks	4 wks
HepB	birth	4 wks
COVID-19	6 months	4 wks
MMR	6-11 mo, repeat at 12 mo old, plus one more dose	
Hep A	6 mo, then 2 dose series at 12 mo or 6 mo after early dose	

YELLOW FEVER

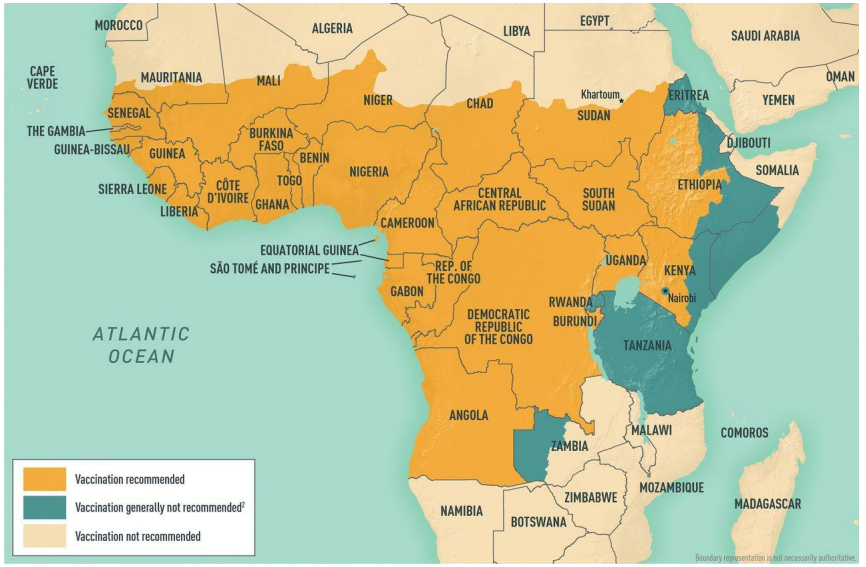
Mosquito borne viral hemorrhagic disease

Countries at risk: 34 in Africa &13 in Central/S Am

Infant imz programs in 36 of 40 endemic countries

Estimated infant coverage 47%

Mass vaccination campaigns ongoing



CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

YELLOW FEVER VACCINE

Live attenuated viral vaccine, regulated by IHR

Egg based

Age related risk of post-vaccine encephalitis

Contraindicated : <6 mo olds ; Egg allergy ; certain thymus disorders; primary immunodeficiencies/ Symptomatic HIV; malignant neoplasms, organ transplantation, immunosuppressive & immunomodulatory therapies

Caution : age > 60 yo ;Asymptomatic HIV infection (with caveats); pregnancy; breastfeeding

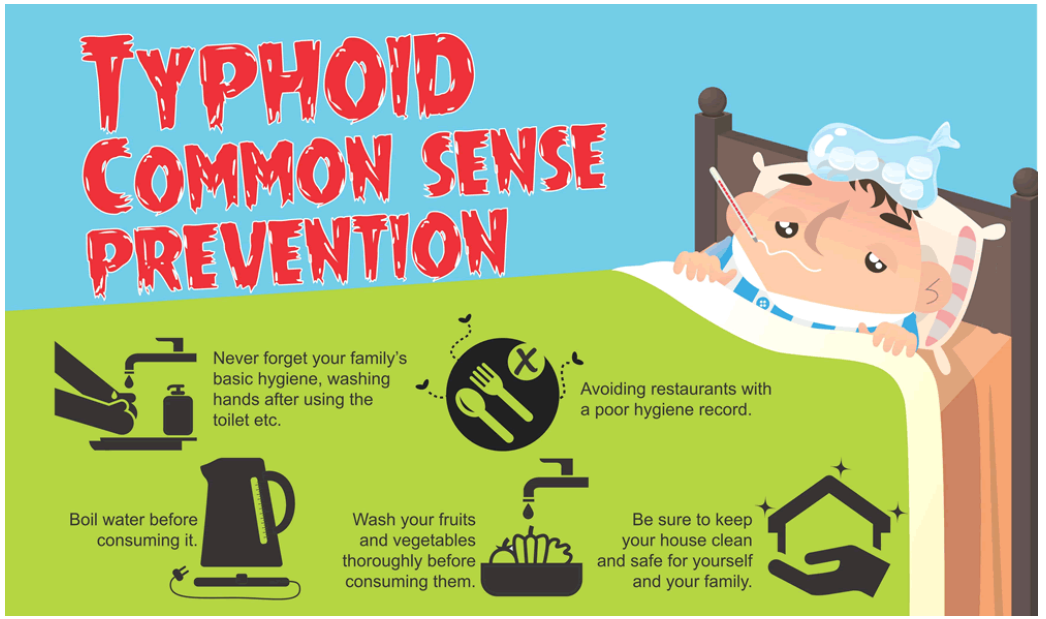
Yellow Fever Vaccine

Age related risk of post-vaccine encephalitis

Age	Recommendation
<6 mos.	NEVER
6-9 mos.	CDC consult
>9 mos.	Same as adults

Typhoid vaccines

- **Oral Ty21a**
  - **4 capsules over 1 week**
  - **Repeat every 5yrs**
  - **Production restarted**
- **Vi Polysaccharide**
  - **>2 yrs old**
  - **Repeat every 2 -3 yrs**



Japanese Encephalitis Vaccines

- **Ixiaro®(Inactivated, cell culture derived)**

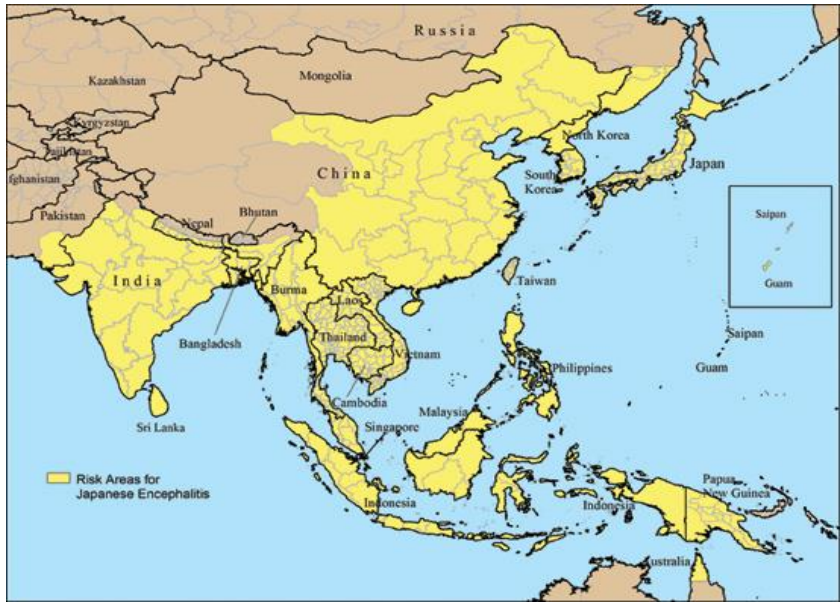
  2mo - 2 yrs : 0.25 ml IM ; 0 & 28 days

  >2 yrs : 0.5 ml IM (same as adults) “

  Booster- data only on >17 yo

- **Indications**

  1 month in endemic area during transmission season



What vaccines would be appropriate for this 5 month old?

0

A Yellow Fever 0%

B MMR 0%

C Typhoid 0%

D DTaP-IPV-HepB 0%

E Rabies 0%

None of the above 0%

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Practical issues

- Vaccine site
  - Vastus lateralis/deltoid
- Calm, confident manner
- Reasoning – tends not to work!
- Distraction
  - Bubbles, ipod/ipad/headphones
- Positioning
- Rewards
  - Special treat, praise

Photo courtesy of Clare Shaw

Malaria prevention A-B-C-Ds
(and dengue/chikungunya/tick disease)

- **A**wareness of risk
- **B**ite prevention
- **C**hemoprophylaxis
- **D**iagnosis

Malaria chemoprophylaxis –Which drug?

- Chloroquine
- Mefloquine
- Atovaquone/Proguanil
- Doxycycline
- Primaquine

CDC Health information for International Travel 2024

Does this breastfeeding infant need malaria chemoprophylaxis?

0

A Yes

0%

B No- Mom will be on medications

0%

C I'm not sure

0%

None of the above

0%

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

Breastfeeding travelers

- **Little data**
- **Medications**
  Check for breast milk excretion & infant side effects
- **Anti-malarials**
  All transfer to breast milk but insufficient amount for infant
  A/P contraindicated in mom if infant is <5 kg
  Doxycycline OK for short-term use
  PQ OK if both have normal G6PD level
- **Vaccines**
  Generally no contraindications except YF precaution

- **“Neither inactivated nor live-virus vaccines administered to a lactating woman affect the safety of breastfeeding for women or their infants” ACIP**
- **YF precaution -contraindicated unless high risk of disease**
- **Mpox (ACAM2000) and smallpox vaccines are contraindicated**
- **Jynneos (replication deficient Mpox vaccine) can be given if indicated.**

Breastfeeding & travel

- Transport through airport security
- Breast care - avoiding/treating mastitis
- Breast pump - batteries, hand pump,electric
- Pumped milk - safe for 4 hrs at room temp

Unique considerations for families

beyond vaccines and anti-malarials...

Age specific issues

Safety

Logistics

Teen/student issues

Comfort issues

Stress/boredom

Environmental hazards

Altitude

Sedation requests

Travelers diarrhea →

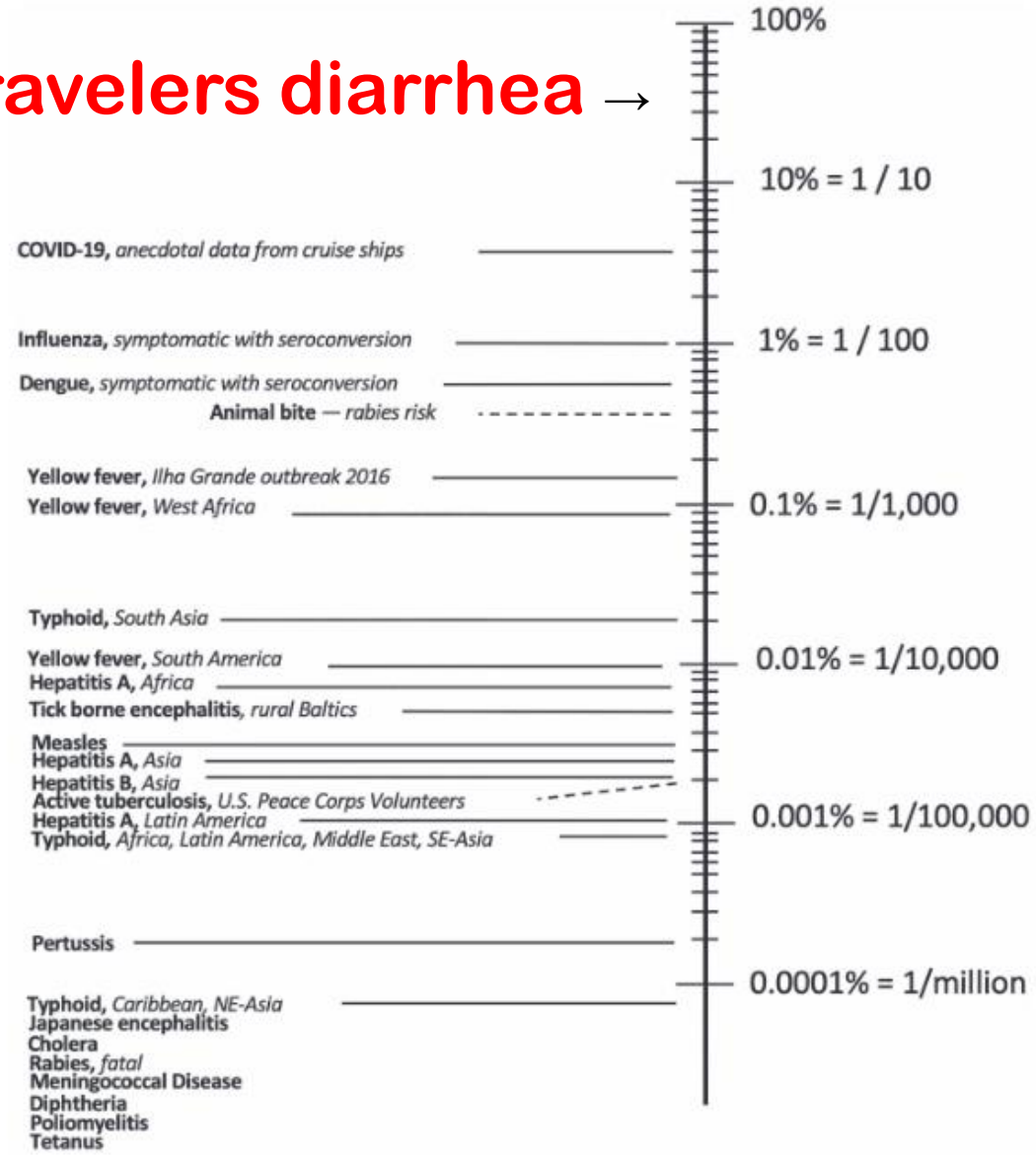


Figure 1. Incidence rate per month of VPDs in travellers; best estimate for non-immunes

Definitions of Travelers' Diarrhea

- *Journal of Travel Medicine*, 2017, Vol 24, Suppl 1.

Pre-travel

Providers should consider the following in counseling the traveler:

(1) Definitions of travelers' diarrhea and severity classification
(2) Importance of oral rehydration through fluid and salt intake for all travelers' diarrhea
(3) Information on effectiveness of treatments for travelers' diarrhea and the risk of travel, travelers' diarrhea, and antibiotic use with the acquisition of multi-drug resistance bacteria.
(4) Provision of empiric treatment medications as indicated by itinerary and provider-traveler determination
(5) Intra- and post-travel illness follow-up recommendations

During Travel

Self-determination of Illness Severity

Mild	**Moderate**	**Severe**	
Diarrhea that is tolerable, is not distressing, and does not interfere with planned activities	Diarrhea that is distressing or interferes with planned activities	Diarrhea that is incapacitating or prevents planned activities	
		Non-dysentery	**Dysentery***
May use loperamide or bismuth subsalicylates	***May*** use loperamide alone or as an adjunct to antibiotics	***May*** use loperamide as adjunct to antibiotics	
	±	+	
	May use antibiotic (Table 2)	***Should*** use antibiotic (Table 2)	

Post-travel

Acute travelers' diarrhea should be treated empirically as above.

Microbiologic testing is recommended in returning travelers with severe or persistent symptoms or in those who fail empiric therapy

Multiplex molecular diagnostics are preferred in patients with persistent or chronic symptoms

Case 2

- 38yo, G2P1 , grew up in Kenya until the age of 22
- 21 wks pregnant
- Plans travel home to Kenya to visit friends and relatives for 6 weeks
- Itinerary includes Nairobi and Mombasa
- Has had malaria several times and believes herself immune
- No vaccines since age 15

Pre-travel issues

- COVID19
- Advisability of the trip
- Airline requirements
- In-flight considerations
- Medical care

Travel & pregnancy : contraindications

- Complicated pregnancy
- Hypertension
- History of pre-term labor
- Diabetes
- Cardiac disease
- History of intrauterine growth restriction

Scuba Diving

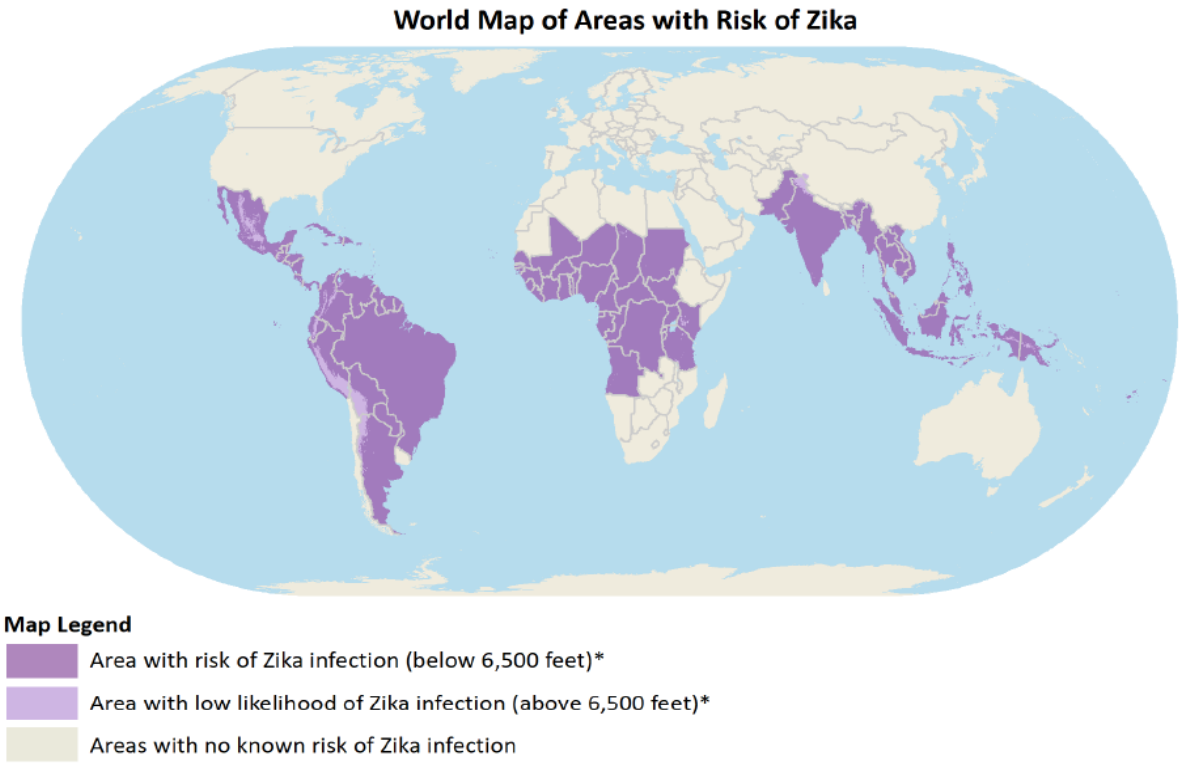
- Unsafe at any stage of pregnancy
- Risk of fetal decompression sickness

Cruise Travel

- COVID19
- Cruise line restrictions- 24-28 wks
- Medical concerns (GI illness)

Zika in Pregnancy

- Outbreak 2016, decline since
- Postpone travel if outbreak
- US Zika Pregnancy Registry
- First trimester highest risk
  - Up to 15 % birth defects
  - Microcephaly, Eye abnormalities



Immunizations & pregnancy

- If essential
  - AVOID 1st trimester
  - AVOID live viral vaccines, except in special circumstances (YF)
- No evidence that bacterial, inactivated viral, toxoids, or tetanus immune globulin pose risk to fetus
- Consider letter of waiver

Vaccination & pregnancy

- **Routine**
  - **Tetanus/diphtheria/acellular pertussis - @27-36 wks**
  - **Influenza**
- **Recommended as indicated**
  - **COVID-19**
  - **Hepatitis A**
  - **Rabies**
  - **Insufficient data on JEV**
  - **Polio (inactivated)**
  - **Hepatitis B**
  - **Inj typhoid**

Vaccination in Pregnancy

Recommended (Safe)

- Influenza (inactivated)
- Tdap
- COVID-19

Recommended if otherwise indicated (Safe)

- Hepatitis B
- Hepatitis A
- dT
- Polio(IPV)
- Rabies
- Polysaccharide meningococcal MPSV4, MenACYW
- Immunoglobulins (RIG, VZIG)

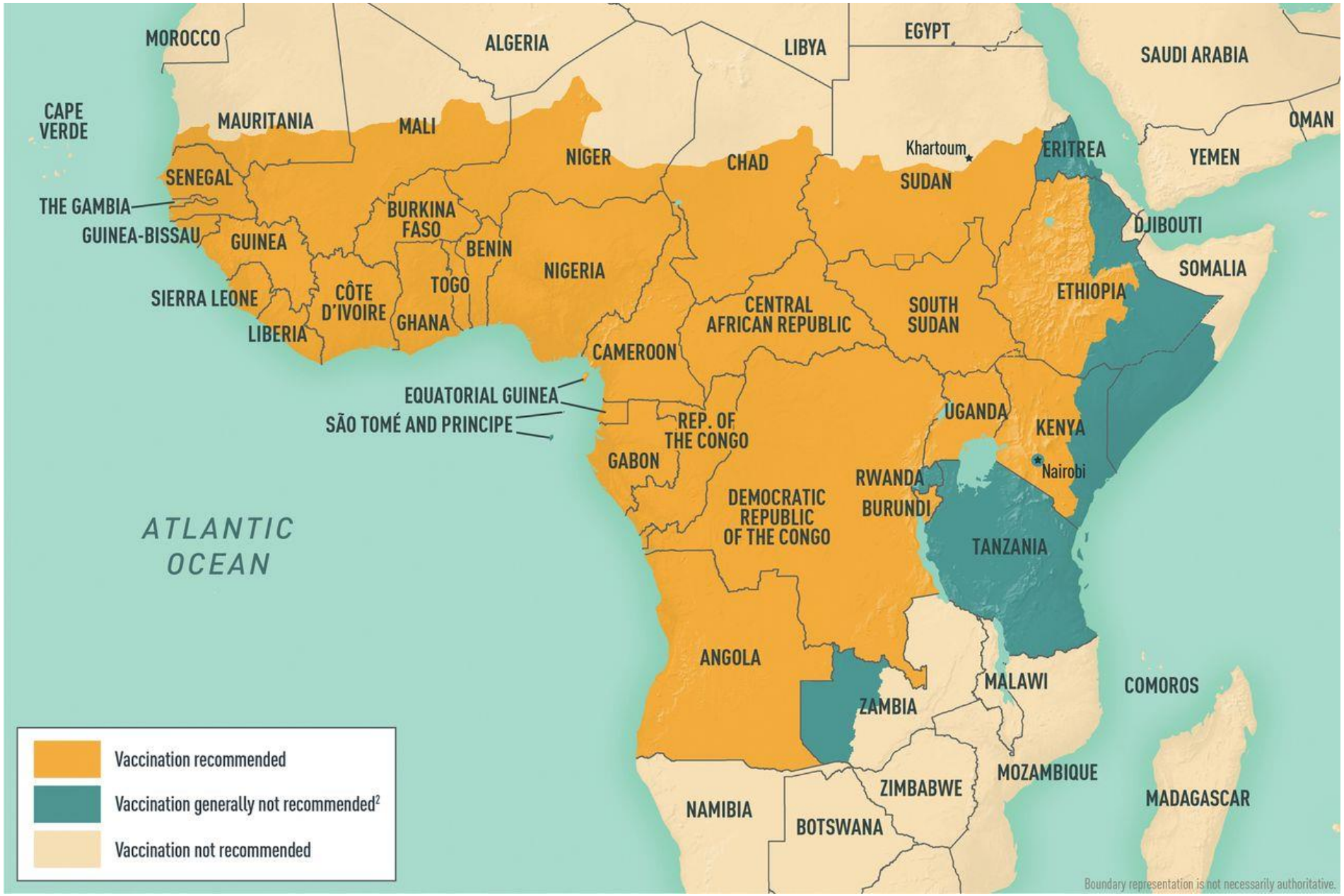
If benefit outweighs risk (Probably safe)

- Yellow fever
- Typhoid (Ty21a)
- Japanese encephalitis (inactivated)

Contraindicated (Theoretical Risk)

- MMR
- Varicella, Zoster
- LAIV (Influenza)
- BCG
- Oral typhoid vaccine
- Live attenuated Japanese Encephalitis

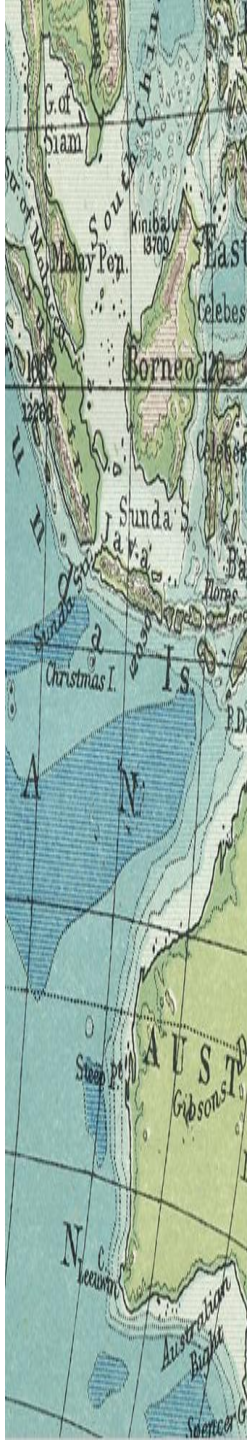
Guidelines for Vaccinating Pregnant Women.
CDC Yellow Book 2024


MOROCCO
ALGERIA
LIBYA
EGYPT
SAUDI ARABIA
CAPE VERDE
MAURITANIA
MALI
NIGER
CHAD
Khartoum
ERITREA
YEMEN
OMAN
SENEGAL
SUDAN
THE GAMBIA
GUINEA-BISSAU
GUINEA
BURKINA FASO
BENIN
NIGERIA
DJIBOUTI
SOMALIA
SIERRA LEONE
CÔTE D'IVOIRE
TOGO
GHANA
LIBERIA
CENTRAL AFRICAN REPUBLIC
SOUTH SUDAN
ETHIOPIA
CAMEROON
EQUATORIAL GUINEA
SÃO TOMÉ AND PRINCIPE
REP. OF THE CONGO
UGANDA
KENYA
Nairobi
GABON
RWANDA
BURUNDI
DEMOCRATIC REPUBLIC OF THE CONGO
TANZANIA
ATLANTIC OCEAN
ANGOLA
MALAWI
COMOROS
ZAMBIA
MOZAMBIQUE
ZIMBABWE
NAMIBIA
BOTSWANA
MADAGASCAR
Vaccination recommended
Vaccination generally not recommended[2]
Vaccination not recommended
Boundary representation is not necessarily authoritative.

YF vaccine & pregnancy

- Postpone travel if possible
- Safety not established, can give if travel is unavoidable, risk warrants
- Early studies suggested possible ⇧ abortion risk - not reproduced
- If used, booster dose is indicated [1]
- Transmitted in breastmilk- 3 cases

1. MMWR June 19, 2015 / 64(23);647-650



Vaccination in Pregnancy

Vaccine		General Recommendation for Use in Pregnant Women
Routine	Hepatitis A	May be used if benefit outweighs risk.
	Hepatitis B	Recommended in some circumstances.
	Human Papillomavirus (HPV)	Not recommended.
	Influenza (Inactivated)	Recommended.
	Influenza (LAIV)	Contraindicated.
	MMR	Contraindicated.
	MCV4	Inadequate data for specific recommendation.
	PCV13	Inadequate data for specific recommendation.
	PPSV23	Inadequate data for specific recommendation.
	Polio	May be used if needed.
	Td	Should be used if otherwise indicated.
	Tdap	Should be used if otherwise indicated.
	Varicella	Contraindicated.
	Zoster	Contraindicated.
Travel & Other	Anthrax	Low risk of exposure – not recommended. High risk of exposure – may be used.
	BCG	Contraindicated.
	Japanese Encephalitis	Inadequate data for specific recommendation.
	Meningococcal (MPSV4)	May be used if otherwise indicated.
	Rabies	May be used if otherwise indicated.
	Typhoid	Inadequate data for specific recommendation.
	Smallpox	Pre-exposure – contraindicated. Post-exposure – recommended.
	Yellow Fever	May be used if benefit outweighs risk.

VACCINE/IMMUNOBIOLOGIC	TYPE	USE
Immune globulins, pooled or hyperimmune	Immune globulin or specific globulin preparations	If indicated for pre- or postexposure use. No known risk to fetus
Vaccination of pregnant women is recommended		
Hepatitis B	Recombinant or plasma-derived	Recommended for women at risk of infection
Influenza[1]	Inactivated whole virus or subunit	All people >6 months, including women who will be or are pregnant during the flu season (September–March), regardless of trimester, and women at high risk for pulmonary complications, regardless of trimester
Tetanus-diphtheria (Td)	Toxoid	If indicated, such as lack of primary series or no booster within past 10 years
Tetanus-diphtheria-pertussis (Tdap)	Toxoid, acellular	Not contraindicated, but no data are available on safety, immunogenicity, and outcomes of pregnancy. ACIP recommends Td when tetanus and diphtheria protection are required but Tdap to add protection against pertussis in some situations. Second or third trimester is preferred.
Hepatitis A	Inactivated virus	No data are available on safety in pregnancy. Because hepatitis A vaccine is produced from inactivated hepatitis A virus, the theoretical risk of vaccination should be weighed against the risk of disease. Consider immune globulin rather than vaccine.
Pregnancy is a Precaution, and Under Normal Circumstances, Vaccination Should Be Deferred; Vaccine Should Only Be Given when Benefits Outweigh Risks		
Japanese encephalitis	Inactivated virus	No data are available on safety in pregnancy. Pregnant women who must travel to an area where the risk is high should be vaccinated when the theoretical risks are outweighed by the risk of disease.
Meningococcal meningitis	Polysaccharide	Meningococcal conjugate vaccine (MenACWY) is preferred for adults; however, no data are available on safety and immunogenicity in pregnant women. Meningococcal polysaccharide vaccine (MPSV4) can be administered during pregnancy if the woman is entering an epidemic area. Indications for prophylaxis are not altered by pregnancy; vaccine is

A 32 yr old G1P0 woman 18 weeks pregnant seeks advice and vaccination for a 2 wk trip to Costa Rica in 4 weeks

Two brief episodes of first trimester bleeding

Ultrasound - normal placenta

8 hr flight

Staying in small hotels in cities

What advice can you give this traveler?

0

A Discuss the advisability of the trip with the OB provider

0%

B Updating vaccines with Hepatitis A and possibly Typhoid is advised

0%

C Insect repellent can be safely used

0%

D Scuba diving is contraindicated

0%

E Purchase evacuation insurance and carry OB records

0%

All of the above

0%

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A mom is traveling to her family's home in Delhi to spend three months. She is breastfeeding her 6 mo old.

Which of the following can you tell her?

a. The baby won't need an anti-malarial if mom takes one
b. Breast pumps are not permitted on planes
c. She can receive the needed vaccines
d. All of the above

Case 3

- A 23 yr old with Crohn's disease for 15 years is planning a trip to South America for 2 months. She is on 10 mg Prednisone per day and has been on Humira for 10 years.

- A 44 yr old male is status post kidney transplant 3 yrs ago and taking a trip to Morocco to visit relatives. He is on Cellcept and has had a good year, after having a rejection episode 18 mo ago

Biologics

- Variable effect on the immune system
- All cause a degree of immune suppression that has impact on vaccine response and adverse events

- https://www.fda.gov/vaccines-blood-biologics/licensed-biological-products-supporting-documents

FDA approved biologics

	Route	Rheumatoid Arthritis	Plaque Psoriasis	Psoriatic Arthritis	Ankylosing Spondylitis	Juvenile Idiopathic Arthritis	Crohn's Disease	Ulcerative Colitis
Abatacept (Orencia®)*	SC,IV	X				X		
Adalimumab (Humira®)*	SC	X	X	X	X	X	X	X
Anakinra (Kineret®)*	SC	X						
Certolizumab pegol (Cimzia®)*	*SC	X					X	
Etanercept (Enbrel®)*	SC	X	X	X	X	X		
Golimumab (Simponi®)*	SC	X		X	X			
Infliximab (Remicade®)	IV	X	X	X	X		X	X
Rituximab (Rituxan) #	IV	X						
Tocilizumab (Actemra®)	IV	X				X		
Ustekinumab (Stelara®)*	SC		X					
Tofacitinib (Xeljanz®)**	Oral	X						

**SC injectable products allow for patient self-administration*
***First oral biologic available in US for rheumatoid arthritis*
 # Rituximab is also indicated as an antineoplastic.

Some caveats

- **All immunocompromised patients traveling outside of Europe, N America, Australia/New Zealand, Caribbean resorts are best seen in a Travel Medicine Clinic**
- **Time since transplant:**
  - **>1 year after organ transplant**
  - **> 2 years after stem cell transplant**
  - **no recent complications, on lower immunosuppression***
- **https://wwwnc.cdc.gov/travel/destinations/list**

Vaccinating the traveler : 3 Rs

Routine vaccines

Esp measles, polio & COVID-19

Required vaccines

Yellow fever

Meningococcal meningitis (Hajj)

Recommended

Table 2 Recommended Adult Immunization Schedule by Medical Condition or Other Indication, United States, 2024

Always use this table in conjunction with Table 1 and the Notes that follow. Medical conditions or indications are often not mutually exclusive. If multiple medical conditions or indications are present, refer to guidance in all relevant columns. See Notes for medical conditions or indications not listed.

VACCINE	Pregnancy	Immunocompromised (excluding HIV infection)	HIV infection CD4 percentage and count		Men who have sex with men	Asplenia, complement deficiency	Heart or lung disease	Kidney failure, End-stage renal disease or on dialysis	Chronic liver disease; alcoholism[a]	Diabetes	Healthcare Personnel[b]
			<15% or <200mm	≥15% and ≥200mm							
COVID-19	See Notes										
IIV4 or RIV4	1 dose annually										
LAIV4					1 dose annually if age 19 - 49 years		1 dose annually if age 19 - 49 years				
RSV	Seasonal administration. See Notes	See Notes				See Notes					
Tdap or Td	Tdap: 1 dose each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	*										
VAR	*		See Notes								
RZV	See Notes										
HPV	*	3 dose series if indicated									
Pneumococcal											
HepA											
Hep B	See Notes									Age ≥ 60 years	
MenACWY											
MenB											
Hib		HSCT: 3 doses[c]				Asplenia: 1 dose					
Mpox	See Notes				See Notes						See Notes

- Recommended for all adults who lack documentation of vaccination, **OR** lack evidence of immunity
- Not recommended for all adults, but recommended for some adults based on either age **OR** increased risk for or severe outcomes from disease
- Recommended based on shared clinical decision-making
- Recommended for all adults, and additional doses may be necessary based on medical condition or other indications. See Notes.
- Precaution: Might be indicated if benefit of protection outweighs risk of adverse reaction
- Contraindicated or not recommended *Vaccinate after pregnancy, if indicated
- No Guidance/ Not Applicable

a. Precaution for LAIV4 does not apply to alcoholism.

b. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations.

c. Hematopoietic stem cell transplant.

Vaccine Types

Live

Rotavirus
JE (Imojev)
OPV
MMR
YF
VZV
Oral Typhoid
Dengue

Inactivated

DTaP,DT, dT
IPV
Hep A
Rabies
TBE
JE
Shingles
Influenza

Subunit, Recombinant, Polysaccharide, Conjugate

Hep B
HiB
PPV23
PCV13,15,20
Meningococcal
HPV
Inj Typhoid

Toxoid

Tetanus
Diphtheria

Viral vector, mRna

COVID19

Precautions with live vaccines

- Not safe for certain populations (immunosuppressed, pregnant women)
- Circulating antibody can interfere with response
- Fragile – careful storage and handling

Yellow Fever vaccine

Contraindications

Age <6 mo

Egg/gelatin allergy

Immune suppression

Immune modulators

Organ transplantation

Thymus disorders

Malignant neoplasms

Precautions

Age 6-8 mo

Age > 60 yo

Pregnancy

Breastfeeding

Asymptomatic HIV

https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/yellow-fever

Measles vaccine?

Measles vaccine?

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Borneo
Celebes
Sunda S.
Java
Christmas I.
AUST
Gibsons
Australian
Basin

Advice?

- **Contingency plans**
- **Communications with home team**
- **Itinerary adjustment to avoid high risk situations**
- **Trip/medical/evacuation insurance**

Traveling with chronic conditions

- Medication supply
- Evacuation insurance
- Contingency plans
- Medical records
- In-flight needs
- IAMAT (International Association for Medical Assistance to Travelers)

Summary & Conclusions

Vaccinating the traveler : 3 Rs

Routine vaccines

Esp measles, polio & COVID-19

Required vaccines

Yellow fever

Meningococcal meningitis (Hajj)

Recommended

Summary- child travelers

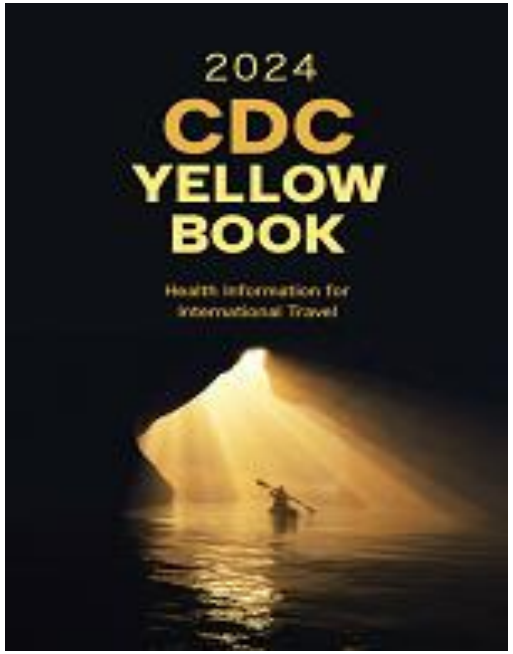
- Be aware of safety issues
- Travel with a medical kit
- Carry ORS packets & know how to handle diarrhea when traveling
- Consider rx of Azithromycin (10mg/kg/day) x 3 days, unreconstituted, to use if severe diarrhea occurs
- Excellent resource for parents https://www.healthychildren.org symptom checker

Summary - pregnant travelers

- Use all resources (advice, practical tips, medications & vaccines) to help your traveler prevent disease
- Virtually all medications and vaccines are less harmful than the diseases they prevent or treat
- The likeliest problems in a pregnant traveler are not vaccine preventable – diarrhea and DVT

Summary- Immunocompromised

- Be familiar with the definitions of differing immune compromise
- Read CDC Yellow Book Chapter on Immunocompromised travelers
- Help assess itinerary, timing, risk and benefits
- Update routine & travel vaccines
- Recognize risks of live vaccines in immune compromised travelers
- Assess drug interactions if prescribing for travelers diarrhea or malaria prevention



Road Safety

- Hire a car with a local professional driver rather than driving
- Check the tires, brakes, lights and safety belts and child safety straps on rental cars
- Wear safety belts in vehicles
- Do not use motorbikes, wear a helmet
- Use alcohol responsibly , avoid drug use
- Be aware of local traffic patterns if walking or cycling
- Avoid night travel

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The ISTM is the largest organization of professionals dedicated to the advancement of the specialty of travel medicine. Focused on the prevention and management of health problems related to international travel and migration, members include physicians, nurses, pharmacists and other health professionals from academia, government and the private sector. ISTM invites all who are interested in travel medicine to join and participate in the advancement of this field.

Learn More

Selected resources

- **Join ISTM! International Society of Travel Medicine www.istm.org**
- **General: Keystone, et al: Travel Medicine ,4th Ed.**
- **CDC Yellow Book 2024**
- **Cdc.gov/travel**
- **Am Acad Pediatrics Red Book 2021-2024**
- **https://www.immunize.org/vaccines/**
- **International Association for Medical Assistance to Travelers: www.iamat.org**

Selected resources: Pregnancy

- **General:** CDC Yellow Book 2024

  Keystone, et al : Travel Medicine, 4th Ed. 2018; Chapter 22

- **YF vaccination** Vaccine 2006 Feb 27;24(9):1421-6

- **Air travel** Magann EF[1],et al ;Travel and pregnancy outcomes: a review of pregnancy regulations and outcomes for passengers, flight attendants, and aviators. Obstet Gynecol Surv. 2010 Jun;65(6):396-402.

  ACOG Committee Opinion No. 746: Air travel during pregnancy:Obstetrics & Gynecology: August 2018 - Volume 132 - Issue 2 - p e64–e66

  Nicholas JS, et al. Aviat Space Environ Med 2000 Jun;71(6):647-8

- **DVT:** Lindqvist P, et al. Obstet Gynecol 1999;94:730-734

  Cannegieter SC et al .Pregnancy and travel-related thromboembolism. Thromb Res. 2013 Jan;131 Suppl 1:S55-8.

  Morteza Izadi,et al ; Do pregnant women have a higher risk for venous thromboembolism following air travel? Adv Biomed Res. 2015; 4: 60.

- **Vaccines** CDC. Guidelines for vaccinating pregnant women. Atlanta: CDC; 2024

- **Altitude:** https://www.theuiaa.org/mountaineering/advice-for-women-going-to-altitude/

- **Zika:** https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/09/management-of-patients-in-the-context-of-zika-virus
  - https://www.who.int/ith/updates/20170310/en/