I. Meningococcal Disease: Overview of a Rare but Potentially Deadly Infection

II. Helping to Protect Through Timely and Complete Immunization: 2 Doses of MenACWYa

III. Getting Adolescents Vaccinated: Much Improvement Needed

IV. Call to Action: What You Can Do to Help Protect Adolescents

V. Helpful Resources

MenACWY (meningococcal conjugate vaccine quadrivalent) helps protect against meningococcal disease resulting from infection with serogroup A, C, W, or Y.
Meningococcal Disease:
Overview of a Rare but Potentially Deadly Infection

Meningococcal Disease in the United States

- A bacterial infection
  - *Neisseria meningitidis*
- An unpredictable disease
  - 98% of cases are sporadic; fewer than 2% are related to outbreaks¹
  - Typically occurs among previously healthy children and adolescents²
- Approximately 2100-3400 cases occurred annually in the 1990s³
  - Approximately 370-1000 per year during 2009-2016⁴,⁵

Outcomes Can Be Severe, Even with Treatment

- Serious outcomes include meningitis (most common clinical presentation) and meningococcemia (bloodstream infection)\(^1\)
- Death rate of 10%-15%, even with antibiotic therapy\(^1\)
  - Death rate even higher (up to 40%) for patients who develop meningococcemia\(^1\)
- Up to 20% of people who survive meningococcal disease suffer lifelong disability\(^2\)
  - Amputation of arms or legs, hearing loss, brain damage


Time Is of the Essence

- Early symptoms are nonspecific
  - Fever, headache, nausea, vomiting, loss of appetite
  - Mimic symptoms of common viral illnesses
- Characteristic symptoms occur later
  - Hemorrhagic rash, neck stiffness, photophobia
  - Typically develop approximately 12-15 hours after symptoms begin\(^1\)
- Rapid progression
  - Death may occur within 24 hours of symptom onset\(^1,2\)

Where the Burden of Disease Falls

- <1 year of age
- 16 through 21 years of age
- ≥65 years of age

Reference:

Modes of Transmission Help Explain Vulnerability of Adolescents and Young Adults

• Spread through respiratory and throat secretions
  - Coughing, sneezing
  - Kissing
  - Sharing eating utensils, water bottles, etc.

• Crowded settings facilitate transmission
  - College dormitory
  - Crowded household
  - Military barracks
  - Nightclubs, bars

References:
Age-Specific Fatalities from Meningococcal Disease

United States, 1999-2014

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>Number of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>197</td>
</tr>
<tr>
<td>1-4</td>
<td>189</td>
</tr>
<tr>
<td>5-14</td>
<td>170</td>
</tr>
<tr>
<td>15-24</td>
<td>411</td>
</tr>
<tr>
<td>25-34</td>
<td>199</td>
</tr>
<tr>
<td>35-44</td>
<td>171</td>
</tr>
<tr>
<td>45-54</td>
<td>202</td>
</tr>
<tr>
<td>55-64</td>
<td>140</td>
</tr>
<tr>
<td>65-74</td>
<td>98</td>
</tr>
<tr>
<td>75-84</td>
<td>100</td>
</tr>
<tr>
<td>85+</td>
<td>77</td>
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</table>

Sources for References 1-16: Deaths: Final data as reported in National Vital Statistics Reports for 1999 through 2014.

Helping to Protect Through Timely and Complete Immunization: 2 Doses of MenACWY
Meningococcal Vaccines in the US Recommended for Use in Adolescents and Young Adults

<table>
<thead>
<tr>
<th></th>
<th>Meningococcal conjugate (MenACWY)</th>
<th>Meningococcal B (MenB)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year first licensed</strong></td>
<td>2005</td>
<td>2014</td>
</tr>
<tr>
<td><strong>Serogroup(s)</strong></td>
<td>A, C, W, Y</td>
<td>B</td>
</tr>
<tr>
<td><strong>Recommendations</strong></td>
<td>Recommended for routine use in adolescents</td>
<td>Recommended, based on individual clinical decision making, for adolescents and young adults 16–23 years of age</td>
</tr>
</tbody>
</table>

ACIP Recommendations for Routine MenACWY Vaccination

- First dose of MenACWY at **11 or 12 years of age**
  - Recommended since 2005 by CDC’s Advisory Committee on Immunization Practices (ACIP)
- A second dose at **16 years of age**
  - Recommended since 2010 by ACIP

### The 16-Year-Old “Platform”

A 16-year-old column was added to the child and adolescent schedule in 2017 to highlight the importance of a visit at this age for MenACWY#2 and other needed vaccines.


### Why Boost at 16 Years of Age?

- Antibody persistence studies indicate that protective levels of circulating antibody decline 3 to 5 years after a single MenACWY dose\(^1\)
- Vaccine effectiveness case–control study suggests that many adolescents are not protected 5 years after vaccination\(^1,2\)

\[\text{“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”} – ACIP\(^1\)\]

Waning Antibody Protection in Serogroup C: The Need for Boosting

Percentage with hSBA titer ≥1.8

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6 years after 1 dose</td>
<td>44.2%</td>
</tr>
<tr>
<td>28 days after booster dose</td>
<td>99.6%</td>
</tr>
</tbody>
</table>

hSBA = Serum bactericidal assay using human complement.

Getting Adolescents Vaccinated: Much Improvement Needed
Missed Vaccination Opportunities in Adolescents Are Common

<table>
<thead>
<tr>
<th>Reason for visit</th>
<th>Percent of age-eligible patients who did NOT receive MenACWY dose 1 during visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive care (n=1678)</td>
<td>57% (n=954)</td>
</tr>
<tr>
<td>Vaccine-only (n=527)</td>
<td>86% (n=453)</td>
</tr>
<tr>
<td>Non-preventive care (n=2944)</td>
<td>96% (n=2821)</td>
</tr>
</tbody>
</table>

*Data based on 9180 health care visits made by 1628 adolescents 11–18 years of age to a university-based pediatric practice in Seattle from November 2006–June 2011.


<table>
<thead>
<tr>
<th>Adolescents vaccinated (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>≥1 dose (by 13–17 years of age)</td>
<td>82.2%</td>
</tr>
<tr>
<td>Second dose (by 17 years of age)</td>
<td>39.1%</td>
</tr>
</tbody>
</table>

## Putting the Numbers Together

**Estimated US population of adolescents 13–17 years of age in 2016:** 21 million<sup>1</sup>

Pool of potentially unprotected adolescents (no MenACWY primary dose): **3.7 million**

**Estimated US population of 17-year-olds in 2016:** 4.2 million<sup>4</sup>

Pool of potentially under-protected 17-year-olds (no MenACWY booster dose): **2.6 million**


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## Call to Action:

**What You Can Do to Help Protect Adolescents**
Strongly Recommend Meningococcal Immunization

- A health care provider’s recommendation to vaccinate is a powerful motivator for patients to get immunized\(^1\)
- 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 on meningococcal disease
  - Keep them up-to-date on all ACIP vaccine recommendations
  - Make sure they are fully immunized themselves with the vaccinations they need
  - Consider designating a vaccine champion or team of champions


Focus on Key Points When Speaking with Patients

- Meningococcal disease is rare but potentially deadly for people your age
- You are at increased risk from your mid-to-late teens into your early 20s
- Disease can come on suddenly, without warning, and can quickly become life-threatening
- The disease can result in severe, lifelong disability, such as hearing loss, amputation of arms or legs, and brain damage
- Meningococcal vaccines are safe and effective
- For routine vaccination, 2 doses are recommended
Vaccinate!

• Follow ACIP recommendations for routine MenACWY immunization¹
  • Give dose 1 at 11-12 years of age AND dose 2 at 16 years of age
  • Use every opportunity to provide the booster dose when indicated

Vaccinate! (cont.)

• Follow ACIP guidance if MenACWY dosing is delayed¹:
  – If dose 1 is given at 13-15 years of age, administer dose 2 at 16-18 years of age
  • Observe minimum interval of 8 weeks between doses
  – If dose 1 is given at ≥16 years of age,² dose 2 is not needed

² A catch-up dose may be administered through 21 years of age to those who have not received a dose after their 16th birthday (eg, first-year college students 19-21 years of age living in residence halls)
Capture Every Opportunity to Immunize

- Consider every patient encounter an opportunity to vaccinate with MenACWY and all other age-appropriate vaccines\(^1\)\(^{-3}\)
  - Well visits
  - Acute care and follow-up visits
  - Sports and camp physicals
  - Routine visits for chronic illnesses (eg, asthma)
  - Visits for influenza vaccines

- Administer all indicated vaccines at the same visit\(^2\)\(^{-3}\)


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
  - “Immunization due” clip attached to paper chart
- Screen for contraindications and precautions
- Develop protocols for vaccinating minors who present for care without a parent\(^1\)\(^{-2}\)

Tool Up

- Standing orders
- Patient reminder and recall systems
  - Strong evidence of effectiveness in improving adolescent vaccination rates
- www.Give2MenACWY.org
  - Checklists, standing orders, tip sheets, patient handouts, and more


Measure Up

- 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: http://www.cdc.gov/vaccines/programs/afix


www.Give2MenACWY.org  •  May 2018
Set the Bar High

- 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

Strengthen the Partnership

- Recognize that success at immunization is a partnership between the health care provider, the adolescent, and the family
- Share your practice’s pro-immunization philosophy and policies with every patient and family from the time of their first visit
  - Develop a written vaccination policy you can share with families
- Make vaccine education visible, accessible, and plentiful
  - Brochures, Vaccine Information Statements, posters, handouts for parents and teens, and website referrals
  - Designated staff members ready to provide vaccine information and answer questions
Take Action!

- Identify adolescents in your practice who are eligible for their second dose of MenACWY vaccine
- Establish a goal for immunizing these patients
- Develop and commit office resources toward achieving that goal

Remember, you’re not done if you give just one.

Helpful Resources
Resources on Meningococcal Disease and Vaccination

• Immunization Action Coalition
  – www.Give2MenACWY.org
  – www.immunize.org/meningococcal
  – www.vaccineinformation.org

• Centers for Disease Control and Prevention
  – www.cdc.gov/meningococcal/

• National Meningitis Association
  – www.nmaus.org

• Meningitis Angels
  – www.meningitis-angels.org

Resources on Meningococcal Disease and Vaccination (cont.)

• Voices of Meningitis
  – www.voicesofmeningitis.org

• American Academy of Pediatrics
  – www2.aap.org/immunization

• American College Health Association

• National Association of School Nurses
  – www.nasn.org

• National Foundation for Infectious Diseases
  – www.nfid.org