Implementation of Vaccines Among Adults with an Emphasis on Racial and Ethnic Disparities

Women In Government: Learning Exchange on Adult Vaccine Policies and Planning
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“Immunization Champion”
Vaccinators Superheroes

Join Us!

MOVE THE NEEDLE

Raise Adult Immunization Rates

Dr. Edgie
Dr. Sandy
Dr. Al
Dr. Matt
Vaccinations help level the playing field
VACCINATION IS VITAL
### Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity†</th>
<th>2006 (final)‡‡</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>48,164</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>175,885</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>503,282</td>
<td>55</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>152,209</td>
<td>6,584</td>
<td>96%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>147,271</td>
<td>15,632</td>
<td>89%</td>
</tr>
<tr>
<td>Polio (paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>11</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>823</td>
<td>1</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>1,314</td>
<td>41</td>
<td>97%</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>20,000</td>
<td>208*</td>
<td>99%</td>
</tr>
</tbody>
</table>

†Source: CDC. MMWR April 2, 1999. 48: 242-264
‡‡Source: CDC. MMWR. August 24, 2007 / 56(33):851-863
* Type b and unknown (< 5 years of age)
12/2014: Mumps outbreak - National Hockey League
12/2014...
Measles at Disneyland!
Measles is very contagious!

- If one person has it, 90% of the people close to that person - who are not immune - will also become infected.
THE TIP OF THE ICEBERG
Each year, thousands of adults suffer /die from vaccine-preventable diseases

Vaccine-Preventable Adult Diseases

In the United States:

- CDC estimates that since 2010, flu-related hospitalizations in the United States have ranged from 140,000 to 710,000 and flu related deaths have ranged from 12,000 to 56,000.
- About 900,000 people get pneumococcal pneumonia every year, leading to as many as 400,000 hospitalizations and 19,000 deaths.
- 700,000 to 1.4 million people suffer from chronic hepatitis B, with complications such as liver cancer.
- HPV causes over 27,000 cancers in women and men each year. About 4,000 women die each year from cervical cancer.

Did You Know

Each year in the United States, 1 million people get shingles and some will have severe pain that can continue even long after their rash clears up (called post-herpetic neuralgia) or they may suffer from other painful complications that could persist for years.
<table>
<thead>
<tr>
<th>Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza¹</td>
</tr>
<tr>
<td>Td/Tdap²</td>
</tr>
<tr>
<td>MMR³</td>
</tr>
<tr>
<td>VAR⁴</td>
</tr>
<tr>
<td>HZV⁵</td>
</tr>
<tr>
<td>HPV–Female⁶</td>
</tr>
<tr>
<td>HPV–Male⁶</td>
</tr>
<tr>
<td>PCV13⁷</td>
</tr>
<tr>
<td>PPSV23⁷</td>
</tr>
<tr>
<td>HepA⁸</td>
</tr>
<tr>
<td>HepB⁹</td>
</tr>
<tr>
<td>MenACWY or MPSV4¹⁰</td>
</tr>
<tr>
<td>MenB¹⁰</td>
</tr>
<tr>
<td>Hib¹¹</td>
</tr>
</tbody>
</table>

ACIP Recommends 13 vaccines for adults!
“Vaccines are not just for kids. Adults need them, too.”

Goals for today’s session:

- What is ACIP? (Advisory Committee on Immunization Practices)
- Overview of FDA licensing process
- Review 2017 Adult Immunization Schedule
- How well are we doing?
  - Our Adult Vaccination Report Card
  - (NHIS survey results)
- Ethnic and Racial Disparities
ACIP:
Advisory Committee on Immunization Practices
ACIP (Advisory Committee on Immunization Practices)

- 15 voting members (appointed by HHS Secretary)
  - 8 ex officio reps; 30 non-voting liaisons
  - ACIP recs become official CDC policy-signed by the CDC director, accepted by HHS Secretary, published in *MMWR*
  - ACIP Working groups for each vaccine- via conference call
  - At least 3 in person meetings per year (at CDC)

- Since October 2010:
  - All ACIP recommendations are evidence-based
GRADE

Grading of Recommendations, Assessment, Development and Evaluation

Evaluates
- quality of evidence
- benefits/harms
- values / preferences of affected populations
- economic impact
FDA versus ACIP

ACIP recommendations are not always consistent with FDA licensing.

- ACIP (Advisory Committee on Immunization Practices)
  - Uses GRADE to make recommendations
- FDA (Food and Drug Administration) licensing
  - Separate process
FDA Licensing Process

- **IND**: Investigational New Drug Application
  - Includes protocol for human studies

- **Preclinical licensure trials:**
  - Phase 1 studies (small study)
  - Phase 2 Studies (larger study - hundreds of patients)
  - Phase 3 Studies (vaccine effectiveness and safety - thousands of patients)

- **BLA**: Biologics License Application request

- **Accelerated Approval Pathway** (fast track)
  - based on early evidence of effectiveness
  - May not satisfy comprehensive ACIP GRADE evidence assessment
ACIP recs and ACA “Coverage Clout”
(currently)

- Under AFFORDABLE Care Act (ACA), new health plans:
  - ACA requires ACIP recommended vaccination coverage
    --without cost sharing--
    one year after recommendation is made.
  - Does not apply to Medicare
Future Vaccination (Insurance) Coverage ??
### ACIP Adult Immunization 2017 Schedule

#### Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017

<table>
<thead>
<tr>
<th>Immunization Schedule</th>
<th>Administration Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus toxoid</td>
<td>One dose every 10 years</td>
</tr>
<tr>
<td>Influenza</td>
<td>An annual influenza vaccination is recommended for all adults aged 65 years or older.</td>
</tr>
</tbody>
</table>
# Vaccine Recs by Age Group

**Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2017**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–21 years</th>
<th>22–26 years</th>
<th>27–59 years</th>
<th>60–64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>1 dose annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>Substitute Tdap for Td once, then Td booster every 10 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HZV&lt;sup&gt;5&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>HPV–Female&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV–Male&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13&lt;sup&gt;7&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>PPSV23&lt;sup&gt;7&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>HepA&lt;sup&gt;8&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td>HepB&lt;sup&gt;9&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
</tr>
<tr>
<td>MenACWY or MPSV4&lt;sup&gt;10&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>1 or more doses depending on indication</td>
<td></td>
</tr>
<tr>
<td>MenB&lt;sup&gt;11&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td>Hib&lt;sup&gt;11&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses depending on indication</td>
<td></td>
</tr>
</tbody>
</table>

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*Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection*

*Recommended for adults with additional medical conditions or other indications*

*No recommendation*
## Vaccine Recs by Medical Condition

### Figure 2. Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications, United States, 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Pregnancy(^4,6)</th>
<th>Immuno-compromised (excluding HIV infection)(^2,3,13)</th>
<th>HIV infection CD4+ count (cells/µL)(^7,9,14)</th>
<th>Asplenia, persistent complement deficiencies(^5,6,7)</th>
<th>Kidney failure, end-stage renal disease, on hemodialysis(^7)</th>
<th>Heart or lung disease, chronic obstructive(^7)</th>
<th>Chronic liver disease(^7)</th>
<th>Diabetes(^7)</th>
<th>Healthcare personnel(^2,3)</th>
<th>Men who have sex with men(^2,3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza(^1)</td>
<td>1 dose annually</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap(^2)</td>
<td>1 dose Tdap each pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR(^3)</td>
<td>contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR(^4)</td>
<td>contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HZV(^5)</td>
<td>contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV-Female(^6)</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV-Male(^6)</td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 21 yrs</td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13(^7)</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV23(^7)</td>
<td>1, 2, or 3 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA(^8)</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepB(^9)</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY or MPSV4(^10)</td>
<td>1 or more doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenB(^10)</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib(^11)</td>
<td>3 doses HSCT recipients only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Yellow: Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection
- Purple: Recommended for adults with additional medical conditions or other indications
- Red: Contraindicated
- White: No recommendation
Vaccine Information Statements (VIS)
https://www.cdc.gov/vaccines/hcp/vis/current-vis.html

**Hepatitis B Vaccine**

### What You Need to Know

1. **What is hepatitis B?**
   - Hepatitis B is a serious infection that affects the liver. It is caused by the hepatitis B virus.
   - In 2009, about 58,000 people became infected with hepatitis B.
   - Each year about 2,000 to 5,000 people die in the United States from chronic or liver cancer caused by hepatitis B.

2. **Hepatitis B vaccine**
   - Hepatitis B vaccines can prevent hepatitis B, and the serious complications of hepatitis B infection, including liver cancer and death.
   - Hepatitis B vaccines may be given by mouth or on the arm that has other vaccines.
   - Routine hepatitis B vaccination was recommended for U.S. adults and children beginning in 1991, and for all children since 1995. Since 1995, new hepatitis B infections among children and adolescents have dropped by more than 90% — and by 70% in some age groups.
   - Vaccines given long-term protection from hepatitis B infections, possibly lifelong.

3. **Who should get hepatitis B vaccine?**
   - **Children and Adolescents**
     - Babies normally get 3 doses of hepatitis B vaccine:
       - 1st dose at birth
       - 2nd dose at 1 month
       - 3rd dose at 6 months
     - Some babies might get 4 doses, for example, if a combination vaccine containing hepatitis B is used.
   - **Adults**
     - Anyone who is HIV positive
     - Anyone who has had a liver transplant
     - Anyone who will be exposed to hepatitis B
     - Anyone born between 1945 and 1965 who is at risk for hepatitis B

4. **Who should not get hepatitis B vaccine?**
   - Anyone with a life-threatening allergy to egg, or to any other component of the vaccine, should not get hepatitis B vaccine.
   - Tell your doctor if you have any severe allergies.

5. **What are the risks of hepatitis B vaccine?**
   - Hepatitis B is a very safe vaccine. Most people do not have any problems with it.
   - The vaccine contains non-infectious material, and cannot cause hepatitis B infection.
   - Some mild problems have been reported.
     - Fever
     - Conjunctivitis
     - Hepatitis
     - Enlarged liver
     - Fatigue
     - Muscle pain

6. **What if there is a moderate or severe reaction?**
   - Call your doctor or go to a doctor's office or emergency room right away. It is important to see a doctor for severe reactions.
   - Call your doctor's office or health department to report the reaction by filing a Vaccine Adverse Event Reporting System (VAERS) form.

7. **The National Vaccine Injury Compensation Program**
   - The National Vaccine Injury Compensation Program (VICP) was created in 1986.

8. **How can I learn more?**
   - Ask your doctor. They can give you the vaccine package insert, which contains this information and more about hepatitis B vaccination.

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**Vaccine Information Statement (Hepatitis B Vaccine)**

2/2/2012

42 U.S.C. § 300a-29
ACIP Recommends 13 vaccines for adults!
FLU: Everyone 6 months & older needs flu vax every year

Reason enough to get VACCINATED!

Even healthy people can get the flu, and it can be serious. Everyone 6 months and older should get a flu vaccine. This means you. This season, protect yourself— and those around you— by getting a flu vaccine.

http://www.flu.gov - 1-800-CDC-INFO

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
Flu: Disease Burden in U.S.

Deaths: 12,000 – 56,000

Hospitalizations: 140,000 – 710,000

Cases: 9,200,000 – 35,600,000

https://www.cdc.gov/flu/about/disease/burden.htm
INFLUENZA VACCINE COMPOSITION FOR 2017-18 (updated!)

- **2017–18 trivalent vaccines:**
  - **NEW!** A/Michigan/45/2015 (H1N1)pdm09-like virus;
  - A/Hong Kong/4801/2014 (H3N2)-like virus;
  - B/Brisbane/60/2008–like virus (Victoria lineage).

- **2017–18 quadrivalent vaccines:**
  - Same three HA antigens as trivalent vaccines, plus
  - B/Phuket/3073/2013–like virus (Yamagata lineage).
Flu Vaccination 2017-2018

Nasal flu vaccine-LAIV 4

(not recommended for 2016-2017)

Not Recommended for 2017-2018 season
Flu Vaccination 2017-2018

- Nasal flu vaccine –LAIV4- (not recommended for 2017-2018 season)
- Inactivated flu shot (IIV)
- Cell cultured inactivated (ccIIV)
  - “almost egg-free”
- Recombinant Influenza vaccine (RIV)
  - “totally egg-free”
- Age ≥65 (only):
  - High dose IIV
  - Adjuvanted IIV (aIIV)
Flu shots for pregnant moms:  
*Two for One benefits for Mom & for Baby*

- Pregnant moms with flu
  - more likely to be hospitalized
  - increased risk of fetal malformation.

- Mom’s flu shot during pregnancy:
  - double protection for mom and for baby.
Babies and FLU

- Babies under six months old:
  - too young to get flu shot
  - little ones are most at risk
  - more likely to be hospitalized
  - more likely to die if they get the flu.

- Family members and care givers of babies need flu vaccination.
Pertussis (Whooping cough)
Pertussis
(Whooping Cough)

- Adults: make up 9000 cases reported each year
- Adults can pass pertussis to others
  - can be a death sentence for babies
Tdap: A Family Affair
(tetanus/diptheria/pertussis)

- Pertussis = whooping cough
- Last 10 yrs - surge in pertussis related deaths in infants
- Cocoon in a circle of familial protection
- Household members are to blame for up to 83% of transmission
Who needs Tdap?

- Adolescents need Tdap
- Unvaccinated dads need one time Tdap booster
- Grandparents need one time Tdap booster
- Pregnant women need Tdap in each pregnancy (in late 3rd trimester between 27-36 weeks)

*Multiple Tdap boosters is off label use*
THE WORLD'S FIRST CANCER VACCINES
A breakthrough that will save thousands of lives
A Special Report
HPV Virus

The cancer-causing HPV virus
WARNING: Graphic Content

The following images and/or content may be disturbing to some viewers. Viewer discretion is strongly advised.
Invasive Cervical Carcinoma

Anal cancer
Clinical Manifestations of Genital Warts In Women

Mild/Inconspicuous

Moderate to Severe

Photo courtesy of Dr. A. Ferenczy

Photo courtesy of The Cincinnati STD/HIV Prevention Training Center
HPV and Anogenital Warts

- HPV 6 and 11 responsible for >90% of anogenital warts
- Infectivity >75%
- Up to 30% spontaneously regress within 4 months.
- Treatment can be painful and embarrassing.
- Topical and surgical therapies are available for genital warts.
- Recurrence rates vary greatly.
  - As low as 5% with podofilox or laser treatment
  - As high as 65% with other treatments

Squamous-Cell Carcinoma of the Penis with Human Papillomavirus
HPV related cancers

- Genitourinary cancers
  - Females:
    - cervical, vulvar, and vaginal cancer
  - Males:
    - penile cancer

- Anal cancer & oropharyngeal cancer
  - Both males and females:
HPV: Did You Know?

- HPV causes over 27,000 cancers in women and men each year.
- About 4,000 women die each year from cervical cancer.

https://www.cdc.gov/vaccines/adults/vpd.html
There are >100 different HPV virus strains

**HPV 9 valent vaccine covers:**

- HPV Types 6, 11
  - Cause 90% of all cases of anogenital warts.

**CANCER causing types:**

- HPV Types 16, 18
  - Cause majority (64%) of all HPV cancers –
    - 21,300 cases of cancer each year:

- HPV Types 31, 33, 45, 52, 58
  - 10% of HPV related cancers - 3400 cancers/yr-
    - Males: 4% additional cancer protection.
    - Females: 14% additional cancer protection
    - *Most of the added protection is for females*
HPV (9v vaccine) vaccination

- **Routinely start at age 11-12** *(can begin as early as age 9)*
  - Get robust immune response when vaccinate at younger ages
    - 2 doses if start series < age 15
    - 3 doses if start ≥ 15 or if immunocompromised
  - It works best if given BEFORE exposure to the virus

- **Who needs vaccination?**
  - All females: through age 26
  - All males: through age 21
    - (through age 26: immunocompromised males, HIV, MSM)
Age 16
Pam Carpenter (age 16)
Pam Carpenter (age 19)
Name that vaccine
Quality of life
Shingles FACTS

- If had chickenpox…… at risk for shingles
- More that 90% of all adults in the United States infected with varicella zoster virus
- one million cases / yr
- Lifetime risk: 30%
- Risk increases with age (starting at age 50)

- Key HZ symptom: Pain

Post herpetic neuralgia (PHN)
  - May persist months / years
Shingles vaccine
(varicella zoster vaccine)
(*brand name Zostavax, by Merck*)

*Live attenuated virus vaccine*

- The Shingles Prevention Study
  *NEJM* June 2, 2005
  38,500+ patients 60 and older

- **Vaccine Effectiveness:**
  - reduced incidence shingles by 51%
  - reduced incidence of PHN by 66.5%
    - risk of PHN (post herpetic neuralgia) increases after age 50.

- **ACIP says:**
  Start vaccinating at age 60+
Who should NOT get it? (Shingles vaccine)

- live attenuated virus vaccine
- It should NOT be given to
  - people with immune system problems
  - Women who are or may be pregnant
  - Anyone allergic to vaccine components including gelatin, neomycin
- Contraindicated in those with immune system problems including patients on high dose steroids (20 mg or higher daily)
HEADS UP: **Investigational** Subunit Adjuvanted Shingles Vaccine (HZ/su)  
*NEJM* 2015; 372:2149-50

- Randomized, placebo-controlled phase 3 study
  - More than 15,000 patients, age 50 and older
  - Conducted in 18 countries
- Study indicated vaccine efficacy of 97.2%
  - More injection site & systemic reactions as compared to placebo
- **Currently under FDA Review:**
  - *expect decision in October 2017*
Minnie Wade Youngblood
(July 4, 1979)
Died 2 years later: age of 74

- **Diagnosis:**
  - *Pneumococcal pneumonia*
  - *Pneumococcal bacteremia*
Pneumococcal Pneumonia: Did You Know?

Pneumococcal pneumonia

Every year:

- About 900,000 people get it
  - 400,000 are hospitalized
  - 19,000 die

https://www.cdc.gov/vaccines/adults/vpd.html
Pneumococcal Infections: Invasive Disease

- Invasive disease:
  - bacteremia (blood infection)
  - meningitis (infection of brain & spinal cord covering)
  - 90% of invasive disease cases: in adults
  - 3,700 deaths in the US in 2013

https://www.cdc.gov/pneumococcal/about/facts.html
Two Pneumococcal vaccines - FDA approved for adults

- **Pneumococcal Polysaccharide vaccine**
  (PPSV 23- Pneumovax 23 by Merck)

- **Pneumococcal Conjugate vaccine**
  (PCV 13- Prevnar by Pfizer)
Invasive Pneumococcal Disease:  

- **Risk in immunocompromised** – 20 x than for those without high risk conditions
  *(PCV 13 vax rec. for immunocomp.in June 2012)*

- **Risk of invasive disease in older adults** – 10 times higher than in younger adults
  *(PCV 13 vax recommended for >65 in Aug 2014)*
CAPiTA
Community Acquired Pneumonia Immunization Trial in Adults
(results became available in June 2014)

- Randomized controlled trial of PCV 13
- 85,000 seniors: PCV 13 or placebo
- **PCV 13 was effective!**
  - 75% effective in preventing vaccine type invasive pneumococcal disease (IPD)
  - 45% effective in preventing vaccine type non bacteremic pneumonia (NBP)
Pneumococcal Vaccination(s): the most complicated ACIP recommendation

- PCV13 & PPSV23 should not be given at same visit.
  - The interval between vaccinations “matters”

- If need both, best to give PCV 13 first.
  - Only *single* dose PCV13 is recommended for adults.

- Only one PPSV 23 dose at / after age 65
“Vaccines are not just for kids. Adults need them, too.”

Goals for today’s session:

- What is ACIP? (Advisory Committee on Immunization Practices)
- Overview of FDA licensing process
- Review 2017 Adult Immunization Schedule
- How well are we doing?
  - Our Adult Vaccination Report Card
  - (NHIS survey results)
- Ethnic and Racial Disparities
“Our Adult Vaccination Coverage Report Card”

https://www.cdc.gov/mmwr/volumes/66/ss/ss6611a1.htm
NHIS: National Health Interview Survey

- Continuous, cross-sectional national household survey of the noninstitutionalized U.S. civilian population.
- In-person interviews are conducted throughout the year.
- Data are compiled and released annually.
- Objective: monitor the health of the U.S. population/ provide estimates of health indicators, health care use and access, and health-related behaviors.
Vaccination rates for adults are abysmal!

Vaccination Coverage: NHIS data 2015

**NHIS data total**

- Flu (≥ 19) 44.8% (up 1.6%)
- Tdap (≥ 19) 23.1% (up 3.1%)
- Zoster (≥ 60) 30.6% (up 2.7%)
- Pneumococcal
  - (19-64, high risk) 23% (up 2.8%)
  - ≥65: 63.6%

**Healthy People 2020 targets**

- Flu 2020 target (≥ 19): 70%
- Zoster 2020 target (≥ 60): 30%—EXCEEDS TARGET!
- Pneumococcal 2020 target
  - (19-64, high risk) 60%
  - ≥65: 90%

Higher coverage for whites than most other groups
Vaccination rates for adults are abysmal!

Vaccination Coverage: NHIS data 2015

MMWR May 5, 2017

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>NHIS data total</th>
<th>White-</th>
<th>Black-</th>
<th>Hispanic-</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flu (≥ 19)</td>
<td>44.8%</td>
<td>48.5%</td>
<td>37.7%</td>
<td>33%</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td>(up 1.6%)</td>
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<td></td>
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</tr>
<tr>
<td>Tdap (≥ 19)</td>
<td>23.1%</td>
<td>27%</td>
<td>15%</td>
<td>14.3%</td>
<td>19.9%</td>
</tr>
<tr>
<td></td>
<td>(up 3.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster (≥ 60)</td>
<td>30.6%</td>
<td>34.6%</td>
<td>13.6%</td>
<td>16%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>(up 2.7%)</td>
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<tr>
<td>Pneumococcal</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(19-64, high risk)</td>
<td>23%</td>
<td>24%</td>
<td>22%</td>
<td>19.4%</td>
<td>21.5%</td>
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<tr>
<td></td>
<td>(up 2.8%)</td>
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<tr>
<td>≥65</td>
<td>63.6</td>
<td>68.1%</td>
<td>50.2%</td>
<td>41.7%</td>
<td>49%</td>
</tr>
</tbody>
</table>

Other NHIS findings—Racial/ethnic differences:
Higher coverage for whites than most other groups
Vaccination rates for adults are abysmal!

Vaccination Coverage : NHIS data 2015

MMWR May 5, 2017

Racial /ethnic differences: Disparities

- Higher coverage for whites than most other groups
- African Americans and Hispanics were at the lower end of coverage as compared to whites
Vaccine Costs
Vaccines for Adults
(CDC website: private sector price per dose)

- **Flu**-
  - Inactivated shot ($17-22)
  - **Egg-free FluBlok ($32-old price from 2015- not on current list)
  - **High dose* ($30-old price- not on current list)

- **Hep A ($66)- need 2
- **Hep B ($55)- need 3
- **HPV 9v- need 2-3 doses
  - $193 per dose
- **Hib* haemophilus influenza type b ($27)

- **Meningococcal**
  - Men ACWY ($117)
  - Men B*:
    - Bexsero $160 (need 2)
    - Trumenba $122 (need 2-3)

- **MMR (live) ($67.03- need 2)

- **Pneumococcal**
  - PPSV 23- ($86)
  - PCV 13-($169)

- **Shingles ($212)
- **Td/ Tdap ($23 / $43)
- **Varicella ($115: need 2
Role of Insurance Coverage in Adult Vaccination

Adults with Health Insurance are 2-5 times more likely to be appropriately vaccinated.

Adults who have Health Insurance are 2-5 times more likely to be appropriately vaccinated.

<table>
<thead>
<tr>
<th></th>
<th>With Insurance</th>
<th>No Insurance</th>
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<tbody>
<tr>
<td>Flu &gt; 19</td>
<td>48%</td>
<td>15.9%</td>
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<tr>
<td>Pneumococcal</td>
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<tr>
<td>19-64 at high risk</td>
<td>22.5%</td>
<td>11%</td>
</tr>
<tr>
<td>65 &amp; older</td>
<td>61.7%</td>
<td>24.3%</td>
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<tr>
<td>Tdap</td>
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</tr>
<tr>
<td>Adults &gt; 19</td>
<td>21.5%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Zoster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults &gt; 60</td>
<td>28.7%</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

Future Vaccination (Insurance) $$ Coverage ??
Prevalence of vaccine preventable diseases is greater among adults than among children

NHIS: Racial /ethnic coverage disparities
  - Higher coverage for whites

Adults without health insurance were vaccinated less often than those with health insurance

Adults reporting usual place of health care were more likely to be vaccinated
Vaccinations help level the playing field
Vaccines help save lives

“With the exception of safe water, no other modality, not even antibiotics, has had such a major effect on mortality reduction and population growth.”

Stanley A. Plotkin, MD
Emeritus Professor of Pediatrics, University of Pennsylvania
Emeritus Professor, Wistar Institute

?? Questions ??

THE END
MOVE THE NEEDLE

RAISE ADULT IMMUNIZATION RATES