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HEALTHCARE SUMMIT 2018

Take Your Shot! Adult and Pediatric Immunizations

Stan Grogg, DO
AOA's Liaison to ACIP
Professor Emeritus
Oklahoma State University- CHS

DO you have yours? ???

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Objectives

- After the presentation the participant should be able to
  - Know the appropriate vaccinations for healthcare professionals
  - Understand the need for vaccinations
  - Advise adult and pediatric patients about their recommended vaccinations
  - And want to go or support a global health outreach trip☺.

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Conflicts of interest

- Speaker's Bureau
  - Sanofi: vaccines
  - Pfizer: meningococcal type B vaccines
- Consultant
  - Sanofi: adolescent vaccines
- I will not be using any slides from a pharmaceutical's kit
- Unless recommended by the ACIP, I will not be discussing any off-label indications

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References

- Why Immunize: https://www.cdc.gov/vaccines/vac-gen/why.htm
- Vaccine quiz, what do you need?: https://www2.cdc.gov/nip/adultimmsched/results.asp
- Vaccines recommended for HCP: http://immunize.org/catg.d/p2017.pdf

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How can one keep up with the ACIP Recommendations?

First, open up APP store and download CDC Vaccine Schedules

CDC Vaccine Schedules 12+

Centers For Disease Control and Prevention

#156 in Medical

★★★★☆ 18 Ratings

Free

App Store Preview

Screenshots iPhone iPad

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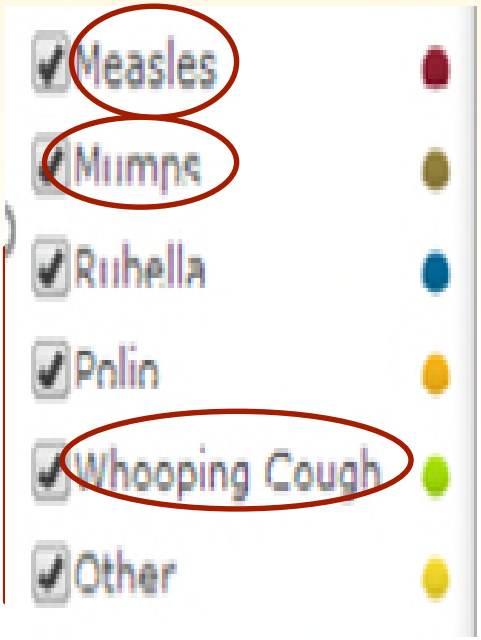
Why Immunize Con't

- Are we having any epidemics of vaccine preventable diseases?



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Ms. Sherri Wise of the Osteopathic Founders Foundation went to Uganda

Sorting meds

Applying Fluoride to teeth

Enjoying the kids

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What's New in Pediatric/Adults Vaccines

https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

- General schedule
- Medical conditions
- Hepatitis B (HepB) vaccine
- Influenza vaccine
- Measles, mumps, and rubella (MMR) vaccine
- Meningococcal vaccine
- Polio vaccine
- Rotavirus vaccine

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Pediatric General Schedule

- Table added outlining vaccine type, abbreviation, and brand names for vaccines (next slide)
- The footnotes are presented in a new simplified format: “really”
- Transition from complete sentences to bullets
- Removed unnecessary or redundant language
- Removed MenHibrix and Hib-MenCy (discontinued in the United States)

3 pediatric schedules

- **Children and Adolescents Aged 18 Years or Younger, United States, 2018**
- **Birth-18 Years Immunization Schedule by Medical Indications**
- **Catch-Up Immunization Schedule**

Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, UNITED STATES, 2018

- Consult relevant ACIP statements for detailed recommendations (www.cdc.gov/vaccines/hcp/acip-recs/index.html).
- When a vaccine is not administered at the recommended age, administer at a subsequent visit.
- Use combination vaccines instead of separate injections when appropriate.
- Report clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) online (www.vaers.hhs.gov) or by telephone (800-822-7967).
- Report suspected cases of reportable vaccine-preventable diseases to your state or local health department.
- For information about precautions and contraindications, see www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

Approved by the

Advisory Committee on Immunization Practices
(www.cdc.gov/vaccines/acip)

American Academy of Pediatrics
(www.aap.org)

American Academy of Family Physicians
(www.aafp.org)

American College of Obstetricians and Gynecologists
(www.acog.org)

This schedule includes recommendations in effect as of January 1, 2018.

The table below shows vaccine acronyms, and brand names for vaccines routinely recommended for children and adolescents. The use of trade names in this immunization schedule is for identification purposes only and does not imply endorsement by the ACIP or CDC.

Vaccine type	Abbreviation	Brand(s)
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel Infanrix
Diphtheria, tetanus vaccine	DT	No Trade Name
Haemophilus influenzae type B vaccine	Hib (PRP-T) Hib (PRP-OMP)	ActHIB Hiberix PedvaxHIB
Hepatitis A vaccine	HepA	Havrix Vaqta
Hepatitis B vaccine	HepB	Engerix-B Recombivax HB
Human papillomavirus vaccine	HPV	Gardasil 9
Influenza vaccine (inactivated)	IIV	Multiple
Measles, mumps, and rubella vaccine	MMR	M-M-R II
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM	Menactra Menveo
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero Trumenba
Pneumococcal 13-valent conjugate vaccine	PCV13	Prevnar 13
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax
Poliovirus vaccine (inactivated)	IPV	IPOL
Rotavirus vaccines	RV1 RV5	Rotarix RotaTeq
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel Boostrix
Tetanus and diphtheria vaccine	Td	Tenivac No Trade Name
Varicella vaccine	VAR	Varivax
Combination Vaccines		
DTaP, hepatitis B and inactivated poliovirus vaccine	DTaP-HepB-IPV	Pediarix
DTaP, inactivated poliovirus and *Haemophilus influenzae* type B vaccine	DTaP-IPV/Hib	Pentacel
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix Quadracel
Measles, mumps, rubella, and varicella vaccines	MMRV	ProQuad

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

Children and Adolescents Aged 18 Years or Younger

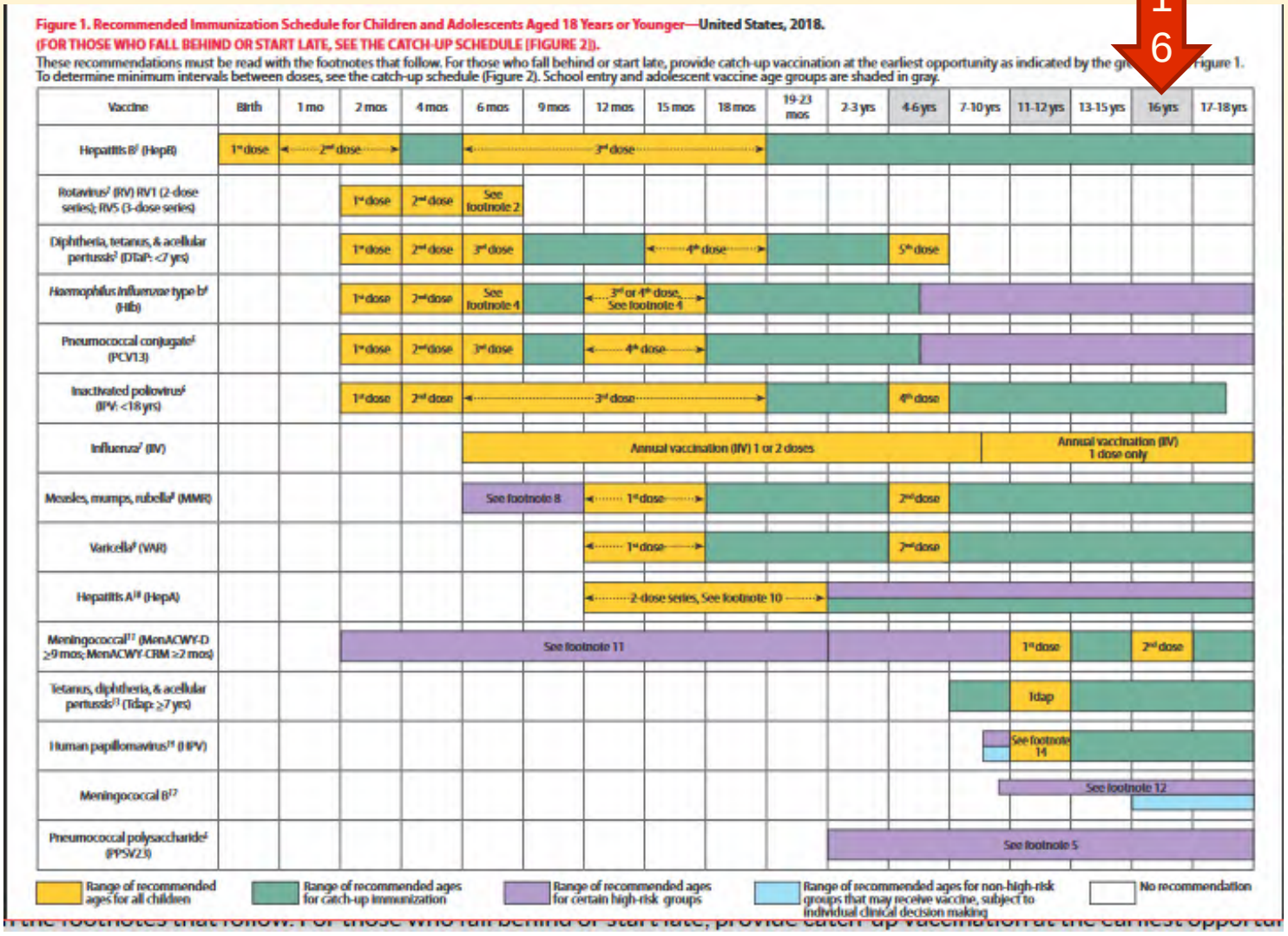

Figure 1. Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2018.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2)).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the gr… Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded in gray.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Hepatitis B[1] (HepB)	1st dose	← 2nd dose →			← 3rd dose →												
Rotavirus[2] (RV) RV1 (2-dose series); RV5 (3-dose series)			1st dose	2nd dose	See footnote 2												
Diphtheria, tetanus, & acellular pertussis[3] (DTaP: <7 yrs)			1st dose	2nd dose	3rd dose			← 4th dose →				5th dose					
Haemophilus influenzae type b[4] (Hib)			1st dose	2nd dose	See footnote 4		← 3rd or 4th dose, See footnote 4 →										
Pneumococcal conjugate[5] (PCV13)			1st dose	2nd dose	3rd dose		← 4th dose →										
Inactivated poliovirus[6] (IPV: <18 yrs)			1st dose	2nd dose	← 3rd dose →							4th dose					
Influenza[7] (IIV)					Annual vaccination (IIV) 1 or 2 doses									Annual vaccination (IIV) 1 dose only			
Measles, mumps, rubella[8] (MMR)					See footnote 8		← 1st dose →					2nd dose					
Varicella[9] (VAR)							← 1st dose →					2nd dose					
Hepatitis A[10] (HepA)							← 2-dose series, See footnote 10 →										
Meningococcal[11] (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)			See footnote 11											1st dose		2nd dose	
Tetanus, diphtheria, & acellular pertussis[13] (Tdap: ≥7 yrs)														Tdap			
Human papillomavirus[14] (HPV)														See footnote 14			
Meningococcal B[12]															See footnote 12		
Pneumococcal polysaccharide[4] (PPSV23)											See footnote 5						

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision making

No recommendation

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Catch-up schedule

FIGURE 2. Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind—United States, 2018.

The figure below provides catch up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with Figure 1 and the footnotes that follow.

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Children age 4 months through 6 years					
Hepatitis B[1]	Birth	4 weeks	8 weeks and at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.		
Rotavirus[2]	6 weeks Maximum age for first dose is 14 weeks, 6 days	4 weeks	4 weeks[2] Maximum age for final dose is 8 months, 0 days.		
Diphtheria, tetanus, and acellular pertussis[3]	6 weeks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[4]	6 weeks	4 weeks If first dose was administered before the 1st birthday. 8 weeks (as final dose) If first dose was administered at age 12 through 14 months. No further doses needed if first dose was administered at age 15 months or older.	4 weeks[4] If current age is younger than 12 months and first dose was administered at younger than age 7 months, and at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiberix) or unknown. 8 weeks and age 12 through 59 months (as final dose)[4] • If current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR • If current age is 12 through 59 months and first dose was administered before the 1st birthday, and second dose administered at younger than 15 months; OR • If both doses were PRP-OMP (Pedvaxd-HB; Comvax) and were administered before the 1st birthday. No further doses needed if previous dose was administered at age 15 months or older.	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before the 1st birthday.	
Pneumococcal conjugate[5]	6 weeks	4 weeks If first dose administered before the 1st birthday. 8 weeks (as final dose for healthy children) If first dose was administered at the 1st birthday or after. No further doses needed for healthy children if first dose was administered at age 24 months or older.	4 weeks If current age is younger than 12 months and previous dose given at <7 months old. 8 weeks (as final dose for healthy children) If previous dose given between 7-11 months (wait until at least 12 months old); OR If current age is 12 months or older and at least 1 dose was given before age 12 months. No further doses needed for healthy children if previous dose administered at age 24 months or older.	8 weeks (as final dose) This dose only necessary for children aged 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus[6]	6 weeks	4 weeks[6]	4 weeks[6] if current age is < 4 years 6 months (as final dose) if current age is 4 years or older	6 months[6] (minimum age 4 years for final dose).	
Measles, mumps, rubella[8]	12 months	4 weeks			
Varicella[9]	12 months	3 months			
Hepatitis A[10]	12 months	6 months			
Meningococcal[11] (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)	6 weeks	8 weeks[11]	See footnote 11	See footnote 11	
Children and adolescents age 7 through 18 years					
Meningococcal[11] (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)	Not Applicable (N/A)	8 weeks[11]			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis[13]	7 years[13]	4 weeks	4 weeks If first dose of DTaP/DT was administered before the 1st birthday. 6 months (as final dose) If first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday.	6 months If first dose of DTaP/DT was administered before the 1st birthday.	
Human papillomavirus[14]	9 years	Routine dosing intervals are recommended.[14]			
Hepatitis A[10]	N/A	6 months			
Hepatitis B[1]	N/A	4 weeks	8 weeks and at least 16 weeks after first dose.		
Inactivated poliovirus[6]	N/A	4 weeks	6 months[6] A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella[8]	N/A	4 weeks			
Varicella[9]	N/A	3 months if younger than age 13 years. 4 weeks if age 13 years or older.			

NOTE: The above recommendations must be read along with the footnotes of this schedule.

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Pediatric Medical Conditions

- The medical indications figure changes include:
- The HIV column provides CD4
- Within the pneumococcal row, stippling was added
  - Heart disease/chronic lung disease
  - Chronic liver disease
  - Diabetes columns
    - Clarify that in some situations children with these conditions may be recommended to receive an additional dose of vaccine.

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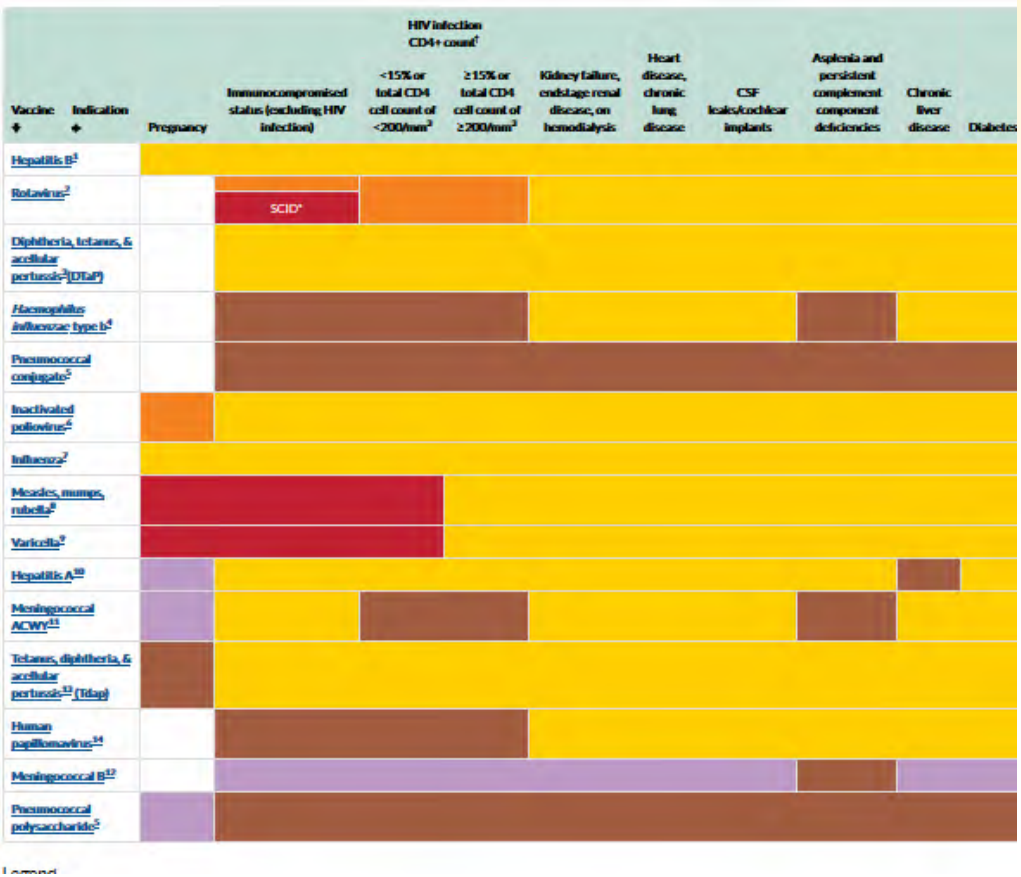
Birth-18 Years Immunization Schedule by Medical Indications



- **Conditions**
  - Pregnancy
  - Immunocompromised
  - HIV (based on CD4 count)
  - Kidney disorders
  - Heart/lung disorders
  - CSF leaks/cochlear implants
  - Asplenia/complement deficiency
  - Liver disease
  - Diabetes

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Influenza

- The influenza vaccine footnote has been updated to indicate that LAIV should not be used during the 2017–2018 influenza season.
  - **BUT**
- **ACIP Reaffirms LAIV Recommendation for 2018-19 Flu**
- **Note:** If a patient sneezes after receiving nasal-spray live attenuated influenza vaccine, count the dose as valid.

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Immunization Survey Influenza Vaccine

- Raise your hand if
  - You receive annual influenza vaccinations

- Inactivated, Needle injected
- Cell culture-based vaccine, inactivated
- Intradermal age 18 to 64 years
- Inactivated, jet-injection age 18 to 64 years
- High Dose for age 65 years or older
- Inactivated, adjuvanted age 65 years
- Recombinant (egg-free) age 18 years or older
- Live-attenuated influenza vaccine (LAIV) age 2 to 49 years

Measles, mumps and rubella

- The measles, mumps, and rubella (MMR) footnote was updated to include guidance regarding the use of a **3rd dose** of mumps-containing vaccine during a mumps outbreak.

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HCP during mumps outbreak

www.cdc.gov/mmwr/volumes/67/wr/mm6701a7.htm?s_cid=mm6701a7_w

- Should a third dose of MMR be given if the HCP has received two prior, **documented** doses of MMR during a mumps outbreak?
  - In January 2018, the ACIP published new guidance for MMR vaccination of persons at increased risk for acquiring mumps during an outbreak

If previously vaccinated with 2 doses of a mumps vaccine and part of a population at increased risk for acquiring mumps because of an outbreak, one should receive a third dose of a mumps virus–containing vaccine to improve protection against mumps disease

Meningococcal vaccine

- The meningococcal vaccine footnotes separate footnotes for
  - MenACWY
  - MenB
- BTW the polysaccharide quadrivalent vaccine is no longer available

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Meningitis can affect anyone, but the age groups most at risk of infection are:

- Infants 6 to 18 months of age.
- Children under the age of 5 years.
- Adolescents and young adults.
- Elderly people (due to their declining immune function)
- People with illnesses which affect the immune system.

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Q: What is the schedule for MenACWY vaccine?

- Dose at 11 or 12 years of age
- Second (booster) dose is recommended at **16** years of age
- Adolescents who receive their first dose at age 13 through 15 years should receive a booster dose at age 16 years
- The minimum interval between MenACWY doses is 8 weeks
- Adolescents who receive a first dose after their 16th birthday **do not need a booster** dose unless they become at increased risk for meningococcal disease

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A patient received MPSV4 or MenACWY vaccine at age 10 years and a dose of MenACWY before the 16th birthday, will they still need a booster dose at age 16?

- Yes, they should receive a booster dose
- A booster dose of MenACWY is recommended at age 16 years even if 2 (or more) doses of meningococcal ACWY vaccine were received before age 16 years
- People age 19 through 21 years who are entering college or are first-year students living in a residence hall, and who have not received a dose of MenACWY on or after age 16 years, should also be vaccinated.

Meningococcal

- Give both MenACWY and MenB to **microbiologists** who are routinely exposed to isolates of Neisseria meningitidis
  - The two vaccines may be given concomitantly but at different anatomic sites, if feasible
  - Every 5 years boost with MenACWY if risk continues

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Why is our non-profit called Power of a Nickel?

- **2 nickels** = child deworming treatment for 6 months
- **10 nickels** = months supply of a multivitamin for a child
- **17 nickels** = antibiotics to cure pneumonia in an elderly grandfather

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Raise you hand if you have seen this vaccine preventable disease

Polio vaccine footnotes

- Clarifies the catch-up recommendations for children 4 years of age and older.
  - If 4 or more doses were given before the 4th birthday, give 1 more dose at age 4–6 years and at least 6 months after the previous dose
  - A 4th dose is not necessary if the 3rd dose was given on or after the 4th birthday and at least 6 months after the previous dose.
  - IPV is not routinely recommended for U.S. residents 18 years of age and older unless traveling to high risk areas

Polio vaccine footnotes

- Clarifies the catch-up recommendations for children 4 years of age and older.
  - **If series contained trivalent oral polio vaccine (tOPV),** either mixed OPV-IPV or OPV-only series; then
  - Total number of doses needed to complete the series is the same as that recommended for the U.S. IPV schedule

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An international adoptee received 6 or more doses of polio vaccine, administered before 4 years of age.

- **Q: What recommendation would you give for polio vaccination?**
  A: Many developing countries administer oral polio vaccine to children during **both routine visits and periodic vaccination campaigns**, so a child's record may indicate more than 4 doses
- Depending on the timing, some of these doses, they may not be valid according to the U.S. immunization schedule

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Polio vaccine cont'd

- Polio vaccine given outside the United States is valid IF
  - A written documentation indicates that all doses were given after 6 weeks of age
    - **And**
  - The vaccine received was IPV or trivalent OPV (tOPV).
  - If the history is of a complete series of IPV, at least one dose should be administered on or after 4 years of age and at least 6 months after the previous dose
  - If a complete series cannot be identified that meets these criteria, then the child should receive as many doses of IPV as needed to complete the U.S. recommended schedule.

Rotavirus vaccine

- The maximum ages for the first and last doses of the rotavirus series have been added to the rotavirus vaccine row of the catch-up schedule.
  - Do not start the series on or after age 15 weeks, 0 days.
  - The maximum age for the final dose is 8 months, 0 days.
- Note: If an infant regurgitates, spits, or vomits during or after receiving oral rotavirus vaccine, count the dose as valid.

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Q: Which infants should not receive rotavirus vaccine?

- History of a severe **allergic reaction** (for example, anaphylaxis) after a previous dose
- Severe (anaphylactic) allergy to **latex**
- Not Rotarix (GSK) (The oral applicator contains latex
- RotaTeq (Merck) is ok
- Infants with the rare disorder severe combined immunodeficiency (**SCID**) (live virus vaccine)
- Infants with a history of **intussusception**

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Applying fluoride to teeth to prevent cavities and dentist removing teeth

We provide tooth brushes and give dental hygiene instructions

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What are these diseases?

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Immunization Survey Work out time☺

- Raise your hand
  - If you have had a Tdap/Td in last 10 years
  - If you are around infants/children, raise your hand if you have had **a** Tdap?
  - Raise your hand if you have had more than 1 Tdap
  - So make sure you have had a Tdap if:
    - See children in your office
    - Parents
    - Grandparent

Tdap cont'd

- HCPs who are not sure or are unsure if they have previously received a dose of Tdap,
  - Should receive a dose of Tdap as soon as feasible, without regard to the interval since the previous dose of Td
- **How often** should HCPs receive Td boosters?
  - Every 10 years thereafter

DTaP/Td/Tdap Vaccines

- Q: If a teen or adult patient never received Tdap but received a dose of Td vaccine 2 years ago, should he/she wait 8 more years before administering a dose of Tdap to the patient?
- A: No. ACIP recommends that people age 11 years and older who have not yet received Tdap receive a single dose of Tdap now. ACIP specifies no waiting interval between administering Td and Tdap.

What is the oldest age that you should NOT give the Tdap?

- ACIP has concluded that Tdap administered to a person age 65 or older is immunogenic and will provide protection

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What is this disease?
Can you die from this disease?

Hep B

Hep A

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Immunization Survey
Hepatitis Vaccinations (A and B)

- **Raise your hand if you have:**
  - Received your Hep B series (3-4 doses)
  - Positive serology for Hep B
  - Received your **two** Hep A vaccinations
    - If you eat out, you should have a Hep A series!

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Wait: what is Heplisav-B http://heplisavb.com/

- Indicated for prevention of infection caused by all known subtypes of hepatitis B virus in adults **18 years of age** and older (**2 doses, one month apart**)
- Immunocompromised persons, including individuals receiving immunosuppressant therapy, may have a diminished immune response to HEPLISAV-B.
- The most common patient-reported adverse reactions reported within 7 days of vaccination were
  - Injection site pain (23%-39%)
  - Fatigue (11%-17%)
  - Headache (8%-17%).

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Hepatitis B

- If previously unvaccinated, give a **2-dose (Heplisav-B)** or 3-dose (Engerix-B or Recombivax HB) series
- Give intramuscularly (IM)
- For HCP who perform tasks that may involve exposure to blood or body fluids, obtain anti-HBs serologic testing 1–2 months after dose #2 (for Heplisav-B) or dose #3 (for Engerix-B or RecombivaxHB)

Hep B testing con't

- If anti-HBs is less than 10 mIU/mL (negative), it is **assumed** the vaccinee is NOT protected from hepatitis B virus (HBV) infection
  - Should receive another 2-dose or 3-dose series of HepB vaccine on the routine schedule, followed by anti-HBs testing 1–2 months later
  - A vaccinee whose anti-HBs remains less than 10 mIU/mL after 2 complete series is considered a **“non-responder.”**

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HCP Hep B Non-responders

- HCP who are non-responders should be considered susceptible to HBV
- Should be counseled regarding precautions to prevent HBV infection
- Need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood or blood with unknown HBsAg status.

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Hep B recs for non-HCP, non-responders

- Should be considered susceptible to HBV
- Should be counseled regarding precautions to prevent HBV infection
- Need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood or blood with unknown HBsAg status.

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So this is confusing, what is the difference between HCP and the general public as non-responders?

- HCP needs to have 2-3 doses of Hep B vaccinations as recommended and if negative titers, they need a second full round of Hep-B and repeat titers before diagnosing as non-responders
- General public needs the 2-3 doses of Hep B and if negative titers, give the second round of shots BUT do not need to repeat the titers, just consider as non-responders

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Hep B in other adult patients

- At the discretion of the treating clinician, the vaccine may also be administered to unvaccinated adults with diabetes age 60 years and older
- What people are likely to be at risk for HepB
  - STD/HIV testing and treatment facilities
  - Drug-abuse treatment and prevention settings
  - Healthcare settings targeting services to MSM
  - Correctional facilities
  - Chronic hemodialysis facilities
  - Facilities for developmentally challenged people

Hep A IGG

- IG provides protection against HAV infection through passive transfer of antibody
- When administered for **pre-exposure prophylaxis**:
  - Dose of **0.1 mL/kg** will provide protection for up to 1 month
  - Dose of 0.2 mL/kg will provide protection for up to 2 months.
  - A dose of 0.2 mL/kg can be repeated every 2 months

Hep A IGG

- For **post-exposure prophylaxis**
  - Dosage is 0.1 mL/kg
  - No maximum dosage of IG for hepatitis A prophylaxis
  - Give within 14 days of exposure

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What does this very sick child have?

Rash started on face, has cough, red eyes, and lethargic

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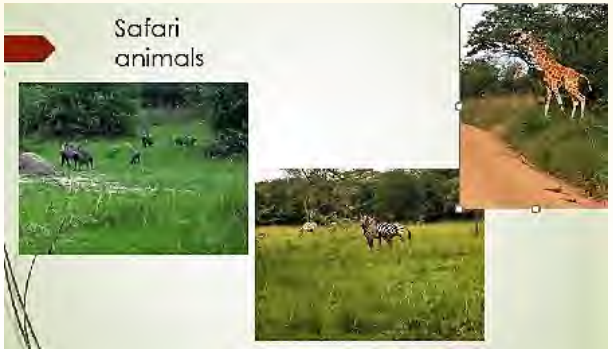
Cultural activities

- Vietnam Hanoi, Ha Long Bay, and Mekong Delta
- Belize cave exploring
- Uganda safari
- Tulum ruins

- Ukraine Chernobyl
- Greek islands
- India, Golden Triangle



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Measles

- Acceptable presumptive evidence of immunity against measles includes all of the following EXCEPT
  1. Health Care Provider (HCP) diagnosis of measles
  2. Written documentation of adequate vaccination
  3. Laboratory evidence of immunity
  4. Laboratory confirmation of measles
  5. Birth in the United States before 1957

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How many of you have actually seen a case of measles?

> 35

This is why a HCP diagnosis is not considered evidence of diagnosis of measles

< 35

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Immunization Survey Measles

- Raise your hand if any of the following are true:
  - Born before 1957
  - Documented measles disease
  - You have had at least two MMR vaccinations with written documentation
  - If you have had positive measles serology

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MMR for those born before 1957

- Although **birth before 1957** generally is considered acceptable evidence of measles, mumps, and rubella immunity
  - **1 dose** of MMR vaccine should be considered for unvaccinated **HCP** born before 1957 who do not have laboratory evidence of measles, mumps or rubella

MMR if born in 1957 or later…

- HCP born in 1957 or later **without serologic** evidence of immunity or prior vaccination
  - Give 2 doses of MMR separated by at least 28 days

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During a measles outbreak…

- For these same HCP who do not have evidence of immunity
  - 2 doses of MMR vaccine are recommended during an outbreak of measles or mumps
  - 1 dose during an outbreak of rubella.
    - Separate M or M or R as vaccines are NOT available in the US

Is there anything that can be done for an unvaccinated HCP who has been exposed to measles, mumps, or rubella?

- Yes
  - Measles vaccine, given as MMR, may be effective if given within the first 3 days (**72 hours)** after exposure to measles
  - IGG may be effective for as long as 6 days after exposure
  - Post-exposure prophylaxis with MMR vaccine does not prevent or alter the clinical severity of **mumps or rubella** and is not recommended (only measles)

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Immunization Survey Mumps

- Raise you hand if
  - You have received at least 2 mumps vaccines
  - You have positive serology for mumps
  - You have history of mumps disease

HCP during mumps outbreak

www.cdc.gov/mmwr/volumes/67/wr/mm6701a7.htm?s_cid=mm6701a7_w.

- Should a third dose of MMR be given if the HCP has received two prior, **documented** doses of MMR during a mumps outbreak?
  - In January 2018, the ACIP published new guidance for MMR vaccination of persons at increased risk for acquiring mumps during an outbreak

If previously vaccinated with 2 doses of a mumps vaccine and part of a population at increased risk for acquiring mumps because of an outbreak, one should receive a third dose of a mumps virus–containing vaccine to improve protection against mumps disease

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What do you think this is?

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Immunization Survey Varicella

- Varicella status, Raise your hand if
  - You were born before 1985
  - Had documented chicken pox disease
  - You have had at least 2 varicella vaccinations
  - If you have had positive serology for varicella

1986 Ford Mustang LX 5.0 vs. Chevrolet Camaro IROC-Z

Dearborn vs. Goliath: And mighty GM sent a Corvette-engine Camaro to slay the Mustang.

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Varicella
HCP should be immune

- Evidence of immunity in HCP includes:
  - Documentation of 2 doses of varicella vaccine given at least 28 days apart
  - Laboratory evidence of immunity
  - Laboratory confirmation of disease
  - Diagnosis or verification of a history of varicella or **herpes zoster** (shingles) by a HCP
  - I guess most HCP have seen chicken pox and can diagnose varicella

Congenital Rubella Syndrome

- Infection during pregnancy may can result in miscarriage, fetal death, or cause *congenital rubella syndrome* which is associated with:
  - Sensorineural deafness
  - Mental retardation
  - Eye abnormalities
  - Congenital heart disease
- Cloudy Cornea

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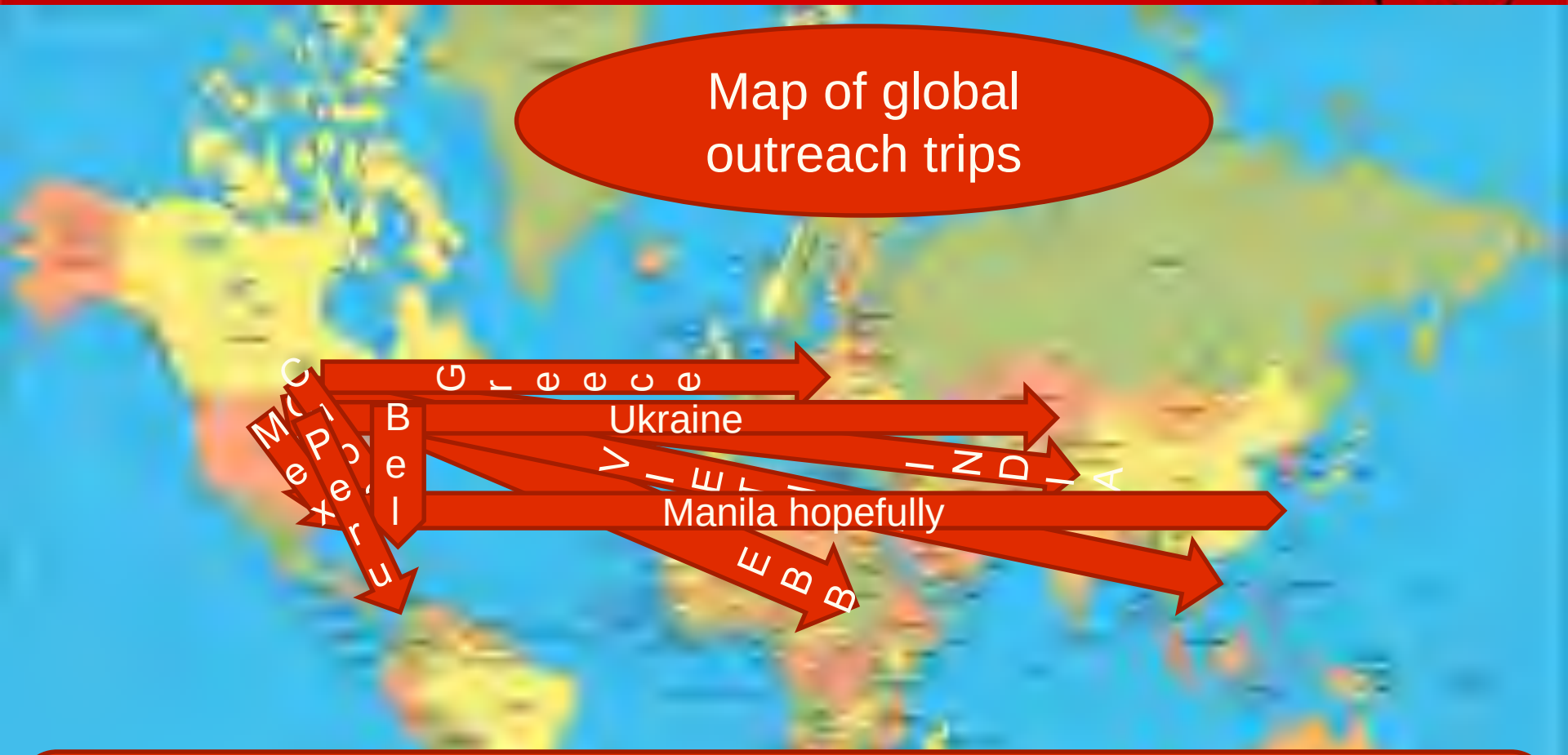
Map of global outreach trips



Mexico, Peru, Belize, Nicaragua, Greece, Vietnam, India, Ukraine
Future: Philippines and Belarus

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Immunization Survey Smokers/Asthmatics

- Raise your hand if you are a smoker or have a history of asthma
  - Did you know you should have had one pneumococcal PPSV-23 vaccination ((Pneumovax by Merck)?

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Immunization Survey: Pneumococcal Vaccinations

- If over 65
  - Raise your hand if you have had at least one PCV-13 vaccination (Prevnar 13 by Pfizer)
- If over 66
  - Raise your hand if you have had at least one PPSV-23 vaccination
- For routine vaccination, the PCV-13 (Prevnar 13) is recommended at age 65 and a PPSV-23 (Pneumovax) is recommended at 12 months later at 66 years of age.

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PPSV23 is recommended for people aged 19-64 with the following:

- Cigarette smokers age 19 years and older
- Chronic cardiovascular disease, excluding hypertension
- Chronic pulmonary disease (After 19, asthma)
- Diabetes mellitus
- Alcoholism
- Chronic liver disease, cirrhosis
- Cochlear implant
- CSF leaks
- Functional or anatomic asplenia
- HIV infection
- Leukemia and other immunodeficiency
- Immunosuppressive therapy
- Solid organ and bone marrow transplantation
- Chronic renal failure

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Immunization Survey HPV

- Raise your hand if
  - You are a female between 15 – 27 years of age and have completed your 3 doses of HPV vaccinations
  - You are a male between 15 – 21 (27) years of age and have completed your 3 dose series of HPV vaccinations

9 y/o through 14 y/o, only two doses separated by 6 months are needed; 15 and older, 3 doses are recommended

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Work with local practitioners

Pediatrician in Ukraine

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Arm is the only place of this painful rash. What is this?

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Immunization Survey Shingles Vaccine

- Raise you hand if you are
  - Over 60 and have received your Merck (Zostavax), live Shingles vaccination
  - Over 50 and have received your 2 doses of GSK (Shingrix), non-live vaccination

Raise you hand if you have received both types of vaccines

Comparison of Zoster Vaccines

Zostavax ZVL-Live Virus by Merck

- Licensed in 2006
- Live attenuated virus
- Single subcutaneous (SQ) dose
- FDA approved ≥50 yrs
  - BUT
- ACIP recommends ZVL for immunocompetent adults aged ≥60 years

Shingrix RZV (Recombinant Zoster by GSK)

- Licensed October 2017
- Recombinant vaccine

(Not live)

- 2 doses IM, 2 mon apart
- FDA and ACIP approved for adults aged ≥50 years
- ACIP **preferentially** recommended: >95% effective

Q: How should zoster vaccine be stored?

- A: RZV (Shingrix)
- Both lyophilized RZV and the adjuvant solution diluent must be stored at refrigerator temperature, between 2° and 8°C (between 36° and 46°F)
- Protect the vials from light
- Do not freeze
- After reconstitution, administer RZV immediately or store refrigerated between 2° and 8°C (between 36° and 46°F) and use within 6 hours

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Q: We sometimes encounter patients with foreign vaccination records. We suspect that some of these records are not valid. What should we do?

- A: If a provider suspects an invalid vaccination, including those from persons vaccinated outside the U.S.
  - One approach:
    - Repeating the vaccinations
  - Second approach
    - Serologic testing

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Questions/Comments

- Antivaxxers

But

  - I do not like to be negative
  - So let's call them what they are **positively**

- Pro-infectors ☹

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Thank you!!!!
Ready to Go with Us or become a M & M?
(Mission Mobilizer)

Celebrating July 4th in Greece