Section 11: Communicable Disease Prevention

Concern	Care/Test	Frequency
Influenza and Pneumococcal Immunizations	▪ Provide influenza vaccine	Annually, if age ≥ 6 months
	▪ Provide pneumococcal vaccine	Once; then per Advisory Committee on Immunization Practices
	▪ Provide Hepatitis B series	19-59 yrs of age at Diagnosis, Individualize if ≥ 60 yrs.
	▪ Screen for Turberculosis infection or disease	As needed

MAIN TOPICS INCLUDED IN THIS SECTION:

Influenza Vaccine

Despite vaccine-preventable diseases greatly decreasing since the beginning of the 20th century, an estimated 42,000 adults and 300 children still die in the United States each year from these diseases or their complications. The majority of these are adults who die of complications from influenza and pneumococcal disease. In Wisconsin in 2009, influenza and pneumococcal disease together were the ninth leading cause of death for all ages and the seventh leading cause of death for adults 85 years and older (Wisconsin Department of Health Services 2011). The elderly and people with chronic health conditions like diabetes are more likely to develop serious, life-threatening complications than younger, healthier people.

Influenza exacerbates underlying chronic conditions like diabetes and can compromise glucose control, resulting in erratic blood sugars (i.e., hypoglycemia or hyperglycemia). In the year 2006, only 33% of United States adults and 36% of Wisconsin adults were immunized for seasonal influenza despite evidence that an annual influenza vaccination can prevent illness and death caused by influenza. Of those with diabetes, 58% of United States adults and 69% of Wisconsin adults were immunized for influenza (Wisconsin Department of Health Services, 2009). While Wisconsin is immunizing a higher percentage of adults with diabetes than the United States, there is still much improvement needed in Wisconsin. In 2005, approximately 22,000 people were hospitalized in Wisconsin for influenza and pneumonia and there were 1,267 resident deaths. In 2009 there were 949 deaths (WISH Data Set). One study found that influenza vaccination reduced hospital admissions by 79% for persons with diabetes.

The Advisory Committee on Immunization Practices (ACIP) recommends that all individuals with diabetes ≥ 6 months of age receive the influenza vaccine annually, due to increased risk of severe complications. The trivalent inactivated influenza vaccine (TIV) should be used for persons with diabetes. The 2011 influenza vaccination recommendations have included the Fluzone High-Dose vaccine as an acceptable influenza vaccine for persons age 65 years or older (Poland Collaborative framework for care and control of tuberculosis and diabetes & Mulligan, 2009). Fluzone High-Dose contains more influenza antigen than the regular vaccine and is intended to create a stronger immune response in older adults. There is currently no contraindication to the use of this vaccine in older adults with diabetes (CDC, 2011).

The live, attenuated influenza vaccine (LAIV) vaccine (FluMist®) should not be given to people with diabetes because it is a live vaccine (CDC, 2010).

Two doses of influenza vaccine (doses separated by ≥ 4 weeks) are recommended for children 6 months through 8 years of age who are receiving the influenza vaccine for the first time. Vaccination is also advised for healthy household contacts (including children) and caregivers of children aged < 5 years and adults aged ≥ 50 years, with particular emphasis on vaccinating contacts of children aged < 6 months. The live, attenuated influenza vaccine (LAIV) vaccine (FluMist®) is approved for use among people aged 2-49 years without medical contraindications. Each year the influenza vaccine contains the antigens that are expected to cause influenza in our hemisphere (American Academy of Pediatrics Committee on Infectious Diseases, 2011).

Immunization is advised for healthy household contacts (including children) and caregivers of persons with medical conditions that put them at higher risk for severe complications from influenza (including diabetes). No preference is indicated for use of the trivalent inactivated vaccination (as opposed to the live attenuated influenza vaccine) by persons who have close contact to persons with diabetes. It is important that all health care providers serving people with diabetes are vaccinated against influenza to reduce the transmission of the virus from health care provider to vulnerable persons (Committee on Infectious Diseases, 2009).

All women with diabetes who are pregnant or will be pregnant during influenza season should be vaccinated with TIV. LAIV is not licensed for use in pregnant women. ACIP recommends that pregnant women be given the influenza vaccine any time during their pregnancy. If a woman failed to receive the influenza vaccine during her pregnancy, she should be given the influenza vaccine in the immediate postpartum period as a household contact of the infant.

Annual vaccination with a currently licensed influenza vaccine, as soon as the vaccine becomes available, is recommended for all individuals aged 6 months or older. Peak activity for seasonal influenza can vary, but generally occurs in January or February. Vaccination efforts should continue throughout the influenza season because duration of the influenza season varies. Immunizations can begin when vaccine for the upcoming influenza season becomes available.

For more specific precautions, specific contraindications to vaccination, side effects, and adverse reactions, consult the ACIP recommendations found at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a3.htm.

Pneumococcal Polysaccharide Vaccine and Pneumococcal Conjugate Vaccine

In the year 2006, 52% of United States adults with diabetes and 64% of Wisconsin adults with diabetes reported ever having received the pneumococcal vaccination.

Streptococcus pneumoniae (pneumococcus) infection is among the leading causes worldwide of illness and death for children, people with underlying debilitating medical conditions, and the elderly (Austriam & Gold, 1964). Annually, the bacterium causes serious infections, resulting in an estimated 175,000 hospitalized cases of pneumococcal pneumonia, more than 50,000 cases of bacteremia, and an estimated 3,000 to 6,000 cases of bacterial meningitis (National Foundation for Infectious Diseases, 2002). According to the Centers for Disease Control and Prevention (CDC), invasive pneumococcal disease causes more than 6,000 deaths annually. About half of these deaths are preventable with the use of the 23-valent pneumococcal polysaccharide vaccine (PPV23). The risk of serious complications, as well as the recent evidence of antibiotic-resistant pneumococci, compound the management of invasive pneumococcal disease and emphasize the importance of the recommendations from ACIP and the Academy of Pediatrics Report of the Committee on Infectious Diseases. Pneumococcal vaccination is intended for reduction of the occurrence of invasive pneumococcal disease; however, the efficacy of the vaccine in preventing against non-invasive pneumococcal infection is limited (Centers for Disease Control and Prevention, 2010).

Advisory Committee on Immunization Practices (ACIP) for prevention of invasive pneumococcal disease (IPD) through use of the 23-valent pneumococcal polysaccharide vaccine (PPSV23) among all adults aged ≥65 years and those adults aged 19-64 years with underlying medical conditions that put them at greater risk for serious pneumococcal infection. A detailed summary of the Adult Immunization Schedule can be found at: http://www.cdc.gov/vaccines/schedules/easy-to-read/adult.html.

For more specific precautions, specific contraindications to vaccination, side effects, and adverse reactions, consult the ACIP recommendations found at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a3.htm.

Preventing Pneumococcal Disease in Infants and Children

Infants and children (especially those with diabetes) are at risk for pneumococcal infection. The immunization and reimmunization schedules are complex and lengthy; therefore, they are not included in this document. Detailed recommendations for use of the pneumococcal conjugate vaccine (PCV13) and the pneumococcal polysaccharide vaccine (PPV23) for children age 6 weeks to age 18 years can be found in:

- Recommended immunization schedules for persons aged 0-18 years – United States, 2012. MMWR 2012; 61(05):1-4, http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm.
- Updated Recommendations for Prevention of Invasive Pneumococcal Disease Among Adults Using the 23-Valent Pneumococcal Polysaccharide Vaccine (PPSV23). MMWR; 59(34);1102-1106, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5934a3.htm.
- Licensure of a 13-Valent Pneumococcal Conjugate Vaccine (PCV13) and Recommendations for Use Among Children – Advisory Committee on Immunization Practices (ACIP), 2010. MMWR 2010; 59(09); 258-261, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5909a2.htm.

Hepatitis B Vaccine

Hepatitis B is a serious disease that can become chronic and lead to liver damage or cancer. People infected with the virus can spread it to others through contact with blood or other body fluids even if they show no symptoms. Hepatitis B can be prevented through a 3-dose immunization series for those ages 19-59. Individualize based on risk for those ≥ 60 years old.

In 2011, the Advisory Committee on Immunization Practices (ACIP) recommended adults with diabetes be included in the high-risk group and should be vaccinated against hepatitis B virus. People with diabetes who are younger than 60 years old were more than twice as likely to get infected with the hepatitis B virus as people without diabetes. There is no significant increase of hepatitis B virus infection found in people with diabetes who are older than 60 years of age and vaccines in older adults are less efficacious and cost-effective than those provided to younger adults, but ACIP states people with diabetes older than 60 years of age may still receive the vaccine (Advisory Committee on Immunization Practices, 2011).

The hepatitis B vaccine series should be administered as soon as feasible after diabetes is diagnosed. There is no advantage to any specific hepatitis B vaccine, dosage, or approved schedule for adults with diabetes. No serologic testing or additional hepatitis B vaccination is recommended for adults who received a complete series of hepatitis B vaccinations prior to their diagnoses of diabetes (CDC, 2011).

Tuberculosis (TB)

People with diabetes have a 2-3 times higher risk of TB than people with no diabetes, a link that has been known for many years. In 1997, Pablos-Mendez et.al. published an article identifying a relationship between diabetes and tuberculosis and further research has confirmed the relationship.

People at risk for developing TB fall into two categories: "those who have an increased likelihood for exposure to persons with TB disease, and those with clinical conditions that increase the risk of progression from LTBI (Latent Tuberculosis Infection) to TB disease" (CDC, 2011, p.1). Persons with diabetes are at increased risk of progression from LTBI to active TB and should be considered for screening. For more information on these two categories visit: http://cdc.gov/tb/publications/factsheets/testing/skintestresults.com.

In 2011, the World Health Organization published the Collaborative Framework for Care and Control of Tuberculosis and Diabetes which presents recommendations based on evidence from three systematic reviews and a series of expert consultations. The report recommends all people with TB should be screened for diabetes and that screening for TB in people with diabetes should be considered, particularly in settings with high TB prevalence. Collaborative Framework for Care and Control of Tuberculosis and Diabetes (2011).

Testing for TB infection may be done with either the TB skin test or a blood test. For more information, please call your local health department or the Wisconsin TB Program (608-261-6319).

Immunization Record Keeping

To help prevent the administration of unnecessary doses, every person should receive a record of their vaccinations. Recording vaccinations in a shared electronic registry, such as the Wisconsin Immunization Registry (http://www.dhs.wisconsin.gov/immunization/WIR.htm), is recommended to allow health care providers around the state access to individual vaccination records. Primary care providers should also ensure that childhood and other recommended preventive vaccinations are up to date.

Each year CDC updates the recommended immunization schedule for the United States. The most recent version can be found at www.cdc.gov/mmwr/preview/mmwrhtml/mm6104a9.htm.

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