Immunization Update
2015

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Objectives

- Describe the Advisory Committee on Immunization Practices (ACIP) recommendations and updates for 2014/2015 that guide current immunization practice

- Evaluate a patient’s immunization and medical history to provide appropriate vaccine recommendations
Disclosures

> Clark Kebodeaux, Pharm.D., BCACP declares no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria
Immunization Schedules

► Updated for 2015

► Download the CDC Vaccine Schedules App
  ► (http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html)
  ► Available on the App Store and Google Play

► Syndicated schedules are current as of 02/28/2015 and do not reflect the updates for HPV vaccines for males/females 9 years of age and older
  ► Will be incorporated in February 2016 update

Strikas RA, ACIP, ACIP Child/Adolescent Immunization Work Group. ACIP Recommended Immunization Schedules for Persons Aged 0 Through 18 Years — United States, 2015 MMWR. 2015;64(04);93-94.
Kim DK, Bridges CB, Harriman KH, ACIP, ACIP Adult Immunization Work Group. ACIP Recommended Immunization Schedule for Adults Aged 19 Years or Older — United States, 2015 MMWR. 2015;64(04);91-92.
Pneumococcal Vaccination

- August 13th, 2014
  - ACIP recommended the routine use of the 13-valent pneumococcal conjugate vaccine among adults aged ≥65 years

- Prevnar 13® has been approved for adults >50 years old since 2011
  - Recommended for all patients >18 years of age with an immunocompromising condition:
    - Functional or anatomic asplenia
    - CSF leak
    - Cochlear implants

Pneumococcal Vaccination

- CAPiTA trial

- 85,000 patients enrolled

- 45.6% efficacy of PCV13 against vaccine-type pneumococcal pneumonia among adults aged ≥65 years
  - 45.0% efficacy against vaccine-type nonbacteremic pneumococcal pneumonia among adults aged ≥65 years
  - 75.0% efficacy against vaccine-type IPD among adults aged ≥65 years

Pneumococcal Vaccination

- Current Vaccination Guidelines
  - Single dose of PPSV23 > 65 years of age

- Inconsistent effectiveness of noninvasive pneumococcal pneumonia with PPSV23 alone

- Increased efficacy when exposed to both PCV13 and PPSV23

New Recommendations to adults ≥65 years

Pneumococcal vaccine-naïve

- PCV13 first
- PPSV23 6-12 months after the dose of PCV13
- If unable to give during this timelines, give at next available opportunity

Previous vaccination with PPSV23

- Previously received ≥1 doses of PPSV23
  - One dose of PCV13 if they have not yet received it
  - PCV13 should be given ≥1 year after the most recent PPSV23 dose

Pneumococcal Conjugate Vaccines

- Pre-PCV (January 1998-December 1999)
- PCV7 (January 2001-June 2009)
- PCV13 (July 2010-December 2012) years

- Pneumonia hospitalizations in children aged <2 years in Tennessee
  - Declined 27% after introduction of PCV13 in 2010
  - Total of 72% after the introduction of PCV7 into the routine childhood immunization schedule in 2000

2015-16 Influenza Season

- Annual influenza vaccination is recommended for all patients ≥6 months of age
  - With no contraindications

- Vaccine components
  - Trivalent
    - A/California/7/2009 (H1N1)-like virus
    - A/Switzerland/9715293/2013 (H3N2)-like virus*
    - B/Phuket/3073/2013-like (Yamagata lineage) virus*
  - Quadrivalent
    - B/Brisbane/60/2008-like (Victoria lineage)

*New for the 2015-2016 Influenza Season
2015-16 Influenza Season

- Children 6 Months through 8 Years
  - Require 2 doses of influenza vaccination at least 4 weeks apart

- Due to the change in overall vaccine composition, only one dose is allowed if the patient received the >2 total doses of trivalent or quadrivalent vaccine before July 1st, 2015

- If that patient has received two doses prior to the 2015-2016 influenza season, only one dose is required
2015-16 Influenza Season

Has the Child received 2 or more doses of influenza vaccine prior to July 1st, 2015?

- **YES**: 1 dose of 2015-16 influenza vaccine
- **NO or UNKNOWN**: 2 doses of 2015-2016 influenza vaccine 4 weeks apart

Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2015-16 Influenza Season *MMWR* August 7, 2015 / 64(30);818-825
2015-16 Influenza Season

- Adults >65 years of age
  - Studies shown a decline in antibody titers 6 months after vaccination
  - Balance the need to vaccinate against the chance of missed opportunity

- Data was published on higher vaccine titers using IIV3, high dose in adults greater than 65
  - ACIP did not recommend a preference for high dose
2015-16 Influenza Season

- Children 6 Months through 8 Years
  - LAIV is **NOT** preferred for children aged 2 through 8 years who have no contraindications to vaccination
    - Both IIV and LAIV are equally appropriate option for children and adults
  - All types of trivalent and quadrivalent influenza vaccine are preferred
    - Vaccination should not be delayed to procure a specific type of vaccination

- Don’t forget about contraindications to LAIV!

*Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2015-16 Influenza Season MMWR August 7, 2015 / 64(30);818-825*
2015-16 Influenza Season

- Vaccination in patients with a known egg allergy
  - RIV3 may be used for persons aged > 18 years who have no other contraindications
    - Changed in October 2014 from 18 through 49 years who have no other contraindications
  - IIV may be used with appropriate precautions and readiness to handle anaphylaxis

- Previous severe reaction to the influenza vaccination is a contraindication for future receipt of the vaccination
2015-16 Influenza Season

- Other Notable Changes
  - FDA approval of Stratis needle-free jet injector (PharmaJet®) in August 2014
    - Adults age 18-64 years of age
  - FDA approval of Fluzone™ Intradermal Quadrivalent in December 2014
    - Adults age 18-64 years of age
Patient Case - Mr. Field

66 year old Male
- Retired mechanical engineer and no plans to travel in the immediate future

Medical History
- Hypertension x 10 years
- Type II Diabetes x 4 years

Vaccination History
- Influenza vaccination in 2013
- Pneumococcal Vaccination in 2013 (Age 65)
- Rest of vaccination history “unsure”
Patient Case - Mr. Field

► Is Mr. Field a candidate for pneumococcal vaccination? If so, which pneumococcal vaccination is appropriate at this visit? Is there any other information you need to know?

► What other vaccinations would you recommend for Mr. Field at this time?

► Mr. Field has his 7 year old granddaughter here at the pharmacy with him as well. He states that according to her mother “she has gotten all her shots to date, but hasn’t had a flu shot this year.” When asked about the flu shots, she has stated she has received one flu shot each year since she can remember. What do you recommend for Mr. Field’s granddaughter?
HPV Vaccination

- Three different types of vaccinations
  - HPV9, HPV4, and HPV2

- Impact of HPV infection
  - Cervical Cancer
  - Genital Warts
  - Other types of cancer (Vaginal, Anal, Oropharyngeal)
  - Anogenital Warts


HPV vaccine. Human Papillomavirus Vaccination: Recommendations of the ACIP. MMWR; August 29, 2014 / 63(RR05);1-30
HPV Vaccination Recommendations

- Routine vaccination at age 11 or 12 years with HPV9, HPV4, or HPV2
  - HPV9, HPV4 for Males
  - Vaccination can begin as early as 9 years of age

- 3 Dose Schedule
  - Second Dose 1-2 months after first dose
  - Third Dose 6 months after the first dose

- Recommended for ages 13-26 years of age
  - Complete series after 26 if started prior to 26 years of age


HPV vaccine. Human Papillomavirus Vaccination: Recommendations of the ACIP. MMWR; August 29, 2014 / 63(RR05);1-30
HPV Vaccination Recommendations

- Interrupted Schedules
- Interchangeability of Vaccine Products

- Special Populations
  - Immunocompromised Patients
  - MSM
  - Lactating Women
  - History of Sexual Abuse


HPV vaccine. Human Papillomavirus Vaccination: Recommendations of the ACIP. MMWR; August 29, 2014 / 63(RR05);1-30
Meningococcal Disease in Children

- Vaccination with MenACWY-CRM Vaccine is recommended for infants aged 2 through 23 months at increased risk for meningococcal disease:
  - Those with persistent complement component deficiencies
  - Those with functional or anatomic asplenia including sickle cell disease
  - Healthy infants in communities with a meningococcal disease outbreak for which vaccination is recommended and/or traveling to areas where meningococcal disease is epidemic.

- Not recommended for children aged 2 months through 10 years

Use of MenACWY-CRM Vaccine in Children Age 2 Through 23 Months at Increased Risk, Recommendations of the ACIP, 2013. MMWR, June 20, 2014 / 63(24);527-530
Serogroup B Meningococcal Vaccine

- Two serogroup B meningococcal (MenB) vaccines were approved by the FDA for patients 10-25 years

- ACIP recommendations all patients >10 years of age received the vaccine if in the following risk groups
  - Persistent complement component deficiencies
  - Asplenia
  - Lab workers exposed to isolates of *Neisseria meningitidis.*
  - Identified as at increased risk due to disease outbreak

- Recommendations do not apply to children aged <10 years

Folaranmi T, Rubin L, Martin SW, Patel M, MacNeil JR. Use of Serogroup B Meningococcal Vaccines in Persons Aged ≥10 Years at Increased Risk for Serogroup B Meningococcal Disease: Recommendations of the ACIP, 2015 MMWR. 2015;64(22);608-612.
Patient Case - Ms. Flowers

Ms. Flowers is a 17 year old female who is 32 weeks pregnant. She has a noted history of sexual abuse in her chart and has discovered that she is HIV+ during her pregnancy.

Medical History:
- HIV Diagnosis x 7 months ago

Medications:
- Lamivudine/Zidovudine 150/300 mg tablet by mouth twice daily
- Atazanavir 300 mg tablet by mouth once daily
- Ritonavir 100 mg tablet by mouth once daily
Patient Case - Ms. Flowers

- Patient has completed the following pediatric vaccine series per her chart:
  - Hepatitis A
  - Hepatitis B
  - Diphtheria, Tetanus, & acellular pertussis (DTaP)
  - Haemophilus influenzae Type b (Hib)
  - IPV
  - MMR
  - Varicella
Patient Case - Ms. Flowers

What vaccinations should be recommended today for Ms. Flowers?

What vaccinations should be administered after the completion of the pregnancy? What other information would you need to know?
Yellow Fever Vaccine

- Yellow fever vaccine
  - Recommended for persons aged ≥9 months
  - Traveling to or living in areas with risk for yellow fever virus transmission

- Current Recommendations
  - One 0.5 mL dose subcutaneously every 10 years based on exposure risk

Yellow Fever Vaccine

- Yellow fever vaccine immunogenicity
  - In April 2013, the World Health Organization (WHO) recommended a single dose of yellow fever vaccine is sufficient to confer sustained, lifelong immunity
  - In June 2015, ACIP no longer recommends a booster dose

- Risk of revaccination versus protection
  - Vaccines adverse events
  - Vaccine effectiveness
    - 92% of recipients maintain sufficient titers of antibodies > 10 years after vaccination

- Special populations

Typhoid Vaccine

- Two available form of vaccination in the United States
  - Typhim Vi®
  - Vivotif™

- Recommended for the following groups
  - Travels to areas of recognized risk ([http://wwwnc.cdc.gov/travel](http://wwwnc.cdc.gov/travel))
  - Individuals at exposed risk
  - Laboratory workers exposed to *Salmonella* serotype Typhi cultures

Jackson BR, Iqbal S, Mahon B. Updated Recommendations for the Use of Typhoid Vaccine MMWR. 2015;64(11);305-308.
Typhoid Vaccine

- ACIP does not recommend one form of vaccination over another
- Key Differences

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>Typhim Vi® (Vi capsular polysaccharide vaccine)</th>
<th>Vivotif™ (Oral live-attenuated Ty21a vaccine)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>≥2 years</td>
<td>≥ 6 years</td>
</tr>
<tr>
<td>Dosage</td>
<td>0.5 mL IM injection</td>
<td>4 capsules PO (Days 0,2,4,6)</td>
</tr>
<tr>
<td>Boosting Interval</td>
<td>Every 2 years</td>
<td>Every 5 years</td>
</tr>
</tbody>
</table>

Jackson BR, Iqbal S, Mahon B. Updated Recommendations for the Use of Typhoid Vaccine MMWR. 2015;64(11);305-308.
Patient Case - Mr. Peters

Mr. Peters is traveling from the United States to Brazil to follow the United States Olympians for the 2016 Olympics.
Patient Case - Mr. Peters

Medical History:
- Allergies: PCN
- Hypertension x 4 years
- COPD x 10 years
- (+) Smoking 2 ppd x 20 years

Medications
- Lisinopril 20 mg
- Spiriva
- Albuterol HFA

Vaccination History
- Influenza vaccination 2014 (IIV)
- MMR, Varicella as a child
Travel Itinerary

- Brazil - Flying to Sao Paulo
  - Staying in Rio de Janeiro for the majority of the games
  - Amazon exploration in Manaus x 3 days

- Planning to return home after 2 weeks

Travel Plans

- Leisure travel
- Hostels/Hotels
- Plane/Car
- No Motion Sickness
- Rural Travel (Manaus)
- No High Altitudes
- No swimming
- Curious about yellow fever requirements
Vaccine Recommendations

- Is Mr. Peters a candidate for yellow fever or typhoid vaccination? If so, which typhoid vaccination is appropriate at this visit?

- What other vaccinations/medications would you recommend for Mr. Field at this time?
JCPP Pharmacists’ Patient Care Process

- JCPP jointly developed a standardized approach to patient care regardless of practice site

- Provides a framework for interdisciplinary, patient-centered care

Pharmacist Patient Care Services

- Population Health
- Pharmacist Services
- Patient-Centered Care
Questions?