

# HEPATITIS B VACCINATION IN DIABETES CARE:

Awareness, Priorities and Action  
among Diabetes Educators  
and Adults with Diabetes

A Report by the American Association  
of Diabetes Educators and GSK



## I. Overview

The hepatitis B virus (HBV) remains a public health concern globally. The infectious virus can lead to serious disease, including liver cancer and cirrhosis and can even lead to death.<sup>1A, 2A, 2B</sup> Despite a declining incidence from 2000 to 2011, there are still thousands of new cases of HBV in the U.S. annually.<sup>3A</sup> According to the Centers for Disease Control and Prevention (CDC), there were an estimated 18,000 new HBV infections in the U.S. in 2012,<sup>3A, 3B</sup> with as many as 1.4 million people infected with the virus.<sup>4A</sup>

For the 29.1 million Americans living with diabetes,<sup>5A</sup> there is a higher rate of HBV compared to the general population.<sup>1B</sup> It is also believed that acute HBV infection progresses to chronic infection more often among older persons with diabetes compared to those without diabetes,<sup>2C</sup> and there is some evidence that diabetes imparts a higher HBV case fatality rate.<sup>2D</sup>

## Recommendations for HBV Vaccination in People with Diabetes

The CDC and the Advisory Committee on Immunization Practices (ACIP) issued recommendations for HBV vaccination in people with diabetes after considering evidence that HBV outbreaks among people with diabetes in healthcare facilities are related to assisted glucose monitoring.<sup>2E</sup> Additional factors that informed the recommendations include results of blood tests from a national survey that found people 18 years and older with diabetes are at higher risk of exposure to HBV,<sup>2F, 2G</sup> diabetes as a risk factor among those with acute HBV,<sup>6A</sup> and an increased risk of nonalcoholic chronic liver disease in people with diabetes.<sup>7A</sup>

The CDC recommends vaccination for:

- Adults with diabetes 19 through 59 years as soon as feasible after diagnosis.<sup>2H, 2I</sup>
- Adults with diabetes aged 60 years or older at the discretion of the treating healthcare provider based on the likelihood of acquiring hepatitis B infection,<sup>2H</sup> including:
  - o Risk associated with increased need for assisted blood glucose monitoring in long-term care facilities.<sup>2J</sup>
  - o Likelihood of experiencing complications or chronic sequelae from hepatitis B infection.<sup>2J</sup>
  - o Likelihood of immune response to vaccination.<sup>2J</sup>

According to the CDC, HBV vaccination may provide partial, if not full, protection for many older adults with diabetes.<sup>1C</sup>

### What is the ACIP?

The ACIP is a group of medical and public health experts who develop recommendations on how to use vaccines to control diseases in the U.S.<sup>8A</sup> The ACIP holds meetings each year at the CDC in Atlanta to make vaccine recommendations. The ACIP's recommendations are forwarded to the CDC's Director for approval. Once the ACIP's recommendations have been approved by the CDC Director, they are published in the CDC's "Morbidity and Mortality Weekly Report (MMWR)" and represent the official CDC recommendations for immunizations in the U.S.<sup>8B</sup>

Despite these recommendations, less than one-third (28.6 percent) of adults age 19 - 59 with diabetes in the U.S. have been vaccinated against HBV.<sup>9A</sup> This low vaccination rate brings to light an unmet need for increased awareness and education regarding the HBV vaccine among adults with diabetes and providers.

The American Association of Diabetes Educators (AADE) is a multi-disciplinary professional membership organization with more than 14,000 professional members dedicated to improving diabetes care through education. AADE encourages HBV vaccination as a component of diabetes care.<sup>10A</sup>

## A Missed Opportunity

Following the CDC recommendations, AADE issued a position statement on vaccines, including the HBV vaccine, and conducted a webinar with the CDC on the topic. Despite these and other efforts, there has been little shift in HBV vaccination rates among people who have diabetes.

To understand this issue in greater depth and explore potential solutions, AADE and global healthcare company GSK commissioned an online survey of 1,000 AADE members. The goals of the survey were to determine: the level of awareness among diabetes educators of the CDC recommendations to vaccinate adults with diabetes; how diabetes educators typically inform their patients; and what level of awareness exists among AADE members' patients about vaccinations, and the HBV vaccination specifically.

The survey was conducted by Reckner, a national consumer opinion research company, for AADE and GSK. The survey was fielded between August 21 and September 2, 2014.

## II. What is Hepatitis B and How Can Vaccination Help Prevent It?

### Hepatitis B

Hepatitis B is a liver disease that results from infection with the hepatitis B virus.<sup>1D</sup> It is 50 to 100 times more infectious than HIV.<sup>1E</sup> HBV is transmitted by exposure to blood or other body fluids of an infected person through sharing needles, syringes or other injection equipment; through sexual contact; and from an infected mother to her baby during childbirth.<sup>1F</sup> The HBV can survive outside the body for at least a week, during which time it can still cause infection.<sup>1G</sup>

Symptoms can range from mild to severe, including abdominal pain, dark urine, fever, joint pain, loss of appetite, nausea and vomiting, weakness and fatigue, and jaundice.<sup>11A</sup>



### COMPLICATIONS OF HBV

When first infected, a person can develop an "acute" infection, which can range from a very mild illness with few or no symptoms to a serious condition requiring hospitalization.<sup>1H</sup> Some people are able to fight the virus and clear the infection, but for others, the infection leads to a "chronic" or lifelong illness.<sup>1H</sup> Chronic HBV infection is associated with high morbidity and mortality<sup>2A</sup> and may lead to cirrhosis and liver cancer.<sup>2B</sup>

### Vaccines Are Available

For most people, HBV vaccination consists of a series of three injections administered intramuscularly to create a protective antibody response.<sup>1I</sup> People with diabetes should talk to their healthcare provider about when and how to get vaccinated.<sup>1J</sup>

The first HBV vaccine became commercially available in the U.S. in 1982.<sup>12A</sup> For people in whom the vaccination series was started but not completed, the CDC recommends that they talk to their healthcare provider.<sup>13A</sup>



### MANY ADULTS MAY BE AT RISK

Routine HBV vaccination of children was implemented in 1991 per the CDC recommendations, starting with the first dose at birth and completion of the series of shots by age six months to 18 months. Therefore, those born before 1991 are less likely to have been vaccinated against HBV.<sup>12B, 14A</sup>

## People with Diabetes at Increased Risk

Recent evidence suggests that people with diabetes, ages 23-59 years, may have approximately a two-fold increased risk of HBV infection compared to those without diabetes.<sup>6B</sup>

### MODES OF TRANSMISSION AMONG ADULTS WITH DIABETES

The CDC has investigated numerous HBV outbreaks in people with diabetes and found that the modes of transmission include:<sup>\*1K</sup>



Use of a blood glucose meter for more than one patient without cleaning and disinfection between uses.



Use of the same injection equipment, such as a syringe or insulin pen, for more than one person.



Failure to consistently wear gloves and perform hand hygiene between finger stick procedures.



Failure to maintain separation of clean and contaminated podiatry equipment.



Use of the same finger stick devices for more than one patient.



Improper sterilization of contaminated podiatry equipment.



Cross-contamination of clean supplies with contaminated blood glucose monitoring equipment used by home health agencies.



Failure to perform environmental cleaning and disinfection between podiatry patients.

\*Case reports from assisted living, long-term care facilities and nursing homes.

## The CDC Recommendations: Rationale and Driving Factors

The CDC considered the available evidence before making its HBV vaccination recommendations for people with diabetes. This evidence includes the fact that since 1996, a total of 29 outbreaks of HBV infection in one or multiple long-term care facilities, including nursing homes and assisted living facilities, were reported to the CDC; of these, 25 involved adults with diabetes receiving assisted blood glucose monitoring. These outbreaks prompted a Hepatitis Vaccines Work Group to evaluate the risk for HBV infection among all adults with diagnosed diabetes. Based on the Work Group findings, the CDC issued its recommendations in 2011.<sup>2E</sup>



### WHAT INFORMED THE CDC RECOMMENDATIONS?

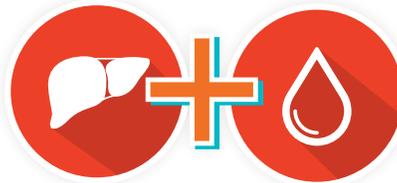
#### National Health and Nutrition Examination Survey (NHANES), 1999-2010:



**60%** MORE SERUM ANTIBODIES FOR HBV CORE ANTIGEN

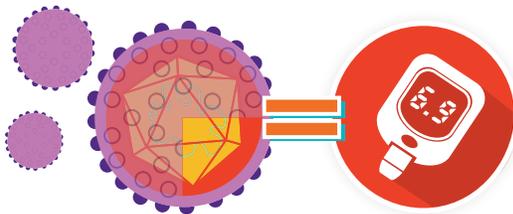
Adults with diabetes had a 60 percent higher prevalence of serum antibodies for HBV core antigen compared to those without diabetes.<sup>2F</sup>

#### Relationship between diabetes and chronic liver disease:



Diabetes is associated with increased underlying nonalcoholic fatty liver disease (NAFLD) compared to those without diabetes.<sup>7A</sup>

#### Virus characteristics:



HBV is highly infectious, can live on surfaces outside the body for up to a week,<sup>16</sup> and can be transmitted in minute amounts of blood, (e.g., on shared blood glucose monitoring devices).<sup>2G</sup>

#### Infection control lapses:



Infection control breaches related to blood glucose monitoring have been documented in long-term care facilities, hospitals, community health centers, ambulatory surgi-centers, private offices, homes and health fairs.<sup>2K</sup>

# SURVEY RESULTS

## III. Diabetes Educators See Patient Education / Awareness Gap

### Patient Awareness of Vaccines in General and HBV Risk

Our survey showed, despite the increased risk for HBV among people with diabetes, the recommendations from the CDC and education from third-party organizations (e.g., AADE), patient awareness remains low. Our survey found that diabetes educators recognize a lack of awareness and concern among their patients about recommended vaccinations in general, and HBV vaccination specifically:

- More than half (52 percent) of educators believe their patients do not understand the importance of recommended vaccinations in general.
- Fifty-four percent say their adult patients with diabetes are not aware that “as a person with diabetes, it is even more important that I get my vaccinations.”
- Only 29 percent say their patients are aware of the recommended vaccinations for them.

People with diabetes also remain unaware of their increased risk for HBV, according to diabetes educators.

- Just 18 percent of educators say that “my adult patients know that people with diabetes have an increased risk of HBV.”

### Patient Awareness of HBV Vaccine and the CDC Recommendations

- According to 52 percent of diabetes educators, their patients do not know that the CDC has recommendations for the HBV vaccine for people with diabetes.
- Only 15 percent say their patients know about the CDC’s recommendations regarding HBV vaccinations.
- Meanwhile, just 14 percent say that “my adult patients understand the importance of the HBV vaccine.”

This perceived lack of patient awareness suggests that people with diabetes may not be following through in getting the recommended vaccinations, including for HBV. According to diabetes educators, just 15 percent report that their adult patients get their vaccinations as recommended.

## IV. Diabetes Educator Priorities and Awareness

Our survey found that diabetes educators place greater importance on lifestyle and behavioral management compared to vaccines when working with their patients. When asked, “as a diabetes educator, what are your priorities for your patients with diabetes?”:

- Seventy-two percent say that setting goals and improving patient self-care habits are their priorities.
- Sixty-four percent cite providing tools and resources for diabetes management as their priority.
- Diet/exercise and regular doctor visits were each cited as priorities by 60 percent of educators.
- Just seven percent say that receiving the recommended vaccinations is a priority they have for their patients.

When asked which vaccinations they recommend to their adult patients, diabetes educators mentioned HBV least often, behind influenza, pneumococcal, zoster and tetanus/diphtheria/pertussis (Tdap). This is not surprising given that we also found educators to have low awareness of the CDC’s recommendations. When asked: “The CDC recommends the hepatitis B vaccination for which adults with diabetes?,” more than half (52 percent) say they do not know.

### Diabetes Educator Disconnect Between Priorities and Beliefs

We found a disconnect in that, per the survey, while diabetes educators place a lower priority on dedicating education session time to the HBV vaccine, the majority (79 percent) say they believe it is very important or important (34 percent and 45 percent, respectively) for adults with diabetes to be vaccinated against HBV. Given time limitations and the fact that there are so many other topics to cover with patients, vaccines, at the moment, may often have a tough time competing to be a priority in diabetes education. Thus, new ways of thinking about this issue and alternative solutions for engaging people with diabetes on this topic and moving them to take action are needed in order to change the paradigm surrounding vaccination.

### Where Do Diabetes Educators Turn for Information?

When seeking information and guidelines for vaccines, most diabetes educators turn to government agencies (69 percent) and professional organizations (67 percent). Just over 20 percent report that they are “very active” and 32 percent are “somewhat active” in seeking out and staying up to date on vaccines information and/or guidelines issued by government agencies and recognized healthcare authorities.

Here again we found a disconnect: more than half of diabetes educators are staying active in seeking vaccines information, yet they are not educating their patients about HBV vaccination. This anomaly points to the existing barriers in educating their patients about HBV vaccination and the limited time that educators spend with patients, which forces them to place greater priority on other issues.

## V. Barriers to Vaccines Education



### DIABETES EDUCATORS FACE COMPETING PRIORITIES

When we looked at specific barriers to patient awareness about HBV vaccination, we found that:

**39%** PATIENT CARE

**23%** PRACTICE/CLINIC

When asked, "What are the barriers to your educating adult patients on the hepatitis B vaccination?," (33 percent) cited no barriers, while of the remaining 67 percent, the two most commonly cited barriers are the need to focus on other priorities in patient care (39 percent) and that the practice/clinic in which the diabetes educator works does not emphasize the HBV vaccine (23 percent).

**21%** 

More than one in five educators (21 percent) report that they lack the time to discuss the vaccine with their patients.

## VI. Call to Action: Increasing Awareness

Although the CDC recommendations were made three years ago, the barriers that diabetes educators face have largely remained the same. Thus, most educators have not made changes to the way in which they educate their patients about HBV: 74 percent say they have not changed their patient education efforts around HBV vaccination over the last three years, even though they agree that it is very or somewhat important (80 percent) for adult patients with diabetes to be educated about HBV.

### Recommendations for Raising Awareness and HBV Vaccination Rates

#### Diabetes Educator Recommendations

Due to the barriers previously noted, there needs to be increased awareness of the CDC recommendations among diabetes educators and people with diabetes. Further, individuals should be better informed about their risk for HBV and the available vaccination options.

Our survey shows that diabetes educators could be doing more to both inform people with diabetes about HBV and to encourage them to get vaccinated. So how can we turn the tide? We asked educators what they think would be the best ways to increase HBV vaccination rates and responses included:

- The overwhelming majority (85 percent) say doctors/prescribers should proactively discuss vaccinations with their patients.
- Sixty-eight percent believe it is important to have healthcare professionals other than doctors (e.g., diabetes educators, nurses and dietitians) proactively discuss vaccination with patients.
- A broad public service or other awareness campaign directed to adult patients with diabetes was cited by 51 percent of educators.

## AADE Recommendations

AADE believes that everyone in the diabetes community, including our members who are on the frontline with patients, is responsible for encouraging patients to stay up to date on recommended vaccinations, including HBV vaccination. For AADE, that starts with actively encouraging our members who say they currently do not educate their patients on the HBV vaccine (38 percent) to commit to providing vaccines education to patients. This includes identifying the best ways for diabetes educators to highlight vaccinations during patient visits.

AADE is committed to exploring a variety of strategies, including:

### Stakeholder Outreach

- Connect with fellow members of the diabetes community and other healthcare groups to explore joint initiatives to increase vaccination rates among people with diabetes.
- Provide guidance to other immunization-focused stakeholders on how to communicate to people with diabetes.
- Convene focus groups with people who have diabetes. Gain insight into why they don't, in general, get vaccinated, and what would motivate them to change this behavior.

## Awareness Building and Resource Creation

- Reinforce the CDC adult vaccination recommendations and AADE's practice documents on vaccinations through a variety of AADE communication vehicles.
- Create and distribute provider tools and patient take-home materials. As noted in the report, diabetes educators have a wide variety of topics they must cover within a limited time. Giving providers a tool such as a vaccines checklist would encourage them to cover the topic. And, providing patients with easy-to-digest take-home materials would allow diabetes educators to cover the importance of vaccines and be able to reinforce that message after the education session.
- Include immunization status and guidance in the 2015 update of AADE's Curriculum for Diabetes Education.

All of the strategies above would take into account recommendations from the National Vaccine Advisory Committee (NVAC). In their March/April 2014 report, "[Recommendations from the National Vaccine Advisory Committee: Standards for Adult Immunization Practice](#)," the NVAC outlines the roles and standards for immunizing and non-immunizing providers, public health departments and professional healthcare-related associations/organizations regarding routine vaccinations for adults in the U.S.<sup>15A</sup>

## The following recommendations from the NVAC continue to inform AADE's thinking about ways to increase HBV vaccination rates among people with diabetes:

### Standards for Non-immunizing Providers:<sup>15B</sup>

A healthcare provider's recommendation and offer of vaccine during the same visit is one of the most important predictors of vaccination receipt among adults. There needs to be increased emphasis on the role of all providers, including non-immunizing providers, to assess immunization status and recommend needed vaccines, and this should be included in clinical training programs. The NVAC's standards for non-immunizing providers include:

- Routinely assess the immunization status of patients.
- Strongly recommend needed vaccine(s).
- Establish referral relationships with immunizing providers and refer patients to these providers.
- Follow up to confirm that patients have received the recommended vaccine(s) and encourage the vaccine provider to document vaccination in the patient's medical record.

### Standards for Professional Healthcare-Related Associations/Organizations:<sup>15C</sup>

- Provide immunization education and training of members, including trainees.
- Provide resources and assistance to implement protocols and other systems that incorporate vaccine needs assessment and vaccination or referral into routine practice.
- Encourage members to be up to date on their own immunizations.
- Assist members in staying up to date on immunization information and recommendations.
- Partner with other immunization stakeholders to educate the public.
- Seek out collaboration opportunities with other immunization stakeholders.
- Collect and share best practices for immunization.
- Advocate policies that support adult immunization standards.

## VII. Conclusion

Three years after the CDC issued its recommendations, less than one-third of American adults with diabetes have been vaccinated,<sup>9A</sup> despite the increased risk of HBV in this population. Diabetes educators perceive that patient awareness about the importance of the vaccine is low, but as our survey shows, educators are finding it challenging to engage their patients with diabetes in dialogue about HBV.

Barriers, including lack of time and competing priorities, force diabetes educators to make decisions about what they will discuss with patients in the limited time they spend with each patient. However, given their one-on-one and group interactions with patients, educators are a crucial starting point to help move the needle by emphasizing the importance of HBV vaccination.

With the benefit of key public health stakeholders already emphasizing the importance of adult vaccination, and the defined population of people with diabetes, we have the opportunity to change the paradigm around HBV education. This means making HBV vaccination a topic of conversation between patients with diabetes and their healthcare team. It means helping those who say they do not educate their patients with diabetes on the HBV vaccine to commit to taking steps to inform their patients with diabetes about the need for vaccinations. And it means exploring ways to highlight vaccinations during patient visits. To that end, AADE is issuing a call to action that employs strategies including: stakeholder outreach by connecting with fellow members of the diabetes community and other healthcare groups, providing guidance to other immunization- focused stakeholders, as well as convening focus groups with people who have diabetes; reinforcing the CDC adult vaccination recommendations and AADE's practice documents on vaccinations; creating and distributing provider tools and patient take-home materials; and including immunization status and guidance in the 2015 update of AADE's Curriculum for Diabetes Education.

Lowering the incidence of HBV in this at-risk population requires that HBV vaccination be a part of the standard of care for people with diabetes. A commitment among all players in the diabetes community to improve communication around HBV will help raise awareness and advance this effort for people with diabetes.

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