



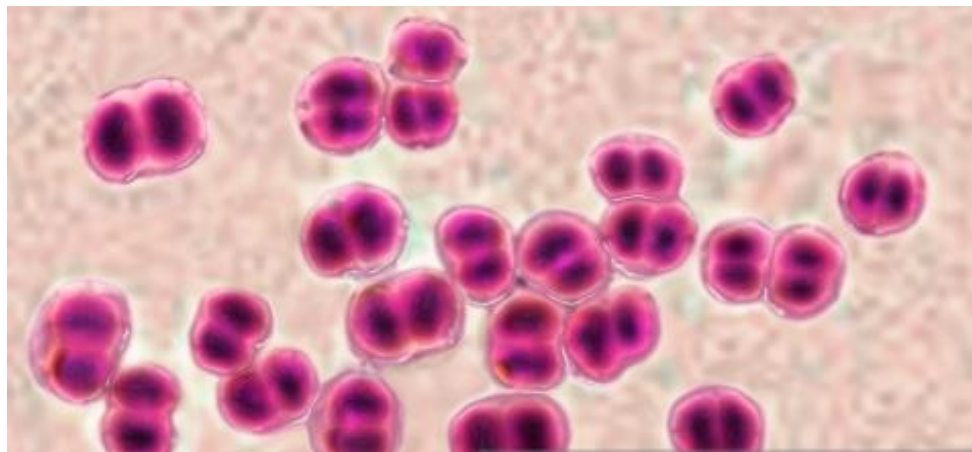
**THE MENINGITIS EXPERIENCE:**  
***A PHYSICIAN'S STORY***

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# *NEISSERIA MENINGITIDIS*

- Twelve known serogroups, six of which are responsible for invasive human disease.
  - A, B, C, W, X, and Y
- Although rare in the United States, invasive meningococcal disease (by any serogroup) is a serious illness and life-threatening.
  - Historically low incidence of 0.18 per 100,000



# TRANSMISSION OF *N. MENINGITIDIS*

- Transmitted by sharing respiratory and throat secretions.
- Typically this is by close, prolonged contact
  - Coughing, kissing, living in same home
- Bacteria does not live long outside of the human body.



**Coughing**



# SIGNS AND SYMPTOMS OF MENINGITIS

- Sudden onset of fever, headache, and neck stiffness.
- Other symptoms include: nausea, vomiting, photophobia, altered mental status.
  - Symptoms can vary in infants and young children.
    - Irritability, poor feeding, bulging fontanelle
- Average incubation period is 4 days, but can range from 2-10 days.



# DIAGNOSIS & TREATMENT

- Initial diagnosis can be made with clinical examination.
- CSF studies and cultures confirm the diagnosis.
  - Meningococcal disease is potentially fatal and should always be viewed as a medical emergency.
- Meningitis is treated with appropriate antibiotic therapy.
  - Even when diagnosed early and appropriate antibiotic therapy is started, 5-10% of cases are fatal.



## *N. MENINGITIDIS VACCINES*

- Quadrivalent meningococcal conjugate vaccine
  - Prevention of serogroups A, C, W, Y
  - Routinely given to patients at age 11 years, with booster at age 16 years.
- Serogroup B meningococcal vaccine
  - MenB-FHbp (licensed in October 2014)
  - MenB-4C (licensed in January 2015)



# MENINGOCOCCAL CONJUGATE ACWY VACCINE

## *MenACWY-CRM*

- (Menveo)
- Licensed for use for persons age 2 months and older.

## *MenACWY-D*

- (Menactra)
- Licensed for use for persons age 9 months and older.

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- Typically administered at age 11-12 years, with a booster dose at age 16 years.
  - Specific circumstances or diagnoses may necessitate an alternative schedule/additional doses.



# SEROGROUP B MENINGOCOCCAL VACCINE

## *MenB-FHbp*

- (Trumemba)
- Bivalent vaccine consisting of 2 different binding proteins from subfamilies A & B.
- Licensed for use in persons 10-25 years of age.
- Administered in a 2- or 3-dose series, depending on risk.

## *MenB-4C*

- (Bexsero)
- Multicomponent vaccine consisting of 3 recombinant proteins from *N. meningitidis* and an outer membrane vesicle.
- Licensed for use in persons 10-25 years of age.
- Administered in a 2-dose series, regardless of risk.





# SEROGROUP B DISEASE

- 50 to 60 cases annually in the United States in persons 11-24 years of age.
  - 80% of these occur in young adults aged 16-23 years
- Incidence in college students is similar to or lower than the incidence in all 18- to 23-year olds or non-college students.

**TABLE 3** Summary of Cost-effectiveness Analysis of Different Strategies for Adolescent Vaccination, United States

Strategy	Cases Prevented, <i>n</i>	Deaths Prevented, <i>n</i>	NNV to Prevent Cases	NNV to Prevent Deaths
Series at 11 years	15	2	203 000	1 512 000
Series at 16 years	28	5	107 000	788 000
Series at 18 years	29	5	102 000	638 000
College students	9	1	368 000	2 297 080



# ACIP RECOMMENDATION #1

## ○ February 26, 2015

- *Routine* use of MenB vaccines for persons 10 years and older who are at increased risk of serogroup B meningococcal disease.
  - Persistent complement component deficiencies
  - Anatomic or functional asplenia, including sickle cell disease
  - Healthy persons at risk due to outbreak
- Category A recommendation
  - Recommendations are made for all persons in an age- or risk-factor-based group



# ACIP RECOMMENDATION #2

- June 24, 2015
  - *Permissive* use of MenB vaccine in healthy adolescents and young adults from age 16-23 years of age (preferred ages, 16-18 years).
    - To provide short-term protection against most strains of MenB, although not at increased risk
  - Routine immunization is *not recommended*.
  - Category B recommendation
    - Recommendations are made for individual clinical decision making



# OTHER CONSIDERATIONS...

- College freshman (especially living in residence halls) and military recruits are at increased risk of invasive meningococcal disease due to serogroups in MCV4 vaccine.
  - This is not true for serogroup B meningococcal disease.

