Travel Vaccines

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What and why?

- What is a routine vaccine?
- What is a travel vaccine?
Routine Vaccines and International Travel

- Hepatitis A and B
- Polio
- MMR
- Varicella
- Td/Tdap
- Meningococcal
Recommended vs. Required

- Very few international requirements
  - Yellow Fever
  - Meningococcal
Patient Encounter

- Patient makes an appointment for a travel health visit

- Patient mentions that he/she is travel during a routine visit

- Patient makes an appointment for “vaccines only”
Barriers to Adult & Travel Vaccines in Primary Care

- Increasing cost of vaccines and biologics
- Poor reimbursement by insurance companies
- Vaccine handling/storage issues
- Cost of staff to manage vaccine program
- Constantly changing vaccine schedules and recommendations
- Practice not well-versed in vaccinology
- Travel medicine has emerged as a specialty
Routine

- Tetanus, diphtheria, pertussis
  - These bacteria still cause disease in developing countries
  - Tetanus grows worldwide, lives in contaminated soil, dust, manure and contaminated fomites
  - Can boost tetanus if more than 5 years since last dose for higher risk travelers (those in remote areas, vigorous activities)
  - Several countries still with endemic diphtheria
  - Pertussis cyclical in other countries, similar to U.S.
Influenza

- Viruses spread by respiratory droplet, contact with infected secretions
- Symptoms can lead to pulmonary complications and mortality
- Air travel major risk factor
- Southern Hemisphere flu season April through September
- Northern Hemisphere flu season October through May
- Epidemics found throughout the globe
- Tropics and subtropics flu season all year round
- Vaccination recommended for travelers, especially those in large tourist groups
Routine

- Measles, Mumps, Rubella
  - Should complete series prior to travel
  - Can give first dose as early as age 6 months, however that dose is not considered valid toward the two-dose recommendation on the ACIP schedule
Hepatitis A

- Liver virus found in infected stool; transmitted by contaminated food & water
- One of the most common vaccine-preventable infections acquired during travel
- Flu-like illness, jaundice, severe abdominal pain and diarrhea, commonly requiring hospitalization; mortality between 0.3% and 1.8%
- Risk for travelers is high due to nature of transmission
- Vaccination indicated for travelers to endemic regions
Hepatitis A Vaccine

- Two in U.S., Vaqta® (Merck) and Havrix® (GSK).
- Two dose series, second dose 6–12 months after 1st.
- Rapid, excellent antibody protection, within 2 weeks after 1st dose
- Second dose confers long-term protection, over 20 years
- Licensed for ages 1 year and up
- On pediatric immunization schedule in U.S. since 2005
- 0.5ml through age 18; 1ml ages 19 and up
- Given IM in the deltoid
- IG used if < 1 year old, or no time for vaccine
- IG offers short-term protection; used for post-exposure
- Vaccine can also be used for post-exposure
Hepatitis B

- Found in blood and body fluids; spread by contact with these fluids
- Vaccination indicated for travel to areas of high endemnicity and epidemics
- Risk for travelers generally low unless visiting area with high endemnicity or current epidemic
- Risk can go up exponentially if traveler requires urgent medical or dental care
Hepatitis B Vaccine

- Several products available in U.S. including Engerix® (GSK), Recombivax® (Merck), and pediatric combination vaccines

- Three dose series, confers long-term immunity when completed over 20 years; day 0, day 30 and 6 months

- Alternate dosing schedules available for accelerating immunity, a good choice for travelers when time permits

- Licensed for use across lifespan, on pediatric schedule

- 0.5ml ages 0 through 18, 1ml age 19 and up

- Given IM in deltoid; use vastus in peds < 1 year old
Hepatitis B
Hepatitis A/B Vaccine Combined

- Twinrix® (GSK)
  - Licensed for use ages 18 and up; confers long-term immunity when series complete
  - Follows same schedule and acceleration options as Hepatitis B (day 0, 30, 6 months)
  - Dose of Hepatitis A antigen is decreased in the combination product, therefore not a good option for travelers who only have time for one dose before departure.
  - 1ml IM in the deltoid
Routine

- Polio

  - Virus spread by fecal–oral route, or less commonly oral–oral
  - Can cause paralysis and meningitis
  - Still endemic to 3 countries, others have occasional outbreaks
  - Risk for travelers is low, unless visiting country with recent outbreak or an endemic country; also post–disaster
  - Vaccination indicated for these travelers
Polio

- IPOL® (Sanofi) only current monovalent product in U.S., several combination vaccines available for peds

  - IPOL® licensed for ages 6 weeks and up
  - Primary series good for ~10 years after last dose
  - Good immune memory created with 1 adult boost, for lifetime
  - Inactive, low incidence of side-effects
  - 0.5ml subq outer arm
Meningococcal

- Bacteria spread through contact with nasopharyngeal secretions
- Causes meningitis and sepsis, leading to neurologic sequelae if not diagnosed and treated rapidly
- Peds are given first dose at adolescent well-visit, ACIP
- Boosted if still at risk 5 years later
- Vaccination indicated for travelers to Meningitis Belt, or countries with current epidemics
Meningococcal
Meningococcal

- New peds combo-vaccine that only covers 2 serotypes – not to be used for travelers, MenHibrix® (GSK).
- Separated into conjugates (MCV4) and polysaccharides (MPSV4)
  - Menveo® (Novartis) MCV4 – licensed ages 2 to 55; 0.5ml IM; 5 years immunity
  - Menactra® (Sanofi) MCV4 – licensed ages 9 months to 55; 0.5ml IM; 5 years immunity
  - Menomune® (Sanofi) MPSV4 – licensed ages 2 and up, but recommended for ages 55 and up; 0.5ml subq; 3 years immunity
Exotics/Specialty Vaccines

- Typhoid fever
- Yellow Fever
- Japanese Encephalitis
- Rabies
Typhoid Fever

- Bacteria found in contaminated food & water
- Spread by ingestion of the same; can be passed person to person via contact with stool or urine of infected person/carrier
- Endemic to Central, South Americas, Africa, Asia, Eastern Europe
- Causes fever, rash, progressing to GI illness which leads to intestinal perforation if left untreated; mortality 20%
- Risk for travelers high due to nature of transmission
- Vaccination indicated for travelers to endemic regions
Incidence of typhoid fever

- Strongly endemic
- Endemic
- Sporadic cases
Two vaccines available in U.S., Typhim Vi® (Sanofi) and Vivotif® (Berna)

50–80% Efficacy for both

Typhim Vi® is inactive, licensed for ages 2 and up; 1 dose confers immunity for 2 years

Typhim Vi® given 0.5ml IM, deltoid

Vivotif® is live bacteria, series of 4 tablets taken orally, confers immunity for 5 years; licensed ages 6 and up

Vivotif® must be refrigerated, and taken on empty stomach
Yellow Fever

- Virus carried by infected mosquitoes
- Endemic to many countries in South America and Africa
- Spread ONLY by mosquito bite, not person to person
- Causes flu-like symptoms, progressing to organ failure
- High morbidity/mortality rates
- Vaccination recommended for travelers to endemic regions, may be required to enter into country
- Vaccine carries side-effect profile higher than other vaccines
Yellow Fever
Yellow Fever
Yellow Fever

- YF-Vax® (Sanofi Pasteur) only U.S. product available
- One dose confers excellent antibody protection for 10 years
- Licensed for ages 9 months and up
- Caution in use over 60 years old
- Provider must be accredited by NY State to give YF vaccine
- 0.5ml subq
- Side-effects can occur up to 28 days post vaccination
- Local reactions are common and not dangerous
- Vaccine grown in egg protein
- Proof of vaccination documented on yellow card, aka International Certificate of Vaccination (ICV)
- Proof of vaccination is required for entry into several countries in South America and Africa
Japanese Encephalitis

- Virus carried by mosquitoes infected through enzootic cycle
- Endemic to rural regions of Asia, South Asia and Southeast Asia
- Causes fever, headache, encephalitis
- High morbidity and mortality rates
- Risk to U.S. travelers is low if travel is limited to urban areas for less than 2 weeks
- Itinerary and planned activities are important to consider
- Vaccination recommended for travelers to endemic regions or epidemic regions
Japanese Encephalitis

[Map showing regions at risk for Japanese Encephalitis]
Japanese Encephalitis

- IXIARO® (Intercell, distributed by Novartis) is only licensed vaccine in the U.S.
- JE-VAX® (Sanofi) no longer available
- Licensed for ages 2 months and up (May 20, 2013)
- Two dose series, day 0 and day 28, confers excellent antibody protection after 2\textsuperscript{nd} dose, lasting only 1 year
- Must boost yearly if patient continues to be at risk
- Human cell culture vaccine, few side effects
- Expensive
- 2mos–3 years, 0.25ml IM; 3 years and up, 0.5ml IM, deltoid
- ACIP June 2013 meeting agenda – vote for peds indication
Rabies

- Virus found in saliva and brain tissue of infected animals; transmitted by the bite/scratch of infected animal
- Causes rapid deterioration of nervous system with almost certain mortality
- Can take weeks or months for symptoms to present
- Risk for travelers dependent on location and activities
- Recommended for travelers spending increased time outdoors in wild, or working with animals
- Prompt wound care can decrease virus transmission
- Vaccine can be difficult to find due to supply issues
Rabies Vaccine

- Pre-exposure regimen should not be started unless it can be completed prior to departure
- Pre-exposure regimen is day 0, 7, and 21 or 28
- 1ml IM, inactive virus, deltid
- Good antibody protection for between 2–6 years once complete, must get titers every two years if still at risk
- Once pre-exposure regimen is complete, still need 1 more dose of vaccine after exposure
- Side effects not common
- Expensive
- Pre-exposure supply affected in U.S. in recent years
- Review wound care regimen and evacuation insurance with clients who are at high risk and can’t find vaccine before departure
Other Exotics/Specialty Vaccines

- **Cholera**
  - Vaccine no longer available in U.S. d/t low efficacy
  - Available in Canada under name Dukoral® (Berna).

- **Tick–borne Encephalitis**
  - Found in temperate regions of Europe and Asia
  - 3 subtypes of virus, one having mortality 20–40%
  - Vaccine available in Europe, Canada; 3–dose series
When to refer

- International travel necessitates a travel health visit with an experienced provider in travel health that has access to current surveillance data.
- Travel health visit should include vaccinations as well as counseling on food/water borne illness, insect borne disease, safety and security, altitude illness, travel evacuation, non-vaccine preventable diseases and how to manage illness during travel.
- Co-management between Primary Care and Travel Health specialist can and often occurs.
Low risk patients

- Low risk never means no risk
- VFRs
- Dangers of counseling against immunization
- Weigh risk of vaccination issues vs. risk of disease
- Consider all factors (itinerary, medical hx, duration of exposure, activities, etc.)
Resources for Healthcare Providers and Patients

- International society for travel medicine
  - www.istm.org
- U.S. Centers for Disease Control
  - www.cdc.gov/travel
- World Health Organization
  - www.who.int.
- Passport Health, LLC.
  - www.Passporthealthusa.com
- Sanofi Pasteur
  - www.travelvacs.us
Sources
