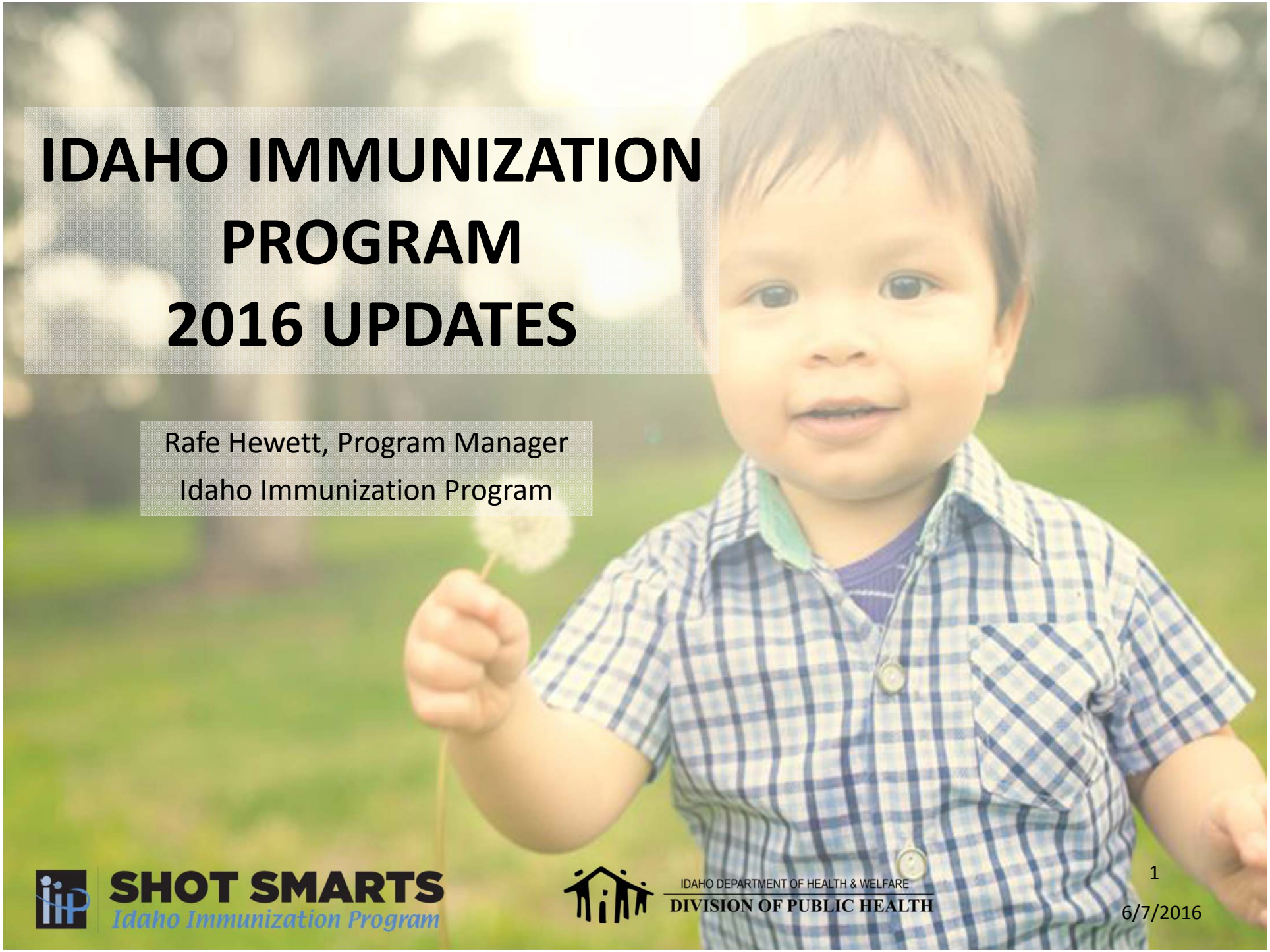
IDAHO IMMUNIZATION PROGRAM 2016 UPDATES

Rafe Hewett, Program Manager
Idaho Immunization Program



SHOT SMARTS
Idaho Immunization Program

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

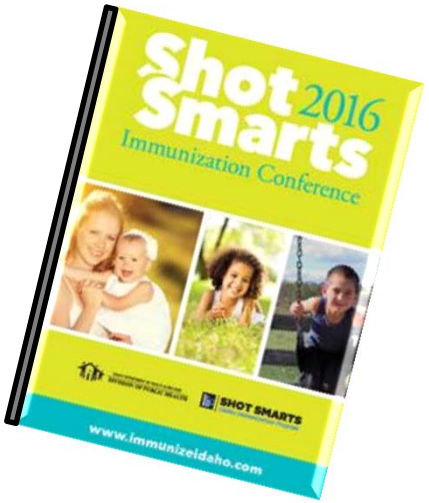
Acknowledgements

- Idaho Immunization Program staff (planning & organizing)
- Guest speakers visiting Idaho
- Exhibitors
- You

General Reminders

General Reminders Continued

- Conference Booklets
- Refreshments
- No breakout sessions this year



AGENDA

8:15 - 9:15 a.m.	**2016 Immunization Update** Dr. Andrew Kroger
9:15 - 9:45 a.m.	**Vaccine Management** IIP Staff
9:45 - 10:00 a.m.	**Break/Visit Exhibitors**
10:00 - 11:00 a.m.	**Talking to Parents about Vaccines** Dr. Paul Offit
11:00 - 11:15 a.m.	**Idaho School Immunization Exemptions** IIP Staff
11:15 a.m. - 12:15 p.m.	**Addressing Vaccine Hesitancy** Dr. Andrew Kroger
12:15 - 1:00 p.m.	**Lunch and Videos**
1:00 - 2:00 p.m.	**Bad Faith** Dr. Paul Offit
2:00 - 2:15 p.m.	**Break/Visit Exhibitors**
2:15 – 3:00 p.m.	**Keynote Speaker Q & A Session**
3:00 – 3:30 p.m.	**Evaluations, Awards, and Drawings**

IRIS Bingo - game explanation

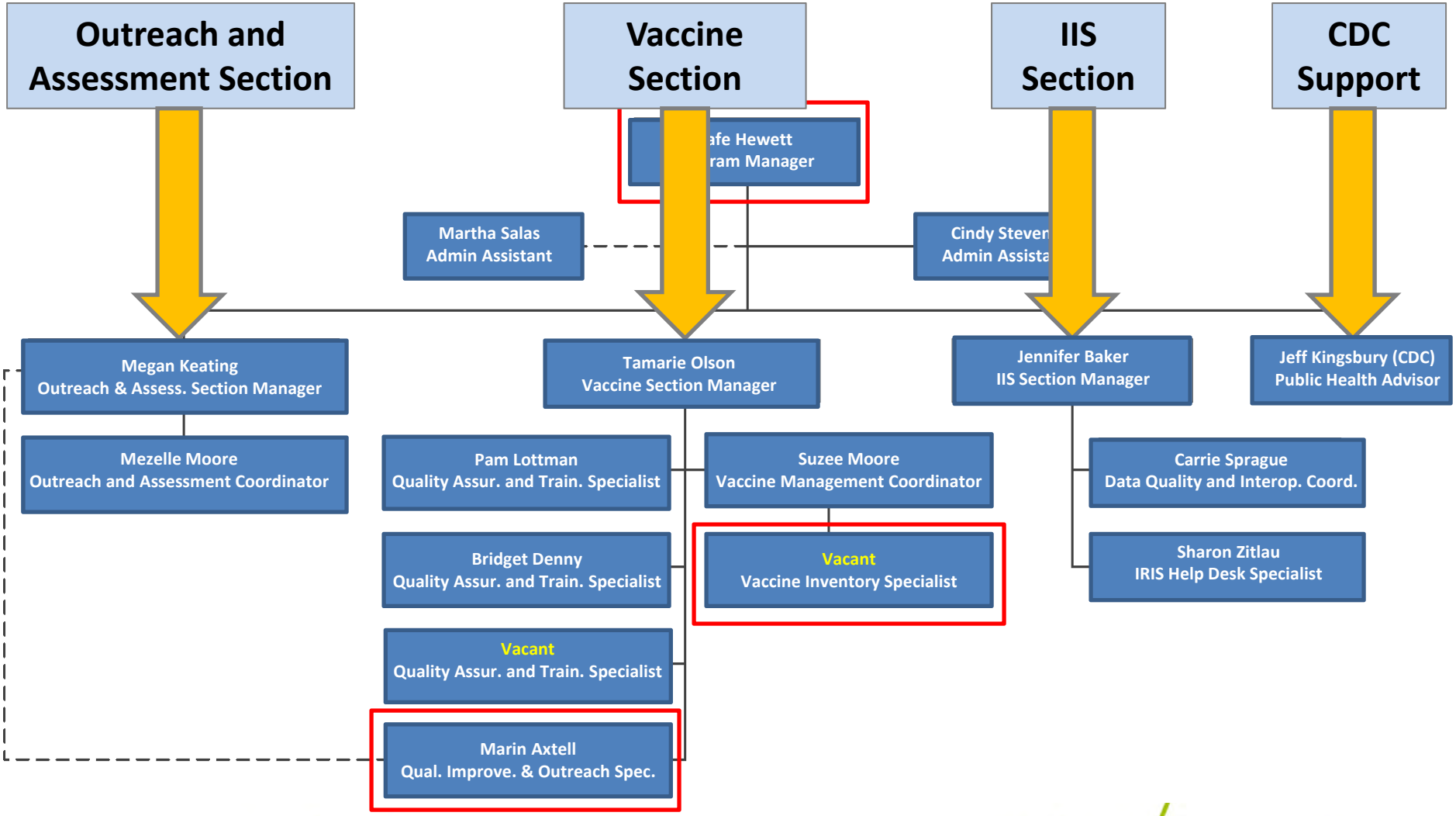
- "Name the Disease" Activity
- Respond to questions throughout day with the corresponding answer on your Bingo card
- When completing a Bingo, shout out as soon as possible to receive a special prize!

Note: Prizes were donated by the Idaho Immunization Coalition, and were not purchased with taxpayer dollars

Evaluations and End of Day Drawing

- **Turn in** your completed Shot Smarts evaluation during the final break
- **Get a raffle ticket** in exchange for your completed evaluation
- **Be here, in this room**, when the winning number is read

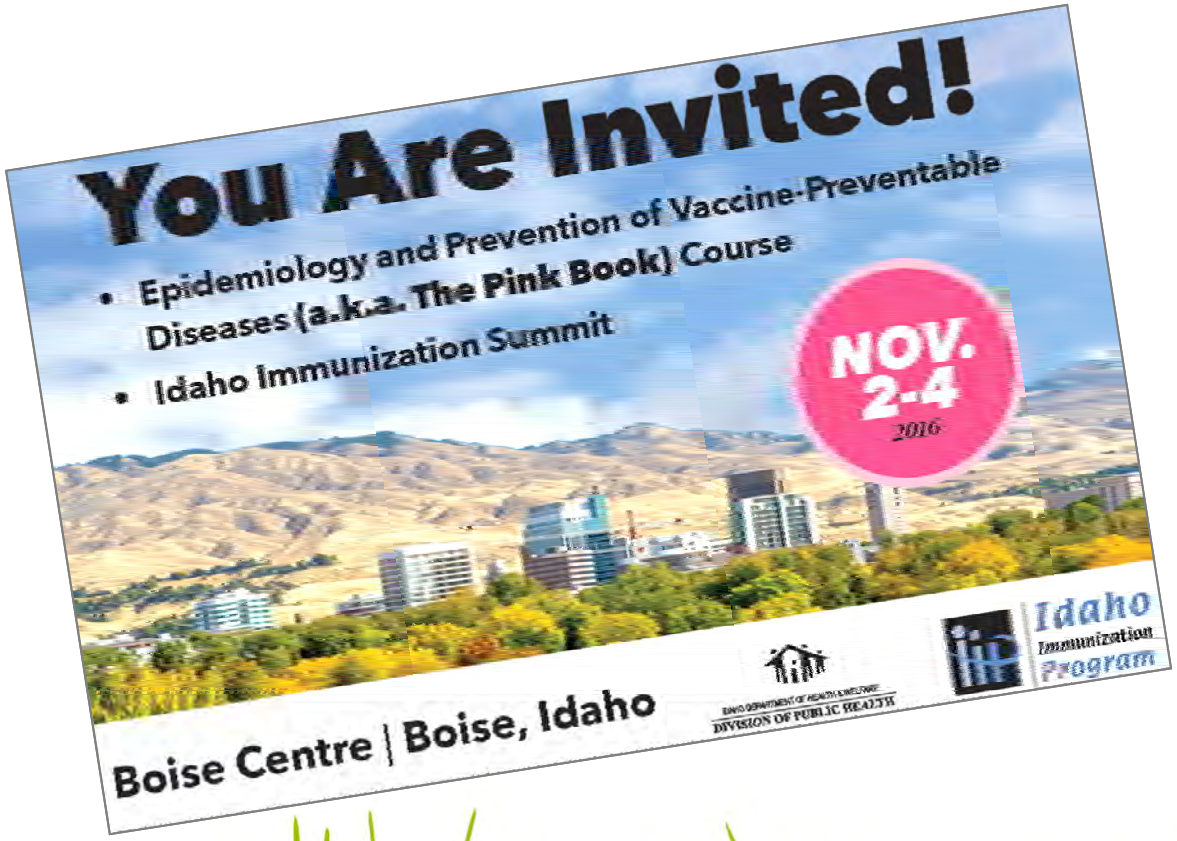
Note: Fitbits were donated by the Idaho Immunization Coalition, and were not purchased with taxpayer dollars


Outreach and Assessment Section
Vaccine Section
IIS Section
CDC Support
afe Hewett
ram Manager
Martha Salas
Admin Assistant
Cindy Steven
Admin Assista
Megan Keating
Outreach & Assess. Section Manager
Tamarie Olson
Vaccine Section Manager
Jennifer Baker
IIS Section Manager
Jeff Kingsbury (CDC)
Public Health Advisor
Mezelle Moore
Outreach and Assessment Coordinator
Pam Lottman
Quality Assur. and Train. Specialist
Suzee Moore
Vaccine Management Coordinator
Carrie Sprague
Data Quality and Interop. Coord.
Bridget Denny
Quality Assur. and Train. Specialist
Vacant
Vaccine Inventory Specialist
Sharon Zitlau
IRIS Help Desk Specialist
Vacant
Quality Assur. and Train. Specialist
Marin Axtell
Qual. Improve. & Outreach Spec.

Outreach and Assessment Section

- Conferences and workshops
- Professional training development
- School and childcare immunization monitoring and support
- Promotion and marketing

2016 Pink Book Course



Note: This course is replacing the annual Booster Shots Trainings

Idaho School Immunization Rates 2015-2016 Results

		%	Health District						
			1	2	3	4	5	6	7
Compliant	Adequately Immunized	86.7%	**73.0%**	84.5%	**89.5%**	89.2%	84.5%	**89.9%**	88.7%
	Conditionally Admitted	1.2%	1.5%	1.3%	1.0%	0.9%	1.9%	0.9%	1.1%
	Exempt	6.3%	**12.6%**	**8.0%**	5.8%	6.6%	**4.1%**	**3.8%**	4.6%
Non-Compliant	Incomplete Record	5.5%	**11.9%**	5.5%	**3.3%**	**3.2%**	**8.7%**	4.9%	5.2%
	No Records	0.4%	**1.0%**	0.6%	0.4%	**0.1%**	0.8%	0.4%	0.4%

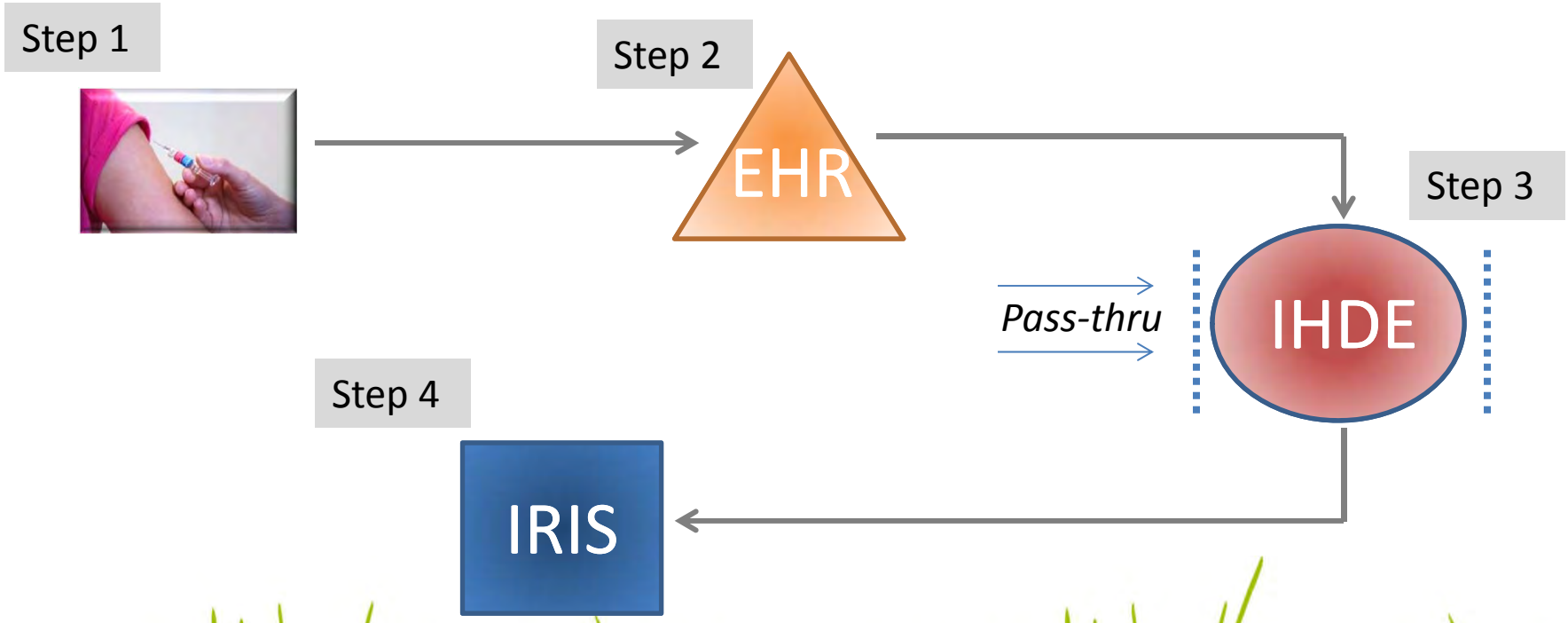
Immunization Information Systems (IIS) Section

- Data Quality
- Interoperability (Data Exchange) with provider EMR/EHRs
- Meaningful Use
- Help Desk
- Training

IRIS User Password Reset

- Began in February 2016
- Function has decreased password reset requests directly to IRIS Help Desk
- Allows IIS Section to re-evaluate staff roles and enhance business practices going forward

Data exchange project with the Idaho Health Data Exchange (IHDE)



IRIS Stats

1. The percent of vaccine administered data reported to IRIS through electronic data exchange is: **76%**
2. The percentage of vaccines administered to children under 19 years of age reported to IRIS within 30 days is: **97%**

In IRIS:	March 2014	March 2015	March 2016
Patients	1,247,682	1,368,761	1,459,993
Immunizations	13,475,153	14,627,207	16,177,633

Vaccine Section

Vaccine Management

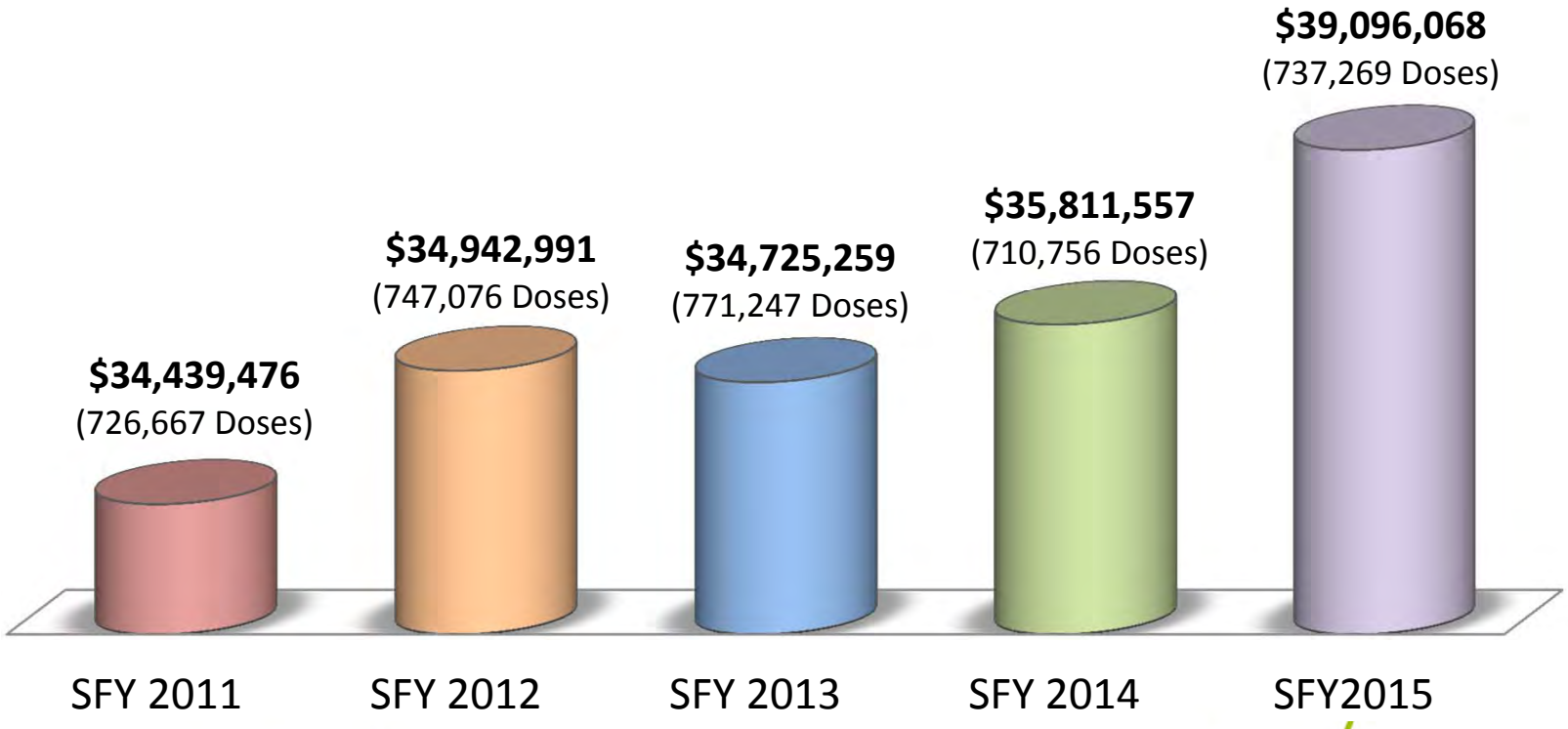
- Ordering
- Accountability

Provider Training and Support

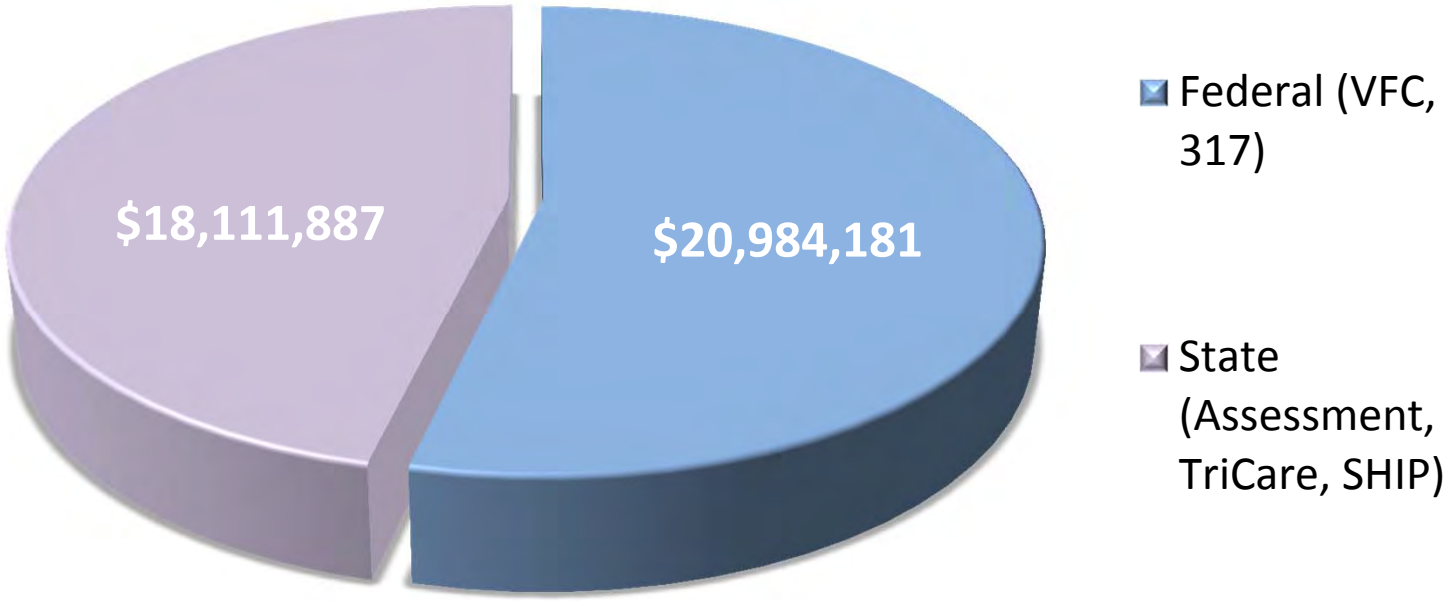
Site Visits

- VFC visits with providers (Vaccine Quality Assurance)
- AFIX visits with providers (Vaccination Quality Improvement)

IIP Vaccine Costs



SFY 2015 Vaccine Funding



Total: $39,096,068

2016 Idaho Immunization Legislation

Bill S1294: Practice of Pharmacy

Description: Amending existing law to provide that pharmacists may prescribe immunizations for persons 6 years or older. (Previously they were able to prescribe to those 12 years or older)

Brought by: Idaho State Pharmacy Association

Status: **Passed/Signed (effective 7/1/2016)**

2016
Immunization Update

Andrew Kroger M.D., M.P.H.
Medical Health Educator
Immunization Services Division

2016 Shot Smarts Immunization Conference
Pocatello ID, 2016

Disclosures

- Andrew Kroger is a federal government employee with no financial interest or conflict with the manufacturer of any product named in this presentation.
- I will discuss the off-label use of serogroup meningococcal B vaccine, human papillomavirus (HPV) vaccine, and pneumococcal conjugate vaccine (PCV13)
- I will not discuss a vaccine not currently licensed by the FDA.

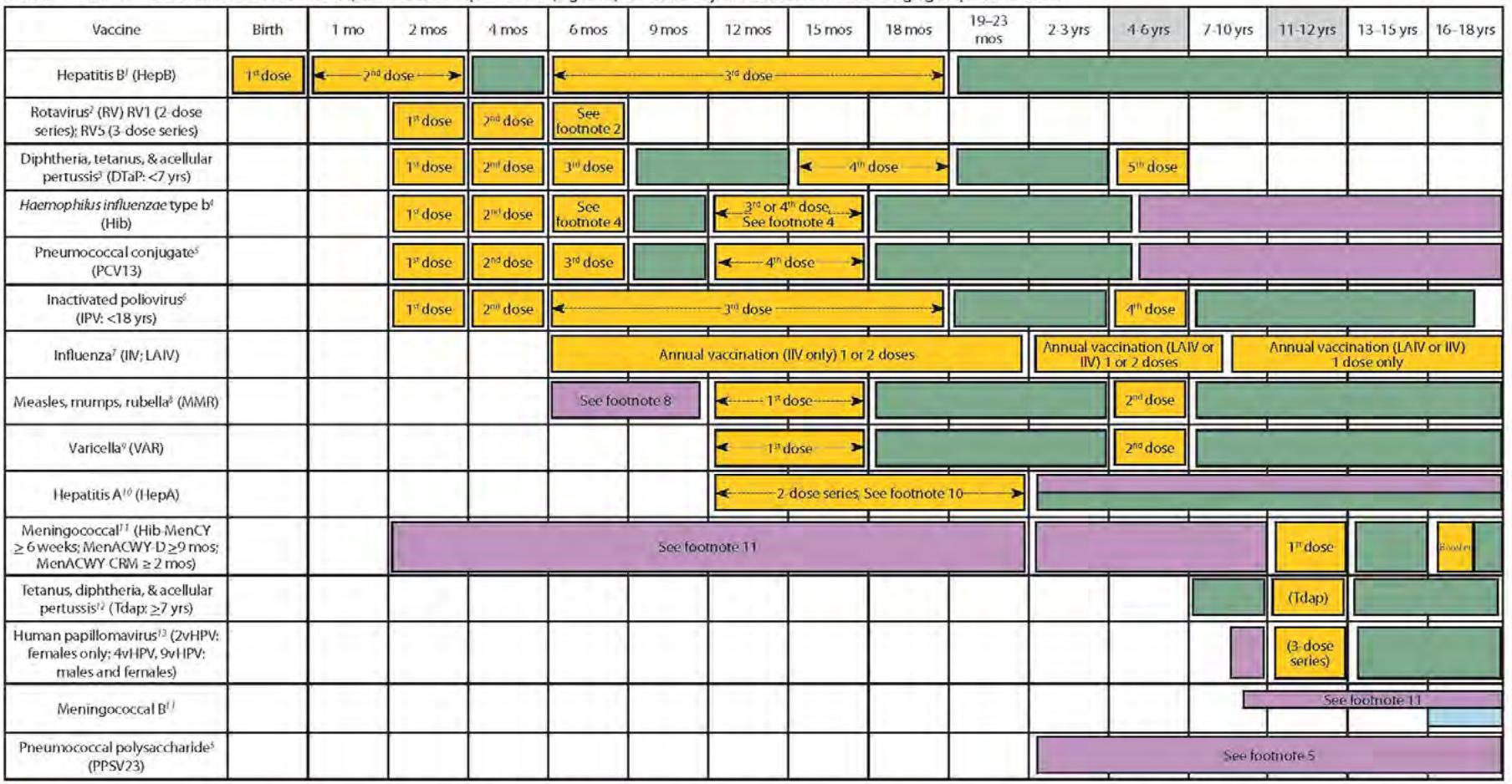
What's New?

- 2016 Immunization Schedules
- Serogroup B meningococcal vaccine
- HPV9
- Pertussis vaccine (Tdap)
- Pneumococcal vaccine recommendations
- Immunization Resources

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2016.

(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 green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded.



This schedule includes recommendations in effect as of January 1, 2016. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at http://www.cdc.gov/vaccines/hcp/acip-recs/index.html. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-7967). Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for vaccination, is available from CDC online (http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/vaccines/acip), the American Academy of Pediatrics (http://www.aap.org), the American Academy of Family Physicians (http://www.aafp.org), and the American College of Obstetricians and Gynecologists (http://www.acog.org).

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

FIGURE 2. Catch-up immunization schedule for persons aged 4 months through 18 years who start late or who are more than 1 month behind —United States, 2016.

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	4 weeks	4 weeks[2]		
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) 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 (wait until at least 12 months old); 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 (Pedvaxl-HIB; Comvax) **and** were administered before the 1st birthday (wait until at least 12 months old) 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[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 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]	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] (Hib-MenCY ≥ 6 weeks; 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] (Hib-MenCY ≥ 6 weeks; MenACWY-D ≥9 mos; MenACWY-CRM ≥ 2 mos)	Not Applicable (N/A)	8 weeks[11]			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis[12]	7 years[12]	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[13]	9 years	Routine dosing intervals are recommended.[13]			
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	4 weeks[6]	6 months[6]	
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.

Recommended Adult Immunization Schedule—United States - 2016

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 immunization schedule for adults aged 19 years or older, by vaccine and age group[1]

VACCINE ▼ AGE GROUP ▶	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza*[2]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap)*[3]	Substitute Tdap for Td once, then Td booster every 10 yrs					
Varicella*[4]	2 doses					
Human papillomavirus (HPV) Female*[5]	3 doses					
Human papillomavirus (HPV) Male*[5]	3 doses					
Zoster[6]					1 dose	
Measles, mumps, rubella (MMR)*[7]	1 or 2 doses depending on indication					
Pneumococcal 13-valent conjugate (PCV13)*[8]	1 dose					
Pneumococcal 23-valent polysaccharide (PPSV23)*[8]	1 or 2 doses depending on indication					1 dose
Hepatitis A*[9]	2 or 3 doses depending on vaccine					
Hepatitis B*[10]	3 doses					
Meningococcal 4-valent conjugate (MenACWY) or polysaccharide (MPSV4)*[11]	1 or more doses depending on indication					
Meningococcal B (MenB)[11]	2 or 3 doses depending on vaccine					
Haemophilus influenzae type b (Hib)*[12]	1 or 3 doses depending on indication					

*Covered by the Vaccine Injury Compensation Program

- Recommended for all persons who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection; zoster vaccine is recommended regardless of past episode of zoster
- Recommended for persons with a risk factor (medical, occupational, lifestyle, or other indication)
- 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 or by telephone, 800-822-7967.

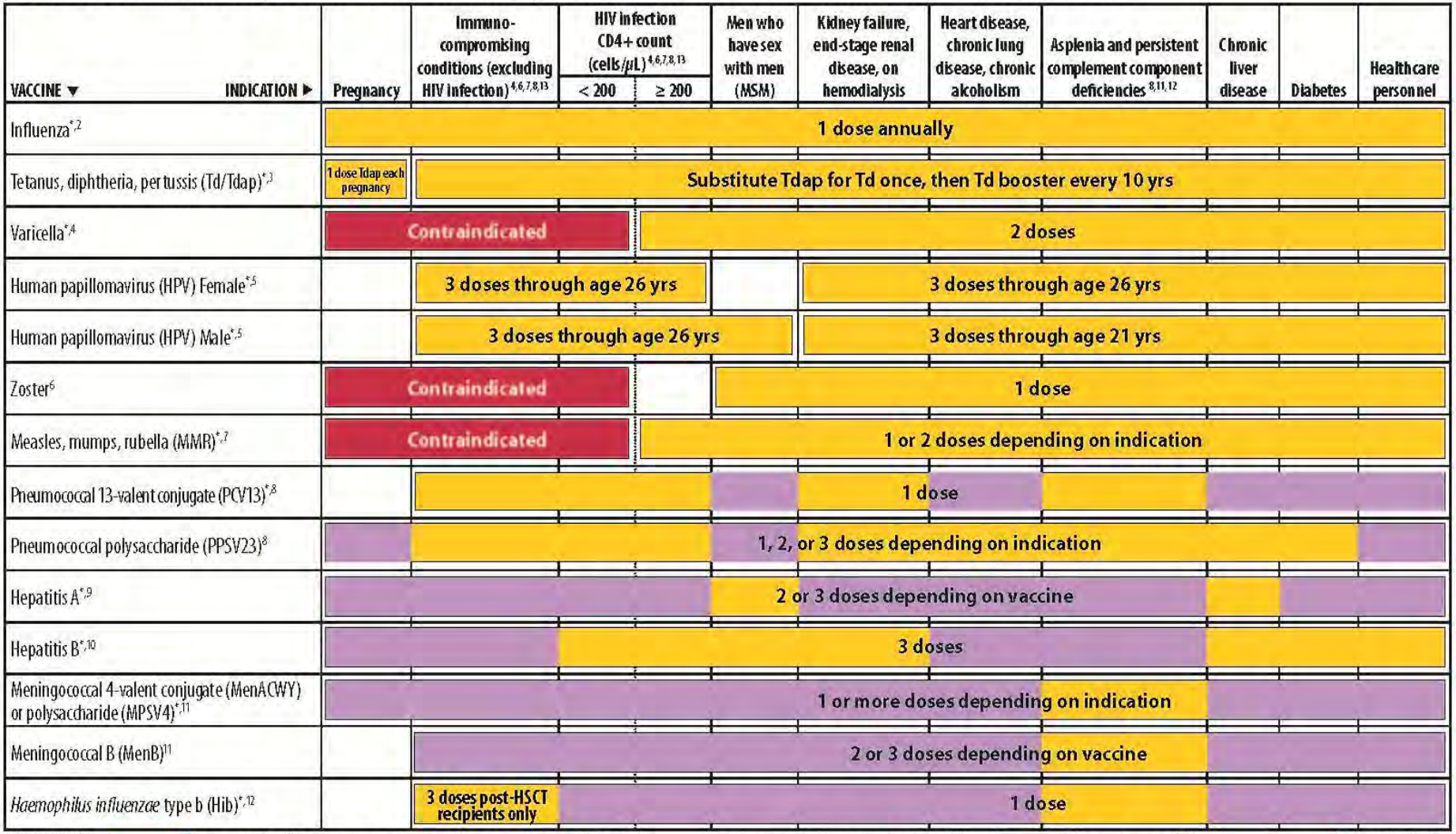
Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines 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.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the America College of Physicians (ACP), the American College of Obstetricians and Gynecologists (ACOG) and the American College of Nurse-Midwives (ACNM).

Figure 2. Vaccines that might be indicated for adults aged 19 years or older based on medical and other indications[1]



*Covered by the Vaccine Injury Compensation Program

Recommended for all persons who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection; zoster vaccine is recommended regardless of past episode of zoster

Recommended for persons with a risk factor (medical, occupational, lifestyle, or other indication)

No recommendation

Contraindicated

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

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly recommended for adults aged ≥19 years, as of February 2016. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/hcp/acip-recs/index.html). 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.

TABLE. Contraindications and precautions to commonly used vaccines in adults [1*†]

Vaccine	Contraindications	Precautions
Influenza, inactivated (IIV)[2]	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine; or to a vaccine component, including egg protein	• Moderate or severe acute illness with or without fever • History of Guillain-Barré Syndrome within 6 weeks of previous influenza vaccination • Adults with egg allergy of any severity may receive RIV; adults with hives-only allergy to eggs may receive IIV with additional safety measures[2]
Influenza, recombinant (RIV)	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of RIV or to a vaccine component. RIV does not contain any egg protein[2]	• Moderate or severe acute illness with or without fever • History of Guillain-Barré Syndrome within 6 weeks of previous influenza vaccination
Influenza, live attenuated (LAIV)[2,3]	• Severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine, or to a previous dose of any influenza vaccine • In addition, ACIP recommends that LAIV not be used in the following populations: — pregnant women — immunosuppressed adults — adults with egg allergy of any severity — adults who have taken influenza antiviral medications (amantadine, rimantadine, zanamivir, or oseltamivir) within the previous 48 hours; avoid use of these antiviral drugs for 14 days after vaccination	• Moderate or severe acute illness with or without fever • History of Guillain-Barré Syndrome within 6 weeks of previous influenza vaccination • Asthma in persons aged 5 years and older • Other chronic medical conditions, e.g., other chronic lung diseases, chronic cardiovascular disease (excluding isolated hypertension), diabetes, chronic renal or hepatic disease, hematologic disease, neurologic disease, and metabolic disorders
Tetanus, diphtheria, pertussis (Tdap); tetanus, diphtheria (Td)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • For pertussis-containing vaccines: encephalopathy (e.g., coma, decreased level of consciousness, or prolonged seizures) not attributable to another identifiable cause within 7 days of administration of a previous dose of Tdap, diphtheria and tetanus toxoids and pertussis (DTP), or diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine	• Moderate or severe acute illness with or without fever • Guillain-Barré Syndrome within 6 weeks after a previous dose of tetanus toxoid-containing vaccine • History of Arthus-type hypersensitivity reactions after a previous dose of tetanus or diphtheria toxoid-containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus toxoid-containing vaccine • For pertussis-containing vaccines: progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized
Varicella[3]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy,[4] or patients with human immunodeficiency virus [HIV] infection who are severely immunocompromised) • Pregnancy	• Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)[5] • Moderate or severe acute illness with or without fever • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination; avoid use of these antiviral drugs for 14 days after vaccination
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever • Pregnancy
Zoster[3]	• Severe allergic reaction (e.g., anaphylaxis) to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, or long-term immunosuppressive therapy,4 or patients with HIV infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination; avoid use of these antiviral drugs for 14 days after vaccination
Measles, mumps, rubella (MMR)[3]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy,[4] or patients with HIV infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)[5] • History of thrombocytopenia or thrombocytopenic purpura • Need for tuberculin skin testing[6]
Pneumococcal conjugate (PCV13)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component, including to any vaccine containing diphtheria toxoid	• Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Hepatitis A	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Hepatitis B	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Meningococcal, conjugate (MenACWY); meningococcal, polysaccharide (MPSV4)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Meningococcal serogroup B (MenB)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Haemophilus influenzae Type b (Hib)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever

1. Vaccine package inserts and the full ACIP recommendations for these vaccines should be consulted for additional information on vaccine-related contraindications and precautions and for more information on vaccine excipients. Events or conditions listed as precautions should be reviewed carefully. Benefits of and risks for administering a specific vaccine to a person under these circumstances should be considered. If the risk from the vaccine is believed to outweigh the benefit, the vaccine should not be administered. If the benefit of vaccination is believed to outweigh the risk, the vaccine should be administered. A contraindication is a condition in a recipient that increases the chance of a serious adverse reaction. Therefore, a vaccine should not be administered when a contraindication is present.

2. For more information on use of influenza vaccines among persons with egg allergies and a complete list of conditions that CDC considers to be reasons to avoid receiving LAIV, see CDC. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2015–16 Influenza Season. *MMWR* 2015;64(30):818-25.

3. LAIV, MMR, varicella, or zoster vaccines can be administered on the same day. If not administered on the same day, live vaccines should be separated by at least 28 days.

4. Immunosuppressive steroid dose is considered to be ≥2 weeks of daily receipt of 20 mg of prednisone or the equivalent. Vaccination should be deferred for at least 1 month after discontinuation of such therapy. Providers should consult ACIP recommendations for complete information on the use of specific live vaccines among persons on immune-suppressing medications or with immune suppression because of other reasons.

5. Vaccine should be deferred for the appropriate interval if replacement immune globulin products are being administered. See CDC. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2011;60(No. RR-2). Available at www.cdc.gov/vaccines/pubs/pinkbook/index.html.

6. Measles vaccination might suppress tuberculin reactivity temporarily. Measles-containing vaccine may be administered on the same day as tuberculin skin testing. If testing cannot be performed until after the day of MMR vaccination, the test should be postponed for at least 4 weeks after the vaccination. If an urgent need exists to skin test, do so with the understanding that reactivity might be reduced by the vaccine.

* Adapted from CDC. Table 6. Contraindications and precautions to commonly used vaccines. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices. MMWR 2011;60(No. RR-2):40–41 and from Hamborsky J, Kroger, A, Wolfe C, eds. Appendix A. Epidemiology and prevention of vaccine preventable diseases. 13th ed. Washington, DC: Public Health Foundation, 2015. Available at www.cdc.gov/vaccines/pubs/pinkbook/index.html.

† Regarding latex allergy, consult the package insert for any vaccine administered.

CS260933-D

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

Meningococcal Disease

Meningococcal Vaccines

TABLE 1. Licensed meningococcal vaccines — United States, 1981–2012

Formulation	Type	Trade name	Manufacturer	Licensed (yr)	Age group	Dose(s)	Serogroups
MPSV4*	Polysaccharide	Menomune	Sanofi Pasteur	1981	≥2 yrs	Single dose	A, C, W, and Y
MenACWY-D†	Conjugate	Menactra	Sanofi Pasteur	2005	11–55 yrs	Single dose	A, C, W, and Y
MenACWY-D†	Conjugate	Menactra	Sanofi Pasteur	2007	2–10 yrs	Single dose	A, C, W, and Y
MenACWY-D†	Conjugate	Menactra	Sanofi Pasteur	2011	9–23 mos	2-dose series	A, C, W, and Y
MenACWY-CRM§	Conjugate	Menveo	Novartis	2010	11–55 yrs	Single dose	A, C, W, and Y
MenACWY-CRM§	Conjugate	Menveo	Novartis	2011	2–10 yrs	Single dose	A, C, W, and Y
Hib-MenCY-TT¶	Conjugate	MenHibrix	GlaxoSmithKline	2012	6 wks–18 mos	4-dose series	C and Y

* Package insert available at http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM308370.pdf.
† Package insert available at http://www.fda.gov/downloads/BiologicBloodVaccines/Vaccines/ApprovedProducts/UCM131170.pdf.
§ Package insert available at http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM201349.pdf.
¶ Package insert available at http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM308577.pdf.

Meningococcal Conjugate Vaccines

- Meningococcal polysaccharide conjugated to protein carrier
- Elicit both T- and B-cell immunity (T-cell dependent immunity)
- 3 brands currently licensed in the United States (2 brands for adults, both quadrivalent MenACWY)

Traveler to High-risk Area, Present During Outbreak Caused by Vaccine Serogroup, Microbiologists Working with *Neisseria meningitidis*

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 18 mos.	MenACWY-CRM at ages 2, 4, 6, and 12–15 mos. May use Hib-MenCY if an outbreak caused by serogroup C or Y	If risk continues, give initial booster after 3 yrs. followed by boosters every 5 yrs.
7-23 mos. if no prior MenACWY-CRM or Hib-MenCY	Give 2 doses MenACWY-CRM 3 mos. apart* (if age 7–23 mos.)** or MenACWY-D (if age 9–23 mos.)	

*Minimum interval 2 mos. If needed for travel

**If using MenACWY-CRM, do not give dose 2 before 12 mos. of age

Traveler to High-risk Area, Present During Outbreak Caused by Vaccine Serogroup, Microbiologists Working with *Neisseria meningitidis*

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 55 yrs.	1 dose of MenACWY*	Boost every 5 yrs. with MenACWY (1st booster after 3 yrs. If primary dose(s) <7rs., then every 5 yrs. if risk remains)
56 yrs. and older	If no previous MenACWY dose and either short-term travel or outbreak-related, 1 dose of MPSV; all others, 1 dose of MenACWY	Boost every 5 yrs. with MenACWY if risk remains

*2-dose primary series 2 mos. apart if HIV+

People with Persistent Complement Component Deficiencies

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 18 mos.	Give MenACWY-CRM or Hib-MenCY at ages 2, 4, 6 and 12–15 mos.	Give MenACWY booster after 3 yrs. followed by boosters every 5 yrs. thereafter
7-23 mos. if no prior MenACWY-CRM or Hib-MenCY	Give 2 doses MenACWY-CRM 3 mos. apart (if age 7–23 mos.)* or MenACWY-D (if age 9–23 mos.)	

*If using MenACWY-CRM, do not give dose 2 before 12 mos. of age

People with Persistent Complement Component Deficiencies

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 55 yrs.	2 doses of MenACWY, 2 mos. apart	Boost every 5 yrs. with MenACWY* (1st boost after 3 yrs. If primary dose(s) <7rs., then every 5 yrs.) if risk remains)
56 yrs. and older	2 doses of MenACWY, 2 mos. apart	Boost every 5 yrs. with MenACWY*

*If person received a 1-dose primary series, give booster at earliest opportunity, then boost every 5 years

People with Functional or Anatomic Asplenia, Including Sickle Cell Disease

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 18 mos.	Give MenACWY-CRM or Hib-MenCY at ages 2, 4, 6 and 12–15 mos.	Give MenACWY booster after 3 yrs. followed by boosters every 5 yrs. thereafter
19-23 mos. if no prior MenACWY-CRM or Hib-MenCY	2 doses of MenACWY-CRM, 3 mos. apart	

People with Functional or Anatomic Asplenia, Including Sickle Cell Disease

Age Group	Primary Dose(s)	Booster Dose(s)
2 – 55 yrs.	2 doses of MenACWY, 2 mos. apart	Boost every 5 yrs. with MenACWY* (1st boost after 3 yrs. If primary dose(s) <7rs., then every 5 yrs.) if risk remains)
56 yrs. and older	2 doses of MenACWY, 2 mos. apart	Boost every 5 yrs. with MenACWY*

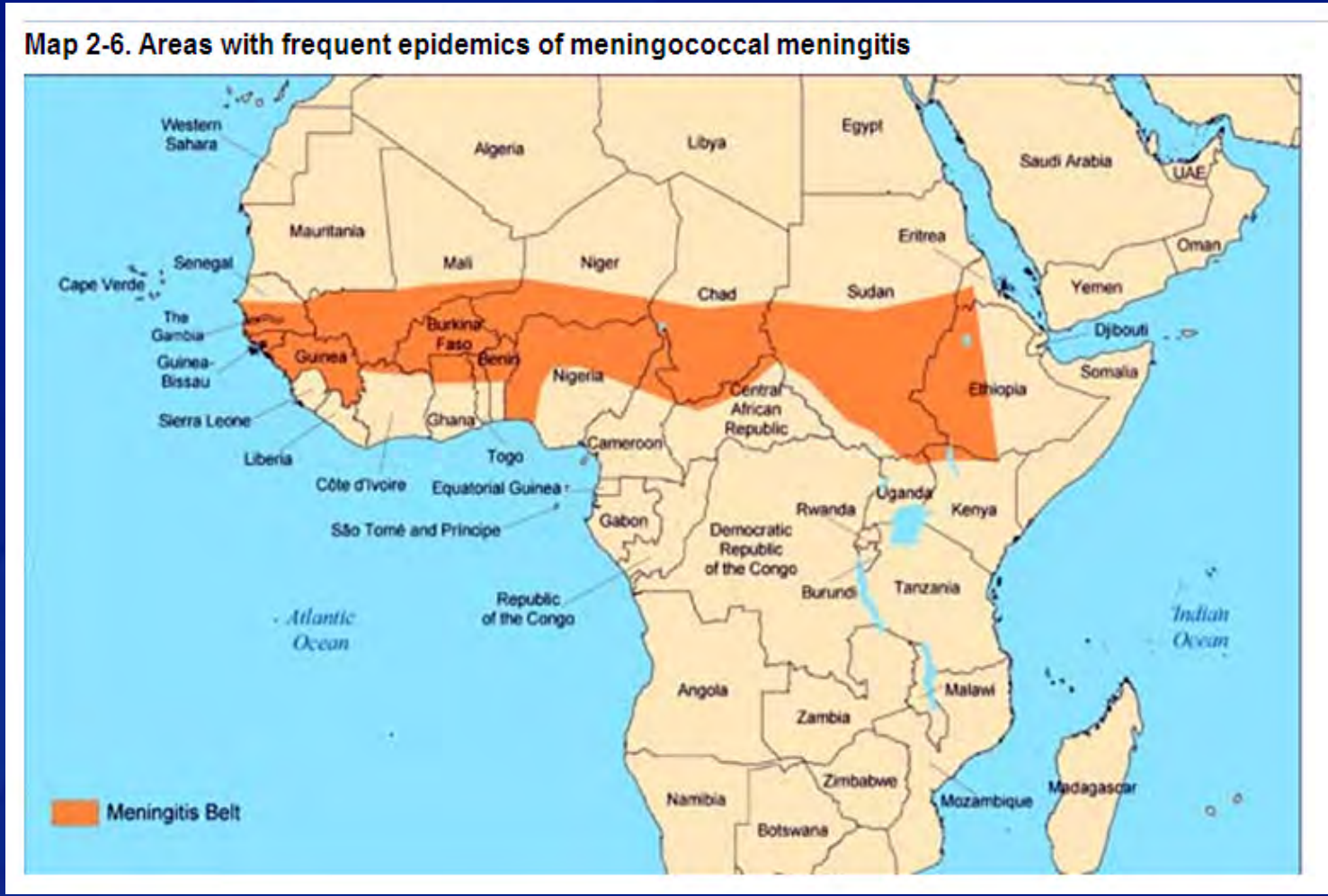
*Children should complete their PCV13 series before vaccination with MenACWY-D; MenACWY-D should be given at least 4 wks. after last dose of PCV13. MenACWY-CRM or Hib-MenCY may be given at any time before or after PCV13

MenACWY Recommendations and HIV

- HIV infection alone is **not** an indication for MenACWY vaccination
- Persons with HIV infection show evidence of suboptimal response to vaccination
- Some persons with HIV infection should receive MenACWY (adolescents, some international travelers, microbiologists, etc.)
- Persons with HIV infection who are vaccinated with MenACWY should receive 2 doses at least 8 weeks apart

MMWR 2013;62(RR-2):1-28

The “Meningitis Belt”



wwwnc.cdc.gov/travel/yellowbook/

Routine Adolescent Recommendations
Meningococcal Conjugate Vaccine (MCV4) (Menactra or Menveo)

Preteens 11-12 yrs*	Dose #1
Catch-up for teens 13-15 yrs.	Dose #1
Teens 16-18 yrs.**	Dose #2
Catch-up 16-18 yrs.	Dose #1
First year college students, 19-21 yrs., living in residence halls	Dose #1

*2-dose primary series 2 mos. apart if HIV+

**Minimum interval between doses is 8 wks.

Meningococcal Vaccination Recommendations for College Students

- **First-year college students living in residence halls**
  - At least 1 dose of MenACWY before college entry, preferably on or after their 16th birthday
- **If only 1 dose of vaccine was administered before the 16th birthday, a booster dose should be administered before enrollment.**
- **For ease of program implementation, persons aged ≤21 years should have documentation of receipt of meningococcal conjugate vaccine not more than 5 years before enrollment**

MenACWY Revaccination Recommendations

- **Other high-risk persons recommended for boosters:**
  - Microbiologists with prolonged exposure to *Neisseria meningitidis*
  - Frequent travelers to or persons living in areas with high rates of meningococcal disease (see next slide)
- **Revaccinate every 5 years as long as the person remains at increased risk**
  - MenACWY for persons 2 through 55 years of age
  - MenACWY for persons 56 years and older also (off-label recommendation) if repeated vaccination anticipated

*Off-label recommendation. *MMWR* 2013;62(RR-2):10-11

International Travelers and Revaccination*

- **International travelers should receive a booster dose of MenACWY if the last dose was administered 5 or more years previously**
  - Vaccination in the 3 years before the date of travel is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj

*CDC Travelers Health website at http://www.cdc.gov/travel

Meningococcal B Vaccines

Product Name/ACIP Abbreviation	FDA Age Indications	Dosage/Route/Schedule
Trumenba ® MenB-FHbp	10 through 25 years of age	• 3 doses – 0.5 mL each • IM injection • 0-, 2-, and 6-month
Bexsero® MenB-4C	10 through 25 years of age	• 2 doses – 0.5 mL each • IM injection • 0, 1–6 month

ACIP MenB Recommendations

- **Certain persons 10 years of age and older* who are at increased risk for meningococcal disease should receive MenB vaccine. These include:**
  - Persons with persistent complement component deficiencies.
  - Persons with anatomic or functional asplenia.**
  - Microbiologists routinely exposed to isolates of *Neisseria meningitidis.*
  - Persons identified as at increased risk because of a serogroup B meningococcal disease outbreak.

*ACIP off-label recommendation

**Including sickle cell disease

www.cdc.gov/mmwr/preview/mmwrhtml/mm6422a3.htm?s_cid=mm6422a3_w

ACIP MenB Recommendations

- **MenB vaccine is NOT recommended for:**
  - High-risk children younger 2 months – 9 years.
  - Persons who travel to or reside in countries where meningococcal disease is hyperendemic or epidemic because risk is generally not caused by serogroup B.
  - Routine use in first-year college students living in residence halls, military recruits, and all adolescents.

Note: MenACWY is recommended

www.cdc.gov/mmwr/preview/mmwrhtml/mm6422a3.htm?s_cid=mm6422a3_w

ACIP MenB Recommendations

MenB vaccine series may be administered to adolescents and young adults 16 through 23 years of age to provide short-term protection against most strains of serogroup B meningococcal disease. The preferred age for MenB vaccination is 16 through 18 years of age.*

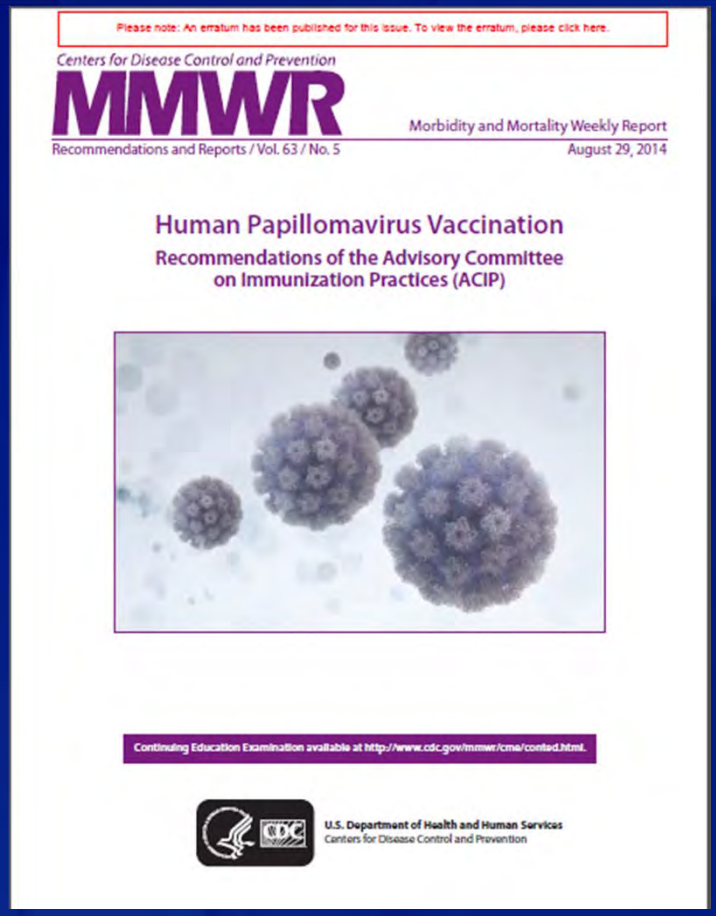
* Permissive recommendation (Category B)

Meningococcal Serogroup B Vaccine Recommendations

- Brands are NOT interchangeable in the same vaccinee
- If two different brands administered to one vaccine – pick which brand is invalid
- Continue with the other brand
- Must use a 4 week interval after the invalid brand, plus remember minimum interval rules between doses in the series of the same brand

Meningococcal Serogroup B Vaccine Recommendations

- **Minimum intervals should be observed between doses of the same vaccine**
  - Bexsero (time zero, time 1 month)
  - Trumenba (time zero, time 1-2 months, time 6 months)
  - If the minimum interval is violated, no need to repeat



Please note: An erratum has been published for this issue. To view the erratum, please click here.

Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports / Vol. 63 / No. 5

August 29, 2014

Human Papillomavirus Vaccination

Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Continuing Education Examination available at http://www.cdc.gov/mmwr/cme/conted.html.

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

Morbidity and Mortality Weekly Report

Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices

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During its February 2015 meeting, the Advisory Committee on Immunization Practices (ACIP) recommended 9-valent human papillomavirus (HPV) vaccine (9vHPV) (Gardasil 9, Merck and Co., Inc.) as one of three HPV vaccines that can be used for routine vaccination (Table 1). HPV vaccine is recommended for routine vaccination at age 11 or 12 years (*1*). ACIP also recommends vaccination for females aged 13 through 26 years and males aged 13 through 21 years not vaccinated previously. Vaccination is also recommended through age 26 years for men who have sex with men and for immunocompromised persons (including those with HIV infection) if not vaccinated previously (*1*). 9vHPV is a noninfectious, virus-like particle (VLP) vaccine. Similar to quadrivalent HPV vaccine (4vHPV), 9vHPV contains HPV 6, 11, 16, and 18 VLPs. In addition, 9vHPV contains HPV 31, 33, 45, 52, and 58 VLPs (*2*). 9vHPV was approved by the Food and Drug Administration (FDA) on December 10, 2014, for use in females aged 9 through 26 years and males aged 9 through 15 years (*3*). For these recommendations, ACIP reviewed additional data on 9vHPV in males aged 16 through 26 years (*4*). 9vHPV and 4vHPV are licensed for use in females and males. Bivalent HPV vaccine (2vHPV), which contains HPV 16, 18 VLPs, is licensed for use in females (*1*). This report summarizes evidence considered by ACIP in recommending 9vHPV as one of three HPV vaccines that can be used for vaccination and provides recommendations for vaccine use.

Recommendations for routine use of vaccines in children, adolescents and adults are developed by the Advisory Committee on Immunization Practices (ACIP). ACIP is chartered as a federal advisory committee to provide expert external advice and guidance to the Director of the Centers for Disease Control and Prevention (CDC) on use of vaccines and related agents for the control of vaccine-preventable diseases in the civilian population of the United States. Recommendations for routine use of vaccines in children and adolescents are harmonized to the greatest extent possible with recommendations made by the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), and the American College of Obstetricians and Gynecologists (ACOG). Recommendations for routine use of vaccines in adults are harmonized with recommendations of AAFP, ACOG, and the American College of Physicians (ACP). ACIP recommendations approved by the CDC Director become agency guidelines on the date published in the Morbidity and Mortality Weekly Report (MMWR). Additional information about ACIP is available at http://www.cdc.gov/vaccines/acip/.

Methods

From October 2013 to February 2015, the ACIP HPV Vaccine Work Group reviewed clinical trial data assessing the efficacy, immunogenicity, and safety of 9vHPV, modeling data on cost-effectiveness of 9vHPV, and data on burden of type-specific HPV-associated disease in the United States. Summaries of reviewed evidence and Work Group discussions were presented to ACIP before recommendations were proposed. Recommendations were approved by ACIP in February 2015. Evidence supporting 9vHPV use was evaluated using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) framework (*5*) and determined to be type 2 (moderate level of evidence) among females and 3 (low level of evidence) among males; the recommendation was categorized as a Category A recommendation (for all persons in an age- or risk-factor–based group) (*6*).

HPV-Associated Disease

HPV is associated with cervical, vulvar, and vaginal cancer in females, penile cancer in males, and anal cancer and oropharyngeal cancer in both females and males (*7–10*). The burden of HPV infection also includes cervical precancers, including cervical intraepithelial neoplasia grade 2 or 3 and adenocarcinoma in situ (≥CIN2). The majority of all HPV-associated cancers are caused by HPV 16 or 18, types targeted by 2vHPV, 4vHPV and 9vHPV (*2,11,12*). In the United States, approximately 64% of invasive HPV-associated cancers are attributable to HPV 16 or 18 (65% for females; 63% for males; approximately 21,300 cases annually) and 10% are attributable to the five additional types in 9vHPV: HPV 31, 33, 45, 52, and 58 (14% for females; 4% for males; approximately 3,400 cases annually) (*1,12,13*). HPV 16 or 18 account for 66% and the five additional types for about 15% of cervical cancers (*12*). Approximately 50% of ≥CIN2 are caused by HPV 16 or 18

HUMAN PAPILLOMAVIRUS (HPV) VACCINATION

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html

Updated ACIP Recommendations

- **Vaccinate males and females at 11-12 years.***
- **Catch up those previously unvaccinated or missing doses:**
  - Females age 13 through 26 years.
  - Males age 13 though 21 years.**
  - High-risk males age 21 through 26 years.**
  - Men who have sex with men and immunocompromised men (including HIV-infected men).
- **Use:**
  - 2vHPV, 4vHPV, or 9vHPV for females.
  - 4vHPV or 9vHPV** for males.

*Vaccination series can be started at 9 years of age

**ACIP off-label recommendation. MMWR 2015;64:300-4

Updated ACIP Recommendations Administration

- **Administer in a 3-dose schedule*:**
  - Dose 2: Administer at least 1 to 2 months after the first dose.
  - Dose 3: Administer at least:
    - 12 weeks after dose 2 AND:
    - 6 months (24 weeks) after dose 1.
  - If the vaccination schedule is interrupted, the series does not need to be restarted.
- **IM injection.**

*ACIP off-label recommendation

MMWR 2015;64(29):300-4

9vHPV vaccination for persons who completed a HPV vaccination series

- The manufacturer did not seek an indication for 9vHPV vaccination for persons who previously completed a HPV vaccination series
- No studies of 9vHPV in prior 1 or 2 dose 4vHPV vaccinees
- A study of 9vHPV in prior (3 dose) 4vHPV vaccinees was conducted

Updated ACIP Recommendations Interchangeability*

- **If vaccination providers do not know or do not have available the HPV vaccine product previously administered, or are in settings transitioning to 9vHPV, for protection against HPV 16 and 18:**
  - Females: Any HPV vaccine product may be used to continue or complete the series.
  - Males: 4vHPV or 9vHPV* may be used to continue or complete the series for males.

*ACIP off-label recommendation. MMWR 2015;64(29):300-4

Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis (Tdap) Vaccine in Adults Aged 65 Years and Older — Advisory Committee on Immunization Practices (ACIP), 2012

Since 2005, the Advisory Committee on Immunization Practices (ACIP) has recommended a tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine booster dose for all adolescents aged 11 through 18 years (preferred at 11 through 12 years) and for those adults aged 19 through 64 years who have not yet received a dose (*1,2*). In October 2010, despite the lack of an approved Tdap vaccine for adults aged 65 years and older, ACIP recommended that unvaccinated adults aged 65 years and older be vaccinated with Tdap if in close contact with an infant, and that other adults aged 65 years and older may receive Tdap (*3*). In July 2011, the Food and Drug Administration (FDA) approved expanding the age indication for Boostrix (GlaxoSmithKline Biologicals, Rixensart, Belgium) to aged 65 years and older (*4*). In February 2012, ACIP recommended Tdap for all adults aged 65 years and older. This recommendation supersedes previous Tdap recommendations regarding adults aged 65 years and older.

The Pertussis Vaccines Work Group of ACIP reviewed the epidemiology of pertussis in adults aged 65 years and older and two cost-effectiveness models to assess the epidemiologic and economic impact of pertussis vaccination in this population. The Work Group also considered safety and immunogenicity data from clinical trials and observational studies on the use of Tdap in adults aged 65 years and older (*3*).

The two Tdap vaccines available in the United States, Boostrix and Adacel (Sanofi Pasteur, Toronto, Canada), differ in composition and approved age for use (Table). Only Boostrix is approved for adults aged 65 years and older; however, ACIP discussed the use of Adacel in this age group. On February 22, 2012, ACIP approved use of Tdap for all adults aged 65 years and older. This report summarizes data considered and conclusions made by ACIP and provides guidance for implementing the recommendation.

The Pertussis Vaccines Work Group of ACIP reviewed the epidemiology of pertussis in adults aged 65 years and older and two cost-effectiveness models to assess the epidemiologic and economic impact of pertussis vaccination in this population. The Work Group also considered safety and immunogenicity data from clinical trials and observational studies on the use of Tdap in adults aged 65 years and older (*3*). The Work Group then presented policy options for consideration to the full ACIP.

Epidemiology of Pertussis in Older Adults

Because pertussis is underdiagnosed and underreported substantially in all age groups, the actual burden of disease in adults aged 65 years and older is unknown (*5*). During 2000–2010, an annual average of 318 pertussis cases (range: 71–719 cases) in adults aged 65 years and older were reported each year through the National Notifiable Diseases Surveillance System (CDC, unpublished data, 2011). Challenges to diagnosing and reporting pertussis in all adults include 1) underrecognition of pertussis as a cause for cough illness, 2) atypical presentation of symptoms in adults, and 3) a low index of suspicion among providers (*6,7*). Few studies are focused on the burden of pertussis in adults aged 65 years and older. Among reported prospective studies, the calculated pertussis incidence ranged from 66 to 500 cases per 100,000 persons per year (*8–11*). Reported pertussis incidence ranges from one to five cases per 100,000 in adults of similar age ranges (CDC, unpublished data, 2011); this 70-fold to 100-fold difference suggests that actual pertussis incidence in older adults is much higher than reported (CDC, unpublished data, 2011). ACIP supported the conclusion that the actual burden of pertussis in adults aged 65 years and older likely is at least 100 times greater than that reported.

Cost Effectiveness Analysis

ACIP reviewed two unpublished cost-effectiveness models, developed independently by GlaxoSmithKline and CDC (*12,13*). Both models were developed to assess the epidemiologic and economic impact of Tdap vaccination in adults aged 65 years and older and demonstrated that a dose of Tdap for older adults resulted in a moderate decrease in the number of cases and outcomes (e.g., outpatient visits, hospitalizations, and deaths), which might represent a cost-effective intervention. Model results were most sensitive to incidence of pertussis; however, sensitivity analyses showed that even with a range of underreporting of incidence, Tdap vaccination might be cost-effective in this population. Reassured by the concordance between the two cost-effectiveness models, ACIP's interpretations were that the cost per case averted and cost per quality-adjusted life-year saved were modest, and pertussis incidence estimates accounting for underreporting were reasonable based on limited data and expert opinion.

Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccine (Tdap) in Pregnant Women — Advisory Committee on Immunization Practices (ACIP), 2012

In October 2011, in an effort to reduce the burden of pertussis in infants, the Advisory Committee on Immunization Practices (ACIP) recommended that unvaccinated pregnant women receive a dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) (*1*). Vaccination of women with Tdap during pregnancy is expected to provide some protection to infants from pertussis until they are old enough to be vaccinated themselves. Tdap given to pregnant women will stimulate the development of maternal antipertussis antibodies, which will pass through the placenta, likely providing the newborn with protection against pertussis in early life, and will protect the mother from pertussis around the time of delivery, making her less likely to become infected and transmit pertussis to her infant (*1*). The 2011 Tdap recommendation did not call for vaccinating pregnant women previously vaccinated with Tdap. On October 24, 2012, ACIP voted to recommend use of Tdap during every pregnancy. This report summarizes data considered and conclusions made by ACIP and provides guidance for implementing its recommendations. These updated recommendations on use of Tdap in pregnant women aim to optimize strategies for preventing pertussis morbidity and mortality in infants.

ACIP is chartered as a federal advisory committee to provide expert external advice and guidance to the Director of the Centers for Disease Control and Prevention (CDC) on use of vaccines and related agents for the control of vaccine-preventable diseases in the civilian population of the United States. Recommendations for routine use of vaccines in children and adolescents are harmonized to the greatest extent possible with recommendations made by the American Academy of Pediatrics, the American Academy of Family Physicians (AAFP), and the American College of Obstetricians and Gynecologists. Recommendations for routine use of vaccines in adults are reviewed and approved by the American College of Physicians, AAFP, the American College of Obstetricians and Gynecologists, and the American College of Nurse-Midwives. ACIP recommendations adopted by the CDC Director become agency guidelines on the date published in the *Morbidity and Mortality Weekly Report* (*MMWR*).

The United States has experienced substantial increases in reported pertussis cases over the past several years. Provisional case counts for 2012 have surpassed the last peak year, 2010, with 41,880 pertussis cases and 14 deaths in infants aged <12 months (*2*) (CDC, unpublished data, 2012). To reduce this burden, optimizing the current vaccination program and protecting infants who are at highest risk for death are immediate priorities. Since the 2011 ACIP vaccination recommendation, uptake of Tdap among pregnant women has been low: one survey of 1,231 women (August 2011 to April 2012) estimated that only 2.6% of women received Tdap during their recent pregnancy (*3*). New data indicate that maternal antipertussis antibodies are short-lived; therefore, Tdap vaccination in one pregnancy will not provide high levels of antibodies to protect newborns during subsequent pregnancies (*4*).

Methods

In monthly teleconferences during 2012, the ACIP Pertussis Vaccines Work Group considered published, peer-reviewed literature and unpublished data relevant to vaccinating pregnant women with Tdap. When data were not available, expert opinion was considered. Summaries of the data reviewed and work group discussions were presented to ACIP before recommendations were proposed. The proposed Tdap recommendation for pregnant women was presented at the October 2012 ACIP meeting and approved by ACIP.

Summary of ACIP Deliberations and Rationale

A dose of Tdap during each pregnancy

Very young infants are dependent solely on maternal antibodies and lack the ability to mount a cell-mediated response (*4*). The effectiveness and optimal concentration of maternal antipertussis antibodies in newborns are not yet known, but high levels of antibodies in the first weeks after birth likely confer protection and might prevent pertussis or modify disease severity (*5–7*). Studies on the persistence of antipertussis antibodies following a dose of Tdap show antibody levels in healthy, nonpregnant adults peak during the first month after vaccination, with substantial antibody decay after 1 year (*8–10*). Antibody kinetics in pregnant women likely would be similar. One study evaluated persistence of maternal

PERTUSSIS VACCINATION OF PREGNANT WOMEN

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/tdap-td.html

ACIP Conclusions: Tdap and Pregnancy

- **Maternal antibodies from women immunized before pregnancy waned quickly (Healy 2012)**
  - Concentration of maternal antibodies unlikely high enough to provide passive protection to infants
- **A single dose of Tdap during one pregnancy is insufficient to provide protection for subsequent pregnancies**

Bottom Line

An infant's first dose of pertussis vaccine is the one you administer to his/her mom!

ACIP Recommendations: Tdap and Pregnancy

- **Administer Tdap to pregnant women during each pregnancy, regardless of previous Tdap vaccination history**
- **Ideally vaccinate between 27 through 36 weeks gestation although Tdap may be given at any time during pregnancy**
  - 27 through 36 weeks gestation is optimal timing to maximize the maternal antibody response AND passive antibody transfer to the infant

*ACIP off-label recommendation; *MMWR*. Vol. 62 No. 7; Feb, 22, 2013

Special Situations and Pregnant Women

- **Unknown or incomplete tetanus vaccination: should complete the 3-dose primary series**
  - Recommended schedule is 0, 4 weeks, and 6 through 12 months
  - Tdap should replace 1 dose of Td, preferably between 27- 36 weeks gestation
- **Wound care: previously unvaccinated pregnant woman should be given Tdap if Td is indicated for wound management**

*ACIP off-label recommendation;

MMWR. Vol. 62 No. 7; February 22, 2013 and *MMWR* 2011:60 (No.41): 11424-1426

Tdap and Postpartum Women

- **Postpartum women *not previously vaccinated* should be vaccinated immediately**
  - Including women who are breastfeeding
- **Do not administer Tdap to postpartum women who have already been vaccinated with Tdap**
  - Regardless of the length of time since Tdap vaccination

Pneumococcal Vaccines

Characteristic	23-valent Pneumococcal Polysaccharide Vaccine (PPV23)	13-Valent Pneumococcal Conjugate Vaccines (PCV13)
Components	Purified polysaccharide	Purified polysaccharide covalently bound to carrier protein
Ages	2 years and older	6 weeks and older *
Number of serotypes	23	13
Effect against bacteremia	Substantial	Substantial
Effect against carriage	None	Substantial
Effect against non-bacteremic pneumonia	No consensus	Moderate
Route	Subcut or IM injection	IM Injection

*ACIP Off-label recommendation

Administering PCV13 and PPSV23 Vaccines General Rules

- **PCV13 and PPSV23 should not be administered during the same clinic visit**
  - Either vaccine may be administered with other vaccines
- **Administer PCV13 before PPSV23 whenever possible**

Invasive Pneumococcal Disease

- **High-risk immunocompromising conditions**
  - Functional or anatomic asplenia
  - Immunocompromising condition
  - Renal disease
  - Cerebrospinal fluid leak
  - Cochlear implant

Invasive Pneumococcal Disease

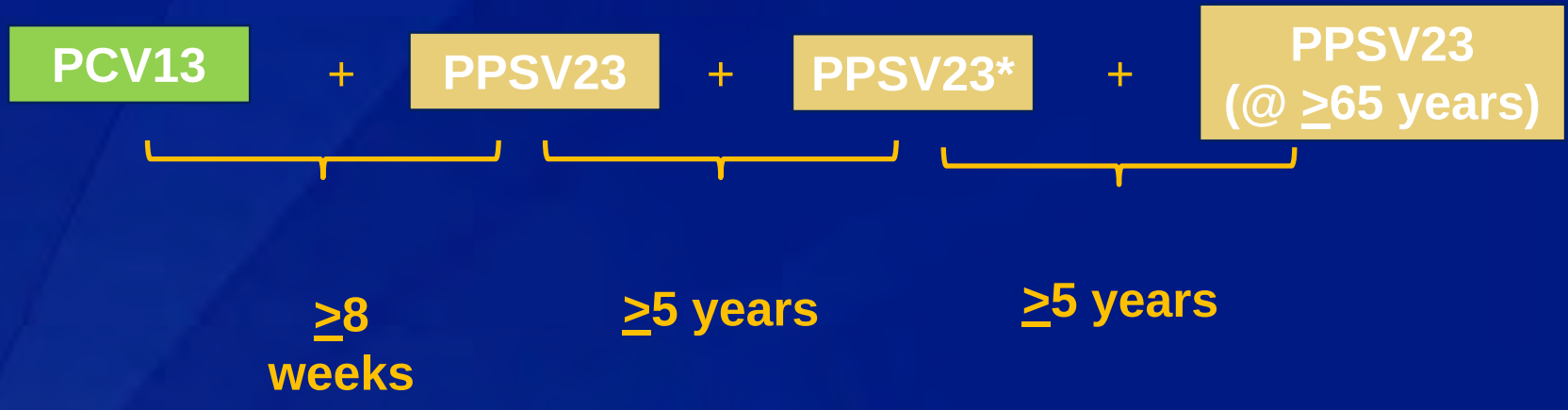
- **High-risk immunocompetent condition**
  - Chronic heart disease
  - Chronic lung disease
  - Metabolic disease
  - Alcoholism
  - Chronic liver disease
  - Cigarette smoking (19 years of age or older)
  - Asthma (19 years of age or older)

Administering PCV13 and PPSV23: General Rules

- **If PCV13 is administered first**
  - Generally administer PPSV23 1 year later
  - If high-risk immunosuppressive: 8 weeks later
- **If PPSV23 is administered first**
  - Must administer PCV13 1 year later
  - Optimal antibody response

ACIP Recommendations for PCV13 and PPSV23 for Adults 19 Years and Older

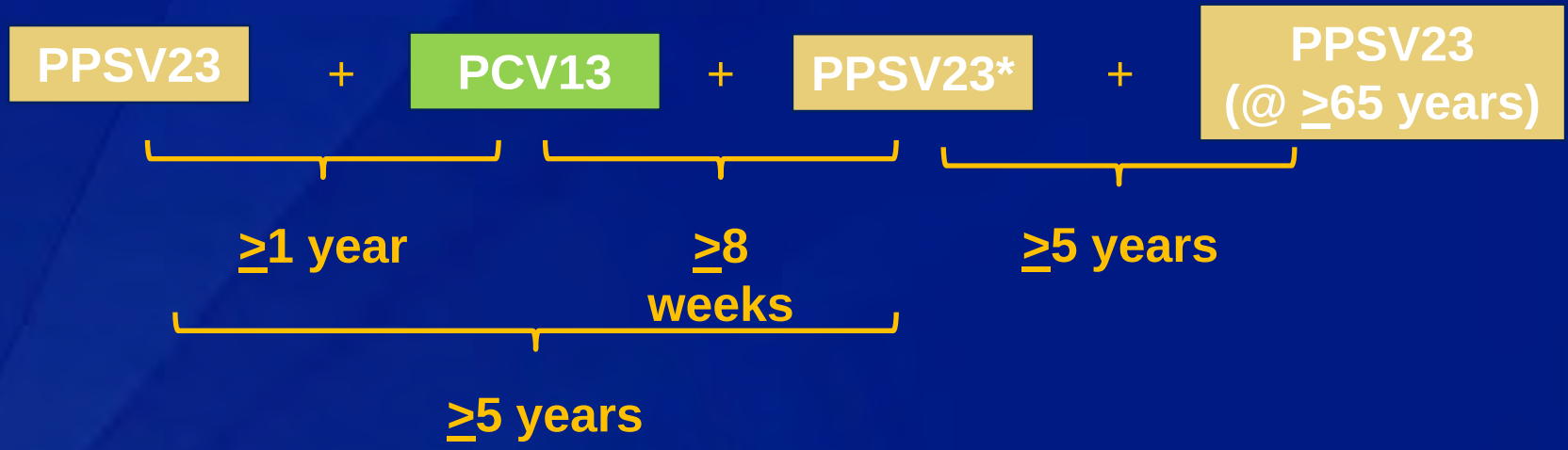
- Immunocompromised, Asplenic (sickle cell, hemoglobinopathy), CSF leaks, Cochlear Implants who are Pneumococcal-naive



*Second PPSV23 dose before age 65 years NOT recommended for adults with CSF leaks or those with cochlear implants

ACIP Recommendations for PCV13 and PPSV23 for Adults 19 Years and Older

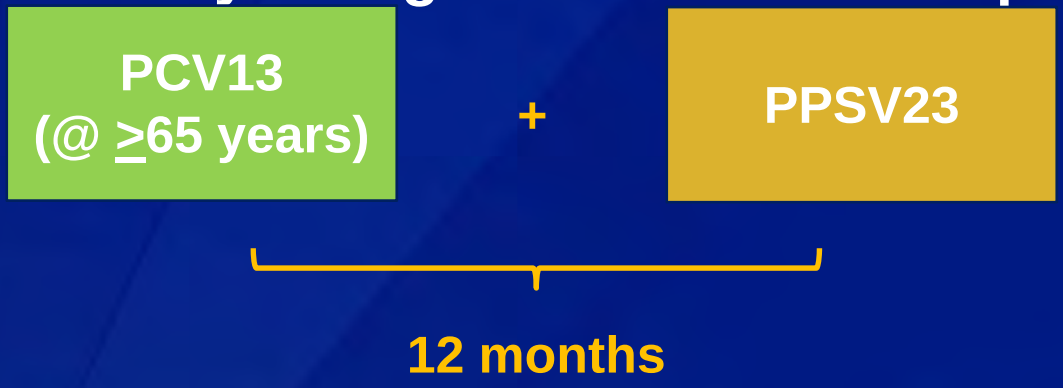
- **Immunocompromised, Asplenic (sickle cell, hemoglobinopathy), CSF leaks, Cochlear Implants who have previously received PPSV23**



*Second PPSV23 dose before age 65 years NOT recommended for adults with CSF leaks or those with cochlear implants

ACIP Recommendations for PCV13 and PPSV23 for Adults 65 Years and Older

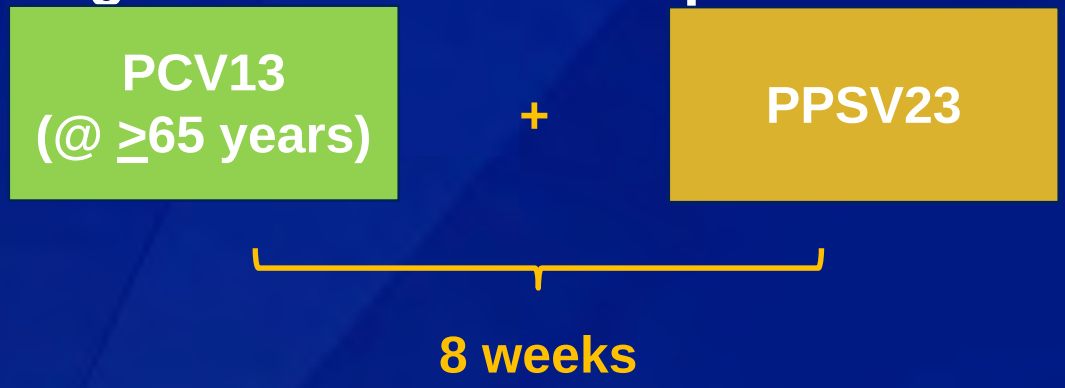
- Pneumococcal-naïve or unknown vaccination history
- Healthy or high-risk immunocompetent adult



- If PPSV23 cannot be given at 12 months later, it should be given during the next visit
- Minimum interval = 8 weeks

ACIP Recommendations for PCV13 and PPSV23 for Adults 65 Years and Older

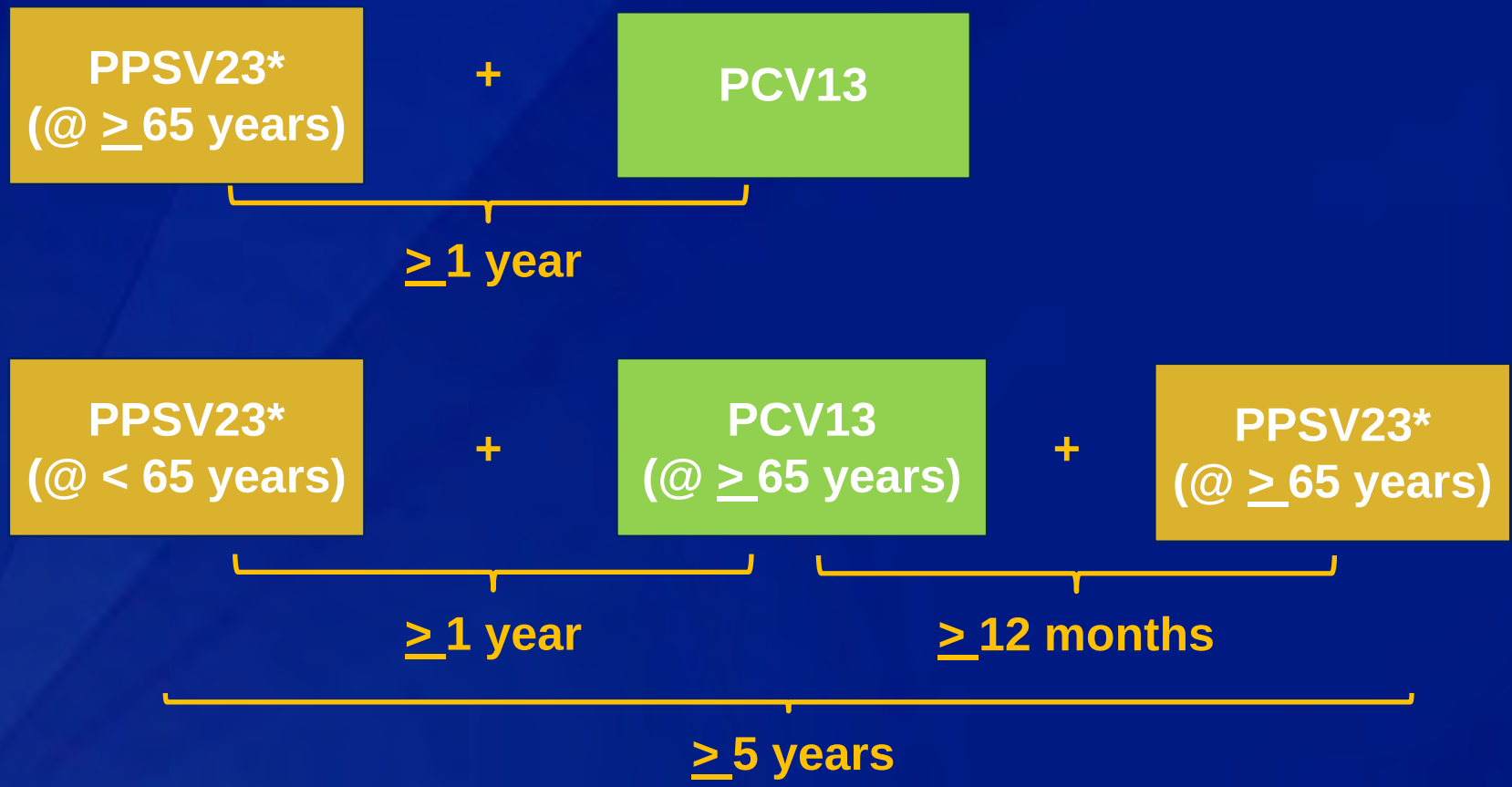
- Pneumococcal-naïve or unknown vaccination history
- High-risk immunocompromised adult



- Minimum interval = 8 weeks

ACIP Recommendations for PCV13 and PPSV23 for Adults 65 Years and Older

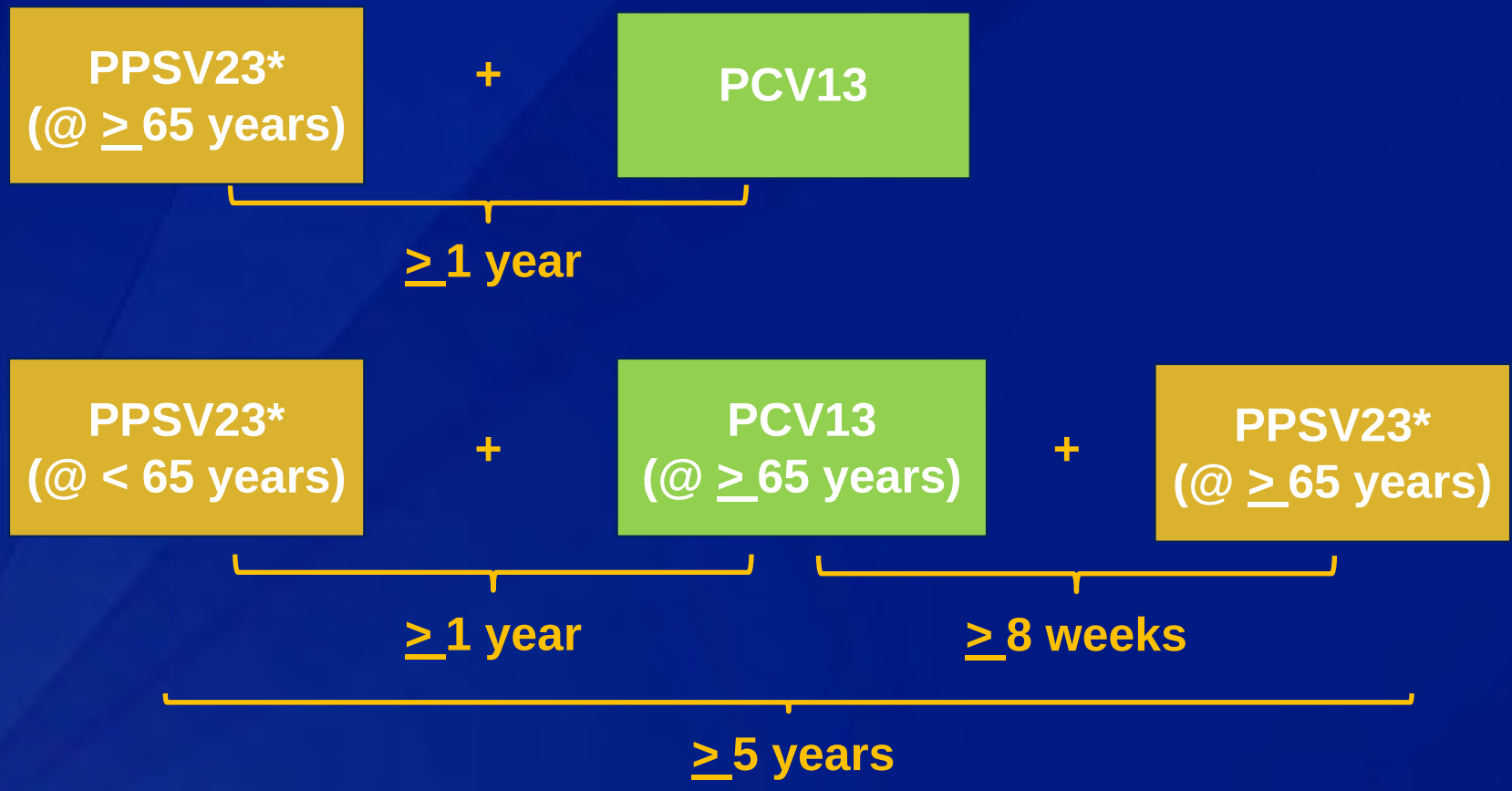
- Previously received one or more doses of PPSV23
- Healthy or high-risk immunocompetent adult



*Doses already administered

ACIP Recommendations for PCV13 and PPSV23 for Adults 65 Years and Older

- Previously received one or more doses of PPSV23
- High-risk immunosuppressive adult



*Doses already administered

http://www.cdc.gov/vaccines/vpd-vac/pneumo/downloads/adult-vax-clinician-aid.pdf

Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

Two pneumococcal vaccines are recommended for adults:
- 13-valent pneumococcal conjugate vaccine (PCV13, Prevnar13®)
- 23-valent pneumococcal polysaccharide vaccine (PPSV23, Pneumovax®23)

PCV13 and PPSV23 should not be administered during the same office visit.

When both are indicated, PCV13 should be given before PPSV23 whenever possible.

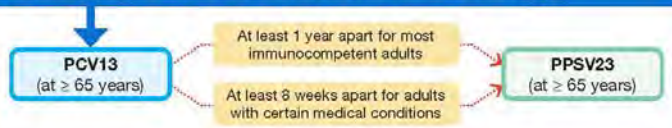
If either vaccine is inadvertently given earlier than the recommended window, do not repeat the dose.

One dose of PCV13 is recommended for adults:
- 65 years or older who have not previously received PCV13.
- 19 years or older with certain medical conditions and who have not previously received PCV13. *See Table 1 for specific guidance.*

One dose of PPSV23 is recommended for adults:
- 65 years or older, regardless of previous history of vaccination with pneumococcal vaccines.
  - Once a dose of PPSV23 is given at age 65 years or older, no additional doses of PPSV23 should be administered.
- 19 through 64 years with certain medical conditions.
  - A second dose may be indicated depending on the medical condition. *See Table 1 for specific guidance.*

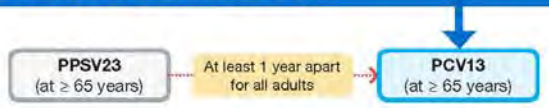
Pneumococcal vaccine timing for adults 65 years or older

For those who have not received any pneumococcal vaccines, or those with unknown vaccination history



- Administer 1 dose of PCV13.
- Administer 1 dose of PPSV23 **at least 1 year** later for most immuno*competent* adults or **at least 8 weeks** later for adults with immuno*compromising* conditions, cerebrospinal fluid leaks, or cochlear implants. *See Table 1 for specific guidance.*

For those who have previously received 1 dose of PPSV23 at ≥ 65 years and no doses of PCV13



- Administer 1 dose of PCV13 **at least 1 year** after the dose of PPSV23 for all adults, regardless of medical conditions.

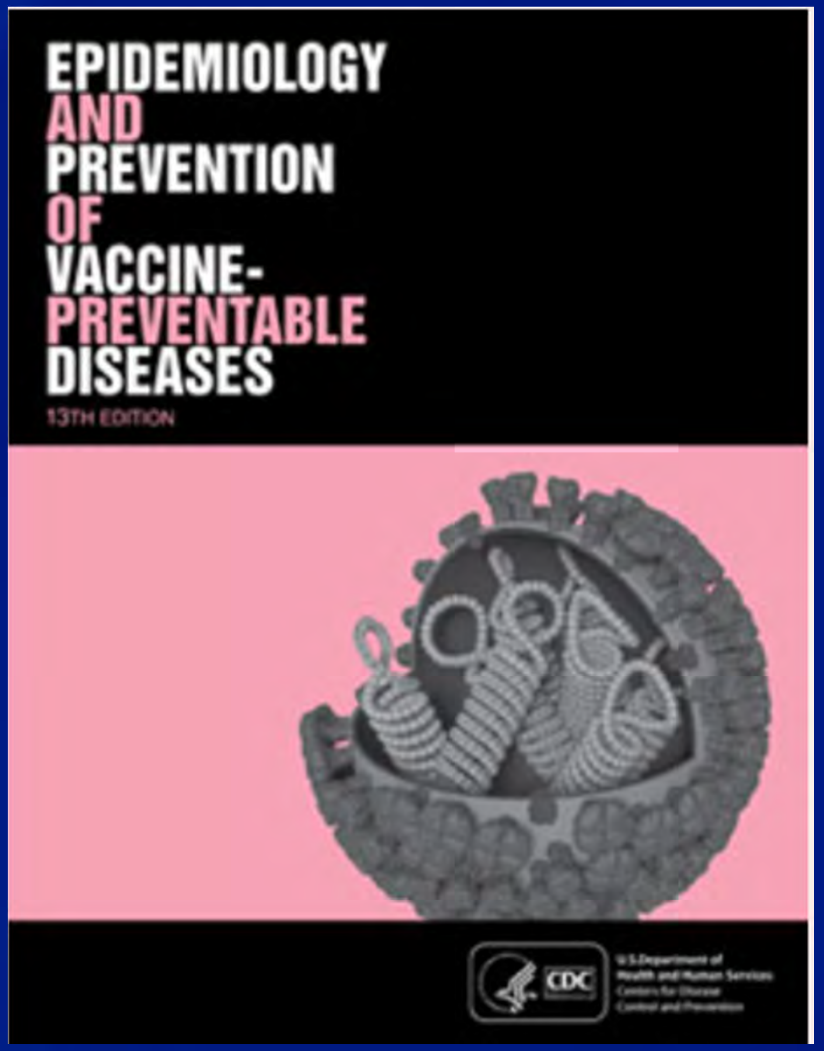
NCIRDig410 | 11.30.2015

www.cdc.gov/pneumococcal/vaccination.html

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

The New Pink Book Now Available

- 13th Edition (2015)
- Available on online – view, print or download.
- Bound copies may be purchased.



www.cdc.gov/vaccines/pubs/pinkbook/index.html
www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC Vaccines and Immunization Resources

- **Questions? E-mail CDC**
  - nipinfo@cdc.gov or www.cdc.gov/cdcinfo

Website	**www.cdc.gov/vaccines**
HCP	**www.cdc.gov/vaccines/hcp**
Twitter	**@CDCIZlearn**
Influenza	**www.cdc.gov/flu**
Vaccine Safety	**www.cdc.gov/vaccinesafety**

Which vaccine preventable disease am I?

- I cause dark urine and a yellowing of the skin.
- My symptoms will appear 3 or 4 months after exposure, but I can stay with you for a lifetime.
- I am spread through blood or other bodily fluids and I can live on objects for 7 days or more.
- I have the highest percentage of Idaho K, 1 & 7th graders in compliance at a rate of 93.7% adequacy for 2015.

Sources: Idaho Immunization Program, CDC, NIS Teen & NIS Children (19-35 months)

Hepatitis B

Vaccine Management, Vaccines for Children, and AFIX

Tamarie Olson
Vaccine Operations and Quality Assurance Manager
Idaho Immunization Program

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Idaho Immunization Program

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DIVISION OF PUBLIC HEALTH

Vaccine Management

Temperature Monitoring Equipment

- Two vaccine temperature monitoring options
  - TR-52*i*
    - Equipment and software
    - Download temperature information manually
  - PharmaWatch™
    - Equipment
    - Temperature information available online
    - Alerts

Vaccine Inventory

- Economic Ordering Quantity (EOQ)
  - Ordering frequency is assigned
  - Vaccine orders should be placed based on your organizations ordering frequency
- Wasted vaccines must be reported to the IIP and accounted for in IRIS
- Expired and spoiled vaccines must be reported to the IIP, accounted for in IRIS, and returned to McKesson

Idaho Immunization Program (IIP)
McKesson Vaccine Return Form

IIP USE ONLY
VTrckS No:
Return ID Expired:
Return ID Spoiled:

For all non-viable vaccine supplied by the IIP to be returned to McKesson Distribution for federal excise tax credit. Vaccine lost due to expiration or improper storage and handling must be reported to the IIP within four weeks of expiration or loss. The Temperature Incident Report must also be completed for all incidents of improper storage and handling that result in vaccine loss. For non-viable, non-returnable vaccine (e.g. open multi-dose vial) complete the Wasted Vaccine Form.

Date:
Immunization Contact:
Phone: (208)
VFC PIN:
Office Name:
Fax: (208)

A copy of this form must be included with the vaccines returned to McKesson.

Vaccine Type	# Doses	Lot #	NDC #	Manufacturer	Expiration Date	Reason Returned*

*Use one of the following reasons in the Reason Returned column for each of the non-viable vaccines:
1. Expired Vaccine
2. Refrigerator / Freezer too warm
3. Refrigerator / Freezer too cold
4. Failure to Store Vaccine Properly upon Receipt
5. Mechanical Failure
6. Natural Disaster / Power Outage
7. Other – Specify
8. Recall

Signature of Preparer:
Date:

Return the completed form to the Idaho Immunization Program to receive a return shipment label.

Idaho Immunization Program

Phone: (208) 334-5931 or (800) 554-2922
Fax: (208) 334-4914
Email: IIP@dhw.idaho.gov

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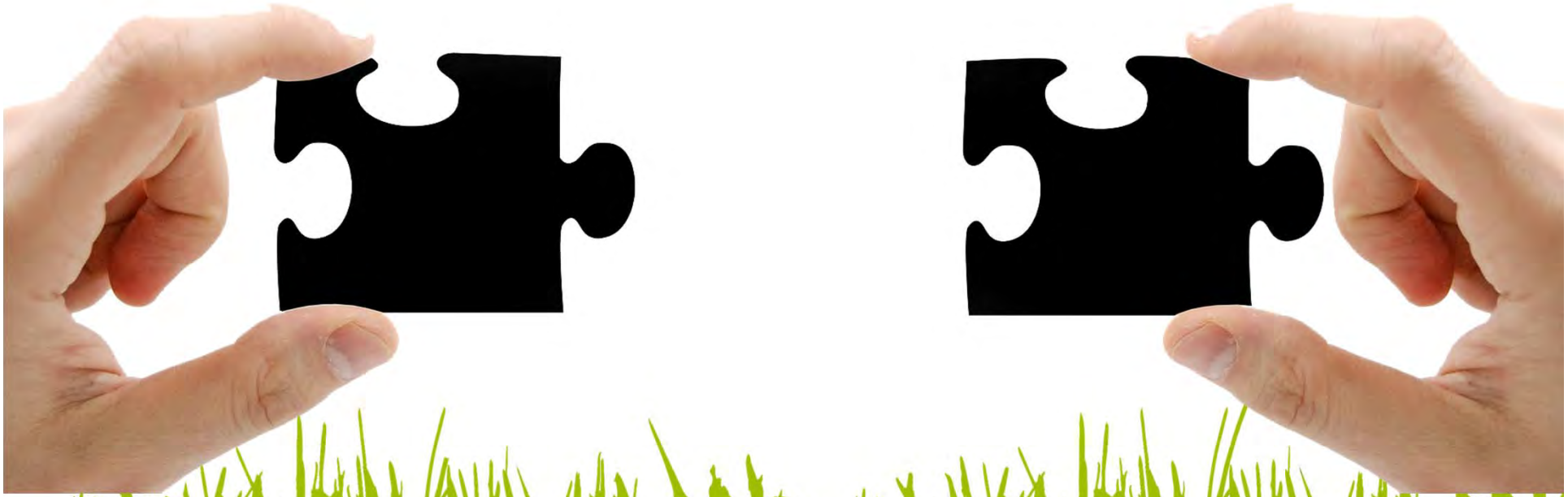
Vaccine Wastage and Return

- Automated process in IRIS
  - August 2016
  - No more paper forms



Vaccine Wastage and Return Training

- On-site trainings will be conducted
  - July 18 – 28, 2016

- Cities:

Ponderay	Meridian	Blackfoot
Coeur d' Alene	Boise	Idaho Falls
Moscow	McCall	Rexburg
Lewiston	Twin Falls	
Nampa	Pocatello	

Additional information about dates, times, and locations will be available soon

Non-Deduct Ad Hoc Report for Vaccine Inventory

- Will display information sent from an organization's EHR/EMR to IRIS that did not deduct from inventory
  - Includes guidance about making corrections
- Will only be distributed to provider with electronic data exchange
- Will be included with the 2016 re-enrollment information

Vaccines for Children

Provider Re-enrollment

- Providers are required to re-enroll annually
- Packets will be distributed in May 2016

- Completed forms are due on July 1, 2016

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AFIX

AFIX-IIS

- Use of IRIS to generate immunization rates
  - CoCASA will no longer be used
  - IRIS organizations can run immunization rates

- Idaho will be working collaboratively with other states

- Target implementation is the Spring of 2017

IIS Section

Jennifer Baker
Immunization Information System Manager
Idaho Immunization Program

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Idaho Immunization Program

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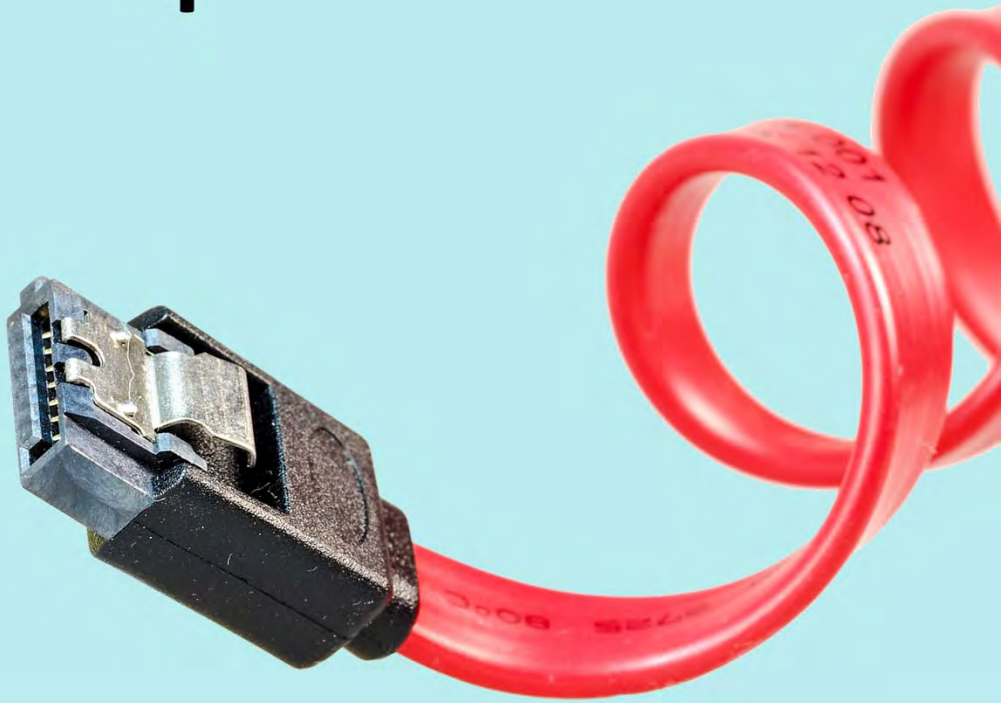
Idaho Immunization Program

Upcoming

Data Exchange Improvements

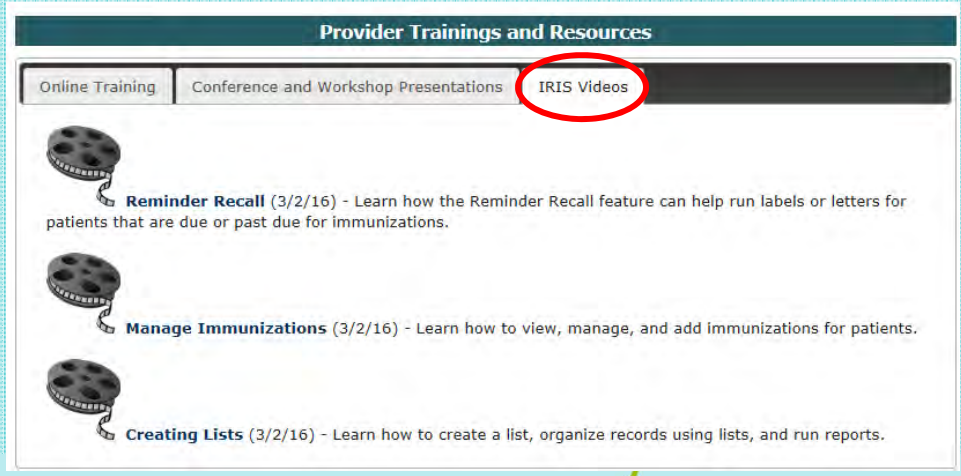
- Benefits
  - Meaningful Use
  - Immunization Rates
  - Data Quality Reports



- Target date: April 1, 2017

Training Videos

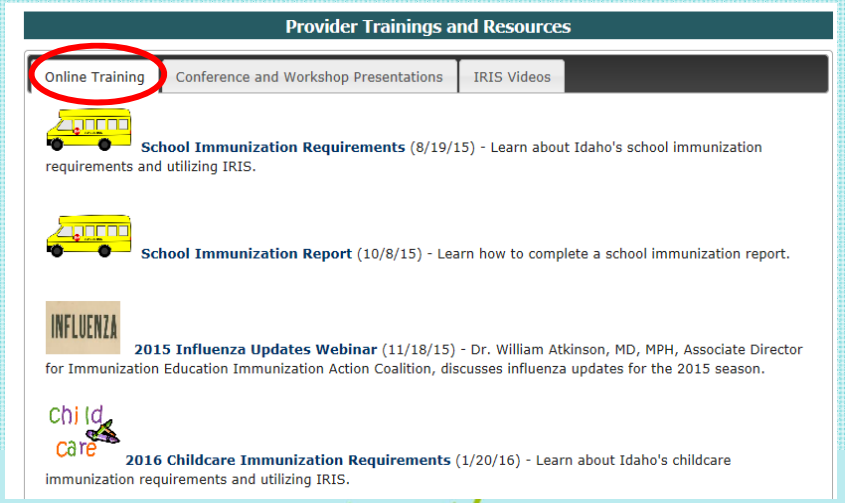
- Focused on IRIS functionality
  - Running a Reminder/Recall
  - Reading the Manage Immunization screen
  - Creating School Lists



- Posted online at www.immunizeidaho.com

Webinars

- Focused on important immunization program topics
  - Influenza
  - School Immunization Requirements
  - Data Exchange
  - Improving DTaP 4 coverage



- Posted online at www.immunizeidaho.com

Password Reset

Best Practices

Helpful Hints

- Reset your own password OR reactivate your account
- Know your email address
- Try to log in to IRIS first before you hit “Forgot Password”
- Watch the webinar from March 16th posted at www.immunizeidaho.com
- Review the instructions on IRIS Home Page

IRIS
IRIS Idaho's Immunization Reminder Information System
Idaho Immunization Program
HOME
FORMS
RELATED LINKS
Production Region
Username:
Password:
Login
Forgot Password?
DO NOT ATTEMPT TO LOG ON UNLESS YOU ARE AN AUTHORIZED USER.
Hot Topics
HT-1
Updated February 16, 2016
Posted on 02/16/2016
IMPORTANT INFORMATION:
All requests for IRIS accounts and new passwords must be submitted online. Requests will NOT be processed over the phone.
FORGOT YOUR PASSWORD?
If you already have an IRIS account but need to reset it, ple click on the "FORGOT PASSWORD" box or click here for instructions FORGOT PASSWORD INSTRUCTIONS.
REQUEST AN IRIS ACCOUNT
If you are a healthcare provider, school, or childcare facility needing an IR enrollment form by selecting the appropriate link below. Complete all of the required informatio business days to receive your IRIS username and password.
Healthcare Provider: REQUEST AN IRIS ACCOUNT
School Staff: REQUEST AN IRIS ACCOUNT
Childcare Provider: REQUEST AN IRIS ACCOUNT

Which vaccine preventable disease am I?

- I represent a group of more than 150 related viruses.
- My series has the lowest rate of completion with 17.2% of boys and 38.3% of girls completing the series in 2014.
- I am the most common sexually transmitted infection (STI).
- During calendar year 2015, the IIP distributed 47,510 doses to protect against me.

Sources: Idaho Immunization Program, CDC, NIS Teen & NIS Children (19-35 months)

HPV

(Human papillomavirus)

Talking to Parents about Vaccines

Paul A. Offit

Division of Infectious Diseases

Children's Hospital of Philadelphia

University of Pennsylvania School of Medicine

Idaho School Immunization Exemptions

Mezelle Moore, MPH
Immunization Outreach and Assessment Coordinator

School Immunization Report (SIR)

- Required for all public, private & parochial schools by November 1st (IDAPA 16.02.15)

- Each year a report must be submitted for:
  - Kindergarten
  - 1st Grade
  - 7th Grade

Kindergarten -12th Grade Doses

Immunization Requirement	Child born on or before 9/1/1999	Child born 9/1/99 through 9/1/2005	Child born after 9/1/2005
Diphtheria, Tetanus & Pertussis* (DTaP)	4 doses	5 doses*	5 doses*
Polio**	3 doses	3 doses	4 doses**
Measles, Mumps & Rubella	1 dose	2 doses	2 doses
Hepatitis B	3 doses	3 doses	3 doses
Hepatitis A	-	-	2 doses
Varicella	-	-	2 doses

** The 5th dose of DTaP is not necessary if the 4th dose was given on or after the 4th birthday.*

*** The 4th dose of polio is not necessary if the 3rd dose was administered at age 4 years or older and at least 6 months following the previous dose.*

7th Grade Doses

Immunization Requirement	7th – 11th grade students
Tetanus, Diphtheria & Pertussis booster (Tdap)	1 dose
Meningococcal	1 dose

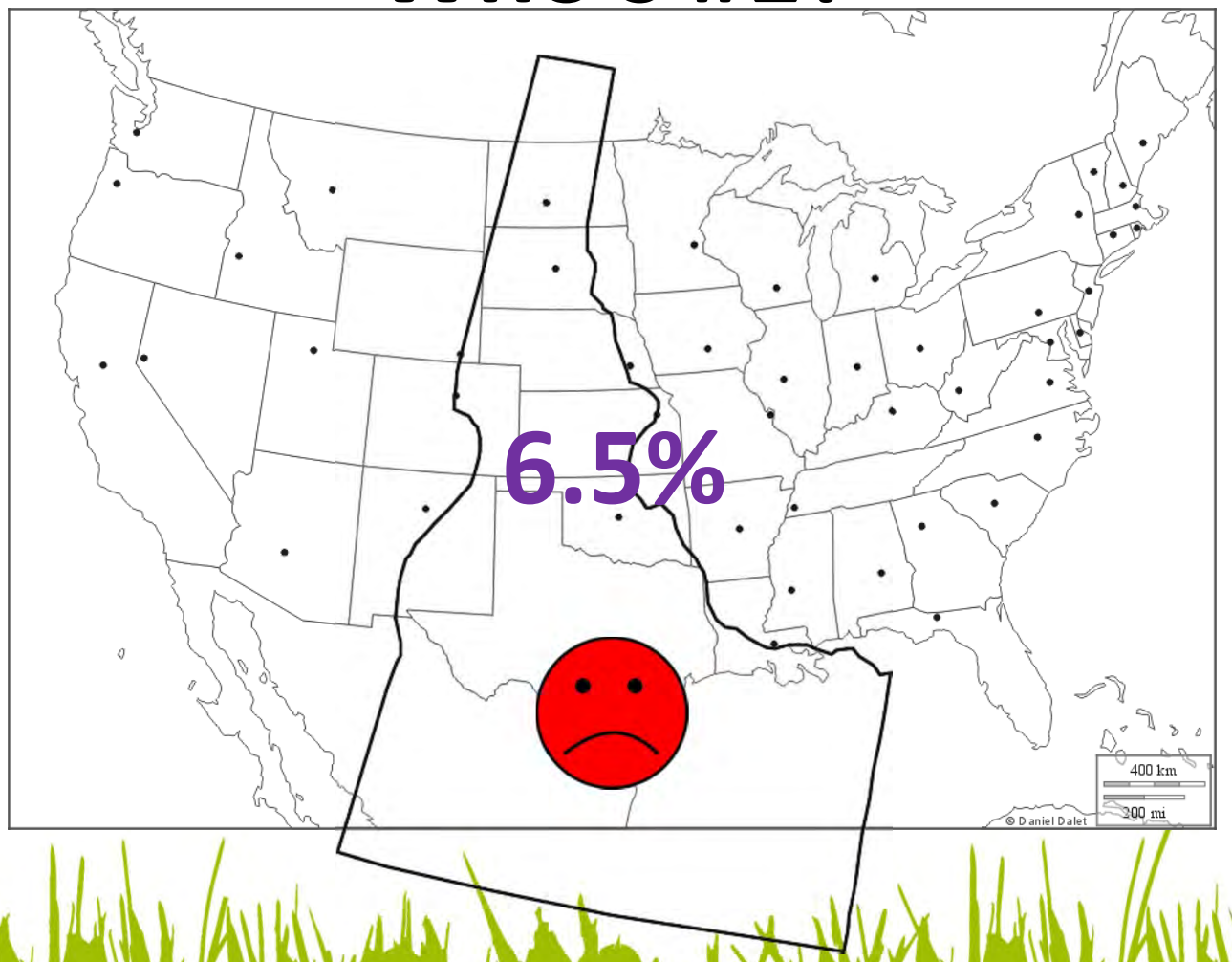
Exemptions

Idaho allows for the following exemptions for school entry:

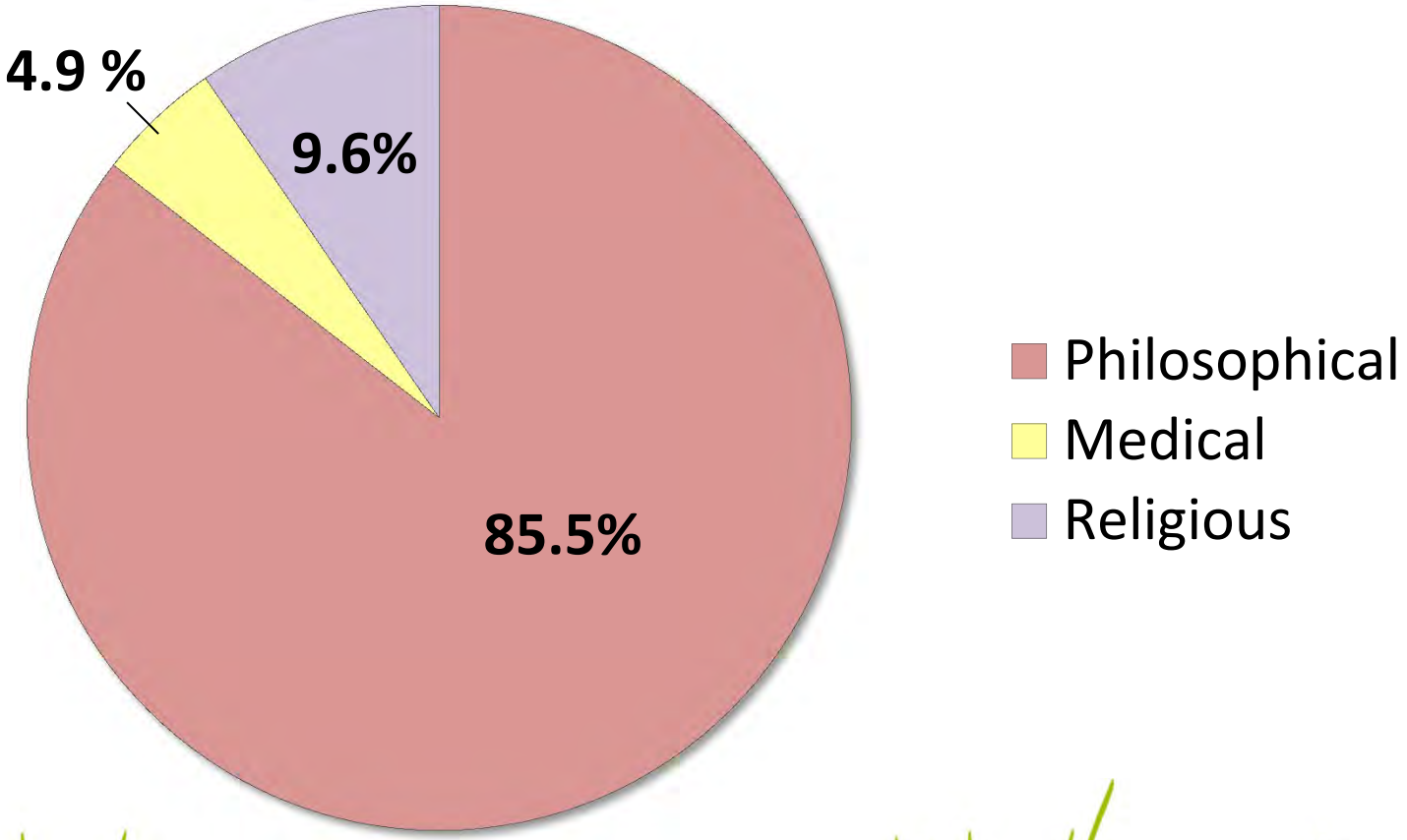
- **Medical** – requires a physician's signature
- **Religious** - requires a signed parent/guardian statement
- **Philosophical** - requires a signed parent/guardian statement

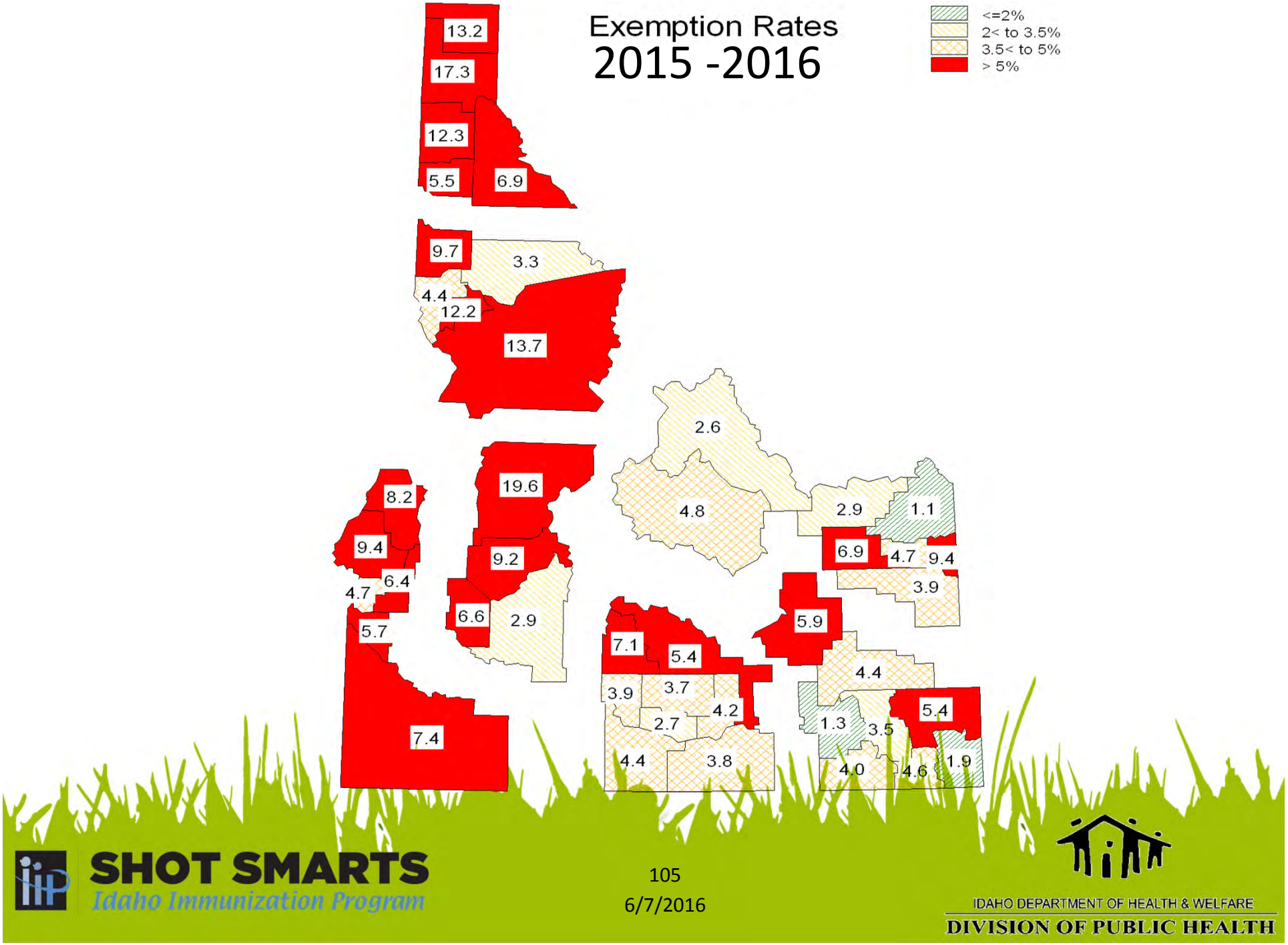
NOTE: Exempted children may be excluded from school during an outbreak!

Who's #1?



Types of Exemptions Reported
(2015 SIR)





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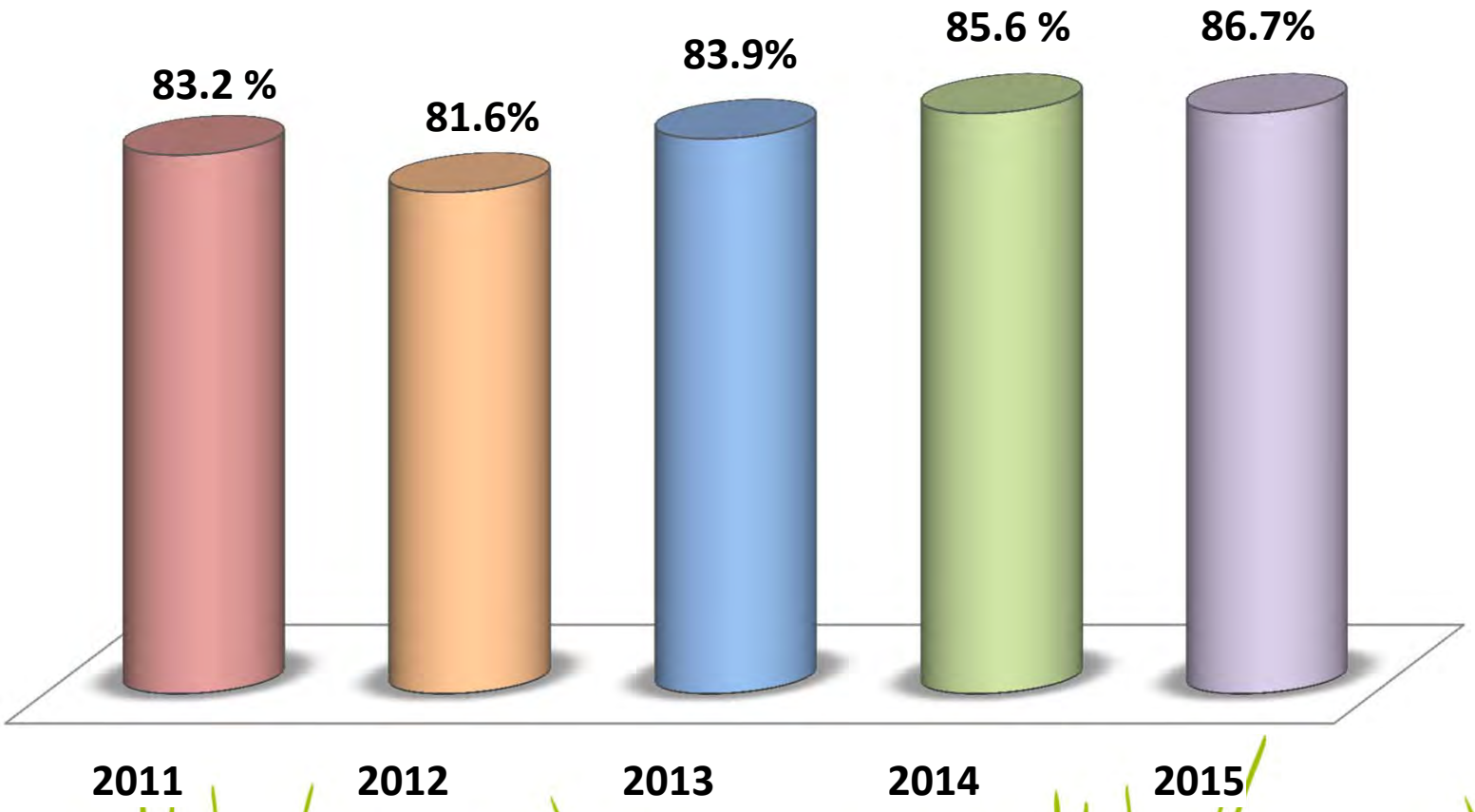
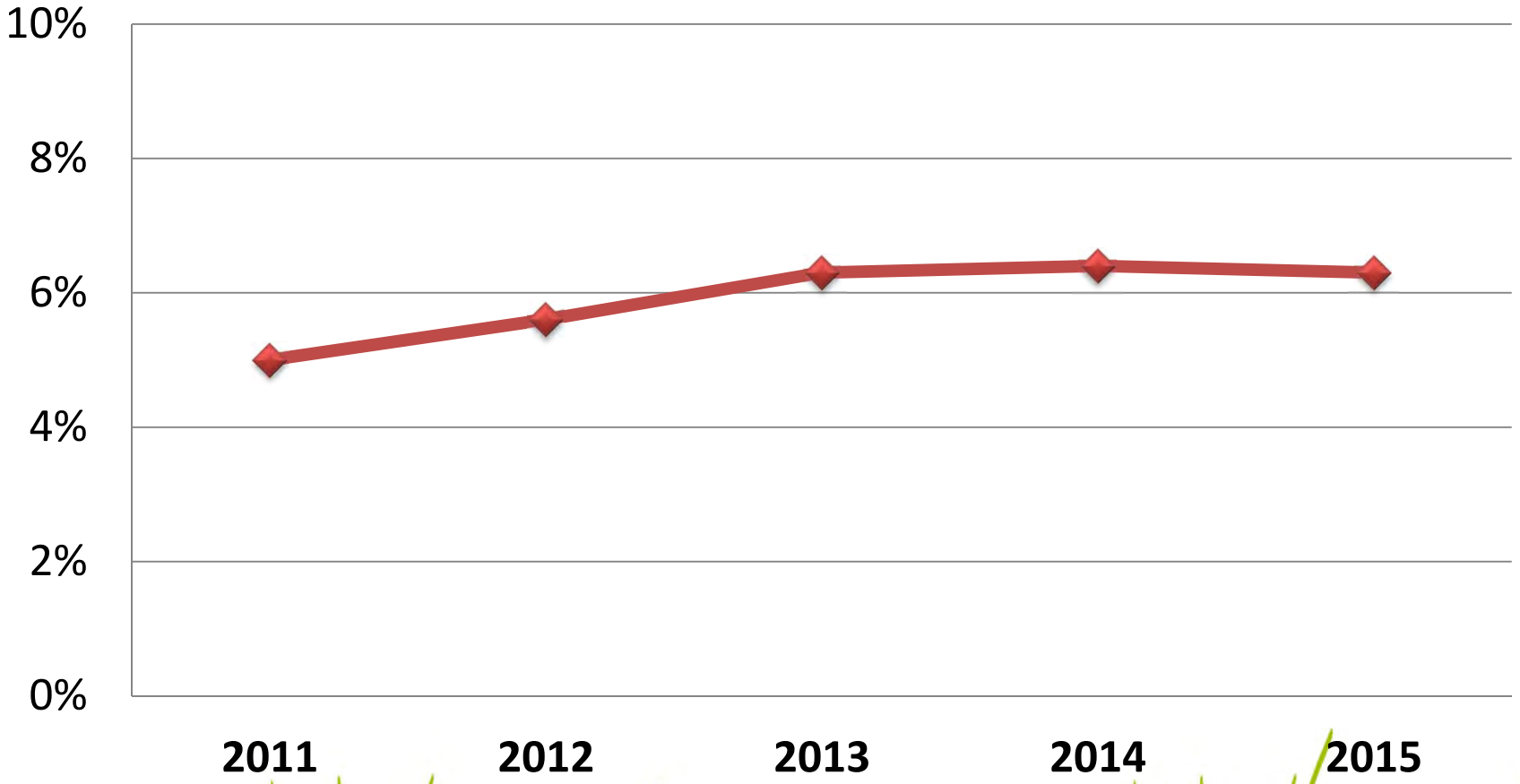
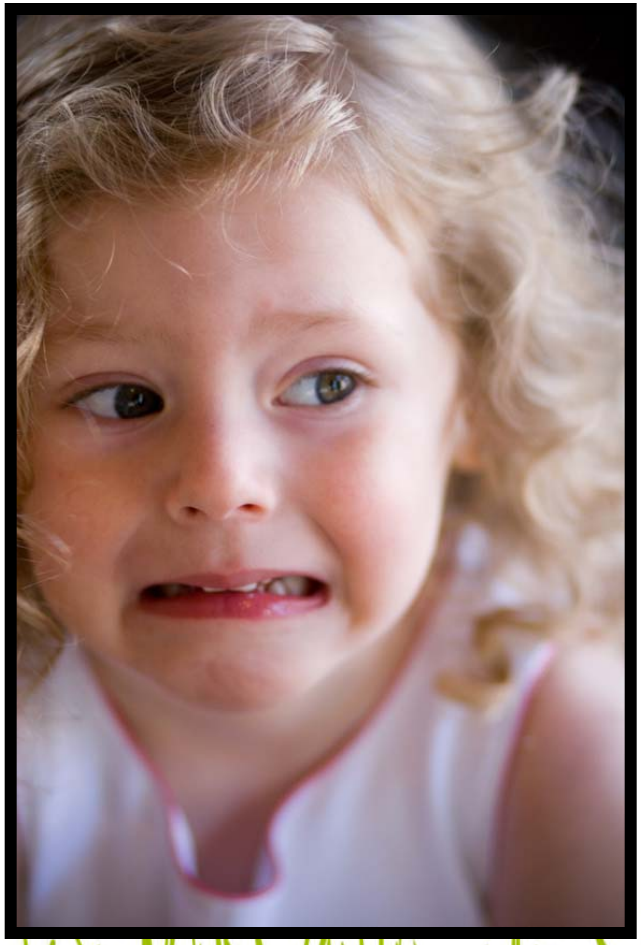
Trends Graph
(Adequately Immunized Students)



Trends Graph
(Student Exemptions)



Exemption Misuse



Reasons some parents file an exemption:

- forgotten or misplaced record
- recently moved and do not have a record copy
- offered as an “easy” way out because of immunization errors

Ways YOU can help:

- Address vaccine hesitancy concerns with parents
- Don’t miss opportunities to vaccinate
- Ensure only valid doses are given
- Double check immunization data entered into IRIS
- Communicate with parents about the need for upcoming vaccinations

Your role is crucial!

Thank you for all that you do to keep Idaho's children healthy!

Which vaccine preventable disease am I?

- Sometimes I can be mild, and those infected can recover in about a week.
- My more serious complications include pneumonia and dehydration.
- I am especially dangerous to young children, older people, pregnant women and those with certain chronic conditions.
- Only 39.2% of children aged 6mo -17yr were vaccinated against me by November 2015

Sources: Idaho Immunization Program, CDC, NIS Teen & NIS Children (19-35 months)

Influenza
(Seasonal Flu)

Addressing Vaccine Hesitancy

Andrew Kroger M.D., M.P.H.
National Center for Immunization and Respiratory Diseases (NCIRD)
Centers for Disease Control and Prevention

2016 Shot Smarts Immunization Conference

Pocatello ID, 2016

Benefit/Risk Communication Challenges

- Time
- Complicated science
- Disease versus vaccine
- Emotions (fear, anxiety) can be driving conversation

Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

Disease	20th Century Annual Morbidity†	2014 Reported Cases ††	Percent Decrease
Diphtheria	21,053	1	> 99%
Measles	530,217	644	> 99%
Mumps	162,344	1,151	99%
Pertussis	200,752	28,660	86%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	8	> 99%
Congenital Rubella Syndrome	152	0	100%
Tetanus	580	21	96%
Haemophilus influenzae	20,000	27*	> 99%
Total	999,159	30,512	97%
Vaccine Adverse Events	Not available	~30,000	Not available

† JAMA. 2007;298(18):2155-2163

†† CDC. MMWR January 9, 2015 / 63(53);ND-733-ND-746. (MMWR 2014 provisional week 53 data)

* *Haemophilus influenzae* type b (Hib) < 5 years of age. An additional 12 cases of Hib are estimated to have occurred among the 226 reports of Hi (< 5 years of age) with unknown serotype.

Importance of Vaccine Safety

Vaccinations universally recommended or mandated

Ongoing safety monitoring needed for the development of sound policies and recommendations

Pre-licensure
Vaccine Safety Studies

Laboratory

Animals

Humans

Pre-licensure Human Studies

Phase I trials – 20 to 100 volunteers

- **Serious adverse reactions**

Phase 2 trials – hundreds of volunteers

- **Best dose for safety and efficacy**
- **Correct number of doses**

Phase 3 trials – few hundred to several thousand volunteers (2000-5000)

- **Usually include a control group which receive a placebo**
- **Looks at safety and efficacy**
- **Common adverse reactions are identified**

Post-licensure Surveillance

Identify rare reactions

Monitor increases in known reactions - Identify risk factors for reactions

Identify vaccine lots with increased rates of reactions

Identify “signals” – reports of adverse events more numerous than would be expected

Vaccine Adverse Event Reporting System (VAERS)

- Jointly administered by CDC and FDA
- National reporting system
- Passive - depends on healthcare providers and others to report
- Receives ~30,000 reports per year

http://vaers.hhs.gov/

VAERS

Vaccine Adverse Event Reporting System

Search web site: Search

Report an Adverse Event | About VAERS | VAERS Data | Vaccine Resources | Information for Healthcare Professionals | Information for U.S. States and Territories | Information for Vaccine Manufacturers

The **Vaccine Adverse Event Reporting System (VAERS)** is a national vaccine safety surveillance program co-sponsored by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). VAERS is a post-marketing safety surveillance program, collecting information about adverse events (possible side effects) that occur after the administration of vaccines licensed for use in the United States.

VAERS provides a nationwide mechanism by which adverse events following immunization may be reported, analyzed, and made available to the public. VAERS also provides a vehicle for disseminating vaccine safety-related information to parents and guardians, health care providers, vaccine manufacturers, state vaccine programs, and other constituencies. more...

Have you or your child had a reaction following vaccination?

1. Contact your health care provider
2. Report the reaction
3. Submit Follow-Up Information
4. Visit the National Vaccine Injury Compensation (if appropriate)

Important note: CDC and FDA do not provide individual medical treatment, advice, or diagnosis. If you need individual medical or health care advice, consult a qualified health care provider.

¿Ha tenido usted o su hijo una reacción adversa después de recibir una vacuna?

1. Contacte a su proveedor de salud
2. Reporte una reacción adversa
3. Visite el Programa Nacional de Compensación por Daños Derivados de Vacunas (si es necesario)

Search VAERS Data

VAERS Data last updated: 09/14/2015

Featured Resources

Seasonal Flu Update

- Summary of 2015-2016 Influenza Vaccine Information

Government Agencies

- Immunization Safety Office
- National Center for Immunization and Respiratory Diseases
- National Vaccine Injury Compensation Program

Vaccine Adverse Event Reporting System (VAERS)

Detects:

- New or rare events
- Increases in rates of known events
- Patient risk factors

VAERS cannot establish causality

- Reportable Events Table (https://vaers.hhs.gov/resources/VAERS_Table_of_Reportable_Events_Following_Vaccination.pdf)
- Not all reports of adverse events are causally related to vaccine
- Additional studies required to confirm VAERS signals and causality

Post hoc ergo propter hoc

“After this therefore because of this”

Temporal association does not prove causation

Just because one event follows another does not mean that the first caused the second

Elements Needed To Assess Correlation of Vaccine Adverse Events

	Disease	No disease
Vaccine	a	b
No vaccine	c	d

$$\frac{\text{Rate in “vaccine” group}}{\text{Rate in “no vaccine” group}} = \frac{a\ /a + b}{c/\ c + d}$$

If the rate in “vaccine” group is higher than the rate in the “no vaccine” group, then vaccines may be the cause

Risk of Autism Spectrum Disorder (ASD) Among Children in Denmark, 1991-1998

	ASD	No ASD
Vaccine	345	440,310
No vaccine	77	96,571

$$\frac{\text{Risk in “vaccine” group}}{\text{Risk in “no vaccine” group}} = \frac{7.83/10{,}000}{7.96/10{,}000}$$

Relative Risk = 0.98

Madsen et al. *N Eng J Med* 2002;347:1477-82

Post-licensure Vaccine Safety Activities

Phase IV Trials

~10,000 participants

Better but still limited

Vaccine Safety Data Link (Large Linked Databases)

Clinical Immunization Safety Assessment Project

Vaccine Safety Datalink

Vaccine Safety Datalink (Large linked database):

Links vaccination and health records

Partnership with large health plans: population under “active surveillance”

- 9 HMOs
- 3% (9 million) of U.S. population

Plans, executes immunization safety studies
Investigates hypotheses from medical literature, VAERS reports, changes in schedules, introduction of new vaccines

CISA Clinical Immunization Safety Assessment Network

Safer Healthier People

CDC Immunization

Improve understanding of vaccine safety issues at individual level

Evaluate individual cases with adverse health events

Develop strategies to assess individuals

Conduct studies to identify risk factors

http://www.vaccinesafety.org/CISA

Vaccine Injury Compensation Program

Established by National Childhood Vaccine Injury Act (1986)

- http://www.hrsa.gov/vaccinecompensation/

"No fault" program

Covers all routinely recommended childhood vaccines

Vaccine Injury Table (www.hrsa.gov/vaccinecompensation/vaccineinjurytable.pdf)

Recent (and Ongoing) Vaccine Safety Concerns by the Public

Immune system overload
Aluminum
Thimerosal and autism/neurologic injury
Syncope

Immune System Overload

Data overall suggest that two vaccines given simultaneously can be as immunogenic and safe compared with an arbitrary interval between the doses

As many as NINE vaccine doses could potentially be given at one visit

What about simultaneous administration of multiple vaccine doses?

Simultaneous Vaccination – Multiple Vaccines

Biological mechanism of immune system capacity

- Antibody level (10 ng/mL) a proxy for seroprotection
- Certain number of B cells required within one week to provide that level (N = 1000)
- Rate at which B cells divide (every 16 hours) mean that one B cell clone is sufficient for each vaccine epitope (one B cell clone per epitope can accomplish this in one week)
- 100 epitopes per vaccine
- Need 100 B cells to provide protection in one mL of blood

Simultaneous Vaccination – Multiple Vaccines

Since we have 10,000,000 B cells / mL of blood

We only need 100 cells / single vaccine response

We have immune capacity to generate a response to 100,000 vaccines, if needed

Offit, Paul, et. Al. Vaccine Safety, Vaccines 6th ed. 2013

Aluminum

Many inactivated vaccines contain aluminum adjuvants

Aluminum can be toxic to preterm infants and renal dialysis patients

Aluminum

- Exposure to preterm and renal patients is via IV fluids
- Aluminum content in vaccines is small – 4 mg by 6 months of age
- By contrast: 10-30 mg from milk ingestion
- Aluminum is a common component of many foods (baked goods, cheese)

Thimerosal (ethylmercury) in Vaccines

- Preservatives used in vaccines to reduce bacterial growth in multidose vials
- Thimerosal is a preservative used in many biologic products (including vaccines) since the 1930s
- Thimerosal is 50% ethylmercury by weight

All Mercury is Not the Same

MethylImercury

- Neurotoxic
- Found in fish – environmental contaminant

EthylImercury

- Used in thimerosal

Methylmercury Reference Values

Agency	Value
Environmental Protection Agency	**0.1 ug/kg/day (Rfd)**
World Health Organization	**3.3 ug/kg/week**

Half Life of Total Mercury (Hg) Washout of Infant Monkeys Given Methyl Mercury Orally or Thimerosal (Ethyl Mercury) Intramuscularly †

Infant Monkeys – 4 doses of 20 µg/Kg at days 0, 7, 14, 21

T1/2	Methyl Hg	Ethyl Hg
Blood	59.5 days ± 24.1	24.2 days± 7.4
Brain	19.1days ± 5.1	6.9 days ± 1.7

Brain concentrations of thimerosal exposed ~3 fold lower than methyl mercury exposed

† Burbacher TM et al in Environmental Health Perspectives, doi:10.1289/ehp.7712 (available at http://dx.doi.org) – Online 21 April 2005

Thimerosal and Autism

- Cohort study: 14,000 children in UK
- Exposure was determined by time since vaccination
- Outcomes collected through parental questionnaires

Heron J, Golding J, Pediatrics 2004

Thimerosal and Autism

- No association between dose of thimerosal and speech, behavior at 3 months, 6 months of age
- Association between dose of thimerosal at 3 months of age and poor prosocial behavior, not observed at 6 months of age
- Authors concluded that early exposure to thimerosal had no deleterious effect on neurologic or psychologic outcomes

Heron J, Golding J, Pediatrics 2004

Another Thimerosal Study Showing No Association with Autism

- Case-control study conducted in 3 managed care organizations
- 256 children with autism spectrum disorder (ASD), 752 without ASD
- Case and control children had similar cumulative exposure to ethylmercury
- Exposure to ethylmercury from thimerosal-containing immunizations during pregnancy or in the first 20 months was not associated with an increased risk of any ASD

Cristofer, Pediatrics, 2010

Autism Speaks™ | Be Informed | Get Involved | Walk Events | Community | Science

AUTISM SPEAKS

Autism Speaks

Science News | News Archive | CAN News Archive

SEARCH

Overview

An Interview with Dr. Geri Dawson, Chief
aks, about the
ding and
tism

Donate

Store

Resources

"... given what the scientific literature tells us today, there is no evidence that thimerosal or the MMR vaccine cause autism. Evidence does not support the theory that vaccines are causing an autism epidemic."

- Dr. Geri Dawson, July 30, 2009

Geri Dawson
Chief Science Officer
Autism Speaks

discovered some of the risk genes for
autism, but we still know little about the

Syncope

Vasovagal reaction

Can occur after vaccination or any other anxiety provoking activity

Syncope

- Since 2001, 666 reports of syncope reported to VAERS
- 80% of reports occur in the first 15 minutes of vaccination
- Increasing reports since 2005, coincident with vaccines recommended for adolescents

Syncope and Head Injury

Concerning public health issue is head injury following syncope

76% of VAERS reports of head injury following syncope occur in adolescents

Syncope and CDCs General Recommendations

- Adolescents and adults should be seated during vaccination
- Consider a 15 minute waiting period following vaccination of adolescents

Benefit and Risk Communication

Opportunities for questions should be provided before each vaccination

Vaccine Information Statements (VISs)

- Must be provided before each dose of vaccine
- Public and private providers
- Available in multiple languages

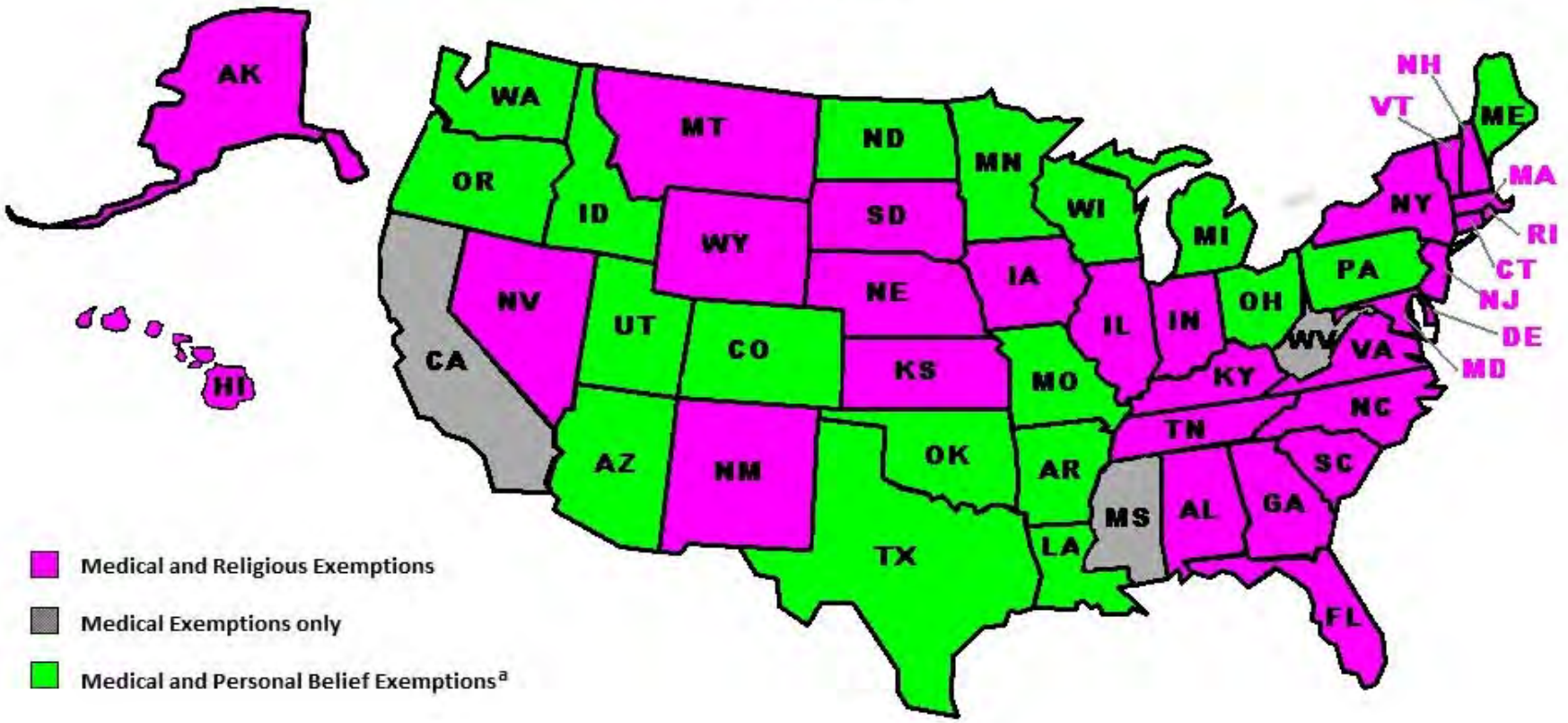
JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

VACCINE EXEMPTIONS

It is law in all US states that children be properly immunized before attending school. However, in addition to medical exemptions offered in each state, the vast majority of states allow for religious exemptions and various states allow personal belief exemptions for daycare and school.

School Exemption Laws by State

(updated September 15, 2015)



Your Source for VISs
www.immunize.org

Communicating with Parents

For providers:

- If provider recommends it, parents more likely to follow
- Ask, acknowledge, and advise
- Start at prenatal visit, develop trust
- Offer reliable resources
- Know the science
- Do not get defensive

Use the Four C's of Effective Communication

- Chemistry
- Clarity
- Consistency
- Credibility

Institute of Medicine Studies, August 2011

Committee findings:

- **CAUSAL RELATIONSHIP between some vaccines and adverse events**
  - **MMR, VZV, Influenza, etc., and anaphylaxis**
- **REJECTION OF 5 RELATIONSHIPS**
  - **Including MMR and autism, TIV and asthma**

Overall, the committee concluded that few health problems are caused by, or clearly associated with, vaccines

Communicating with Parents

What parents want:

- Delayed vs. alternate schedules
- Facts and statistics
- Trust good websites
- Do not want to be talked down to
- Unbiased, non-coercive, credible, non-judgmental information

Childhood Immunization Schedule and Safety

Institute of Medicine - Mission

- Review scientific findings and stakeholder concerns related to the safety of the recommended childhood immunization schedule
- Identify potential research approaches, methodologies, and study designs that could inform this question
- Issue a summary report

Findings

- IOM committee finds no evidence that the schedule is unsafe
- Following the complete childhood immunization schedule is strongly associated with reducing vaccine-preventable diseases
- Committee calls for continued study of the immunization schedule using existing data systems

www.iom.edu/childimmunizationschedule

CDC Vaccines and Immunization Resources

- **Questions? E-mail CDC**
  - nipinfo@cdc.gov or www.cdc.gov/cdcinfo

Website	**www.cdc.gov/vaccines**
HCP	**www.cdc.gov/vaccines/hcp**
Twitter	**@CDCIZlearn**
Influenza	**www.cdc.gov/flu**
Vaccine Safety	**www.cdc.gov/vaccinesafety**

You Are Invited!

- **Epidemiology and Prevention of Vaccine-Preventable Diseases (a.k.a. The Pink Book) Course**
- **Idaho Immunization Summit**

NOV. 2-4 2016

Boise Centre | Boise, Idaho

**This event will replace Booster Shots 2016*

The Course will focus on the principles of vaccination, general recommendations, immunization strategies for providers, and specific information about vaccine-preventable diseases and the vaccines that prevent them. The two-day Course will include presentations from immunization experts from the Centers for Disease Control and Prevention (CDC). A half-day Immunization Summit will take place on November 4th and will include national, state, and local updates on immunization practices.

For more information and to register visit:

www.idahoimmune.org/events

Brought to you by the CDC, the Idaho Immunization Program, and the Idaho Immunization Coalition.

SHOT SMARTS
Idaho Immunization Program

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

Which vaccine preventable disease am I?

- I am very contagious and can live in a room up to two hours after the infected person has left.
- I cause a rash of tiny, red spots that start at the head and spread to the rest of the body.
- The rash I cause can be accompanied by diarrhea, coughing, runny noses and red eyes.
- In 2014, I reportedly infected 667 people in 27 states.

Sources: Idaho Immunization Program, CDC, NIS Teen & NIS Children (19-35 months)

Measles

Which vaccine preventable disease am I?

- I cause intense coughing fits.
- I am most harmful for young babies.
- I am spread by an infected person breathing, coughing, or sneezing
- In 2015, there were 194* estimated cases of me reported in Idaho

**2015 data are preliminary*

Sources: Idaho Immunization Program, CDC, NIS Teen & NIS Children (19-35 months)

SHOT SMARTS
Idaho Immunization Program

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

Pertussis
(Whooping Cough)

SHOT SMARTS
Idaho Immunization Program

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

Keynote Speaker Question and Answer Session

Thank You
for Attending
Shot Smarts!
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