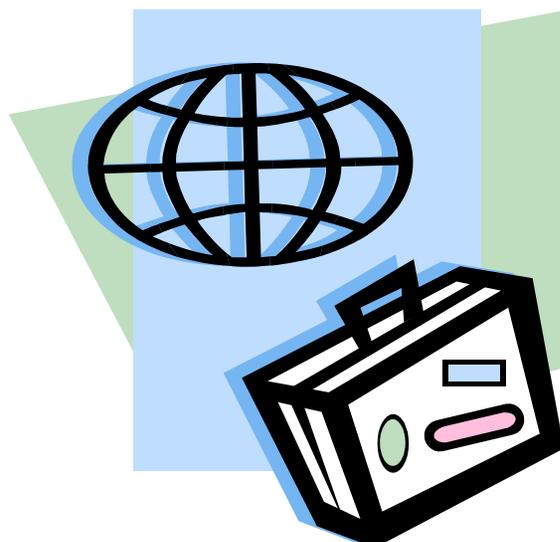




THE PRESENTATION WILL BEGIN  
SHORTLY.



# VACCINATING THE INTERNATIONAL TRAVELER



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**NORTH DAKOTA**  
DEPARTMENT *of* HEALTH

- In 2009 Americans made over 61 million trips outside of the United States.



### Factors to keep in mind

- Region of world
- Traveler's age
- Traveler's health
- Length of trip
- Planned activities

# PRE-TRAVEL CONSULTATION



- Risk Assessment
  - Where
  - When
  - What
- Risk Communication
  - Baseline knowledge
  - Risk reduction measures
- Risk Management
  - Vaccines
  - Medications
  - Education
  - Guidance

# NEED TO BE UP-TO-DATE ON ROUTINE VACCINES

## Recommended Adult Immunization Schedule—United States - 2012

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group<sup>1</sup>

VACCINE ▼	AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza <sup>2</sup>		1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) <sup>3,*</sup>		Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella <sup>4,*</sup>		2 Doses					
Human papillomavirus (HPV) Female <sup>5,*</sup>		3 doses					
Human papillomavirus (HPV) Male <sup>5,*</sup>		3 doses					
Zoster <sup>6</sup>						1 dose	
Measles, mumps, rubella (MMR) <sup>7,*</sup>		1 or 2 doses			1 dose		
Pneumococcal (polysaccharide) <sup>8,9</sup>		1 or 2 doses					1 dose
Meningococcal <sup>10,*</sup>		1 or more doses					
Hepatitis A <sup>11,*</sup>		2 doses					
Hepatitis B <sup>12,*</sup>		3 doses					

\*Covered by the Vaccine Injury Compensation Program



For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection



Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)



Tdap recommended for ≥65 if contact with <12 month old child. Either Td or Tdap can be used if no infant contact



No recommendation

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at [www.hrsa.gov/vaccinecompensation](http://www.hrsa.gov/vaccinecompensation) or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines) or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

# CATCHING-UP AN ADULT

## ○ Tdap/Td

- Needs booster
  - Tdap if never received before, once in lifetime
    - If received Td recently should still get a Tdap
  - Td if received Tdap, more than 10 years ago
- No documentation, need series of 3
  - 1<sup>st</sup> and 2<sup>nd</sup> separated by 4 weeks
  - 3<sup>rd</sup> dose 6 months after 2<sup>nd</sup>
  - May need to complete upon return



## ○ Hepatitis B

- Started, didn't finish
  - Do **NOT** restart
  - Has 1
    - 2<sup>nd</sup> dose now, 3<sup>rd</sup> dose in 8 weeks
  - Has 2
    - 3<sup>rd</sup> dose now
- No documentation, need series of 3
  - 1<sup>st</sup> and 2<sup>nd</sup> separated by 4 weeks
  - 3<sup>rd</sup> dose 8 weeks after 2<sup>nd</sup>
  - Watch for this---3rd dose must be 16 weeks after 1st



# CATCHING-UP AN ADULT CONTINUED



## ○ Hepatitis A

- Started, didn't finish
  - 2<sup>nd</sup> dose now
- No documentation, need 2 dose series
  - Separated by 6 months
  - May have to complete upon return

## ○ Twinrix (HepA+HepB)

- Traditional
  - No documentation, need series of 3
    - 1<sup>st</sup> and 2<sup>nd</sup> separated by 4 weeks
    - 3<sup>rd</sup> dose 6 months after 1<sup>st</sup>
- Alternate (0, 7d, 21-30d, 12m)
  - Now
  - 2<sup>nd</sup> dose in 7 days
  - 3<sup>rd</sup> dose 21-30 days
  - 4<sup>th</sup> dose *booster* in 1 yr after 1<sup>st</sup> dose
  - If interval between doses is longer, **don't** need to restart

# WHERE ARE THEY GOING & WHAT DO THEY NEED?



## Resources

- CDC by destination  
(recommend book marking in your offices)
  - <http://wwwnc.cdc.gov/travel/destinations/list.htm>
- 2012 Yellow Book
  - <http://wwwnc.cdc.gov/travel/yellowbook/2012/table-of-contents.htm>
- CDC Travelers' Health
  - <http://wwwnc.cdc.gov/travel/>

## Requirements

- Yellow Fever
  - Sub-Saharan Africa and tropical South Africa
  - Patient may need a certificate of vaccination
- Meningococcal
  - Saudi Arabia during the Hajj  
*October 24-27, 2012*

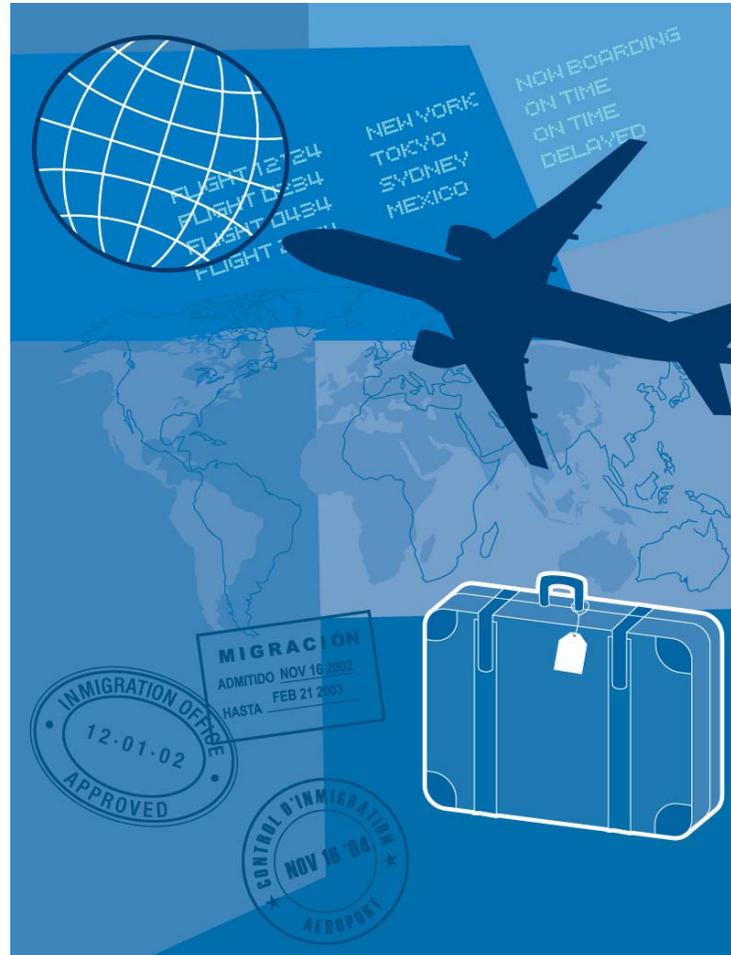
## Vaccine-Preventable Diseases

Vaccine recommendations are based on the best available risk information. Please note that the level of risk for vaccine-preventable diseases can change at any time.

Vaccination or Disease	Recommendations or Requirements for Vaccine-Preventable Diseases
<a href="#">Routine</a>	Recommended if you are not up-to-date with routine shots, such as measles/mumps/rubella (MMR) vaccine, diphtheria/pertussis/tetanus (DPT) vaccine, poliovirus vaccine, etc.
<a href="#">Hepatitis A</a> or immune globulin (IG)	Recommended for all unvaccinated people traveling to or working in countries with an intermediate or high level of hepatitis A virus infection ( <a href="#">see map</a> ) where exposure might occur through food or water. Cases of travel-related hepatitis A can also occur in travelers to developing countries with "standard" tourist itineraries, accommodations, and food consumption behaviors.
<a href="#">Hepatitis B</a>	Recommended for all unvaccinated persons traveling to or working in countries with intermediate to high levels of endemic HBV transmission ( <a href="#">see map</a> ), especially those who might be exposed to blood or body fluids, have sexual contact with the local population, or be exposed through medical treatment (e.g., for an accident).
<a href="#">Typhoid</a>	Recommended for all unvaccinated people traveling to or working in the Caribbean, especially if staying with friends or relatives or visiting smaller cities, villages, or rural areas where exposure might occur through food or water.
<a href="#">Rabies</a>	Recommended for travelers spending a lot of time outdoors, especially in rural areas, involved in activities such as bicycling, camping, or hiking. Also recommended for travelers with significant occupational risks (such as veterinarians), for long-term travelers and expatriates living in areas with a significant risk of exposure, and for travelers involved in any activities that might bring them into direct contact with bats, carnivores, and other mammals. Children are considered at higher risk because they tend to play with animals, may receive more severe bites, or may not report bites.

# MOST COMMON TRAVEL RELATED VACCINES

- Hepatitis A
- Hepatitis B
- Japanese encephalitis (JE)
- Meningococcal
- Polio (adult booster)
- Rabies
- Typhoid fever
- Yellow fever



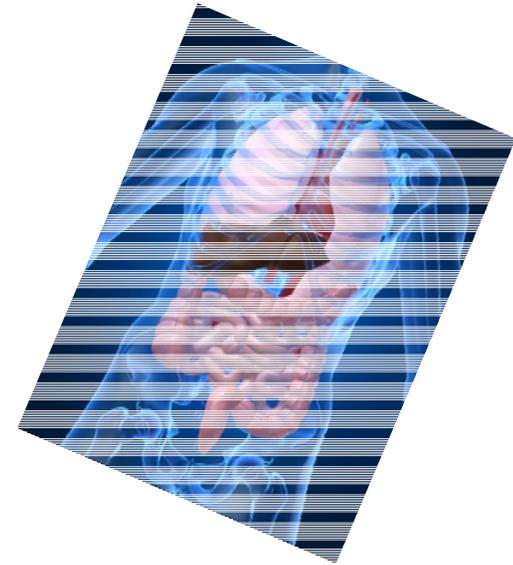
# HEPATITIS A



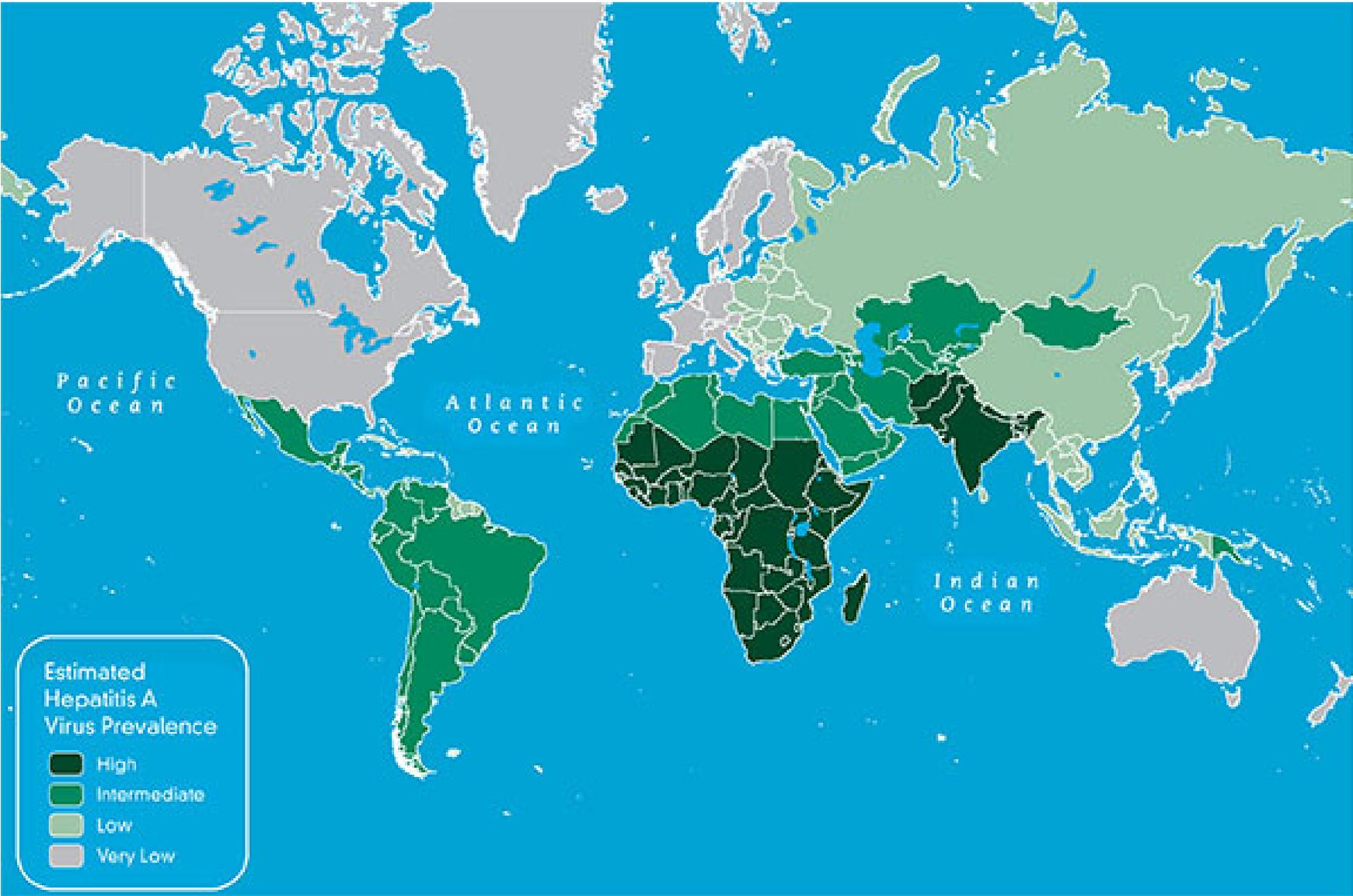
- Transmission
  - Most often fecal-oral route. Less often by swallowing food or water that's contaminated.
- Vaccination
  - Series of 2 intramuscular shots 6 months apart
  - 1 dose can provide some protection with in 2 weeks, start series prior to leaving if necessary and finish upon return
  - (in those  $\leq 40$  years of age)

# HEPATITIS A

- People who are traveling for international adoption should be advised that hepatitis A vaccination is recommended for all previously unvaccinated household members and other people who anticipate close personal contact (such as regular babysitters) with an international adoptee from a country of high or intermediate endemicity during the first 60 days after arrival of the adoptee in the United States.
  - First dose 2 weeks before arrival of adoptee.



Map 3-03. Estimated prevalence of hepatitis A virus<sup>1,2</sup>



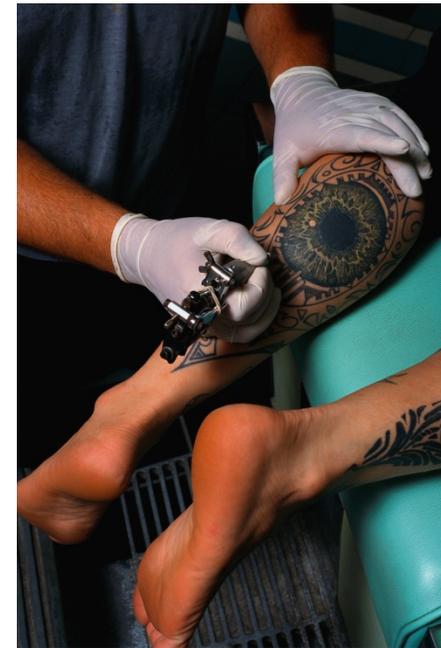
# HEPATITIS B

## ○ Transmission

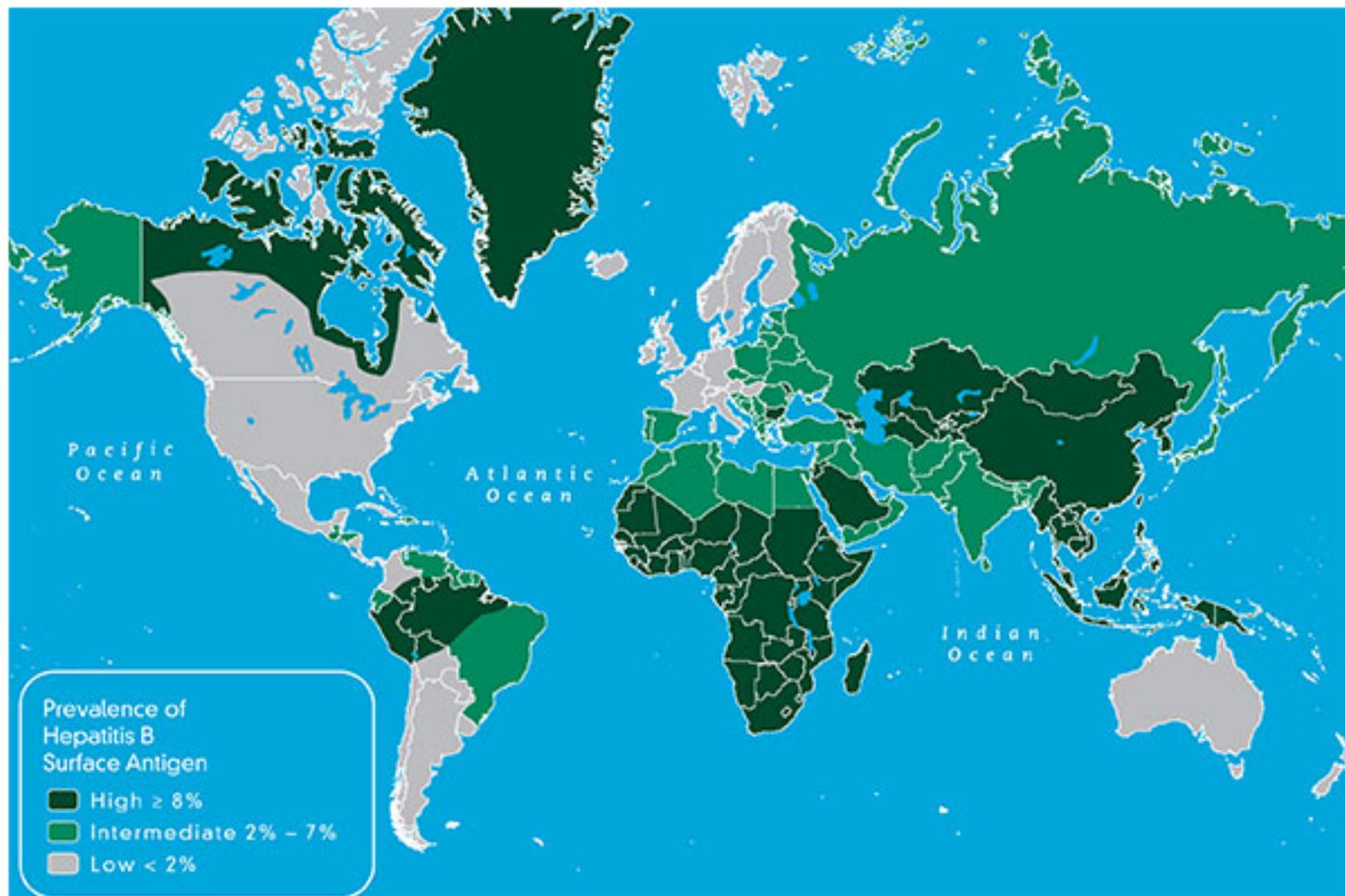
- Direct contact with blood, semen, or other bodily fluids
  - *Can survive in dried blood up to 7 days.*



Ideal to start 6 months prior to leaving, should be at least initiated even if can't finish prior to departure.



Map 3-04. Prevalence of chronic infection with hepatitis B virus, 2006



# JAPANESE ENCEPHALITIS (JE)

*Travelers on short urban visits have minimal risks.*



## ○ Transmission

- Bite of infected mosquito

## ○ Vaccination

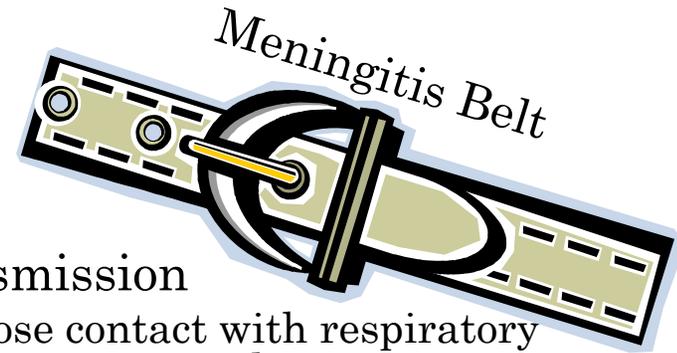
- 1 licensed in US
  - Ixiaro
- 2 dose series spaced 28 days apart, should be completed  $\geq 1$  week prior to departure

# JAPANESE ENCEPHALITIS



- The ACIP recommends JE vaccine for travelers who plan to spend  $\geq 1$  month in endemic areas during the JEV transmission season. This includes long-term travelers, recurrent travelers, or expatriates who will be based in urban areas but are likely to visit endemic rural or agricultural areas during a high-risk period of JEV transmission. Vaccine should also be considered for the following:
  - Short-term ( $< 1$  month) travelers to endemic areas during the JEV transmission season, if they plan to travel outside an urban area and their activities will increase the risk of JEV exposure. Examples of higher-risk activities include: 1) substantial time outdoors in rural or agricultural areas, especially during the evening or night; 2) participating in extensive outdoor activities (such as camping, hiking, trekking, biking, fishing, hunting, or farming); and 3) staying in accommodations without air conditioning, screens, or bed nets.
  - Travelers to an area with an ongoing JE outbreak.
  - Travelers to endemic areas who are uncertain of specific destinations, activities, or duration of travel.
  - JE vaccine is not recommended for short-term travelers whose visits will be restricted to urban areas or times outside a well-defined JEV transmission season.

# MENINGOCOCCAL



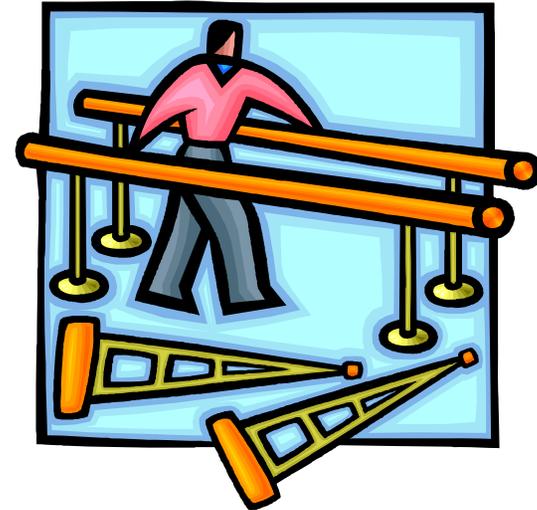
- Transmission
  - Close contact with respiratory secretions or saliva
- Vaccination
  - 2 dose series, 8 weeks apart
  - A one-dose primary series of Menactra is licensed for people aged 2–55 years.
  - A two-dose primary series of Menactra is licensed for children aged 9–23 months.
  - Menveo is licensed for people aged 2–55 years.
  - Quadrivalent meningococcal polysaccharide vaccine (MPVS4) (Menomune) is licensed for use among people aged  $\geq 2$  years.
  - Approximately 7–10 days are required after vaccination for development of protective antibody levels.

Map 3-13. Areas with frequent epidemics of meningococcal meningitis



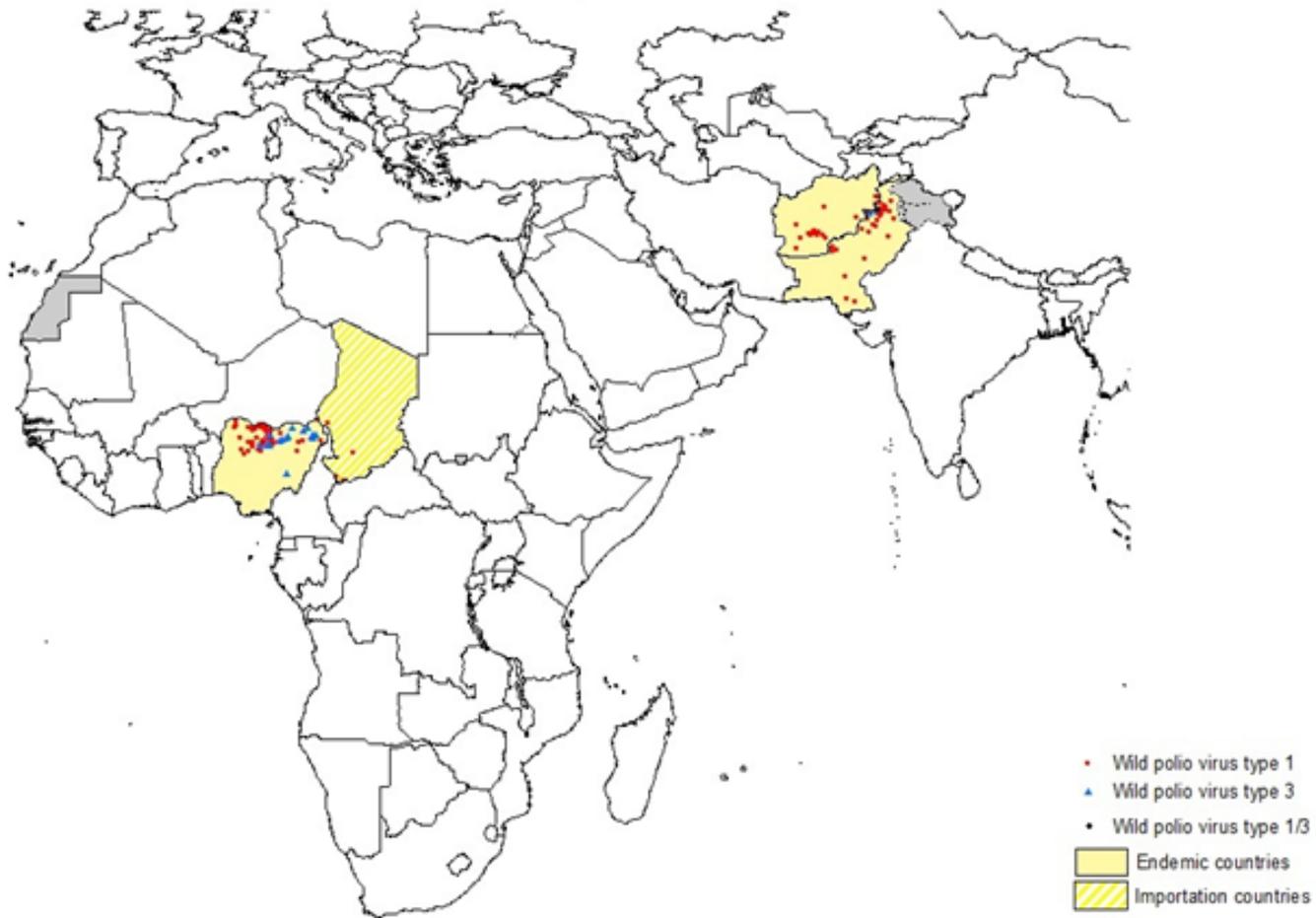
# POLIO (ADULT BOOSTER)

- Transmission
  - Fecal-oral
  - Oral
- Vaccination
  - Vaccination History w/ IPV or OPV
    - 1 single IPV booster dose
  - Unknown status
    - 3 doses of IPV
    - 4 weeks between 1<sup>st</sup> & 2<sup>nd</sup>
    - 6 months between 2<sup>nd</sup> & 3<sup>rd</sup>
    - Alternative
      - 3 doses 4 weeks apart
      - Have <8 weeks, 2 doses 4 weeks apart
      - Have <4 weeks, 1 dose of IPV



## Polio cases in the world in 2012

### Wild Poliovirus - 2012 01 January - 02 October



Data in HQ as of 02 October 2012

Excludes viruses detected from environmental surveillance and vaccine derived polioviruses. 1 WPV1 case in Gilgit Baltistan, date of onset 11 August 2012, does not appear on the map.

# RABIES



- Transmission
  - Saliva of rabid mammal
- Vaccination
  - Pre-exposure (based on risk)
    - 3 injections before travel
      - Don't start if can't finish prior to leaving
    - 0, 7d, and 21-28d

# RABIES VACCINE SUPPLY

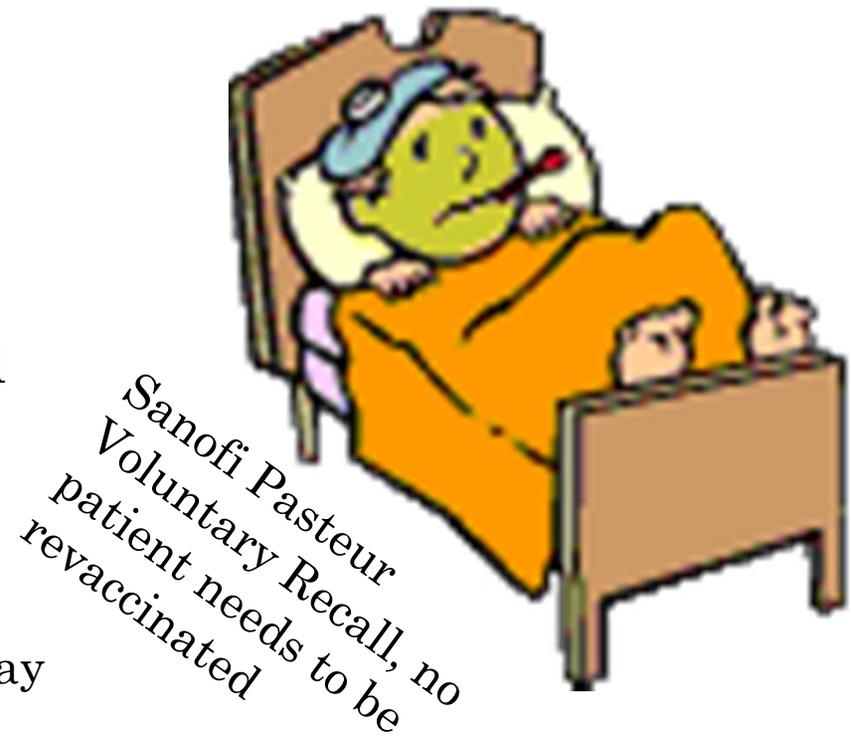


- Rabies vaccine for pre-exposure use is available only from wholesale distributors who have existing stocks of RabAvert vaccine from Novartis.
- At this time, there are no limitations in the supply of rabies immune globulin or vaccine for post-exposure prophylaxis (PEP).
- Sanofi Pasteur, maker of IMOVAX (Rabies Vaccine), is currently unable to directly supply rabies vaccine for pre-exposure vaccination.
- Sanofi Pasteur will continue to supply rabies vaccine for PEP to health care providers who are treating patients who have had documented rabies exposures.
- Novartis, makers of RabAvert (Rabies Vaccine), is also currently unable to directly supply rabies vaccine for pre-exposure vaccination.
- Additional lots of RabAvert and IMOVAX are expected to be released in the coming months. These lots are expected to return supplies to normal levels.



# TYPHOID FEVER

- Transmission
  - Contaminated water or food
- Vaccination
  - Oral, Live... (Vivotif)
    - Four doses: one capsule every other day for a week (day 1, day 3, day 5, and day 7). The last dose should be given at least 1 week before travel to allow the vaccine time to work.
      - Good for 5 years
  - Vi Capsular (Typhim Vi)
    - 1 dose intramuscular
      - Good for 2 years



# TYPHOID VACCINE RECALL (TYPHIM VI)



- On September 24, 2012, Sanofi Pasteur voluntarily recalled several lots of Typhim Vi<sup>®</sup> vaccine (prefilled syringes and 20-dose vials) due to these lots being at risk for lower antigen content.
  - There is no safety concern related to this action.
- The NDDoH recommends that you evaluate your records for patients who received the recalled doses and notify them that there is a potentially lower antigen level but revaccination due to this recall is not necessary.
- Also, if you have doses in your inventory from the recalled lots, they should not be administered.



## YELLOW FEVER

- Transmission
  - Mosquito
  - Human-Mosquito-Human
- Vaccination
  - 1 subcutaneous injection
  - If possible delay vaccinating breastfeeding mom
  - 10 yr revaccination, if travel indicates the need
- ICVP
  - Can be obtained by your clinic by contacting NDDoH to start the process
- Stamp of Vaccination for Patient can be obtained at these ND sites
  - Bismarck-PH
  - Fargo-PH, Innovis, Sanford Children's & Sanford Health
  - Grand Forks-Altru, GF Family Medicine Residency, Altru Pediatrics
  - Minot-Trinity Health
  - Williston- PH

## Table 3-24. Countries that require proof of yellow fever vaccination from all arriving travelers<sup>1</sup>

Angola	Gabon
Benin	Ghana
Burkina Faso	Guinea-Bissau
Burundi	Liberia
Cameroon	Mali
Central African Republic	Niger
Congo, Republic of the	Rwanda
Côte d'Ivoire	São Tomé and Príncipe
Democratic Republic of Congo	Sierra Leone
French Guiana	Togo

<sup>1</sup> Country requirements for yellow fever vaccination are subject to change at any time; therefore, CDC encourages travelers to check with the destination country's embassy or consulate before departure.

**Table 3-21. Countries with risk of yellow fever virus (YFV) transmission<sup>1</sup>**

AFRICA			CENTRAL AND SOUTH AMERICA
Angola	Equatorial Guinea	Mauritania <sup>2</sup>	Argentina <sup>2</sup>
Benin	Ethiopia <sup>2</sup>	Niger <sup>2</sup>	Bolivia <sup>2</sup>
Burkina Faso	Gabon	Nigeria	Brazil <sup>2</sup>
Burundi	Gambia, The	Rwanda	Colombia <sup>2</sup>
Cameroon	Ghana	Senegal	Ecuador <sup>2</sup>
Central African Republic	Guinea	Sierra Leone	French Guiana
Chad <sup>2</sup>	Guinea-Bissau	Sudan <sup>2</sup>	Guyana
Congo, Republic of the	Kenya <sup>2</sup>	Togo	Panama <sup>2</sup>
Côte d'Ivoire	Liberia	Uganda	Paraguay
Democratic Republic of the Congo <sup>2</sup>	Mali <sup>2</sup>		Peru <sup>2</sup>
			Suriname
			Trinidad and Tobago <sup>2</sup>
			Venezuela <sup>2</sup>

<sup>1</sup> Countries/areas where "a risk of yellow fever transmission is present," as defined by the World Health Organization, are countries or areas where "yellow fever has been reported currently or in the past, plus vectors and animal reservoirs currently exist" (see the current country list within the International Travel and Health publication (Annex 1) at [www.who.int/ith/en/index.html](http://www.who.int/ith/en/index.html) .

<sup>2</sup> These countries are not holoendemic (only a portion of the country has risk of yellow fever transmission). See [Maps 3-18](#) and [3-19](#) and yellow fever vaccine recommendations ([Yellow Fever and Malaria Information, by Country](#)) for details.

# MINIMUMS FOR VACCINATION

## AGE (EARLIEST CAN START)

- Hep A
  - 12 months
- Hep B
  - Birth
- Twinrix
  - 18 years
- DTaP
  - 6 weeks
- IPV
  - 6 weeks
- MMR
  - 12 months
- MCV4
  - 9 months (Menactra)
- Japanese encephalitis (JE)
  - 17 years
- Rabies
  - 2 years-Rabavert
  - Infants-Imovax
- Typhoid fever
  - Oral-6 years
  - Intramuscular-2 years
- Yellow fever
  - 6 months if necessary, prefer 9 months

## COMPLETION

(Earliest Possible for adults)

- Hep A
  - 6 months
- Hep B
  - 4 months
- Twinrix
  - 30 days, with booster in 1 year
- Td/Tdap
  - 6 months (no series prior)
- IPV
  - 3 months (no series prior)
- MMR
  - 1 month
- MCV4
  - 2 months
- Japanese encephalitis (JE)
  - 1 month
- Rabies
  - 1 month
- Typhoid fever
  - Type dependent
- Yellow fever
  - That day

# VACCINE ADMINISTRATION

- It is **SAFE** to give all vaccines commonly used simultaneously at separate sites.
  - May also do a TB skin test same day
- If not given simultaneously
  - Inactivated may be given at any time
  - Live virus (MMR, varicella, yellow fever, live attenuated influenza) must be spaced by 28 days (30 days for yellow fever)
  - Must wait 4-6 weeks after live vaccine administration to do TB skin test



# MISSED DOSES AND BOOSTERS

## ALL OTHER VACCINES

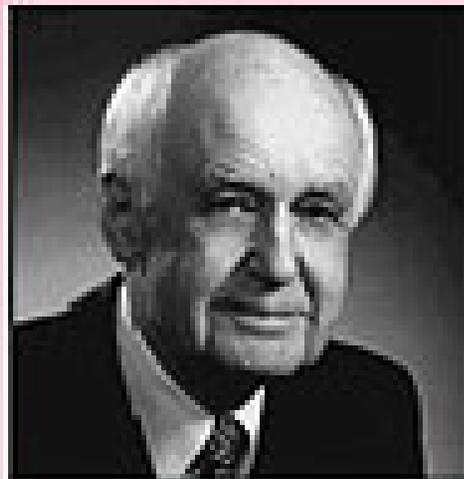
- No need to restart series
- Administer next scheduled dose when patient returns



## Rabies, TYPHOID & Td

- Rabies
  - If continued risk, test antibody titer to determine need for further vaccine
- Typhoid (only if needed per travel)
  - Oral, repeat every 5 years
  - Injection, repeat every 2 years
- Td (travel doesn't matter)
  - Every 10 years

# Vaccine-Preventable Diseases



## THE PINK BOOK

Epidemiology and Prevention of Vaccine Preventable Disease has in [Appendix B](#), Foreign Language Terms.

This can help you translate vaccinations received outside the United States.

Type your  
QUESTIONS in the  
chat window at the  
right  
?

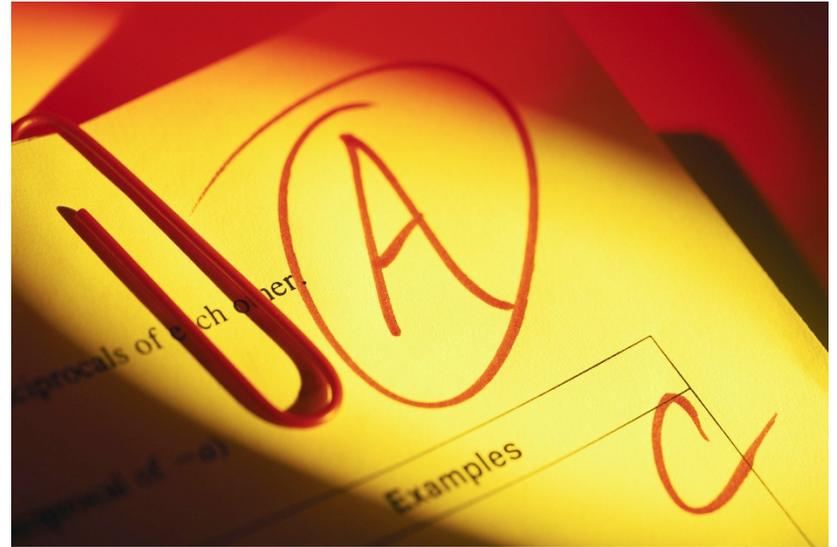
This presentation will be posted to our website:

[www.ndhealth.gov/immunize](http://www.ndhealth.gov/immunize)

- After the presentation, questions may be sent to:
- Molly Howell [mahowell@nd.gov](mailto:mahowell@nd.gov)
- Abbi Pierce [apierce@nd.gov](mailto:apierce@nd.gov)
- Mary Woinarowicz [mary.woinarowicz@nd.gov](mailto:mary.woinarowicz@nd.gov)
- Amy Schwartz [amschwartz@nd.gov](mailto:amschwartz@nd.gov)
- Janna Hoisington [jahoisington@nd.gov](mailto:jahoisington@nd.gov)
- Stacy Lovelace [slovelace@nd.gov](mailto:slovelace@nd.gov)



# POST-TEST



## ○ Post-test

- Nurses interested in continuing education credit, visit [www.ndhealth.gov/immunize/posttest/](http://www.ndhealth.gov/immunize/posttest/)
- Successfully complete the five-question post-test to receive your certificate
- Credit for this session available until

**Wednesday, December 19<sup>th</sup> 5pm**