



## **Vaccination Practices for Hepatitis B, Influenza and Pneumococcal Disease for People with Diabetes**

American Association of Diabetes Educators (AADE) Position Statement

### **Introduction**

Hepatitis B, influenza and pneumococcal disease are common, preventable infectious diseases with high morbidity and mortality in people with chronic diseases, such as diabetes, renal failure and in the elderly.<sup>1</sup> 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.<sup>2,3</sup> Communities with pockets of unvaccinated and undervaccinated populations are at increased risk for outbreaks of vaccine-preventable diseases.<sup>4</sup>

### **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.<sup>5</sup> 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.<sup>6</sup> 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.<sup>4</sup>

Pneumococcal infections cause 40,000 deaths annually in the United States. People with diabetes are susceptible to pneumococcal infection and are at increased risk for the morbidity and mortality of bacteremia from this organism.<sup>1</sup> Additional risk is associated with being age 65 years or older and having chronic cardiovascular, pulmonary, and renal disease.

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.<sup>1</sup> During the 2010 flu season an estimated 68.6% of individuals 65 year of age or older received the influenza vaccine. Early release of data from the 2010 National Health Interview Survey reveals only 59.4% of individuals aged 65 and older had ever received a pneumococcal vaccination.<sup>7</sup> Both of these numbers fall short of *Healthy People: 2010* vaccination goal of 90% of people age 65 and older against influenza and pneumococcal disease.<sup>8</sup> 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.<sup>9</sup> The

ACIP Hepatitis Working Group has provided the answers to focused questions related to diabetes and hepatitis: 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.<sup>10</sup> 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.<sup>11</sup>

### **Role of Diabetes Educator**

Based on the AADE's National Practice Surveys in 2010, only 20.1% 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 type 2 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. Following 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.<sup>4</sup>

### **Recommendations**

- The American Diabetes Association 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.<sup>12</sup>
- A pneumococcal polysaccharide vaccine 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.<sup>12</sup>
- 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.<sup>8</sup>

### **Conclusion**

Persons with diabetes have co-morbid factors such as age and other chronic diseases which increase morbidity and mortality from infection. Persons with diabetes have high death rates associated with influenza and pneumococcal infections. 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 seasonal flu vaccine and vaccine for pneumonia as recommended by the CDC.

Hepatitis B vaccination of adults with diabetes could potentially prevent more than 5,000 hepatitis B infections, according to data presented at the June 23, 2011 meeting of the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.<sup>1</sup> The goal of Healthy People 2020 to increase immunization rates and reduce preventable infectious diseases is rooted in evidence-based clinical and community activities and services for the prevention and treatment of infectious diseases.<sup>4</sup>

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Ava Eaves, RD, LD, CDE; Kim DeCoste, RN, MSN, CDE; Dana Graves, RN, MSN, CDE; Kimberly Richards, PharmD

### **Criteria for rating evidence and grading recommendations\***

Level-of- Study Design or Information Type Evidence

1. Large randomized controlled trial (RCT); Multicenter trial; Large meta-analyses with quality rating
2. Randomized controlled trial that has some design or methodological flaws; Prospective cohort study; Meta-analyses of cohort study; Case-control study; Quasi-Experimental study (rigorous pre-post with a control group); Systematic review that is well designed
3. Methodologically flawed randomized controlled trial; Nonrandomized controlled trial; Observational study; Case series or case report; Review (note Cochrane reviews are systematic reviews that could qualify as Level 2 evidence)
4. Expert consensus; Expert opinion based on experience; Theory-driven conclusions; Unproven claims; Experience-based information; Opinion Piece

*\*This is not an exhaustive list – Reviewers will need to use their own judgment at times.*

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Current proposals for hepatitis vaccination for people with diabetes are:

- Option 1/Category A recommendation calls for the hepatitis B vaccination for all unvaccinated adults with diabetes who are younger than 60 years, and the hepatitis B vaccine series should be completed as soon as feasible after a diagnosis of diabetes;
- Option 1/Category B recommendation states that decisions to vaccinate adults with diabetes who are aged 60 years and older should be made based on the clinical judgment of the health care provider, considering the various risks and benefits.