

Immunizations: The Superheroes to Protect Against Disease

Vallery Huston, PharmD

Conflict of Interest

- I have no actual or potential conflict of interest in relation to this activity.

Objectives

- Pharmacists**
 - Discuss why it is important for pharmacists to provide immunizations
 - Review the legal requirements for pharmacists to provide immunizations in the state of Illinois
 - Discuss how to interpret the 2012 Immunization Schedules for children, adolescents, and adults
 - Describe how to incorporate discussions regarding immunizations as a part of the routine patient interaction
- Technicians**
 - Discuss why it is important to provide immunizations for patients.
 - Explain the legal requirements for providing immunizations in the state of Illinois.
 - Describe the 2012 Immunization Schedules for children, adolescents, and adults.
 - Describe how to collect immunization information as a part of the patient interaction.

Importance of Vaccines



Influenza and Pneumococcal Disease Impact

- Estimated 200,000 hospitalizations per year in the United States
- 8th leading cause of death in the United States in 2009
- 53,582 deaths in 2009

1. Kenneth D. Kochanek, M.A.; Jiaquan Xu, M.D.; et al Centers for Disease Control Division of Vital Statistics. Deaths: Preliminary Data for 2009

Vaccination Rates for 2011

Influenza Vaccination Rates for 2011

Age 65 and over	64.3%
Age 50-65	43.8%
Age 8-49	27.5%

- The percentage of adults aged 65 and over who had ever received a pneumococcal vaccination increased from 42.4% in 1997 to 62.3% in 2011.

2. Centers for Disease Control. CDC/NCHS, National Health Interview Survey, 1997-2011. Available at: <http://www.cdc.gov/nchs/nhis.htm>.

Health care provider vaccination rates

- Only 52.9% of Health Care Providers received influenza vaccine in 2009
- Consider making influenza vaccination mandatory for health system

3. National Health Interview Survey 2009.

Legal requirements

- To administer Vaccines in Illinois a pharmacist must:
 - Have an active Illinois Pharmacist License
 - Complete a vaccine delivery education program
 - Have active CPR training
 - Complete OSHA training yearly
 - May administer per protocol or per order

Legal Requirements

- Technicians May Not administer vaccinations
 - May manage inventory
 - Help process paperwork
- Student Pharmacists
 - May administer vaccinations under the supervision of a pharmacist
 - Must have all legal requirements for vaccination completed

What are the current recommendations for a one time dose of Tdap vaccine?

1. All patients 7-10 years of age
2. All patients 10-64 years of age
3. All patients >65 years of age
4. All patients >11 years of age

Current ACIP Recommendations

FIGURE 1: Recommended immunization schedule for persons aged 0 through 6 years—United States, 2012 (for those who fall behind or start late, see the catch-up schedule [Figure 3])

Vaccine	Age	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19-23 months	2-3 years	4-6 years
Hepatitis B ^a	Key B		Key B			Key B						
Diphtheria, tetanus, pertussis ^b			DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c	DTaP ^c
Tetanus, diphtheria, pertussis ^b			MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
Poliovirus ^d			IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV
Measles, mumps, rubella ^e			MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR
Hepatitis A ^f												1 dose ^g
Meningococcal ^h												MCV4 — see footnote ⁱ

4. Centers for Disease Control. ACIP Recommendations. Available at. <http://www.cdc.gov/vaccines/recs/ACIP/>

Current ACIP Recommendations

FIGURE 2: Recommended immunization schedule for persons aged 7 through 18 years—United States, 2012 (for those who fall behind or start late, see the schedule below and the catch-up schedule [Figure 3])

Vaccine	Age	7-10 years	11-12 years	13-18 years
Tetanus, diphtheria, pertussis ^a		1 dose (if indicated)	1 dose	1 dose (if indicated)
Human papillomavirus ^b		see footnote ^c	3 doses	Complete 3-dose series
Meningococcal ^d		See footnote ^e	Dose 1	See note ^f 16 years old
Influenza ^g		Influenza (yearly)		
Pneumococcal ^h		See footnote ⁱ		
Hepatitis A ^j		Complete 2-dose series		
Hepatitis B ^k		Complete 3-dose series		
Inactivated poliovirus ^l		Complete 3-dose series		
Measles, mumps, rubella ^m		Complete 2-dose series		
Varicella ⁿ		Complete 2-dose series		

4. Centers for Disease Control. ACIP Recommendations. Available at. <http://www.cdc.gov/vaccines/recs/ACIP/>

Current ACIP Recommendations

Figure 2. Vaccines that might be indicated for adults based on medical and other indications¹

Vaccine	Indication	Program	Immunocompromised conditions (including human immunodeficiency virus (HIV))	Age	Other	Other	Other	Other	Other	Other
Influenza ²		1 dose TIV annually								
Tetanus, diphtheria, pertussis (Tdap) ^{3,4}		1 dose Td booster, then boost with Tdap every 10 yrs								
Varicella ⁵		2 doses								
Human papillomavirus (HPV) vaccine ^{6,7}		3 doses through age 26 yrs								
Zoster ⁸		1 dose								
Pneumococcal polysaccharide ⁹		1 or 2 doses								
Hepatitis A ¹⁰		2 doses								
Hepatitis B ¹¹		3 doses								

Legend: For all persons in this category who have not been vaccinated or whose vaccination status is unknown; Recommended if lower risk than persons in program; Recommended if lower risk than persons in program; Contraindicated; No recommendation

These estimates include the recommended age group and medical indications for which administration of currently licensed vaccines is currently indicated for adults ages 18 years and older as of January 1, 2012. For all vaccines being recommended on the adult immunization schedule, a vaccine safety (VSD) report is available. For more information on the VSD for the indicated vaccine, please visit <http://www.cdc.gov/vaccines/imz/immunization/vsd/>. All vaccine safety reports are confidential and are not to be disseminated. For more information on the VSD for the indicated vaccine, please visit <http://www.cdc.gov/vaccines/imz/immunization/vsd/>. All vaccine safety reports are confidential and are not to be disseminated.

- ### New Vaccine information
- Influenza
 - Pneumococcal
 - Pertussis - Tdap
 - Shingles
 - Human Papillomavirus (HPV) vaccine

- ### Influenza Vaccine
- 2012-2013 Strains
 - A/California/7/2009 (H1N1)(Change from 2011-2012)
 - A/Victoria/361/2011 (H3N2)(same as 2011-2012)
 - B/Wisconsin/1/2010 (same as 2011-2012)
 - No vaccine shortage
5. Centers for Disease Control. Influenza. Available at: <http://www.cdc.gov/flu/about/season/flu-season-2012-2013>

- ### New Influenza Delivery
- High dose flu vaccine
 - Frail elderly
 - > 65 years of age
 - Same strains as TIV
 - Higher antibody levels
 - Intradermal Flu Vaccine
 - Adults 18-64 years of age
 - Preservative Free
 - 0.1 ml
6. Centers for Disease Control. Influenza. Available at: <http://www.cdc.gov/influenza>.
7. Fluzone Intradermal vaccine [Prescribing Information]. Swiftwater, PA: Sanofi Pasteur Inc.; 2011.

- ### Pneumococcal Vaccine
- Pneumococcal 23-valent polysaccharide vaccine: Pneumovax®
 - Indicated in patients >50 years of age or older
 - Indicated for patients ≥2 years who are at increased risk for pneumococcal disease.
 - Chronic disease
 - New indication for smoking and asthma
 - Pneumococcal 13-valent conjugate vaccine: Prevnar®
 - New indicated for adults >50 years of age
 - Indicated for children aged 6mo – 5years
 - Previous PCV vaccine 7-valent
 - Covers 4 more serotypes of pneumococcal disease than previous PCV
8. Pneumovax Vaccine. [Prescribing Information] Whitehouse Station, NJ: Merck and Co, Inc; 2011.
9. Prevnar Vaccine. [Prescribing Information] Philadelphia, PA: Pfizer Inc. 2011.

- ### Pneumovax® vs. Prevnar®
- Clinical Debate
 - Pneumovax®
 - Covers 23 serotypes
 - Does not produce a significant booster effect
 - Prevnar®
 - Covers 13 serotypes
 - Elicits a greater immune response
 - Produces a booster effect

The number of pertussis cases in the United States in 2010 was....

1. More than the number of cases in 2000
2. Less than the number of cases in 2000
3. Is about the same as it was in 2000
4. Zero

Tdap – Pertussis Vaccine

- Pertussis outbreaks across the country
 - 7,867 cases in 2000
 - 27,550 cases in 2010
 - Significant increase in pertussis
- Possible causes
 - Decreased vaccination rates
 - Decrease in herd immunity
 - Adults as carriers

10. Centers for Disease Control. MMWR. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5104a1.htm>
 11. Centers for Disease Control. Pertussis. Available at: <http://www.cdc.gov/pertussis/outbreaks.html>

CDC Pertussis Data



12. Centers for Disease Control and Prevention. Pertussis. Available at: <http://www.cdc.gov/pertussis/images/pertussis-graph-2012-ig.jpg>

Tdap-Tetanus, diphtheria, pertussis

- Secondary to significant pertussis outbreaks ACIP now recommends
 - Patients received one booster dose of pertussis containing vaccine
 - Booster dose for adults and adolescents over the age of 65
 - Recommended for all patients regardless of last tetanus booster

Tdap vaccination rates

- Great opportunity for pharmacists to impact disease transmission
- Percent of patients who have received Tdap in past 2 years
 - Total Tdap 2.1%
 - Whites 1.7%
 - Blacks 3.9%
 - Hispanics 1.8%
- What are your hospitals Tdap vaccination rates?

13. Centers for Disease Control and Prevention. Vaccine stats. Available at: <http://www.cdc.gov/vaccines/stats-surv/his/downloads/his-adult-summer-2007.pdf>

Herpes Zoster/Shingles Vaccine

- Available in 2006
- Live vaccine
- Vaccine decreases post herpetic neuralgia by 67%

14. Zostavax Vaccine. [Prescribing Information] Whitehouse Station, NJ. Merck and Co, Inc.; 2011.

Herpes Zoster Vaccine Recommendations

- FDA recently approved the vaccine for adults age 50-59
- ACIP has not changed recommendation for adults. Still recommend for adults over the age of 60.
- Pharmacists who administer under protocol should not administer shingles vaccine to patient between 50 and 59 with out order from physician

Herpes Zoster and Pneumovax® Should be administered how.

1. Simultaneously, they have synergistic effects
2. Separated, the pneumococcal antibody is lowered
3. Separated, the zoster antibody is lowered
4. Simultaneously, they do not effect antibody levels

Zoster Vaccine and Pneumovax®

- ACIP has not changed recommendations
- Should not be administered simultaneously.
 - Simultaneous administration decreases varicella zoster antibody level post vaccine administration
 - Manufacturer recommends not administering the vaccine simultaneously and should be separated by 4 weeks.

Human Papillomavirus (HPV) Vaccine

- Previous Recommendations
 - All girls aged 11 – 26
- New Recommendations
 - All girls aged 11 – 26
 - Boys aged 11 – 26

Why did the recommendation change?

- Boys and Men can be HPV carriers and transmit virus without having active infection
- Men can acquire anal warts and can be at an increased risk of anal cancer secondary to HPV infection.

What can Pharmacists do?

- Act as an advocate
- Maintain inventory
- Stay up to date
- Get involved

Pharmacists as Vaccine Advocate

- Educate
 - Educate health care providers of importance of preventing transmission
 - Add vaccinations to medication reconciliation process for pharmacists and technicians
- Vaccinate
 - Get certified to administer vaccinations
 - Work with physician to develop protocol
 - Increase vaccination rates at health system

Maintain Vaccine Inventory

- Pharmacy Staff
 - Know what vaccines should be administered to patients when they are hospitalized
 - Verify adequate levels of vaccine are in stock
 - Always handle and store vaccine appropriately
 - All staff should be aware of how to handle and store vaccine inventory
 - Staff should also be aware of how to handle vaccine that has been outside of recommended storage conditions

What is the “Pink Book”

1. CDC textbook on epidemiology of vaccine preventable diseases
2. ACIP book published yearly with vaccine recommendations
3. Autobiography written by the pink panther

Stay up to Date

- Vaccine Recommendations change yearly
- Vaccine resources
 - CDC.gov
 - Immunize.org
 - Pink Book: Epidemiology and Prevention of Vaccine-Preventable Diseases (available online)
 - MMWR (Morbidity and Mortality Weekly Report)
- Listserves
 - Immunization Action coalition (IAC): express@immunize.org
 - MMWR: www.cdc.gov/mmwr
- Smartphone app: Shots 2012

Get Involved

- Hospital Committee
- Champion pharmacists as vaccine advocates and administrators.

Questions?

Assessment Questions

1. What are the legal requirements a pharmacist must have/complete to administer vaccinations?
 - A. Have an active Illinois Pharmacist License
 - B. Complete a vaccine delivery education program
 - C. Have active CPR training
 - D. Complete OSHA training yearly
 - E. All of the above

•

2. Who may legally administer vaccinations in the state of Illinois with proper training and documentation?

- A. Pharmacists Only
- B. Pharmacists and Technicians
- C. Pharmacists and Pharmacy Students
- D. Pharmacists, Pharmacy Students and Pharmacy Technicians

3. What are the current recommendations for Tdap vaccination regardless of their last Tetanus booster?

- A. Patients > 11years of age without contraindication
- B. Patients aged 10-64 years of age
- C. Patients 7- 10 years of age
- D. Patients > 65 years of age

4. Who should receive high dose flu vaccine?

- A. Frail Elderly >65 years of age
- B. Patient < 65 years of age with diabetes
- C. Patients with chronic lung disease
- D. Adolescents age 5 – 11 years of age

5. Which of the following is true regarding simultaneous administration of pneumovax and shingles vaccine?

- A. They should be administered simultaneously, they have synergistic effects
- B. Administration of the two vaccines should be separated, the pneumococcal antibody is lowered
- C. Administration of the two vaccines should be separated, the zoster antibody is lowered
- D. They can be administered simultaneously. Simultaneous administration does not effect antibody levels