

Vaccine Updates

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Disclosures

- Financial Disclosures:
 - There are no relevant financial relationships or conflicts of interest with regards to materials or products presented during this presentation
 - I do not intend to discuss off-label use of a product(s) during this presentation

Objectives

- Discuss vaccine updates that have been implemented from the Fall of 2015 through the present date
- List the vaccines recommended for specific patient populations
- Describe vaccine changes and apply them to individual practice

Influenza



Influenza

- What is the flu?
 - A viral infection known for attacking your respiratory system
- What are the consequences of the flu?
 - Most resolve on their own
 - Disease can be deadly in certain patient populations
- How can we best prevent an outbreak?
 - Vaccination
 - Good hand hygiene

Mayoclinic.org

Influenza

- When is flu season?
 - Flu season: October – May
 - Can peak at different times
 - 2015-2016 peak was around March
- When should vaccinations be administered?
 - As soon as the vaccine becomes available
 - By October if possible
 - Takes about 2 weeks for the vaccine to work
- How long does the flu vaccine coverage last?
 - No specific duration

CDC.gov

Influenza

Disclaimer:

The Advisory Committee on Immunization Practices (ACIP) and the Centers for Disease Control and Prevention (CDC) recommend routine influenza vaccines in everyone 6 months of age and older who do not have contraindications

No preference is given to one vaccine over another for those whom more than one vaccine may be appropriate

*Prevention and Control of Seasonal Influenza with Vaccines Recommendations of the Advisory Committee on Immunization Practices — United States, 2016-17 Influenza Season

Influenza

New updates/recommendations for the upcoming 2016-2017 influenza season:

• Live attenuated influenza vaccine (LAIV4) demonstrated low effectiveness against influenza A (H1N1) and is therefore no longer recommended

- **Flumist** ®

• 2016-17 US trivalent vaccine will contain: an A (H1N1-like) strain, another A (H3N2-like) virus and a B strain

- **Afluria** ®
- **Fluvirin** ®
- **Fluzone High Dose** ® adults >65 year of age

*Prevention and Control of Seasonal Influenza with Vaccines Recommendations of the Advisory Committee on Immunization Practices — United States, 2016-17 Influenza Season

Influenza

- Quadrivalent will include all of the above plus an additional B strain
 - **Fluzone** ®
 - **Fluarix** ®

• Recommendation of observation in egg allergic patients is decreased from 30 to 15 minutes

- **FluBlok** ®

• Persons with a severe egg allergy are recommended to obtain vaccine administration in an inpatient or outpatient medical setting (hospitals, clinics, health departments, and physicians offices)

*Prevention and Control of Seasonal Influenza with Vaccines Recommendations of the Advisory Committee on Immunization Practices — United States, 2016-17 Influenza Season

Question

A 9 year old patient presents to your clinic/pharmacy for the yearly flu shot. What is the best vaccination for them to receive.

- A. Quadrivalent
- B. Trivalent
- C. Flumist®
- D. A or B
- E. All of the above

Pneumococcal Vaccines



Pneumococcal

- What is pneumonia?
 - An infection inflaming one or both lungs
 - Causes cough, shortness of air, fever, chills...etc
- Why do we vaccinate?
 - Causes many different types of infections
- Who needs to be vaccinated?
 - Children
 - Certain comorbidities/disease states
 - Specific ethnic populations
 - Adults >65 years of age

Mayoclinic.org

Pneumococcal Vaccines

What is the original recommendation?

- ACIP recommends that both PPSV23 (Pneumovax23®) and PCV13 (Prennar13 ®) be administered to individuals over the age of 65
 - Prennar® should be given first followed by Pneumovax® 6-12 months later
 - Persons over the age of 65 who have already received Pneumovax® should be administered Prennar® more than one year after they received Pneumovax®
 - For persons 2 years of age and older meeting certain criteria should receive both Prennar® and Pneumovax®
 - They should be given a dose of Prennar® followed by a dose of Pneumovax® more than 8 weeks later

*Intervals Between PCV13 and PPSV23 Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Pneumococcal Vaccines

What are the new recommendations?

- ACIP recommends Prennar® and Pneumovax® be given in a series to adults older than 65 years of age
 - Prennar® should be given first, Pneumovax® should follow at least 1 year later in immunocompetent adults
 - If for some reason, the dose of Pneumovax® is given earlier than the 1 year mark, a subsequent dose does not need to be given

*Intervals Between PCV13 and PPSV23 Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Pneumococcal Vaccines

What is the rationale?

- Reduce the complexity of the original dosing schedule for adults over the age of 65
- Longer intervals (more than 1 year) could lead to an improved immune response against the serotypes in both vaccines when compared to a single dose of either

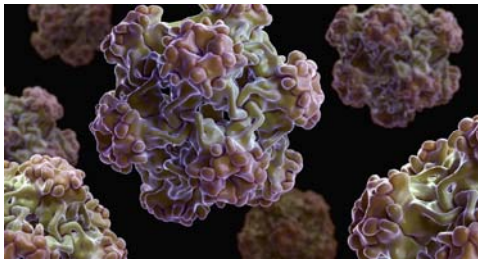
*Intervals Between PCV13 and PPSV23 Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Question

A frantic 72 YO F comes into your clinic/pharmacy worried because she just received the pneumococcal vaccine series for persons over the age of 65. She received the Pevnar® vaccine at her doctors office and had an appointment 8 months later (for another matter) and decided to get the Pneumovax® over with so she didn't have to make a new appointment. Her daughter told her today that the CDC now recommends they get the second vaccine more than a year after the first. She is worried now that she is not covered. What do you tell her?

- A. Not to worry, the 1 year is just a recommendation
- B. This is a terrible mistake and she must get the 2 vaccines over again
- C. She will need a repeat dose of the Pneumovax® at the 1 year mark
- D. None of the above

Human Papillomavirus (HPV)



HPV

- There are over 40 different types of HPV
- Why vaccinate?
 - To help prevent HPV related complications
 - Genital warts
 - Cervical cancers
 - Vaginal cancers in women
 - Penial cancers in men

CDC.gov

HPV

- How do you get it?
 - Most commonly associated with sexual activity
- Who should get it?
 - Boys and girls aged 11 or 12 years old
 - Women up through age 26
 - Men up through age 21 (unless immunocompromised)
- Why such a young age?
 - For the vaccine to be effective *before* the patient is exposed to HPV

CDC.gov

Human Papillomavirus (HPV)

What is the original recommendation?

**These recommendations are using the 4vHPV (Gardasil®) and 2vHPV (Cervarix®) vaccines

- ACIP recommends persons 11 or 12 years of age receive the HPV vaccination series
 - Can be started as early as age 9
- Also recommended for females age 13-26 and males 13-21 years of age who have not yet had the vaccines or have not completed the 3-vaccine series
- Immunocompromised and other populations may be vaccinated up to age 26 if they have not previously been vaccinated

Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices.

HPV

What are the new recommendations?

- 9vHPV (Gardasil-9®), 4vHPV (Gardasil®) or 2vHPV (Cervarix®) can be used for vaccination of females 11 or 12 years of age as well as females up to age 26 who are previously unvaccinated or have not completed their 3-vaccine series
- Gardasil-9® or Gardasil® can be used for vaccination of males 11 or 12 as well as males up to age 21 same as the females
- Gardasil-9® or Gardasil® are also used for vaccination for immunocompromised persons (this includes Human Immunodeficiency Virus(HIV)) up to age 26 or previously unvaccinated

Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices.

HPV

What is the rationale?

- ~64% of HPV-associated cancers can be linked to HPV 16 or 18 (both are covered in the Ceravrix® and Gardasil® vaccination series)

- ~10% are linked to the 5 additional types of HPV found in the Gardasil-9® vaccine (HPV 31,33,45,52 and 58)

- ~66% of cervical cancers are linked to HPV 16 and 18 and ~15% to the other 5 listed above

- HPV 6 or 11 cause 90% of genital warts

Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices.

Question:

An 18 year old patient (male/female) presents to your clinic and explains they had the first 2 doses in the 3 dose series for HPV when they were 12 years old, but they never completed the series.

True or False: The patient can receive the 3rd vaccine in the series and does not need to be revaccinated from the beginning.

HPV

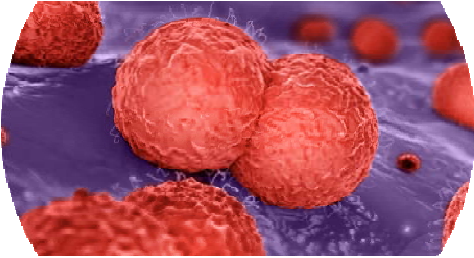
Administration schedule:

- 3-dose schedule:
 - Initial dose is administered
 - Second dose is given 1-2 months later
 - Third dose is given at least 6 months after the first

****Note:** If the vaccine schedule is interrupted, the series does not need to be started over again

Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices.

Meningococcal



Meningococcal

- Why vaccinate?
 - To decrease the chance of patients contracting meningitis
 - Occurs without warning
 - Affects otherwise healthy individuals
- Who can get it?
 - Anyone
 - Most common in people who live in close contact

Meningococcal

What is the original recommendation?

- ACIP recommends routine vaccination of all adolescents aged 11-18 years old with a quadrivalent Meningococcal Conjugate Vaccine, Menactra ® or Menveo ® (MenACWY)
- A dose should be administered between the ages of 11 or 12 with a booster dose at age 16
- Also recommends the routine vaccination of specific populations at an increased risk for meningococcal disease

Use of Serogroup B Meningococcal Vaccines in Adolescents and Young Adults: Recommendations of the advisory Committee on Immunization Practice, 2015

Meningococcal

What are the new recommendations?

•MenB (Serogroup B Meningococcal) vaccination series may be administered to adolescents as well as young adults (i.e. 16-23 years of age)

- Will provide short-term protection against most strains of serogroup B meningococcal disease

•Administration occurs in a 2-dose series of Bexsero® or a 3-dose series of Trumenba®

- Individual MenB vaccines are not interchangeable and may not be mixed during the series administration

Use of Serogroup B Meningococcal Vaccines in Adolescents and Young Adults: Recommendations of the advisory Committee on Immunization Practice, 2015

Meningococcal

What is the rationale?

- The incidence of serogroup B meningococcal disease is low in persons ranging from 11-23 years of age
- 50-60 cases and 5-10 deaths are reported annually
 - Majority occurs in the older (16-23) age group
- 7 outbreaks have occurred on college campuses since 2009
 - Resulted in 41 cases with 3 deaths

Use of Serogroup B Meningococcal Vaccines in Adolescents and Young Adults: Recommendations of the advisory Committee on Immunization Practice, 2015

Meningococcal

Rationale Continued:

- Studies estimate that around 15-29 individual cases and 2-5 deaths could be prevented yearly with a routine adolescent MenB vaccination program with doses administered at 11, 16 or 18 years of age
- Recommendation for college students is estimated to prevent around 9 cases and 1 death per year

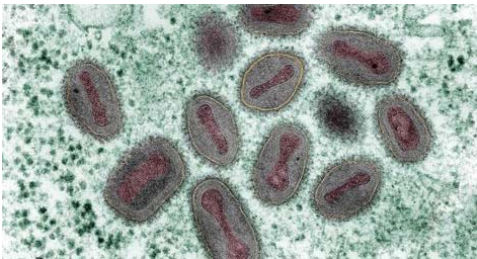
Use of Serogroup B Meningococcal Vaccines in Adolescents and Young Adults: Recommendations of the advisory Committee on Immunization Practice, 2015

Question

A patient received 2 vaccines in the 3 vaccine series of Trumenba®. They arrive for their 3rd vaccine and all you have in stock is the Bexsero®. What should you do?

- A. Go ahead and finish the series with the Bexsero®
- B. Inform the patient you need to order the Trmenba® vaccine and they cannot receive it today
- C. Tell the patient they don't need to finish the series
- D. None of the above

Smallpox



Smallpox

- Considered eradicated
- Last case in the United States 1949
- Last case world wide 1977
- Routine vaccination stopped for the general public

CDC.gov

Smallpox

What is the original recommendation?

In 2001, the ACIP released revised recommendations stating that:

Laboratory and healthcare personnel who are exposed to the vaccinia virus, recombinant vaccinia virus and other orthopoxviruses affecting humans *should* be vaccinated with Dryvax ® smallpox vaccine.

Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015*

Smallpox

What are the new recommendations?

•Vaccination with the new ACAM2000 is now *recommended* for lab personnel who directly handle cultures or animals contaminated or infected with:

- Replication-competent vaccinia virus
- Recombinant vaccinia virus derived from replication-competent vaccinia strains
- Other orthopoxvirus effecting humans

Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015*

Smallpox

What are the new recommendations?

•Vaccination should be *offered* to

- Healthcare personnel who currently treat or anticipate treating patients with vaccinia virus whose contact is limited to contaminated materials
- Persons administering ACAM2000 smallpox vac

Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015*

Smallpox

- Lab personnel should be revaccinated with ACAM2000 at least every 10 years
- For those working with the more virulent orthopoxvirus, revaccination is recommended every 3 years
- Healthcare workers with minimal exposure or those administering the vaccines should be revaccinated on a case-by-case basis

Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015*

Smallpox

What is the rationale?

- In the US, 14 orthopoxvirus infections have been reported in lab personnel from 2004-2014
- 13 of the 14 (93%) infections occurred in personnel who had not been vaccinated per recommendations

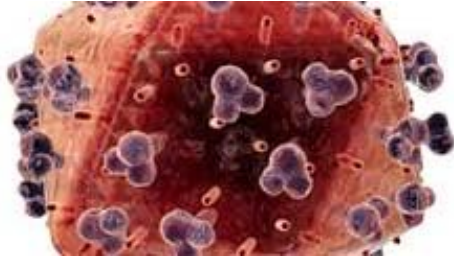
Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015*

Question

True or False:

All healthcare personnel who come in contact with the virus in ANY form *should* be vaccinated.

Yellow Fever



Yellow Fever

- How is it spread?
 - Mosquito bites
- Signs/Symptoms
 - Fever and flu-like symptoms
 - Jaundice
 - Multi-organ failure
- Who needs the vaccine?
 - Travelers

CDC.gov



CDC.gov

Yellow Fever

What is the original recommendation?

- In 2009, the Yellow Fever vaccine was recommended to be re-administered every 10 years to boost antibody titers

*Yellow Fever Vaccine Booster Doses: Recommendations of the Advisory Committee on Immunization Practices, 2015

Yellow Fever

What are the new recommendations?

- One, single dose of the Yellow Fever vaccine is now recommended for life-time protection in most travelers
- Additional doses are recommended in certain populations: (before next travel date)
 - Women who were pregnant during initial dose
 - Anyone who has had a hematopoietic stem cell transplant after initial vaccination
 - Those with HIV when administered first dose

*Yellow Fever Vaccine Booster Doses: Recommendations of the Advisory Committee on Immunization Practices, 2015

Yellow Fever

New Recommendations Continued:

- Boosters can be given to travelers who had their last dose 10 years ago and are at a higher- risk based on season, location, activities and duration of stay
- Laboratory workers tasked with the daily handling of wild-type yellow fever virus should have their titers measured at least every 10 years and be revaccinated if necessary.

*Yellow Fever Vaccine Booster Doses: Recommendations of the Advisory Committee on Immunization Practices, 2015

Yellow Fever

What is the rationale?

•Organization with the World Health Organization (WHO) concluded that a single, one-time dose of Yellow Fever Vaccine was sufficient for lifelong immunity and booster vaccines are no longer necessary

*Yellow Fever Vaccine Booster Doses: Recommendations of the Advisory Committee on Immunization Practices, 2015

Question

In general, individuals traveling to a yellow fever prone are should be vaccinated:

- A. Every 10 years
- B. Every 3 years
- C. Revaccination is not necessary

Summary

- Influenza:
 - *Flumist* ® no longer recommended
 - Patients with egg allergies now wait 15 minutes
 - Patients with severe egg allergies should obtain vaccine in clinical office
- Pneumococcal:
 - Prevnar ® should be given first, Pneumovax ® should follow at least 1 year later in immunocompetent adults
- HPV
 - Gardasil-9® is now recommended

Summary

- Meningococcal:
 - MenB vaccination series may be administered to adolescents as well as young adults
- Smallpox:
 - Vaccination with the new Smallpox Vaccine is now recommended for lab personnel
 - Should be offered to other healthcare personnel with potential exposure
- Yellow fever:
 - One, single dose of the yellow fever vaccine is now recommended for life-time protection in most travelers

References

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