

Adolescent Immunization Update and the 16-Year-Old Platform

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Advisory Committee on Immunization Practices (ACIP)

The recommendations to be discussed are primarily those of the ACIP

- comprised of 15 experts in clinical medicine and public health who are not government employees
- provides guidance on the use of vaccines and other biologic products to the Department of Health and Human Services, CDC, and the U.S. Public Health Service

www.cdc.gov/vaccines/acip



ACIP Recommendation Categories

Category A recommendations

- made for all persons in an age- or risk-factor-based group

Category B recommendations

- do not apply to everyone, but in the context of a clinician-patient interaction, vaccination may be appropriate for a person

www.cdc.gov/vaccines/acip/recs/GRADE/downloads/handbook.pdf



Platforms



Immunization Platforms

- Routine health visits for administration of recommended vaccines
- Emphasize the importance of on-time vaccination
- Create opportunities for catch-up of missed vaccines
- Creates the opportunity to provide developmentally targeted care and anticipatory guidance

Auslander B et al. *J Adolescent Health* 2017;60:475-6.



TABLE 1. Recommended schedule for active immunization of normal infants and children (See individual ACIP recommendations for details.)

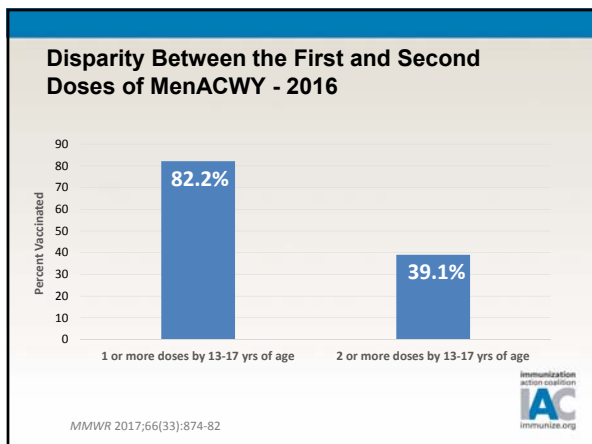
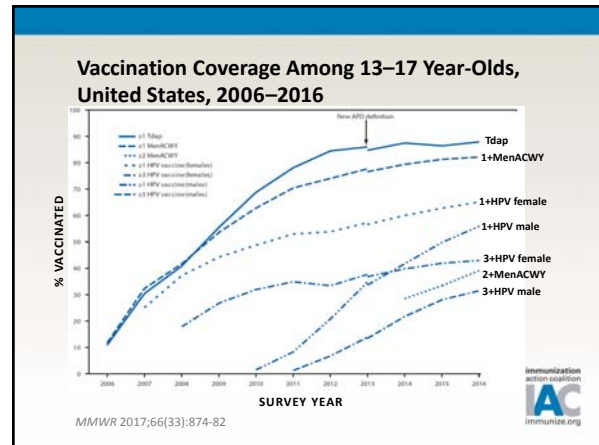
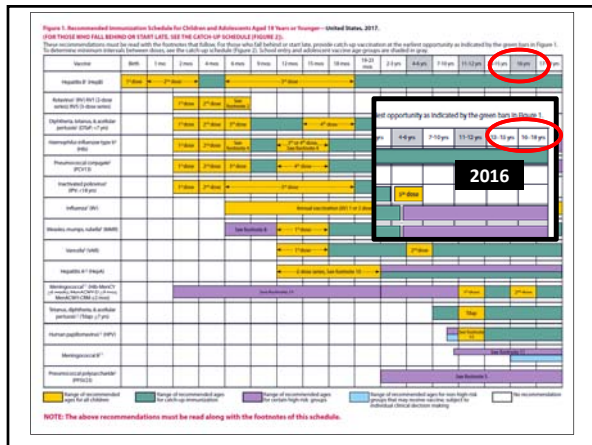
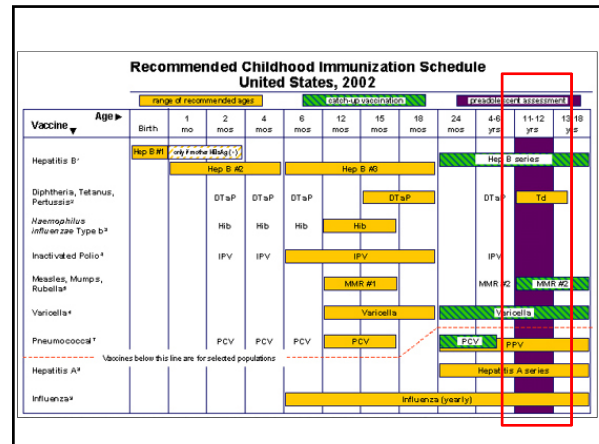
Recommended age*	Vaccine(s) [†]	Comments
2 mo.	DTP-1, [§] OPV-1 ^{††}	Can be given earlier in areas of high endemicity
4 mo.	DTP-2, OPV-2	6-wks-2-mo. interval desired between OPV doses to avoid interference
6 mo.	DTP-3	An additional dose of OPV at this time is optional for use in areas with a high risk of polio exposure
15 mo.**	MMR ^{†††}	
18 mo.**	DTP-4, OPV-3	Completion of primary series
4-6 yr. ^{§§}	DTP-5, OPV-4	Preferably at or before school entry
14-16 yr.	Td ^{††††}	Repeat every 10 years throughout life

*These recommended ages should not be construed as absolute, i.e. 2 mos. can be 6-10 weeks, etc.
[†]For all products used, consult manufacturer's package enclosure for instructions for storage, handling, and administration. Immunobiologics prepared by different manufacturers may vary, and those of the same manufacturer may change from time to time. The package insert should be followed for a specific product.
[‡]DTP—Diphtheria and tetanus toxoids and pertussis vaccine.
[§]OPV—Oral, attenuated poliovirus vaccine contains poliovirus types 1, 2, and 3.
[¶]Simultaneous administration of MMR, DTP, and OPV is appropriate for patients whose compliance with medical care recommendations cannot be assured.
^{††}MMR—Live measles, mumps, and rubella viruses in a combined vaccine (see text for discussion of single vaccines versus combination).
^{†††}Up to the seventh birthday.
^{††††}Td—Adult tetanus toxoid and diphtheria toxoid in combination, which contains the same dose of tetanus toxoid as DTP or DT and a reduced dose of diphtheria toxoid.
 1983 childhood immunization schedule

TABLE 1. Recommended childhood immunization schedule* — United States, January 1995

Vaccine	Birth	2 Months	4 Months	6 Months	12 [†] Months	15 Months	18 Months	4-6 Years	11-12 Years	14-16 Years
Hepatitis B ¹	HB-1	HB-2	HB-3							
Diphtheria, Tetanus, Pertussis ²		DTP	DTP	DTP	DTP or DTaP at ≥15 months			DTP or DTaP	Td	
<i>H. influenzae</i> type b ^{**}		Hib	Hib	Hib	Hib					
Poliovirus		OPV	OPV	OPV				OPV		
Measles, Mumps, Rubella ³					MMR			MMR	MMR	

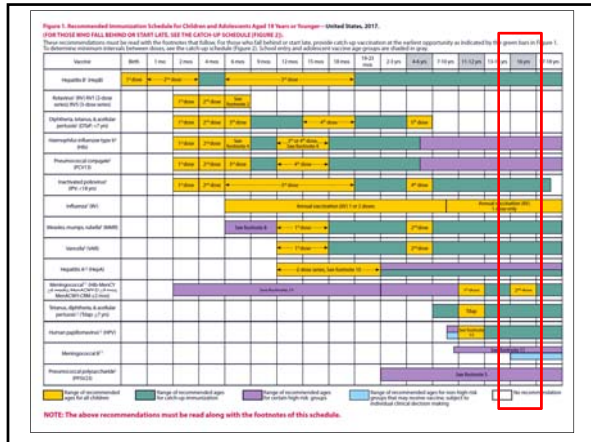
* Recommended vaccines are listed under the routinely recommended ages. Shaded bars indicate range of acceptable ages for vaccination.
[†] Vaccines recommended in the second year of life (i.e., 12-15 months of age) may be given at either one or two visits.



The 16-Year-Old Immunization Platform

- Help ensure adherence with the recommendations for MenACWY and MenB vaccines
- Provides an opportunity for healthcare providers to review adolescents' vaccination status and complete any other needed vaccination and/or vaccination series
- Help ensure that vaccines are covered by public or parental insurance
- Help further encourage adherence to recommended screenings and anticipatory guidance during adolescence

Auslander B et al. *J Adolescent Health* 2017;60:475-6.



Meningococcal Disease

- 373 cases of invasive meningococcal disease were reported in 2015
- 10%-15% patients die, even with antibiotic treatment
 - death can occur in up to 40% of patients in whom meningococemia develops
- Up to 20% of those who survive meningococcal disease sustain lifelong disability such as arm or leg amputation, hearing loss, or neurologic damage

MMWR 2013;62(RR-2):15; MMWR 2015;64:608-12



Meningococcal Vaccines

- Meningococcal Conjugate Vaccines (MenACWY)
 - Conjugated meningococcal capsular polysaccharide
 - Available since 2005
 - Routinely recommended at age 11-12 year since 2005
- Meningococcal Serogroup B Vaccines (MenB)
 - Meningococcal capsular proteins
 - Available since late 2014
 - Routinely recommended for people at increased risk age 10 years and older

MMWR 2013;62(RR-2):15; MMWR 2015;64:608-12



MenACWY Vaccines

- Menactra (Sanofi Pasteur)
 - Approved for persons 9 months through 55 years*
 - Approved for revaccination of persons 15 through 55 years
- Menveo (GlaxoSmithKline)
 - Approved for persons 2 months through 55 years*

*recommended to be used off-label in persons 56 years and older

MMWR 2013;62(RR-2):15



MenACWY Routine Schedule

Age at first dose	Booster dose
11–12 years	16 years*
13–15 years	16–18 years*
16–18 years	No

*off-label recommendation for Menveo

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



Why Boost MenACWY at 16 Years of Age?

- Antibody persistence studies indicate that protective level of circulating antibody decline 3 to 5 years after a single MenACWY dose
- Vaccine effectiveness case-control study suggests that many adolescents are not protected 5 years after vaccination
- A single dose of meningococcal conjugate vaccine administered at age 11 or 12 years is unlikely to protect most adolescents through the period of increased risk at ages 16 through 21 years

MMWR 2013;62(RR-2):1-28; MMWR 2011;60(3):72-76



Second Dose MenACWY Coverage Is Suboptimal

- First dose coverage at 88% among adolescents 13–17 years of age
- Only 39% for booster dose among 17-year-olds who received a first dose before age 16
- Opportunities to vaccinate are often missed

MMWR 2017;66(33):874-82



MenACWY Second Dose

Resources to help improve second dose MenACWY coverage available at



www.give2mcv4.org

(a collaborative project between IAC and Sanofi Pasteur)



Recommending MCV4 Vaccine: What to Say and How to Say It

The National Vaccine Advisory Committee (NVAC) calls on all health care providers to:

- Incorporate immunization needs assessment into every clinical encounter.
- Strongly recommend all immunizations that patients need.
- Either administer vaccines or refer the patient to a provider who can immunize.
- Document the vaccination given.

A clinician's strong recommendation for a vaccine is known to be powerful and persuasive in building vaccine confidence and acceptance among patients and parents.

In the 2013–2014 influenza season in the United States, for example, a clinician's recommendation was a key factor in determining whether pregnant women were vaccinated. When the clinician made a recommendation and offered vaccination, 70.5% of pregnant women were vaccinated. If the clinician made a recommendation but did not offer vaccination, the immunization rate was 32%. Furthermore, if the clinician neither recommended nor offered vaccine, the rate was only 9.7%.

Meningococcal disease: Recognizing risk

- When it comes to discussing MCV4[®] with patients and parents, focus can be placed on:
- The life-threatening nature of the disease.
 - A well-documented period of increased risk for adolescents and young adults.



Meningococcal Vaccine Recommendations by Age and Risk Factor for Serogroups A, C, W, and Y Protection		A separate vaccine is needed for meningococcal serogroup B (MenB) protection. See www.immunize.org/menb .	
MenACWY (MCV4) Recommendations by Age and Risk Factor			
Age 13 through 17 years			
For children age 13 through 17 years	1 dose (MCV4) at age 13-17 years	1 booster dose (MCV4) at age 16-18 years	1 booster dose (MCV4) at age 18-26 years
Age 18 through 26 years			
For children age 18 through 26 years	1 dose (MCV4) at age 18-26 years	1 booster dose (MCV4) at age 18-26 years	1 booster dose (MCV4) at age 18-26 years
Age 27 years and older			
For children age 27 years and older	1 dose (MCV4) at age 27 years and older	1 booster dose (MCV4) at age 27 years and older	1 booster dose (MCV4) at age 27 years and older
Age 65 years and older			
For children age 65 years and older	1 dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older
People with functional or anatomic asplenia, including sickle cell disease			
For children age 2 years through 17 years	1 dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years
For children age 18 years through 64 years	1 dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years
For children age 65 years and older	1 dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older
People with high-risk medical conditions			
For children age 2 years through 17 years	1 dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years
For children age 18 years through 64 years	1 dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years
For children age 65 years and older	1 dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older
People with certain microbiological conditions			
For children age 2 years through 17 years	1 dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years
For children age 18 years through 64 years	1 dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years
For children age 65 years and older	1 dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older
People with certain populations at risk during an outbreak			
For children age 2 years through 17 years	1 dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years	1 booster dose (MCV4) at age 2-17 years
For children age 18 years through 64 years	1 dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years	1 booster dose (MCV4) at age 18-64 years
For children age 65 years and older	1 dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older	1 booster dose (MCV4) at age 65 years and older

www.immunize.org/catg.d/p2018



Meningococcal Serogroup B



Groups at Increased Risk for Meningococcal B Disease

- High-risk medical conditions:
 - persistent complement component deficiencies including treatment with eculizumab (Soliris, Alexion Pharmaceuticals)
 - functional or anatomic asplenia
- Certain microbiologists
- Populations at risk during an outbreak
- **NOT at increased risk:** international travelers, HIV infection, first-year college students

MMWR 2015;64:608-12



Meningococcal Serogroup B Vaccines

- MenB-FHbp (Trumenba, Pfizer)
 - Licensed by FDA on October 29, 2014
 - 2 components
 - Approved for 10 through 25 years of age
 - 2- or 3-dose series (0, 6 months for healthy people; 0, 2, 6 months for people at increased risk)
- MenB-4C (Bexsero, GlaxoSmithKline)
 - Licensed by FDA on January 23, 2015
 - 4 components
 - Approved for 10 through 25 years of age
 - 2-dose series (0, ≥1 month)

Pfizer and GSK product information. CBER website.



ACIP Recommendations for Meningococcal B Vaccine of High-Risk Persons

- Certain persons 10 years of age or older* who are at increased risk for meningococcal disease should receive MenB vaccine
 - persistent complement component deficiencies including treatment with eculizumab (Soliris)
 - anatomic or functional asplenia
 - risk in a serogroup B meningococcal disease outbreak
 - certain microbiologists
- Not routinely recommended for international travelers, people with HIV infection, or first year college students who live in a dormitory
- MenB vaccines are included in VFC

*off-label for persons 26 years and older

MMWR 2015;64:608-12



This is an official
CDC
HEALTH ADVISORY

Patients Receiving Eculizumab (Soliris®) at High Risk for Invasive Meningococcal Disease Despite Vaccination

Eculizumab (Soliris®) recipients have a 1,000 to 2,000-fold greater risk of invasive meningococcal disease compared to the general U.S. population. The Food and Drug Administration (FDA)-approved prescribing information for eculizumab includes a black box warning for increased risk of meningococcal disease, and the Advisory Committee on Immunization Practices (ACIP) recommends meningococcal vaccination for all patients receiving eculizumab. Recent data show that some patients receiving eculizumab who were vaccinated with the recommended meningococcal vaccines still developed meningococcal disease, most often from nongroupable *Neisseria meningitidis*, which rarely causes invasive disease in healthy individuals.

July 7, 2017 [Learn More >](#)



ACIP MenB Recommendations for Healthy Persons (Not at High Risk)

- “The current low incidence of MenB disease and uncertainty about strain coverage and duration of immunity resulted in the ACIP determining that insufficient evidence exists to make a routine public health recommendation that all adolescents be vaccinated with MenB vaccine”
- “Given the seriousness of meningococcal disease and the availability of licensed vaccines, the ACIP agreed that sufficient evidence exists to encourage individual clinical decision making”

MMWR 2015;64:608-612



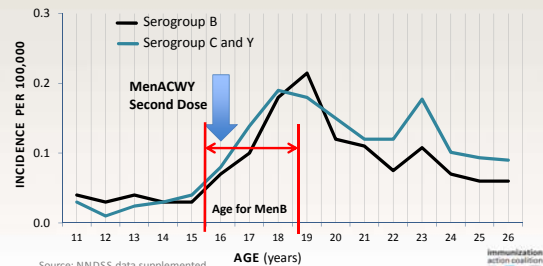
ACIP MenB Recommendations For Healthy Persons (Not at High Risk)

- A MenB vaccine series *may be administered* to healthy adolescents and young adults age 16 through 23 years to provide protection against most strains of serogroup B meningococcal disease
- The preferred age for MenB vaccination is 16 through 18 years (Category B recommendation)
 - Vaccines with a Category B recommendation are included in the VFC program and ACA insurance programs

MMWR 2015;64(No. 41):1171-76



Meningococcal Incidence in Adolescents and Young Adults by Serogroup, 2009–2013



Source: NNDSS data supplemented with additional serogroup data from ABCs and state health departments



ACIP Recommendations for Meningococcal B Vaccine

- The two MenB vaccines are NOT interchangeable
- The same vaccine *must* be used for all doses
- Minimum intervals between doses have not been defined
 - use routine schedule only
- Need for booster dose(s) unknown – not recommended at this time
- MenB vaccines can be given at the same time as other vaccines including MenACWY

MMWR 2015;64(No.41):1171-76



Influenza



Influenza Vaccine Products for the 2017–2018 Influenza Season

Manufacturer	Trade Name (generic alternative)	How Supplied	Minimum Content (mg/0.5ml)	Age Group	Vaccine Product Billing Code ^a
AstraZeneca	Shingrix (Shingrix)	0.5 mL (single dose syringe)	0	18 through 49 years	90512 90517
Celastrol/Novartis	Flucelvax (Flucelvax)	0.5 mL (single dose syringe)	0	2 years & older	90006 90006
ID Biomedical Corp. of Quanta, a subsidiary of GlaxoSmithKline	FluLaval (FluLaval)	0.5 mL (single dose syringe)	0	6 months & older	90006 90006
		1.0 mL (multi-dose vial)	25	6 months & older	90008 90008
Pharm Sciences Corp.	Flukick (Flukick)	0.5 mL (single dose vial)	0	18 years & older	90071 90071
		0.5 mL (single dose syringe)	0	18 years & older	90067 90067
		0.25 mL (single dose syringe)	0	6 through 15 months	90065 90065
		0.5 mL (single dose syringe)	0	2 years & older	90006 90006
Sanofi Pasteur, Inc.	Flucelvax (Flucelvax)	0.5 mL (single dose vial)	0	2 years & older	90006 90006
		1.0 mL (multi-dose vial)	25	6 through 15 months	90007 90007
		1.0 mL (multi-dose vial)	25	2 years & older	90008 90008
	Flucelvax High-Dose (Flucelvax High-Dose)	0.5 mL (single dose syringe)	0	65 years & older	90062 90062
	Flucelvax Intranasal (Flucelvax Intranasal)	0.5 mL (single dose intranasal sprayer)	0	18 through 49 years	90008 90008
		0.5 mL (single dose syringe)	0	18 through 49 years	90006 90006
Novartis (Novartis)	Shingrix (Shingrix)	0.5 mL (single dose syringe)	243	2 years & older ^a	90006 90006
		1.0 mL (multi-dose vial)	0		90008 90008
Novartis (Novartis)	Shingrix (Shingrix)	0.5 mL (single dose syringe)	243	2 years & older ^a	90006 90006
		1.0 mL (multi-dose vial)	0		90008 90008
Novartis (Novartis)	FluLaval (FluLaval)	0.5 mL (single dose syringe)	0	65 years & older	90013 90013
		0.5 mL (single dose syringe)	0	2 years & older	90006 90006
		1.0 mL (multi-dose vial)	25	6 months & older	90008 90008
		0.5 mL (single dose syringe)	0	2 years & older	90071 90071
		1.0 mL (multi-dose vial)	25	2 years & older	90008 90008

www.immunize.org/catg.d/p4072

Tdap Vaccines

- Boostrix (GlaxoSmithKline) – approved for persons age 10 years and older
- Adacel (Sanofi Pasteur) – approved for persons ages 10 through 64 years
- Neither approved by FDA for persons 7 through 9 years of age
- Both approved for a single dose

*off-label recommendation for Adacel



Adolescent Tdap Recommendations

- Single dose recommended at 11 or 12 years of age
- Catch-up 13- through 18-year-olds who have not been vaccinated with Tdap

MMWR 2011; 60 (No. 1):13-15



Tdap in Pregnancy

- Administer a dose of Tdap vaccine during each pregnancy regardless of the woman's prior history of receiving Tdap*
- To maximize passive transfer of antibody to the fetus optimal timing of Tdap is between 27 and 36 weeks gestation – preferably earlier in the interval
- Tdap may be administered earlier in pregnancy if necessary (e.g., wound management)
 - not necessary to repeat a Tdap dose during that pregnancy

*off-label recommendation

MMWR 2013;62(No.7):131-135



Tdap Vaccine Effectiveness

- Original Tdap licensure was based on immunologic bridging to DTaP recipients rather than clinical trials of vaccine effectiveness
- Subsequent studies have demonstrated that Tdap vaccine effectiveness decreases with increased time since vaccination
 - 70%–75% within 1 year
 - 30%–35% within 2–4 years

J Infect Dis 2014;210(6):942-53, *Pediatrics* 2015;135(6):981-9



Tdap Revaccination

- Revaccination with Tdap applies ONLY to pregnant women
- Revaccination is not recommended for family members, other contacts, or healthcare providers
- ACIP's recommendation is to focus on the current Tdap program
 - improve adolescent and adult Tdap coverage, including HCP (51% in 2015)
 - vaccination of pregnant women

MMWR 2013;62(No.7):131-135



Tdap/Td Revaccination

- A routine booster dose of tetanus and diphtheria toxoid (Td) is recommended every 10 years throughout life
- It is acceptable to use Tdap for the decennial booster dose if Td is not available

MMWR 2013;62(No.7):131-135



Human Papillomavirus



HPV Vaccine Recommendations

- Routine vaccination with 2 doses at 11 or 12 years of age
- Catch-up vaccination
 - females through age 26 years
 - males through age 21 years, permissive through age 26 years
- 9vHPV can be used to finish a series started with a different vaccine

MMWR 2015;64(No.11):300-4



ACIP HPV 2-Dose Recommendations

- A 2-dose schedule is recommended for persons beginning the HPV series before 15 years of age
- Doses must be separated by at least 5 months (recommended interval 6-12 months)
- If doses are separated by less than 5 months then 3 doses are recommended



ACIP HPV 2-Dose Recommendations

- Persons beginning the series at 15 years or older or who are immunosuppressed should receive a 3-dose schedule
- 2-dose schedule can be completed with *any combination of HPV vaccines* and is retroactive as the first dose was given before age 15 years
- A prolonged interval between doses does not require restarting the series or adding doses



What You Can Do to Help Protect Adolescents



Strongly Recommend Adolescent Vaccines

- A healthcare provider's recommendation to vaccinate is a powerful motivator for patients to get immunized
- Reinforce your recommendation with an environment that is:
 - enthusiastically pro-vaccine
 - committed to fully vaccinating ALL eligible adolescent patients, regardless of whether they are college bound
- Provide training, promote leadership
 - educate staff – keep them up to date on all ACIP vaccine recommendations
 - make sure they are fully immunized themselves with the vaccinations they need

CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases* 2015:33-46.



Use Every Opportunity to Immunize

- Consider every patient encounter an opportunity to vaccinate with all age-appropriate vaccines
 - Well visits
 - Acute care and follow-up visits
 - Sports and camp physicals
 - Routine visits for chronic illnesses (such as asthma)
 - Visits for influenza vaccines
- Administer all indicated vaccines at the same visit

Epidemiology and Prevention of Vaccine-Preventable Diseases 2015:33-46, *MMWR* 2011;60(RR-2):1-61, National Vaccine Advisory Committee (NVAC), *Pediatrics* 2003;112(4):958-963



Implement Immunization Processes and Procedures

- Check immunization status of patients at every visit (“vital sign”)
 - Review immunization information system (IIS) record
- Establish mechanisms to identify patients due for vaccination
 - Electronic medical record (EMR) prompts
 - “Vaccination due” clip attached to paper chart

J Adolesc Health 2013;53(4):550-553
Am J Prev Med 2009;36(3):278-279



Other Strategies to Improve Adolescent Vaccination Coverage

- Standing orders
- Patient reminder and recall systems
 - Strong evidence of effectiveness in improving adolescent vaccination rates*
- www.give2mcv4.org
 - Checklists, standing orders, tip sheets, patient handouts, and more

*Community Preventive Services Task Force
www.thecommunityguide.org/vaccines/clientreminder.html



Other Strategies to Improve Adolescent Vaccination Coverage

- Measure your practice's vaccination rates at least annually
 - IIS
 - EMR system
 - chart audit
 - claims data review
 - Assessment, Feedback, Incentives, and eXchange (AFIX)
- For additional information and helpful contacts:
www.cdc.gov/vaccines/programs/afix/index.html

Pediatrics 2003;112(4):958-963
Epidemiology and Prevention of Vaccine-Preventable Diseases 2015:33-46



Other Strategies to Improve Adolescent Vaccination Coverage

- Create a culture that values well care for adolescents
- Establish expectations of compliance with vaccination recommendations – among patients, parents, and providers
- Emphasize the importance of following the ACIP-recommended immunization schedule for adolescents
 - 11–12 years of age
 - 16 years of age
 - Whenever a patient is behind on immunization



Immunization Action Coalition Resources

Websites

- www.immunize.org (for HCP)
- www.vaccineinformation.org (for the public)
- www.give2mcv4.org (for HCP)
- www.immunizationcoalitions.org (for coalitions)

Publications – *Needle Tips*, *Vaccinate Adults*, *IAC Express*

- www.immunize.org/publications

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Thank you!

