



Vaccination Practices for People with Diabetes

AADE Practice Synopsis

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Introduction

Influenza, pneumococcal, hepatitis B, tetanus, pertussis, and shingles are common preventable infectious diseases with high morbidity and mortality in people with chronic diseases, such as diabetes, renal failure, and in the elderly.¹ Observational study of patients with a wide variety of chronic illnesses has shown that these conditions are associated with a higher hospitalization rate and complications compared to persons without chronic health conditions.^{2,3} Communities with pockets of unvaccinated and undervaccinated populations are at increased risk for outbreaks of vaccine-preventable diseases.^{4,5}

Background/Rationale and Evidence

Annual administration of the influenza vaccine has been shown to decrease diabetes-related hospital admissions for influenza during “flu epidemics” by as much as 79% based on reports of case-controlled series.¹ The number of seasonal influenza-associated deaths varies from year to year because of the unpredictability in length and severity. The Centers for Disease Control and Prevention (CDC) estimates flu associated deaths ranged from a low of 3,000 to a high of about 40,000 during flu seasons from 1976-2007.⁶ While anyone can have influenza related complications and hospitalizations, serious illness and death, the CDC reports that older adults are especially vulnerable. According to the Advisory Committee on Immunization Practices (ACIP), the American College of Physicians, the American Academy of Pediatrics, and the American Academy of Family Physicians, vaccinating individuals at high risk before influenza season each year is the most effective measure for reducing the impact of influenza.⁷

Individuals with diabetes are six times more likely to be hospitalized and three times more likely to die from complications of influenza or pneumonia than those in the general population.⁸ During the 2014 flu season an estimated 69.1% of individuals 65 year of age or older received the influenza vaccine. Additionally, in 2014 only 61.3% of individuals aged 65 and older had ever received a pneumococcal vaccination.⁹ Both of these numbers fall short of *Healthy People: 2020* vaccination goal of 70% of all people age 18 and older against influenza and 90% of people age 65 and older against pneumococcal disease.⁴

Hepatitis B is caused by infection with the hepatitis B virus (HBV) with the highest concentrations of HBV found in blood, and lower concentrations in other body fluids. HBV infection can be self-limited or chronic. The risk for chronic infection is inversely related to age at acquisition. Chronic HBV infection carries a risk of premature death from cirrhosis or hepatocellular carcinoma.¹⁰ The ACIP Hepatitis Working Group has provided the answers to focused questions related to diabetes and hepatitis. The current infection control adherence levels are insufficient to prevent transmission of hepatitis B among adults with diabetes and a vaccination is likely to substantially reduce the risk of hepatitis B among adults with diabetes.¹¹ CDC data from 2009-2010 showed an overall incidence of hepatitis B in adults with diabetes of

2.1 per 100,000, compared with 1.1 per 100,000 for adults without diabetes, a statistically significant difference.¹²

Tetanus and Pertussis are preventable with appropriate immunization. A Tdap vaccine can protect adolescents and adults from tetanus, diphtheria, and pertussis. One dose of Tdap is routinely given at age 11 or 12. People who did not get Tdap at that age should get it as soon as possible.

Zoster virus causing shingles is a common complication of adults who had chicken pox as children. Nearly 1 out of every 3 people in the United States will develop shingles in their lifetime. There are an estimated 1 million cases of shingles each year in this country. However the risk of shingles increases as you get older. Nearly 50% of all cases occur in men and women 60 years old or older.

Role of Diabetes Educator

Based on the AADE's National Practice Survey in 2015, only 19.6% of diabetes educators offer information or discuss immunizations with people with diabetes. Infections and illnesses may make blood glucose management more difficult and elevated glucose can weaken the immune system. Routine vaccines are an important aspect of care. Effective management of diabetes involves all of the diabetes-care stakeholders—patients, educators, physicians and insurers. Diabetes educators need to make a concerted effort to discuss and help people with diabetes obtain regular preventative vaccinations to maximize their protection of common, preventable infectious diseases. By following CDC recommendations from Healthy People 2020, diabetes educators can work towards a coordinated strategy with the community and other healthcare providers for provision of culturally appropriate preventive health care education to individuals with diabetes.¹³

Recommendations

- The American Diabetes Association (ADA) and the CDC recommend annual influenza vaccination for all people with diabetes who are six months of age or older. Vaccination each year is required.¹⁴
- ACIP recommends that all adults 65 years of age or older receive a dose of Pneumococcal Conjugate Vaccine (PCV13) followed by a dose of Pneumococcal Polysaccharide Vaccinations (PPSV23) 6 to 12 months later.¹⁵
- A pneumococcal polysaccharide vaccine (PPSV23) should be administered to all persons with diabetes older than two years of age. A one-time revaccination is recommended for individuals 65 years of age or older if previously immunized when they were less than 65 years of age if the vaccine was administered more than 5 year ago. Other indications for repeat vaccination include nephrotic syndrome, chronic renal disease, and other immunocompromised states, such as after transplantation.¹⁵
- Hepatitis B vaccination is recommended for all unvaccinated adolescents, all unvaccinated adults at risk for HBV infection, and all adults seeking protection from HBV infection.¹⁵
- Tdap for Tetanus and Pertussis, for all children and adults starting at age 12.¹⁵
- Zostavax vaccination is recommended for people who have had chicken pox and are 60 years old or older, the recommendation is being lowered to 50 years old.¹⁵

Conclusion

Persons with diabetes often have co-morbid factors which increase morbidity and mortality from infection. In addition, blood glucose control is more difficult when illness is present. Vaccines are among the most cost-effective clinical preventive services and are a core component of any preventive services package. People with diabetes should routinely receive routine vaccines as recommended by the ADA 2015 Standards of Medical Care in Diabetes and the CDC.

Resources:

CDC Diabetes Type 1 and Type 2 and Adult Vaccination

<http://www.cdc.gov/vaccines/adults/rec-vac/health-conditions/diabetes.html>

2015 Recommended Immunizations for Adults: By Age

<http://www.cdc.gov/vaccines/schedules/downloads/adult/adult-schedule-easy-read.pdf>

Vaccine Recommendations of the ACIP

<http://www.cdc.gov/vaccines/hcp/acip-recs/index.html>

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References

1. Standards of medical care in diabetes--2015: summary of revisions. *Diabetes Care*. Jan 2015;38 Suppl:S4.
2. Van Kerkhove MD, Vandemaële KA, Shinde V, et al. Risk factors for severe outcomes following 2009 influenza A (H1N1) infection: a global pooled analysis. *PLoS medicine*. Jul 2011;8(7):e1001053.
3. Seshasai SR, Kaptoge S, Thompson A, et al. Diabetes mellitus, fasting glucose, and risk of cause-specific death. *N Engl J Med*. Mar 3 2011;364(9):829-841.
4. U.S. Department of Health and Human Services. Healthy People 2020 - Improving the Health of Americans <http://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases>. Accessed August 13, 2015.
5. Athamneh LN, Sangsri SS. Influenza vaccination in patients with diabetes: disparities in prevalence between African Americans and Whites. *Pharm Pract*. Apr 2014;12(2):410.
6. Estimates of deaths associated with seasonal influenza --- United States, 1976-2007. *MMWR. Morb Mortal Wkly Rep*. Aug 27 2010;59(33):1057-1062.
7. Prevention and control of seasonal influenza with vaccines. Recommendations of the Advisory Committee on Immunization Practices--United States, 2013-2014. *MMWR. Recommendations and reports : Morb Mortal Wkly Rep. Recommendations and reports / Centers for Disease Control*. Sep 20 2013;62(RR-07):1-43.
8. Centers for Disease Control and Prevention. Flu and Pneumonia Vaccinations Decrease Relative Morbidity Risk for People with Diabetes. <http://www.cdc.gov/diabetes/projects/pdfs/hpNewsletter.pdf>. Accessed August 13, 2015.
9. Centers for Disease Control and Prevention. Early Release of Selected Estimates Based on Data From the January–June 2014 National Health Interview Survey 2014; <http://www.cdc.gov/nchs/nhis/released201412.htm>. Accessed August 13, 2015.

10. Busch K, Thimme R. Natural history of chronic hepatitis B virus infection. *Med Microbiol Immunol*. Feb 2015;204(1):5-10.
11. Use of hepatitis B vaccination for adults with diabetes mellitus: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR. MMWR Morb Mortal Wkly Rep*. Dec 23 2011;60(50):1709-1711.
12. Reilly ML, Schillie SF, Smith E, et al. Increased risk of acute hepatitis B among adults with diagnosed diabetes mellitus. *J Diabetes Sci Technol*. Jul 2012;6(4):858-866.
13. U.S. Department of Health and Human Services. Healthy People 2020 - Improving the Health of Americans <http://www.healthypeople.gov/2020/default.aspx>. Accessed August 13, 2015.
14. Centers for Disease Control and Prevention. Adult Immunization Schedules 2015; <http://www.cdc.gov/vaccines/schedules/hcp/adult.html>. Accessed August 13, 2015.
15. Centers for Disease Control and Prevention. Vaccine-Specific Recommendations. 2015; <http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/index.html>. Accessed August 13, 2015.