

## Vaccination Recommendations for Patients with Diabetes

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### Abstract

Influenza, *Pneumococcus*, hepatitis B and herpes zoster infections are common and preventable infectious diseases in which morbidity and mortality rates might be higher for diabetic patients. ADA, WHO and The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices, recommend influenza, hepatitis B and pneumococcal vaccines for all patients with diabetes. When compared to non-diabetics, risk of being infected, hospitalization and complication rates are higher in diabetic subjects.

**Keywords:** *Diabetes Mellitus; Vaccination; Influenza; Pneumococcus; Hepatitis B; Herpes Zoster*

### Introduction

*Pneumococcus* and influenza epidemics are thought to be related to high morbidity and mortality rates in patients with diabetes [1,2]. An epidemiologic analysis carried out during an influenza pandemic showed that hospitalization and intensive care unit admission rates were higher among diabetic subjects [3]. Since influenza vaccination has been shown to prevent both morbidity and mortality, diabetic patients are recommended to get a seasonal flu vaccine each year in October-November. It may reduce influenza related hospitalizations in diabetics by 40%. Furthermore, people with diabetes are at increased risk for death from pneumococcal infections [1,4,5], which has been shown to reduce by pneumococcal immunization. Re-vaccination is recommended for subjects > 64 years of age previously immunized when they were < 65 years of age if the vaccine was administered more than 5 years ago. Health Canada recommends the administration of Pneu-P-23 [6], while The Centers for Disease Control and Prevention Advisory Committee recommends only Pneu-P-23 for diabetics aged 19 - 64 years and Pneu-C-13 followed by Pneu-P-23 (with at least 8 weeks time interval between two vaccinations) for diabetics aged ≥ 65 years in whom an underlying immunosuppressive pathology (such as chronic renal failure) is present. Hepatitis B virus (HBV) is a highly virulent blood borne pathogen causing acute and chronic liver disease. Adults with type 1 and type 2 diabetes carry a higher risk for HBV infection [7,8]. Hepatitis B vaccination is recommended for patients with diabetes mellitus aged 19 - 59 years. Although it is less effective for those aged > 59 years, it may be recommended when the risk of hepatitis B infection is high [9,10]. Herpes Zoster virus causes zona disease characterized by painful blistering skin lesions, which may be complicated by postherpetic neuralgia leading long-lasting morbidity [11]. In diabetes mellitus, herpes zoster infection risk is increased due to impaired cellular immunity [12]. Advisory Committee on Immunization Practices (ACIP) and Public Health Agency of Canada [13,14] recommend herpes zoster vaccination for all adults aged ≥ 60 years. Immunization before the age of 60 years may not provide protection in the coming years. Vaccine efficacy wanes within the first 5 years after vaccination and protection beyond 5 years is unclear. In some guidelines, two-dose recombinant herpes zoster vaccine (RZV) is recommended for individuals aged 50 years and over with an interval of 2 - 6 months. In addition, people with diabetes who will travel to endemic areas should have their local vaccines [15].

As a result, influenza vaccination should be done every year to reduce the risk of influenza-related complications in people with diabetes. Therefore, pneumococcal vaccine (PPSV23) should be applied to all people with diabetes between 19 - 64 years of age. Over 65 years of age, a dose of PCV13 and a year after a dose of PPSV23 should be performed. If the first vaccination is PPSV23, PPSV23 is recommended to be administered one more dose after five years.

In cases of immunosuppression; In patients with nephrotic syndrome, chronic renal failure or transplantation, pneumococcal vaccination should be repeated. HBV vaccine should be given to all people who have not been vaccinated before. People with diabetes should be included in all social protection and eradication programs. Diabetic patients traveling to endemic areas are recommended to be vaccinated according to the region.

### Conclusion

Studies have demonstrated that vaccination rates among diabetics are inadequate. It is important to educate both patients and health care workers about immunization of diabetic patients to prevent infectious diseases causing serious morbidity, mortality and health care related cost.

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