Childhood Immunization Update 2014

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National Center for Immunization and Respiratory Diseases

21st Annual Arizona Immunization Conference

April 2014

Take Out Your Cell Phone

- You will have the opportunity to text answers to questions!
- Please note: message and data rates may apply

Disclosures

- JoEllen Wolicki is a federal government employee with no financial interest or conflict with the manufacturer of any product named in this presentation.
- The speaker will discuss the off-label use of HPV, pneumococcal conjugate, and meningococcal conjugate vaccines.
- The speaker will not discuss a vaccine not currently licensed by the FDA.

Disclosures

Next ACIP Meeting
June 25 and 26, 2014

www.cdc.gov/vaccines/recs/acip/

- The recommendations to be discussed are primarily those of the Advisory Committee on Immunization Practices (ACIP)
  - Composed of 15 non-government experts in clinical medicine and public health
  - Provides guidance on use of vaccines and other biologic products to DHHS, CDC, and the U.S. Public Health Service

2014 Schedule Updates

- ***MMWR* publication in February 2014**
  - Contains website links to schedules - actual schedules will not be included
- **Updated guidance for:**
  - Meningococcal conjugate vaccination as early as 2 months of age for children at increased risk of invasive disease
  - Pneumococcal conjugate vaccination for children with high-risk conditions
  - *Haemophilus influenzae* type b (Hib) conjugate vaccine, pneumococcal conjugate vaccine, and tetanus, diphtheria, and acellular pertussis (Tdap) vaccine catch-up schedules updated to provide more clarity
- **Standardized formatting used for footnotes for each vaccine**

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2014.

(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 in bold.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13–15 yrs	16–18 yrs
Hepatitis B[1] (HepB)	1st dose	2nd dose			3rd dose											
Rotavirus[2] (RV) RV1 (2-dose series); RV5 (3-dose series)			1st dose													
Diphtheria, tetanus, & acellular pertussis[3] (DTaP: <7 yrs)			1st dose													
Tetanus, diphtheria, & acellular pertussis[4] (Tdap: ≥ 7 yrs)																
Haemophilus influenzae type b[5] (Hib)			1st dose													
Pneumococcal conjugate[6] (PCV13)			1st dose													
Pneumococcal polysaccharide[6] (PPSV23)																
Inactivated poliovirus[7] (IPV) (<18 yrs)			1st dose													
Influenza[8] (IIV; LAIV) 2 doses for some: See footnote 8																
Measles, mumps, rubella[9] (MMR)																
Varicella[10] (VAR)																
Hepatitis A[11] (HepA)																
Human papillomavirus[12] (HPV2: females only; HPV4: males and females)																
Meningococcal[13] (Hib-MenCY ≥ 6 weeks; MenACWY-D ≥9 mos; MenACWY-CRM ≥ 2 mos)																

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

This schedule includes recommendations in effect as of January 1, 2014. vaccine generally is preferred over separate injections of its equivalent c recommendations, available online at http://www.cdc.gov/vaccines/hcp (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-79 precautions and contraindications for vaccination, is available from CDC

This schedule is approved by the Advisory Committee on Immunization (http://www.aafp.org), and the American College of Obstetricians and Gy

NOTE: The above recommendations must be read alo

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, 2014.

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.

Persons aged 4 months through 6 years					
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
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, & acellular pertussis[3]	6 weeks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[5]	6 weeks	4 weeks if first dose 8 we if first dose adminis No fu if first dose admin			
Pneumococcal[6]	6 weeks	4 weeks if first dose 8 weeks (as final do administere No further doses nee administere			
Inactivated poliovirus[7]	6 weeks				
Meningococcal[13]	6 weeks				
Measles, mumps, rubella[9]	12 months				
Varicella[10]	12 months				
Hepatitis A[11]	12 months				
Tetanus, diphtheria; tetanus, diphtheria, & acellular pertussis[4]	7 years[4]				
Human papillomavirus[12]	9 years				
Hepatitis A[11]	12 months				
Hepatitis B[1]	Birth				
Inactivated poliovirus[7]	6 weeks				
Meningococcal[13]	6 weeks				
Measles, mumps, rubella[9]	12 months				
Varicella[10]	12 months	3 months if perso 4 weeks if per			

NOTE: The above recommendations must

Footnotes — Recommended immunization schedule for persons aged 0 through 18 years—United States, 2014

For further guidance on the use of the vaccines mentioned below, see: http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.
For vaccine recommendations for persons 19 years of age and older, see the adult immunization schedule.

Additional information

- For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant ACIP statement available online at http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of 4 months or greater are determined by calendar months.
- Vaccine doses administered 4 days or less before the minimum interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum interval or minimum age should not be counted as valid doses and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose by the recommended minimum interval. For further details, see *MMWR, General Recommendations on Immunization and Reports* / Vol. 60 / No. 2; Table 1. *Recommended and minimum ages and intervals between vaccine doses* available online at http://www.cdc.gov/mmwr/pdf/rr/rr6002.pdf.
- Information on travel vaccine requirements and recommendations is available at http://wwwnc.cdc.gov/travel/destinations/list.
- For vaccination of persons with primary and secondary immunodeficiencies, see Table 13, *"Vaccination of persons with primary and secondary immunodeficiencies,"* in General Recommendations on Immunization (ACIP), available at http://www.cdc.gov/mmwr/pdf/rr/rr6002.pdf.; and American Academy of Pediatrics. Immunization in Special Clinical Circumstances, in Pickering LK, Baker CJ, Kimberlin DW, Long SS eds. *Red Book: 2012 report of the Committee on Infectious Diseases. 29th ed.* Elk Grove Village, IL: American Academy of Pediatrics.

1. **Hepatitis B (HepB) vaccine. (Minimum age: birth)**
   Routine vaccination:
   At birth:
   - Administer monovalent HepB vaccine to all newborns before hospital discharge.
   - For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series, at age 9 through 18 months (preferably at the next well-child visit).
   - If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine regardless of birth weight. For infants weighing less than 2,000 grams, administer HBIG in addition to HepB vaccine within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if mother is HBsAg-positive, also administer HBIG for infants weighing 2,000 grams or more as soon as possible, but no later than age 7 days.

   Doses following the birth dose:
   - The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks.
   - Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. See Figure 2.
   - Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks), administer the third dose at least 8 weeks after the second dose AND at least 16 weeks after the **first** dose. The final (third or fourth) dose in the HepB vaccine series should be administered no earlier than age 24 weeks.
   - Administration of a total of 4 doses of HepB vaccine is permitted when a combination vaccine containing HepB is administered after the birth dose.

   Catch-up vaccination:
   - Unvaccinated persons should complete a 3-dose series.
   - A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years.
   - For other catch-up guidance, see Figure 2.
2. **Rotavirus (RV) vaccines. (Minimum age: 6 weeks for both RV1 [Rotarix] and RV5 [RotaTeq])**
   Routine vaccination:
   Administer a series of RV vaccine to all infants as follows:
   1. If Rotarix is used, administer a 2-dose series at 2 and 4 months of age.
   2. If RotaTeq is used, administer a 3-dose series at ages 2, 4, and 6 months.
   3. If any dose in the series was RotaTeq or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered.

   Catch-up vaccination:
   - The maximum age for the first dose in the series is 14 weeks, 6 days; vaccination should not be initiated for infants aged 15 weeks, 0 days or older.
   - The maximum age for the final dose in the series is 8 months, 0 days.
   - For other catch-up guidance, see Figure 2.
3. **Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. (Minimum age: 6 weeks. Exception: DTaP-IPV [Kinrix]: 4 years)**
   Routine vaccination:
   - Administer a 5-dose series of DTaP vaccine at ages 2, 4, 6, 15 through 18 months, and 4 through 6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

   Catch-up vaccination:
   - The fifth dose of DTaP vaccine is not necessary if the fourth dose was administered at age 4 years or older.
   - For other catch-up guidance, see Figure 2.
4. **Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine. (Minimum age: 10 years for Boostrix, 11 years for Adacel)**
   Routine vaccination:
   - Administer 1 dose of Tdap vaccine to all adolescents aged 11 through 12 years.
   - Tdap may be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.
   - Administer 1 dose of Tdap vaccine to pregnant adolescents during each pregnancy (preferred during 27 through 36 weeks gestation) regardless of time since prior Td or Tdap vaccination.

   Catch-up vaccination:
   - Persons aged 7 years and older who are not fully immunized with DTaP vaccine should receive Tdap vaccine as 1 (preferably the first) dose in the catch-up series; if additional doses are needed, use Td vaccine. For children 7 through 10 years who receive a dose of Tdap as part of the catch-up series, an adolescent Tdap vaccine dose at age 11 through 12 years should NOT be administered. Td should be administered instead 10 years after the Tdap dose.
   - Persons aged 11 through 18 years who have not received Tdap vaccine should receive a dose followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter.
   - Inadvertent doses of DTaP vaccine:
     - If administered inadvertently to a child aged 7 through 10 years may count as part of the catch-up series. This dose may count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11 through 12 years.
     - If administered inadvertently to an adolescent aged 11 through 18 years, the dose should be counted as the adolescent Tdap booster.
   - For other catch-up guidance, see Figure 2.
5. ***Haemophilus influenzae* type b (Hib) conjugate vaccine. (Minimum age: 6 weeks for PRP-T [ACTHIB, DTaP-IPV/Hib (Pentacel) and Hib-MenCY (MenHibrix)], PRP-OMP [PedvaxHIB or COMVAX], 12 months for PRP-T [Hiberix])**
   Routine vaccination:
   - Administer a 2- or 3-dose Hib vaccine primary series and a booster dose (dose 3 or 4 depending on vaccine used in primary series) at age 12 through 15 months to complete a full Hib vaccine series.
   - The primary series with ActHIB, MenHibrix, or Pentacel consists of 3 doses and should be administered at 2, 4, and 6 months of age. The primary series with PedvaxHib or COMVAX consists of 2 doses and should be administered at 2 and 4 months of age; a dose at age 6 months is not indicated.
   - One booster dose (dose 3 or 4 depending on vaccine used in primary series) of any Hib vaccine should be administered at age 12 through 15 months. An exception is Hiberix vaccine. Hiberix should only be used for the booster (final) dose in children aged 12 months through 4 years who have received at least 1 prior dose of Hib-containing vaccine.

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

www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html

Showing the CDC Schedules on Your Website

http://www.cdc.gov/vaccines/schedules/syndicate.html

IMMUNIZATION COVERAGE RATES

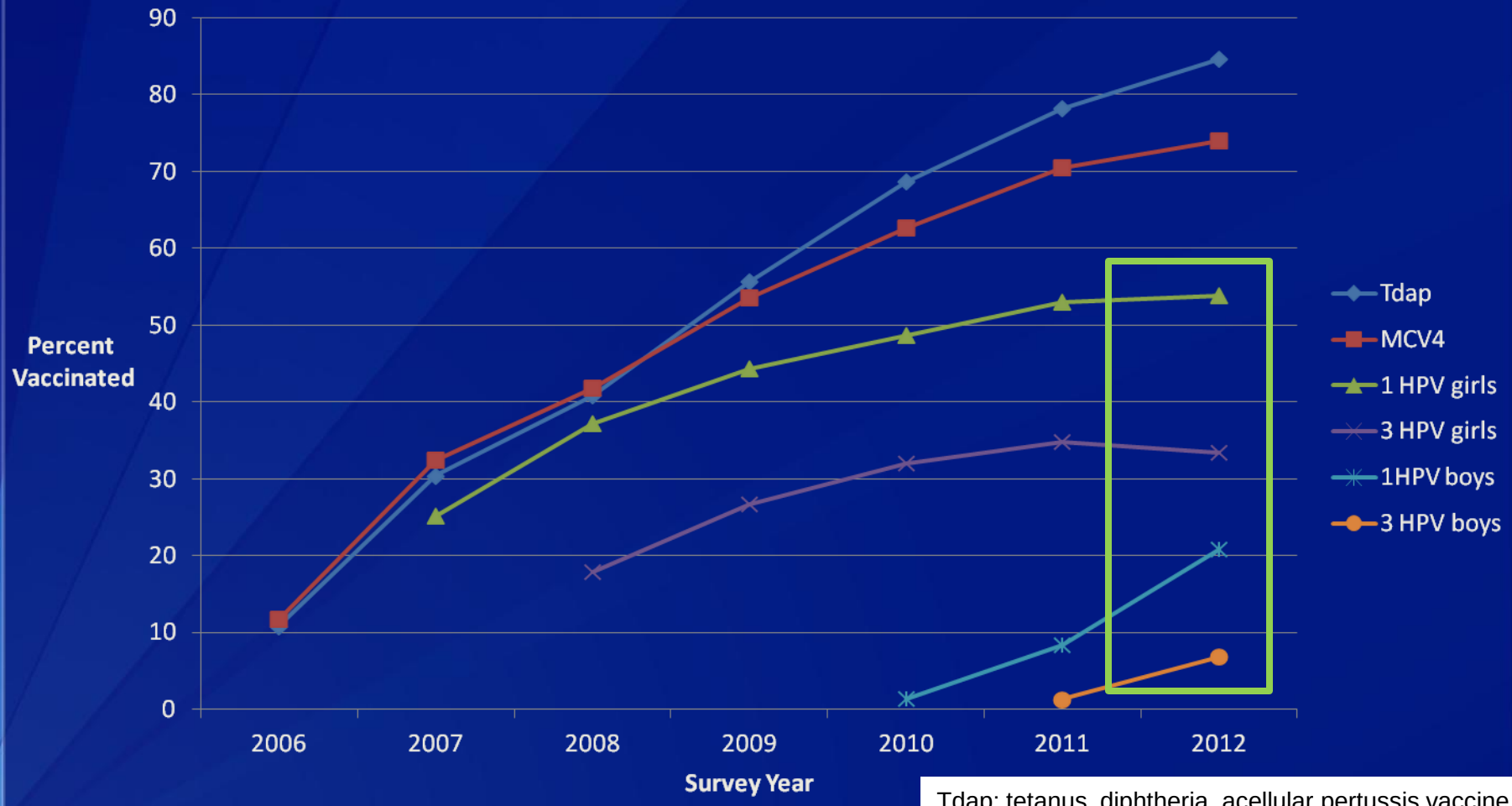
Estimated Coverage of Vaccines Among Children Aged 19-35 Months, NIS 2012

State/Area	Vaccine Series* 4:3:1:3:3:1:4
United States	68.4%
Arizona	67.5%

*Includes ≥4 doses DTaP/DT/DTP, ≥ 3 doses polio, ≥ 1 dose MMR, full series of Hib, ≥ 3 doses Hep B, dose ≥ 1 varicella, and doses ≥ 4 PCV.

MMWR 2013; 62(36): 733-40

National Estimated Vaccination Coverage Levels among Adolescents 13-17 Years, National Immunization Survey-Teen 2006-2012



MMWR 2013; 62(364: 685-693

Tdap: tetanus, diphtheria, acellular pertussis vaccine
MCV4: meningococcal conjugate vaccine
HPV: human papillomavirus vaccine

ACIP IMMUNIZATION RECOMMENDATIONS FOR SPECIFIC VACCINES

MMWR Morbidity and Mortality Weekly Report

Recommendations and Reports

Quadrivalent Human Papillomavi

Recommendations of the Advisory C
on Immunization Practices (AC

INSIDE: Continuing Education Examin

DEPARTMENT OF HEALTH AND HUMAN
CENTERS FOR DISEASE CONTROL AND PR

MMWR Morbidity and Mortality Weekly Report

FDA Licensure of Bivalent Human Papilloma
(HPV2, Cervarix) for Use in Females and U
Vaccination Recommendations from the Advis
on Immunization Practices (ACI

MMWR / May 28, 2010 / Vol. 59 / No. 20

MMWR Morbidity and Mortality Weekly Report

FDA Licensure of Quadrivalent Human Papillomavirus Vaccine (HPV4, Gardasil) for Use in Males and Guidance from the Advisory Committee on Immunization Practices (ACIP)

MMWR / May 28, 2010 / Vol. 59 / No. 20

HUMAN PAPILLOMAVIRUS (HPV) VACCINATION

http://www.cdc.gov/vaccines/pubs/ACIP-list.htm#hpv

HPV Vaccines

Quadrivalent/HPV4 (Gardasil)	**Name**	**Bivalent/HPV2** (Cervarix)
Merck	**Manufacturer**	GlaxoSmithKline
6, 11, 16, 18	**Types**	16, 18
Females: Anal, cervical, vaginal, and vulvar precancer and cancer; Genital warts **Males:** Anal precancer and cancer; Genital warts	**Indications**	**Females:** Cervical precancer and cancer **Males:** Not approved for use in males
Pregnancy Hypersensitivity to yeast	**Contraindications**	Pregnancy Hypersensitivity to latex (latex only contained in pre-filled syringes, not single-dose vials)
3 dose series: 0, 2, 6 months	**Schedule (IM)**	3 dose series: 0, 1, 6 months

ACIP Recommendations for HPV Vaccine

- Routine HPV vaccination recommended for males and females, ages 11-12 years
- Catch-up for both males and females
  - Females:13-26 years
  - Males:13-21 years; 22-26 years if immunocompromised or MSM
- Permissive for use ages 9-10 years for both males and females; 22-26 for males

MMWR 2007; 56; RR-2, 1-24)

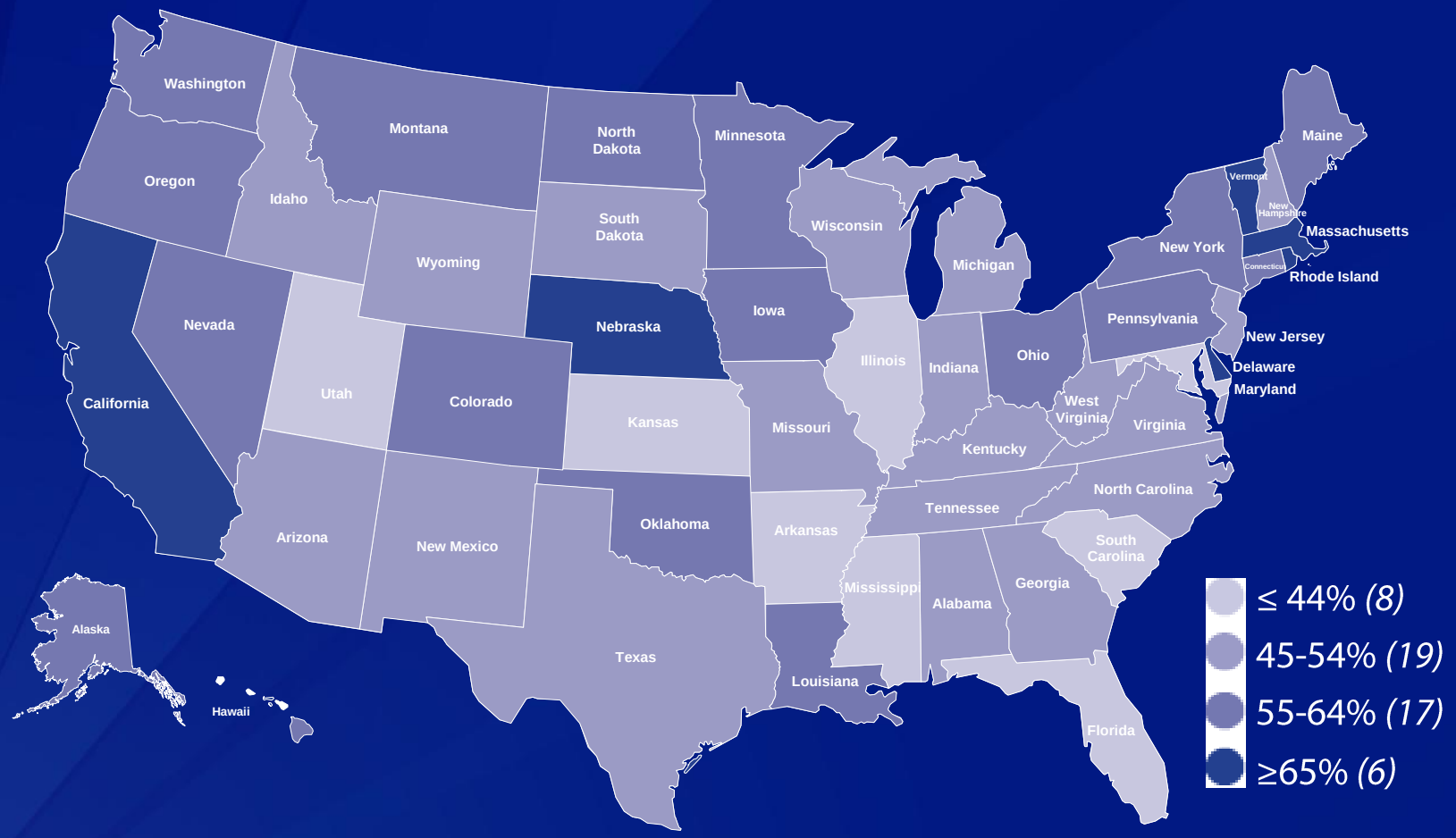
What Would You Do?

- If a dose of HPV vaccine is significantly delayed, should the series be restarted?
  - Yes – Text CDC1Y to 22333
  - No – Text CDC1N to 22333

Note: Message and Data Rates May Apply

Results

Coverage of 1 of More Doses of HPV Among Adolescent Girls 13-17 Years by State, NIS-Teen 2012



Source: *MMWR*. 2013;62;685-93

Why We Need to Increase Vaccination of 12 Year Olds

- Currently, 26 million girls less than13 yoa in the US; If none of these girls are vaccinated then:
  - 168,400 will develop cervical cancer and
  - 54,100 will die from it

Vaccinating 30% would prevent 45,500 of these cases and 14,600 deaths

Vaccinating 80% would prevent 98,800 cases and 31,700 deaths

For each year we stay at 30% coverage instead of achieving 80%, 4,400 future cervical cancer cases and 1400 cervical cancer deaths will occur

The Perfect Storm

- **Why is HPV vaccine different?**
  - HPV vaccine issues sensationalized by popular media
  - Different reasons for why some girls and boys don't get the first shot and why some don't finish all 3 shots
  - Parents think sexuality instead of cancer prevention
  - Some clinicians aren't giving strong recommendations
  - Parents have questions that are seen as hesitation by some doctors
  - Phased girls-then-boys recommendations initially confusing to parents
  - Systems interventions to improve coverage rates depend on clinician commitment

Avoid Missed Opportunities

- Recommend HPV vaccine
  - Include HPV vaccine when discussing other needed vaccines
- HPV vaccine can safely be given at the same time as the other recommended adolescent vaccines
- Integrate standard procedures
  - Assess for needed vaccines at every clinical encounter, including acute care visits
  - Immunize at *every* opportunity
  - Use standing orders
- Document doses in the medical record
- Use reminder and recall

Tools for improving uptake of HPV: www.cdc.gov/vaccines/teens

HPV Vaccination Resources for Providers

CDC Home

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Preteen and Teen Vaccines

Vaccines Home
Vaccines & Immunizations

Vaccines Home > Specific Groups > Preteen and Teen Home > For HCPs

Email page link
Print page

HPV Vaccine Resources for Healthcare Professionals

Contact Us:

Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333

800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
Contact CDC-INFO

HPV Vaccine is Cancer Prevention

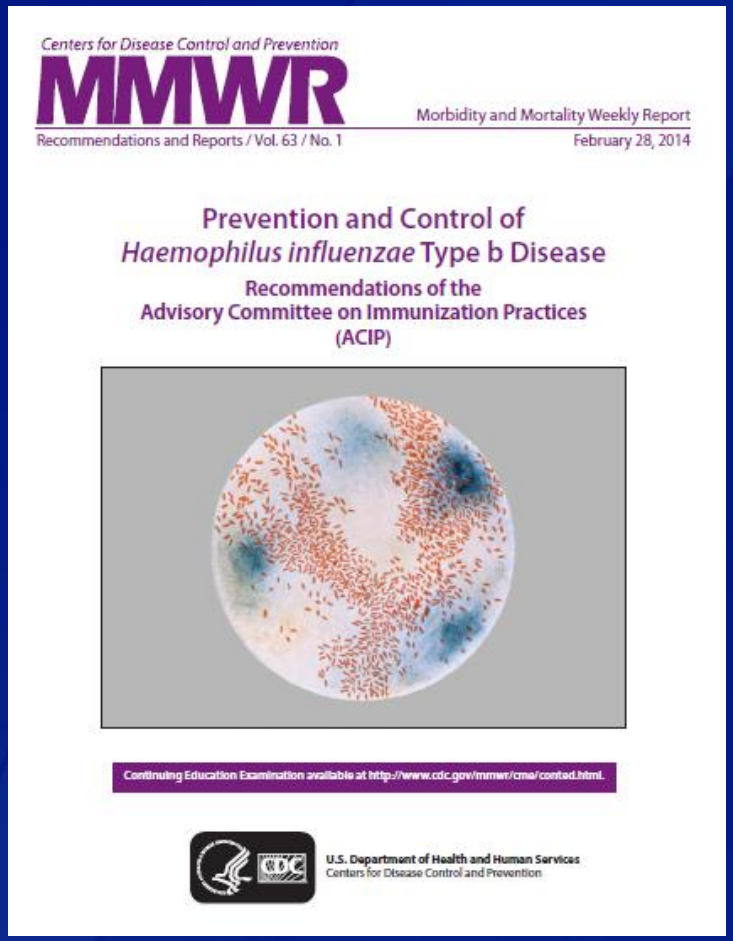
Overview | Tools for Your Practice | Handouts to Give to Patients & Parents

- HPV is so common that almost everyone will be infected with HPV at some point in their lives; however most people will never know they have been infected.
- HPV exposure can occur with any type of intimate sexual contact.
- In the U.S., HPV causes about 17,000 cancers in women, and about 9,000 cancers in men each year.

Low HPV vaccination rates are leaving another generation of

Resource Spotlight

www.cdc.gov/vaccines/YouAreTheKey



Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports / Vol. 63 / No. 1

February 28, 2014

Prevention and Control of
Haemophilus influenzae Type b Disease

Recommendations of the
Advisory Committee on Immunization Practices
(ACIP)

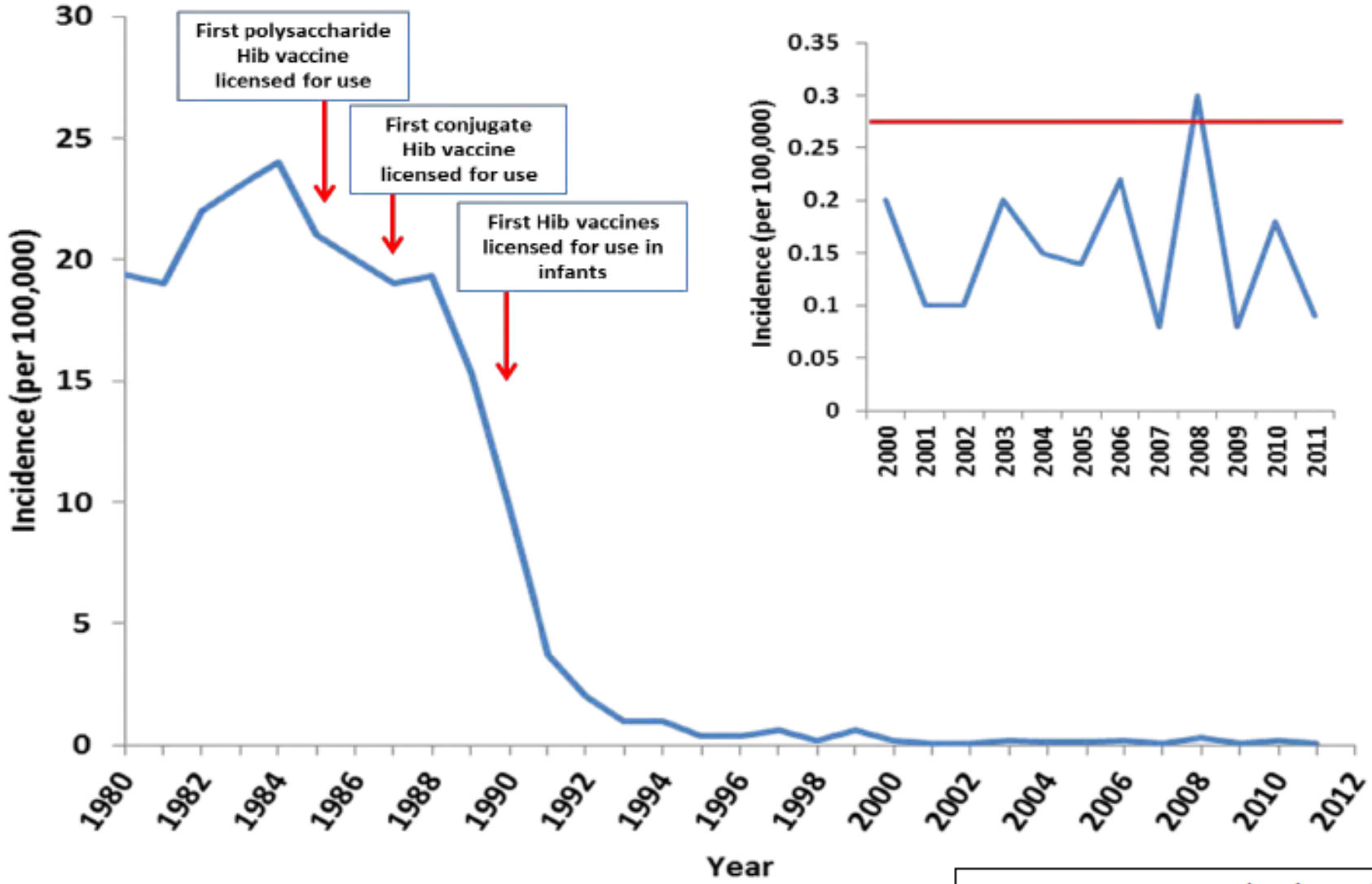
Continuing Education Examination available at http://www.cdc.gov/mmwr/cme/conted.html.

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

HAEMOPHILUS INFLUENZAE TYPE B (HIB) VACCINATION

www.cdc.gov/mmwr/pdf/rr/rr6301.pdf

Estimated incidence of invasive Hib infection in <5 year olds, United States 1980-2011*



Sources: *1980-1997: National Bacterial Meningitis Reporting System and National Notifiable Diseases Surveillance (NDSS); 1997-2011: ABCs cases estimated to the U.S. population

Hib-containing Vaccines

Vaccine	Product Name	Schedule
PRP-OMP containing vaccines	PedvaxHib (Hib) Comvax (Hib-HepB)	2 dose primary series at 2 and 4 months; booster dose at 12 – 15 months
PRP-T containing vaccines	Acthib (Hib) Pentacel (DTaP-IPV-Hib)	3 dose primary series at 2, 4, and 6 months; booster dose at 12-15 months
	MenHibrix (Hib-MenCY)	3 dose primary series at 2, 4, and 6 months; booster dose at 12-15 months
	Hiberix (Hib)	Booster dose at 12-15 months for previously vaccinated children; do NOT use for the primary series

Haemophilus influenzae type B

- **Updated ACIP recommendations were published February 2014**
- **Includes recommendations for:**
  - Routine vaccination of infants
  - Guidance for catch-up of previously unvaccinated infants and children starting late
  - High-risk groups

Updated Guidance for High-risk Children

High-risk group*	Vaccine guidance
Patients <12 months of age	Follow routine Hib vaccination recommendations
Patients 12 through 59 months of age	If unimmunized or received 0 or 1 dose before age 12 months: 2 doses 2 months apart If received 2 or more doses before age 12 months:1 dose If completed a primary series and received a booster dose at age 12 months or older: no additional doses

Updated Guidance for High-risk Children(2)

High-risk group*	Vaccine guidance
Patients undergoing chemotherapy or radiation therapy, age <59 months	If routine Hib doses given 14 or more days before starting therapy: revaccination not required If dose given within 14 days of starting therapy or given during therapy: repeat doses starting at least 3 months following therapy completion
Patients undergoing elective splenectomy, age ≥ 15 months	If unimmunized:1 dose prior to procedure
Asplenic patients >59 months of age	If unimmunized:1 dose
HIV-infected children>59 months of age	If unimmunized:1 dose
Recipients of hematopoietic stem cell transplant, all ages	Regardless of Hib vaccination history: 3 doses (at least 1 month apart) beginning 6-12 months after transplant

Courtesy E. Briere, CDC

Hib Disease and Healthy Children

Response to vaccine better as age increase

Less doses needed to provide protection

Hib Catch-up for Healthy Children

Some children may not need a complete series

- Infants 7 months of age and older who are unvaccinated
- Children with a lapsed series- previously vaccinated children that are not up-to-date for their age

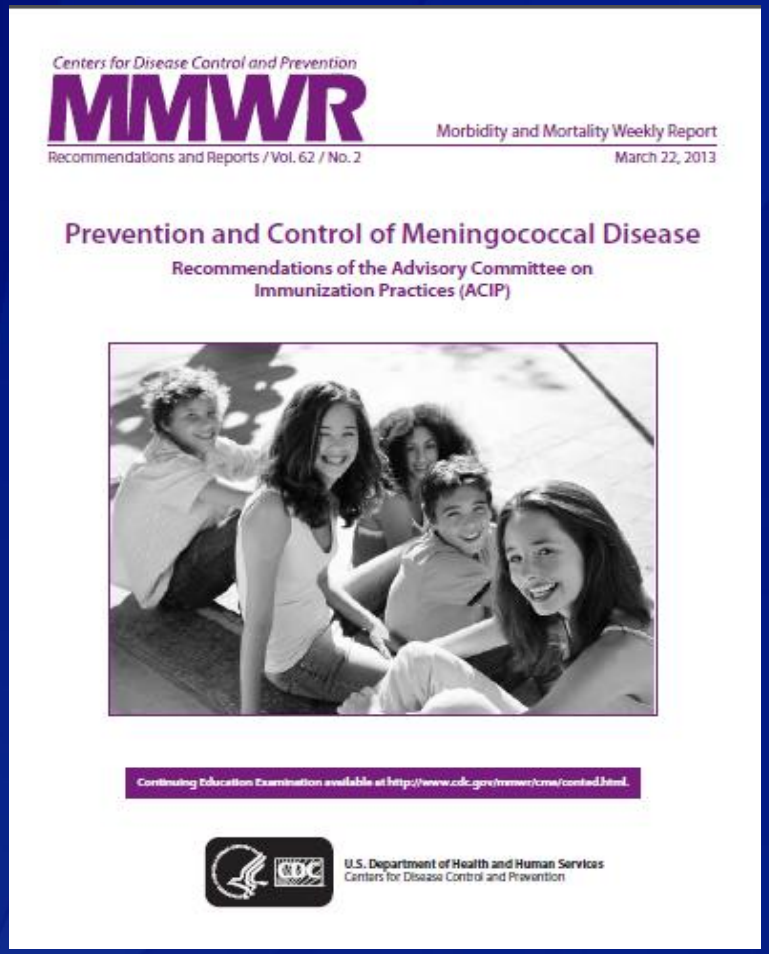
When Using the Hib Catch-up Schedule

- **Decision to vaccinate is based on:**
  - Current age
  - Immunization history, including:
    - Product, if available
    - Date(s)/age(s) previously vaccinated
    - Time since the previous dose
  - Health status

What Would You Do?

- Benjamin is a healthy 2-year-old coming for a well child visit. His immunization history indicates he has received 2 doses of Hib vaccine. The first at 10 months and a second at 15 months of age.
  Do you administer Hib vaccine today?
  - Yes
  - No

Note: Message and Data Rates May Apply



Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports / Vol. 62 / No. 2

March 22, 2013

Prevention and Control of Meningococcal Disease

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

MENINGOCOCCAL VACCINATION

http://www.cdc.gov/mmwr/PDF/rr/rr6202.pdf

Vaccination of High-risk Groups

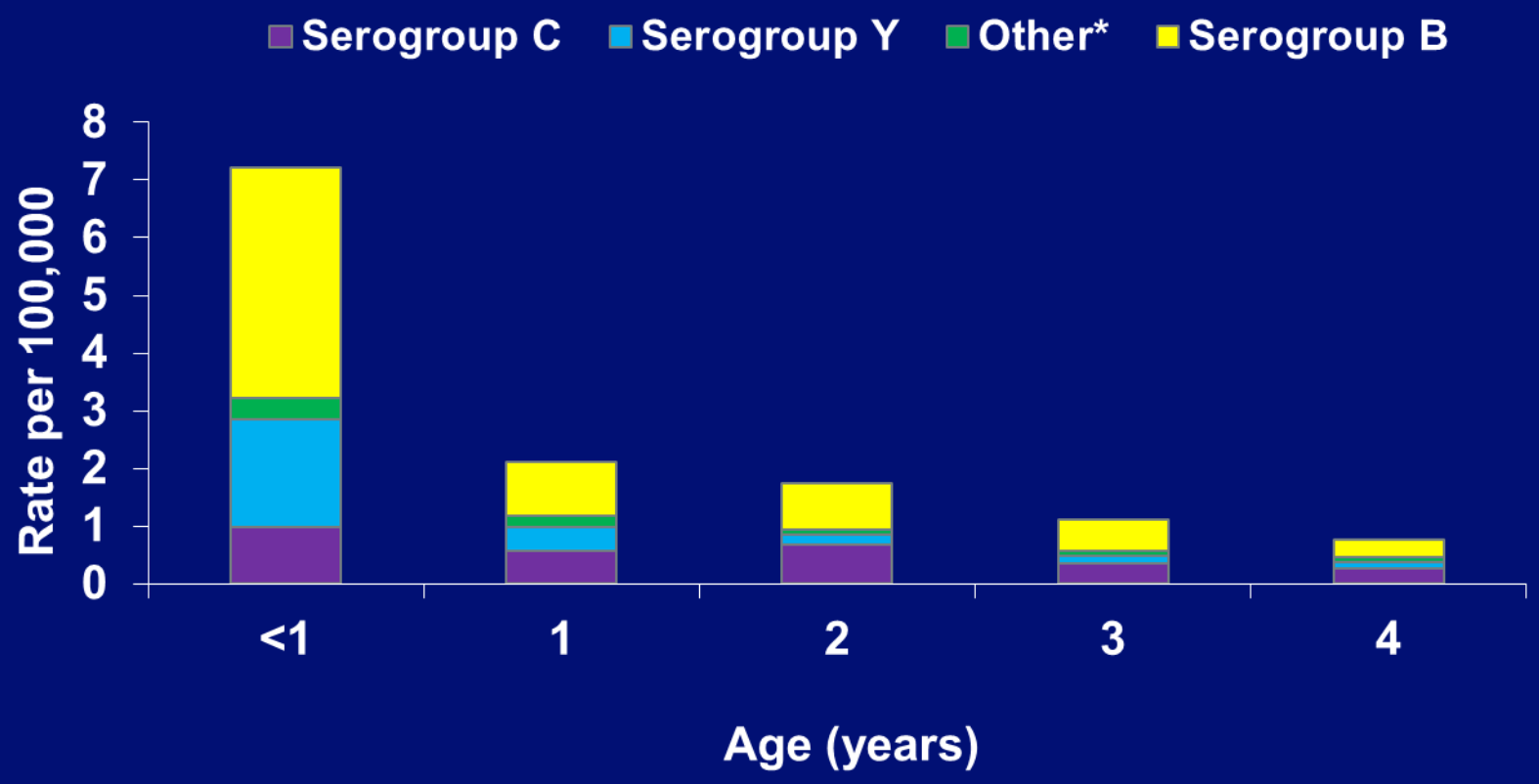
- **Vaccination is recommended for persons 2 months of age and older who are at increased risk for meningococcal disease, including:**
  - Functional or anatomic asplenia
  - Persistent complement component deficiency
  - Travelers to high-risk areas
  - Certain lab workers
  - For use in meningococcal outbreaks caused by vaccine serogroups

Comparing Meningococcal Conjugate Vaccines

	Meningococcal Conjugate		Meningococcal Conjugate & *Haemophilus influenzae* type b
Brand Name	Menactra	Menveo	Menhibrix
Sero-groups	A, C, Y, and W		C and Y
Ages	9 months through 55 years	*2 months through 55 years	6 weeks through 18 months
ACIP Abbrev	MenACWY or MCV4		Hib-MenCY
Route	Intramuscular injection (IM)		

*FDA licensed to 2 months of age, ACIP approved 10/23/2013

50-60% of Disease in Children Under 5 Years is Due to Serogroup B



*Other includes serogroups W-135, nongroupables, other, and unknown
ABCs cases from 1993-2009 and estimated to the U.S. population with 18% correction for under reporting

Why Vaccine Recommendations Target High-risk Infants

- **Data do not support routine infant meningococcal vaccination at this time**
  - Low number of preventable cases and continued declines in disease incidence
  - Vaccines are safe and effective, but duration of protection of these vaccines unlikely to be more than 5 years
- **Challenging decision given disease severity**
  - Risk for serogroup C and Y disease is very low in the absence of vaccination
  - Frequently evaluate disease trends
- **Infants at increased risk for meningococcal disease recommended for vaccination**

Meningococcal Vaccination for High-risk Children 2 through 23 Months

Vaccine	Indicated for:	Not Indicated for:	Primary Vaccination	Booster Doses
Menactra (MenACWY-D)	Complement deficiencies Outbreaks Travel	Asplenia	9, 12 months	3 yrs after 1^0 series, then every 5 yrs
MenHibrix (HibMenCY-TT)	Complement deficiencies Asplenia Outbreaks	Travel Booster dose	2, 4, 6, and 12-15 months	3 yrs after 1^0 series, then every 5 yrs (using Menactra or Menveo)
Menveo (MenACWY-CRM)	Complement deficiencies Asplenia Outbreaks Travel		2, 4, 6, and 12 months	3 yrs after 1^0 series, then every 5 yrs

Vaccination for High-risk Persons 2 Years and Older

- **Administer 2 doses of MCV4 to previously unvaccinated high-risk persons 2 months of age and older with:**
  - Persistent complement deficiencies
  - Functional or anatomic asplenia

- **Administer 1 dose of MCV4 to:**
  - Certain travelers
  - Persons present during outbreaks
  - Lab personnel routinely working with *Neisseria meningitidis*
  - Residents of countries where disease is hyperendemic or epidemic

Meningococcal Booster Vaccination for Those At Continued Risk

Persons who remain at increased risk and completed the primary dose or series:

- 2 mos–6 yrs: Should receive additional dose of either MCV4
  - 3 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter
- 7 yrs and older: Should receive additional dose of either MCV4
  - 5 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter

*ACIP off-label recommendation

Meningococcal Vaccination Recommendations by Age and/or Risk Factor

This table summarizes the recommendations of CDC's Advisory Committee on Immunization Practices for the use of meningococcal vaccine.

MCV4 = Menactra (sanofi) and Menveo (Novartis) **MCV4-D** = Menactra
MPSV = Menomune (sanofi) **Hib-MenCY** = MenHibrix (GlaxoSmithKline)

TARGETED GROUP BY AGE AND/OR RISK FACTOR	PRIMARY DOSE(S)	BOOSTER DOSE(S)
People ages 11 through 18 years	Give 1 dose of MCV4, preferably at age 11 or 12 years[1]	Give booster at age 16 years if primary dose given at age 12 years or younger
		Give booster at age 16 through 18 years if primary dose given at age 13 through 15 years[2]
People ages 19 through 21 years who are are first-year college students and living in residence halls	Give 1 dose of MCV4[1]	Give booster if previous dose given at age younger than 16 years
Certain travelers,[3] people present during outbreaks caused by a vaccine serogroup,[4] and other people with prolonged increased risk for exposure (e.g., travelers to or residents of countries where meningococcal disease is hyperendemic or epidemic and microbiologists routinely working with *Neisseria meningitidis*)		
▪ for age 9 through 23 months	Give 2 doses of MCV4-D, 3 months apart[5]	If risk continues, give initial booster after 3 years, followed by boosters every 5 years
▪ for age 2 through 55 years	Give 1 dose of MCV4[1]	Boost every 5 years with MCV4[6,7]
▪ for age 56 years and older	Give 1 dose of MPSV	Boost every 5 years with MPSV[7]
People with persistent complement component deficiencies,[8] or functional or anatomic asplenia, including sickle cell disease		
▪ for age 2 through 18 months[9]	Give Hib-MenCY at ages 2, 4, 6 and 12–15 months	Give MCV4 booster after 3 years followed by MCV4 boosters every 5 years thereafter
▪ for age 9 through 23 months with persistent complement component deficiencies only *(does not include children with functional or anatomic asplenia)*	Give 2 doses of MCV4-D, 3 months apart	
▪ for ages 2 through 55 years	Give 2 doses of MCV4, 2 months apart[10]	Boost every 5 years with MCV4[6,11]
▪ for age 56 years and older	Give 1 dose of MPSV	Boost every 5 years with MPSV[11]

FOOTNOTES

1. If the person is HIV-positive, give 2 doses, 2 months apart.
2. The minimum interval between doses of MCV4 is 8 weeks.
3. Prior receipt of Hib-MenCY is not sufficient for children traveling to the Hajj or meningitis belt as it doesn't provide protection against serogroups A or W-135.
4. Seek advice of local public health authority to determine if vaccination is recommended.
5. If a child age 9 through 23 months will enter an endemic area in less than 3 months, give doses as close as 2 months apart.
6. If primary dose(s) given when younger than age 7 years, give initial booster after 3 years, followed by boosters every 5 years.
7. Boosters are recommended if the person remains at increased risk.
8. Persistent complement component deficiencies include C3, C5-C9, properdin, factor H, and factor D.
9. Children ages 2 through 18 months who are present during outbreaks caused by serogroups C or Y may be given an age-appropriate series of Hib-MenCY.
10. Children with functional or anatomic asplenia should complete a PCV13 vaccine series before vaccination with MCV4; if MCV4-D is to be given, vaccinate at least 4 weeks following last dose of PCV13.
11. If the person received a 1-dose primary series, give booster at the earliest opportunity, then boost every 5 years.

Technical content reviewed by the Centers for Disease Control and Prevention

IMMUNIZATION ACTION COALITION 1573 Selby Avenue • St. Paul, MN 55104 • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p2018.pdf • Item #P2018 (12/12)

www.immunize.org/catg.d/p2018.pdf

What Would You Do?

- Noah is 4 months old and in your facility for a well child visit. He has sickle cell disease. You are planning to administer meningococcal vaccine today. Which vaccine product should be used?
  - Menactra
  - Menveo

VACCINE ADMINISTRATION

http://www.cdc.gov/VACCINES/RECS/vac-admin/default.htm

Vaccine Administration

- **"Rights" of Medication Administration**
  - Right patient
  - Right time
    - Age and intervals between doses
  - Right vaccine
    - Product indications
  - Right preparation
    - Diluents and time considerations
  - Right route
    - Needle length
  - Right site
    - Age and patient size

Rotavirus (RV) Vaccine Administration Errors, United States, 2006-2013

- **66 reports of RV vaccine administration errors to Vaccine Adverse Event Reporting System (VAERS)**
  - 39 reports of injecting RV vaccine (RV1: 33; RV5: 6)
    - 19 of 39 reports (49%) documented an adverse event
    - Irritability (7) and injection site redness (5) most common
  - 27 reports of eye splashes
    - 21 cases: infants coughed, sneezed, or spit vaccine into the eyes of vaccination providers (17), parents (1), or themselves (3)
    - 21/27 reported non-serious adverse events-minor eye irritation

MMWR 2014; 63(04);81
www.cdc.gov/mmwr/preview/mmwrhtml/mm6304a4.htm?s_cid=mm6304a4_w

Lets Discuss the Elephant in the Room!

Shots hurt!!

Shots hurt!!

It Doesn’t Have to Hurt

http://www.youtube.com/watch?v=KgBwVSYqfps

Reducing the Pain of Childhood Vaccination

- **Use age-appropriate strategies alone or in combination to reduce pain during injections, including:**
  - Use of topical anesthetics
  - Tactile stimulation
  - Position: patient sitting rather than lying down
  - Order of injection: administer the most painful vaccine last
  - Rapid injection without aspiration
  - Age-appropriate distraction techniques
  - Infants: ingesting sweet-tasting liquids or breast-feeding

Taddio A, Appleton M, Bortolussi R, et al. Reducing the pain childhood vaccination: an evidence-based clinical practice guideline. Can Med Assc Journal 2010;182:E843-E855

Reducing Injection Pain

- Recent study found physical intervention called the **5 S's** provided significant pain reduction with or without sucrose after 2 -and 4- month vaccinations

1. Swaddling
2. Side/stomach position
3. Shushing
4. Swinging
5. Sucking

} 5 S's

- When 4/5 "S's" were done, babies usually stopped crying within 45 seconds after injection

John W. Harrington, MD, Stacey Logan, MD, Courtney Harwell, MD, Jessica Gardner, MD, Jessica Swingle, BS, Erin McGuire, MSa, and Rosemarie Santos, MD *Pediatrics* April 16th, 2012. doi: 10.1542/peds.2011-1607

http://www.youtube.com/watch?v=WkR_e1L6zxI

CDC Safe Injection Practices

CDC Home

Centers for Disease Control and Prevention
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A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Injection Safety

Injection Safety
- CDC's Role
- CDC Statement
- Information for Providers
- Information for Patients
- Preventing Unsafe Injection Practices
- ▶Safe Injection Practices
- CDC Clinical Reminder: Spinal Injection Procedures
- Infection Prevention during Blood Glucose Monitoring and Insulin Administration
- Recent Publications
- Recent Meetings
- The One & Only Campaign

Related Links
- One & Only Campaign
- HICPAC
- 2007 Guideline for

Injection Safety > Preventing Unsafe Injection Practices

Recommend 7 Tweet Share

Safe Injection Practices to Prevent Transmission of Infections to Patients

Download the complete 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings [PDF - 3.80 MB]

III.A.1.b. Safe Injection Practices The investigation of four large outbreaks of HBV and HCV among patients in ambulatory care facilities in the United States identified a need to define and reinforce safe injection practices 453. The four outbreaks occurred in a private medical practice, a pain clinic, an endoscopy clinic, and a hematology/oncology clinic. The primary breaches in infection control practice that contributed to these outbreaks were 1) reinsertion of used needles into a multiple-dose vial or solution container (e.g., saline bag) and 2) use of a single needle/syringe to administer intravenous medication to multiple patients. In one of these outbreaks, preparation of medications in the same workspace where used needle/syringes were dismantled also may have been a contributing factor. These and other outbreaks of viral hepatitis could have been prevented by adherence to basic principles of aseptic technique for the preparation and administration of parenteral medications 453, 454. These include the use of a sterile, single-use, disposable needle and syringe for each injection given and prevention of contamination of injection equipment and medication.

Whenever possible, use of single-dose vials is preferred over multiple-dose vials, especially when medications will be administered to multiple patients. Outbreaks related to unsafe injection practices

Email page link
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Contact Us:
Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333
800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
Contact CDC-INFO

http://www.cdc.gov/injectionsafety/IP07_standardPrecaution.html

NCIRD Vaccine Administration

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Choose a topic above
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A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Vaccines and Immunizations

Vaccines Home
Vaccines & Immunizations

Vaccines and Immunizations Home
- Immunization Schedules
- Recommendations and Guidelines
- Advisory Committee on Immunization Practices (ACIP)
- Vaccine Storage & Handling
- ▶Vaccine Administration
- Recalled Vaccines
- Reminder Systems and Strategies for Increasing Vaccination Rates
- Vaccines & Preventable Diseases
- Basics and Common Questions
- Vaccination Records
- Vaccine Safety and Adverse Events
- For Travelers
- For Specific Groups of People
- Campaign Materials
- Publications
- News and Media Resources

Vaccines and Immunizations Home > Recommendations and Guidelines

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Vaccine Administration

Recommendations and Guidelines

Guidelines

- Vaccine Administration Guidelines [2 MB, 15 pages] from Pink Book Appendix (includes pictures of sites)
- Vaccines with Diluents: How to Use Them [1 page] Contains a chart that lists the vaccines that require reconstitution with a diluent before they can be administered including maximum time allowed between reconstituting each vaccine and having to discard it. Plus the general steps to follow when reconstituting vaccines.
- It's Federal Law - use of VISs and more in Pink Book appendix E [1 MB, 10 pages] Appendix includes instructions for use of Vaccine Information Statements, how to get VISs, questions and answers, etc.
- Dosage, Route, Site:
  - All ages: Dose, Route, Site, and Needle Size [1 page]
  - Adults: Dose, Route, Site, Needle Size, and Preparation [1 page]
  - Adults: How to administer IM and SC Injections to Adults [1 page]
- Immunization Site Maps
  - Children
    Michigan Department of Community Health
    - Under 12 months of age [1 page]
    - 12 months and older [1 page]
  - Preteens and Adolescents [1 page]
    Michigan Department of Community Health

On this Page
- Guidelines
- Screening and Checklists
- Reference Tables
- Comforting Techniques

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(888) 232-6348
Contact CDC-INFO

http://www.cdc.gov/vaccines/recs/vac-admin/default.htm

IMMUNIZATION RESOURCES

Immunization Twitter Just for You

@CDCIZlearn

is a leading source for health care providers on immunization training, recommendations, and information across the lifespan

CDC™

IZ LEARN

Tweets

CDC IZ Learn @CDCIZLearn · 5 hrs
#CDC talks 2014 childhood & adolescent imz schedules and adult imz recs & practice standards: 1.usa.gov/1kiwxtz
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Dr. Tom Frieden @DrFriedenCDC · Mar 27
South East Asia Region just declared polio-free! Wonderful tribute to global collaboration and front-line work. Now just two regions to go.
Expand Reply Retweet Favorite More

CDC IZ Learn @CDCIZLearn · Mar 26
Children traveling internationally-even those under 1yr-need MMR! See recs for #vax before & after travel. 1.usa.gov/
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CDC IZ Learn @CDCIZLearn · Mar 25
Get CE credits for #CDC presentatior
IZ resources. 4/2/14. 1.usa.gov/1jnlW
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Patient w/ fever & rash? Keep #meas
Philippines. 1.usa.gov/1dHyLih
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Learn more about #vaccine administr
video: bit.ly/NzSitS
View media

CDC IZ Learn @CDCIZLearn · Mar 19
Vaccinate children on time for best protection from disease: CDC's Dr. Andrew Kroger in @Immunize_USA blog. bit.ly/1IPBoDJ
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CDC IZ Learn
@CDCIZLearn

Brush up on best practices for #vaccine storage & handling. Get CDC's toolkit here: 1.usa.gov/1d2m7u4

Reply Delete Favorite More

8:46 AM - 19 Mar 2014

CDC Vaccines and Immunization Resources

- Questions? E-mail CDC:
  - Providers nipinfo@cdc.gov
  - Parents and patients www.cdc.gov/cdcinfo
- Website ww.cdc.gov/vaccines
- Influenza www.cdc.gov/flu
- Vaccine Safety w.cdc.gov/vaccinesafety

Additional Resources

- Arizona Department of Health
  http://azdhs.gov/phs/immunization
- Local Health Departments
- Immunization Action Coalition www.immunize.org
- Vaccine Education Center www.chop.edu
- American Academy of Pediatrics (AAP) www.aap.org/immunize
- National Foundation for Infectious Diseases (NFID) www.nfid.org

Adult Immunization Update Tomorrow

JoEllen Wolicki BSN, RN
jwolicki@cdc.gov

OPTIONAL

Vaccine Administration Best Practices

- Assess the immunization record
- Use the current recommended immunization schedules
- Screen for contraindications and precautions
- Educate the parent and/or patient, using Vaccine Information Statements and other credible resources

Vaccine Administration Best Practices

- Administer vaccine(s) using best practice guidelines, the rights of medication administration, and measures to minimize discomfort and promote safety
- Implement protocols to manage an acute adverse reaction should it occur
- Document what you did, using immunization information system (IIS) whenever available
- Provide the patient with a copy of their immunization record