Welcome to Vaccine Preventable Diseases. A webinar hosted by the Texas Department of Aging and Disability Services (DADS). My name is Tracy Fuller. I am a registered nurse in the Quality Monitoring Program in Quality Assurance and Improvement at DADS. I will be joined today by Dr. Lilani Muthali from The Center for Policy and Innovation at DADS.

Today we will be discussing Pneumococcal Disease; Tetanus, Diphtheria, and Pertussis; Varicella-Zoster, and Hepatitis B. We will also talk about the available vaccines used to prevent these diseases. Afterwards, we will open the floor for questions and comments. Please take the time at the end of this webinar to take a short survey regarding this webinar. Your participation will help us improve future webinars.

Pneumococcal Disease

Streptococcus pneumoniae causes an acute bacterial infection worldwide. The major clinical syndromes of pneumococcal disease are pneumonia, bacteremia, and meningitis. Pneumococcal pneumonia is the most common clinical presentation of pneumococcal disease among adults. Although pneumonia alone is not considered to be an “invasive” disease, as many as 175,000 hospitalizations from pneumococcal pneumonia are estimated to occur annually in the United States. More than 40,000 cases and more than 4,400 deaths from invasive pneumococcal disease are estimated to have occurred in the United States in 2005.
Slide 5
The incubation period of pneumococcal pneumonia is short, about 1 to 3 days. Symptoms generally include an abrupt onset of fever and chills or rigors. Other common symptoms include pleuritic chest pain, cough productive of rusty-colored sputum, dyspnea (shortness of breath), tachypnea (rapid breathing), hypoxia (poor oxygenation), tachycardia (rapid heart rate), malaise, and weakness. Nausea, vomiting, and headaches occur less frequently.

Slide 6
Pneumococcal disease occurs throughout the world. S. pneumoniae is a human pathogen. The reservoir for pneumococci is presumably the nasopharynx of asymptomatic human carriers. Transmission of S. pneumoniae occurs as the result of direct person-to-person contact via respiratory droplets and by autoinoculation in persons carrying the bacteria in their upper respiratory tract. The spread of the organism within a family or household is influenced by such factors as crowding, season, and the presence of pneumococcal infection. Pneumococcal infections are more common during the winter and in early spring when respiratory diseases are more prevalent.

Slide 7
Conditions that increase the risk of invasive pneumococcal disease include decreased immune function from disease or drug; functional or anatomic asplenia (absence of the spleen); chronic heart disease; pulmonary disease, including asthma; liver or renal disease; smoking cigarettes; and cerebrospinal fluid leak.

Slide 8
Outbreaks of pneumococcal pneumonia are not common. When outbreaks occur, they are usually in crowded environments, such as correctional facilities and nursing facilities. During outbreaks, persons with invasive disease often have underlying illness and may have a high fatality rate.
Pneumococcal polysaccharide vaccine should be administered routinely to all adults 65 years of age and older. The vaccine is also indicated for persons 2 years of age and older who have a chronic illness; including heart disease, lung disease, diabetes, sickle cell disease; and has a disease or condition that lowers the body’s resistance to infection, such as persons with splenic dysfunction or absence (either from disease or surgical removal), Hodgkin disease, lymphoma, multiple myeloma, chronic renal failure, nephrotic syndrome (a type of kidney disease), organ transplant, or taking any drug or treatment that lowers the body’s resistance to infection, such as long term steroids, certain cancer drugs and radiation therapy. Revaccination is recommended for persons 2 years of age and older who are at highest risk for serious pneumococcal infection due to conditions that lower the body’s resistance to infection. The second dose should be administered 5 or more years after the first dose. Revaccination 3 years after the previous dose may be considered for children at highest risk for severe pneumococcal infection who would be 10 years of age or less at the time of revaccination, including children who received pneumococcal conjugate vaccine. Persons age 65 years and older should be administered a second dose of Pneumococcal vaccine if they received the vaccine more than 5 years previously, and were younger than 65 years of age at the time of the first dose.

The most common adverse reactions following vaccination are local reactions such as redness or pain where the shot was given. Less than 1% develop fever, muscle aches, or more severe local reactions. Severe allergic reactions have been reported very rarely.
For both pneumococcal polysaccharide and conjugate vaccines, a severe allergic reaction (anaphylaxis) to a vaccine component or following a prior dose is a contraindication to further doses of vaccine. Persons with moderate or severe acute illness should not be vaccinated until their condition improves. However, minor illnesses, such as upper respiratory infections, are not a contraindication to vaccination. The safety of pneumococcal polysaccharide vaccine for pregnant women has not been studied, although no adverse consequences have been reported among newborns whose mothers were inadvertently vaccinated during pregnancy. Women who are at high risk of pneumococcal disease and who are candidates for pneumococcal vaccine should be vaccinated before pregnancy, if possible.

The Healthy People 2010 goal is to achieve at least 90% coverage for pneumococcal polysaccharide vaccine among persons 65 years of age and older. Data from the 2003 Behavioral Risk Factor Surveillance System (a population-based, random-digit-dialed telephone survey of the U.S. population 18 years of age and older), who are not residing in an institutional setting, estimate that 64% of persons 65 years of age or older had ever received pneumococcal polysaccharide. Vaccination coverage levels were lower among persons 18–64 years of age with a chronic illness.

Both influenza and pneumococcal vaccine have been proven effective in preventing hospitalizations, and reducing case fatalities among people who are aging. Both influenza and Pneumococcal vaccine use in long-term care facilities remains lower than the Healthy People 2010 Risk reduction goal. Long-term care facilities need to improve their vaccination services in order to achieve the proposed public health targets for 2010, of 90% for both Influenza and
Pneumococcal vaccinations. This will have a significant impact on reducing complications and death associated with pneumococcal disease.

**Slide 15**

Tetanus

**Slide 16**

Tetanus is an acute, often fatal, disease caused by a toxin produced by the bacterium Clostridium tetani. The bacteria is sensitive to heat and cannot survive in the presence of oxygen, however the spores are very resistant to heat and the usual antiseptics. They can survive autoclaving at 249.8°F (121°C) for 10–15 minutes. The spores are widely distributed in soil and are present in animal feces. Manure-treated soil may contain large numbers of spores. Clostridium tetani usually enters the body through non-intact skin. Once inoculated into an oxygen-poor site, such as necrotic tissue that can result from blunt trauma or deep puncture wounds, the spores germinate to vegetative bacilli that multiply and elaborate a potent neurotoxin. Toxins act at several sites within the central nervous system.

**Slide 17**

The incubation period ranges from 3 to 21 days, usually about 8 days. In general the further the injury site is from the central nervous system, the longer the incubation period. In neonatal tetanus, symptoms usually appear from 4 to 14 days after birth, averaging about 7 days. On the basis of clinical findings, three different forms of tetanus have been described. Local tetanus is an uncommon form of the disease, in which individuals have persistent contraction of muscles in the same anatomic area as the injury. Cephalic tetanus is a rare form of the disease, occasionally occurring with otitis media (ear infections) in which Clostridium tetani is present in the flora of the middle ear, or following injuries to the head. There is involvement of the cranial nerves, especially in the facial area. The most common type (about 80%) of reported tetanus is generalized tetanus.
The disease usually presents with a descending pattern. The first sign is trismus or lockjaw, followed by stiffness of the neck, difficulty in swallowing, and rigidity of abdominal muscles. Other symptoms include elevated temperature, sweating, elevated blood pressure, and episodic rapid heart rate. Spasms may occur frequently and last for several minutes. Spasms continue for 3–4 weeks. Complete recovery may take months.

**Slide 18**

Laryngospasm (spasm of the vocal cords) and/or spasm of the muscles of respiration leads to interference with breathing. Fractures of the spine or long bones may result from sustained contractions and convulsions. In recent years, tetanus has been fatal in approximately 11% of reported cases. Cases most likely to be fatal are those occurring in persons 60 years of age and older (18%) and people who are unvaccinated (22%). In about 20% of tetanus deaths, no obvious pathology is identified and death is attributed to the direct effects of tetanus toxin.

**Slide 19**

Tetanus occurs worldwide but is most frequently encountered in densely populated regions in hot, damp climates with soil rich in organic matter. Organisms are found primarily in the soil and intestinal tracts of animals and humans. Transmission is primarily by contaminated wounds (apparent and in-apparent). The wound may be major or minor. In recent years, however, a higher proportion of individuals had minor wounds, probably because severe wounds are more likely to be properly managed. Tetanus may follow elective surgery, burns, deep puncture wounds, crush wounds, otitis media (ear infections), dental infection, animal bites, abortion, and pregnancy. Tetanus is not contagious from person to person. It is the only vaccine-preventable disease not contagious.

**Slide 20**

Diphtheria
**Slide 21**
Diphtheria is an acute, toxin-mediated disease caused by the bacterium Corynebacterium diphtheriae. The organism produces a toxin that causes local tissue necrosis. Within the first few days of respiratory tract infection (usually in the pharynx) a gray-brown, leather-like adherent pseudo membrane forms. Removal is difficult. The toxin produced at the site of the membrane can lead to systemic manifestations: such as cardiomyopathy, low platelet count, kidney damage. The membrane may cause dysphagia, sore throat, hoarseness, dyspnea, airway obstruction and even death. Fever is usually not high, even though the individual may appear quite toxic. Individuals with severe disease may develop marked edema of the submandibular areas and the anterior neck along with lymphadenopathy, giving a characteristic “bullneck” appearance.

**Slide 22**
The incubation period of diphtheria is 2–5 days (range, 1–10 days). Disease can involve almost any mucous membrane. For clinical purposes, it is convenient to classify diphtheria into a number of manifestations, depending on the site of infection. The most common site is the respiratory tract.

**Slide 23**
Corynebacterium diphtheriae is an exclusive inhabitant of human mucous membranes and skin. Spread is primarily by airborne respiratory droplets, direct contact with respiratory secretions of symptomatic individuals, or exudates from infected skin lesions. Asymptomatic respiratory carriage is important in transmission. Effective antibiotic therapy promptly terminates shedding. Transmission is most often person-to-person spread from the respiratory tract. Rarely, transmission may occur from skin lesions or articles soiled with discharges from lesions of infected persons (fomites).
Slide 24
Pertussis

Slide 25
Pertussis, or whooping cough, is an infectious disease caused by the bacterium Bordetella pertussis. The disease results in high morbidity and mortality. Pertussis remains a major health problem among children in developing countries, with 294,000 deaths resulting from the disease in 2002 (World Health Organization estimate). Pertussis is primarily a toxin-mediated disease. The bacteria attach to the cilia of the respiratory epithelial cells, produce toxins that paralyze the cilia, and cause inflammation of the respiratory tract, which interferes with the clearing of pulmonary secretions. Until recently it was thought that Bordetella pertussis did not invade the tissues. However, recent studies have shown the bacteria to be present in alveolar macrophages.

Slide 26
The incubation period of pertussis is commonly 7–10 days, with a range of 4–21 days, and rarely may be as long as 42 days. The clinical course of the illness is divided into three stages. The first stage, the catarrhal stage, is characterized by the insidious onset of runny nose, sneezing, low-grade fever, and a mild, occasional cough, similar to the common cold. The cough gradually becomes more severe, and after 1–2 weeks, the second, or paroxysmal stage, begins. Fever is generally minimal throughout the course of the illness. It is during the paroxysmal stage that the diagnosis of pertussis is usually suspected. Characteristically, the individual has bursts, or paroxysms, of numerous, rapid coughs, apparently due to difficulty expelling thick mucus from the tracheobronchial tree. At the end of the paroxysm, a long inspiratory effort is usually accompanied by a characteristic high-pitched whoop. During such an attack, the individual may become cyanotic (turn blue). Children and young infants, especially, appear very ill and distressed. Vomiting and exhaustion commonly follow the episode. The person does not appear to be ill between
attacks. The paroxysmal stage usually lasts 1 to 6 weeks but may persist for up to 10 weeks. Infants younger than 6 months of age may not have the strength to have a whoop, but they do have paroxysms of coughing. In the convalescent stage, or the third stage, recovery is gradual. The cough becomes less paroxysmal and disappears in 2 to 3 weeks. However, paroxysms often recur with subsequent respiratory infections for many months after the onset of pertussis.

**Slide 27**

Adolescents, adults, and school-age children partially protected by the vaccine may become infected with Bordetella pertussis but may have milder disease than infants and young children. Pertussis infection in these persons may be asymptomatic, or present as illness ranging from a mild cough illness to classic pertussis with persistent cough (i.e., lasting more than 7 days). Inspiratory whoop is not common. Even though the disease may be milder in people who are older, those who are infected may transmit the disease to other susceptible persons, including infants who are not immunized or incompletely immunized. People who are older are often found to have the first case in a household with multiple pertussis cases, and are often the source of infection for children.

**Slide 28**

The most common complication, and the cause of most pertussis-related deaths, is secondary bacterial pneumonia. Young infants are at highest risk for acquiring pertussis-associated complications, such as pneumonia, hypoxia, apnea, seizures encephalopathy and malnutrition. Other less serious complications of pertussis include otitis media, anorexia, and dehydration. Complications resulting from pressure effects of severe paroxysms include pneumothorax, epistaxis, subdural hematomas, hernias, and rectal prolapse. This disease results in high morbidity and mortality. In the United State, 5000-7000 cases are reported each year. The incidence in 2007 was 3.6/100,000 when 10,454 cases of pertussis were reported.
Slide 29
Pertussis occurs worldwide. Pertussis is a human disease. Adolescents and adults are an important reservoir for Bordetella pertussis and are often the source of infection for infants. Transmission most commonly occurs by the respiratory route through contact with respiratory droplets, or by contact with airborne droplets of respiratory secretions. Transmission occurs less frequently by contact with freshly contaminated articles of an infected person. Pertussis has no distinct seasonal pattern, but it may increase in the summer and fall. Pertussis is highly communicable, as evidenced by secondary attack rates of 80% among susceptible household contacts. Persons with pertussis are most infectious during the catarrhal period and the first 2 weeks after cough onset (approximately 21 days).

Slide 30
Tetanus, Diphtheria, and Pertussis Vaccine

Slide 31
Tdap is available in two vaccines. Boostrix is approved for persons 10 through 64 years of age; Adacel is approved for persons 11 through 64 years of age. Both Tdap vaccines are approved by the Food and Drug Administration for a single (booster) dose for persons who have completed the recommended childhood DTP/DTaP vaccination series.

Slide 32
The Advisory Committee on Immunization Practices recommends that adults 19 through 64 years of age receive a single dose of Tdap to replace a single dose of Td for booster immunization against tetanus, diphtheria and pertussis. Tdap may be given at an interval less than 10 years since receipt of the last tetanus toxoid-containing vaccine to protect against pertussis. Special emphasis should be
placed on Tdap vaccination of adults who have close contact with infants, such as childcare, healthcare personnel, and parents.

Slide 33
All adolescents and adults should have documentation of having received a primary series of at least three doses of tetanus and diphtheria toxoids during their lifetime. A person without such documentation should receive a series of three doses of tetanus- and diphtheria-containing vaccine. One of these doses, preferably the first, should be Tdap if the person is at least 10 years of age (the minimum age approved for one of the two available Tdap products). The remaining two doses should be adult formulation Td.

Slide 34
A 5-year interval between Td and Tdap is encouraged to reduce the risk of local and systemic adverse reactions. The decision whether to administer Tdap when less than 5 years has elapsed since the last dose of Td should be based on whether the benefit of pertussis immunity outweighs the risk of a local adverse reaction. An interval of less than 5 years can be considered in situations of increased risk of pertussis, such as during a pertussis outbreak, or if protection is needed because of household or other close contact with an infant younger than 12 months of age or a young child who has not been vaccinated against pertussis.

Slide 35
Healthcare personnel who work in hospitals, ambulatory, or community care settings and have direct contact with individuals should receive a single dose of Tdap. Priority should be given to vaccination of healthcare personnel who have direct contact with infants 12 months of age and younger. An interval as short as 2 years (or less) from the last dose of Td is recommended for the Tdap dose.
Slide 36
The most common adverse reaction following both brands of Tdap vaccine is a local reaction, such as pain, redness, or swelling at the site of injection. Tdap recipients also reported a variety of nonspecific systemic events, such as headache, fatigue and gastrointestinal symptoms. Local reactions, fever, and nonspecific systemic symptoms occurred at approximately the same rate in recipients of Tdap and Td. No serious adverse events have been attributed to Tdap.

Slide 37
Tdap is contraindicated for persons with a history of a severe allergic (anaphylactic) reaction to a vaccine component or following a prior dose of the vaccine. Tdap is also contraindicated for persons with a history of encephalopathy occurring within 7 days after administration of a pertussis-containing vaccine; in this case give Td instead of Tdap.

Slide 38
Precautions to Tdap include:

- History of Guillain-Barré syndrome within 6 weeks after a previous dose of tetanus toxoid-containing vaccine
- Progressive or unstable neurologic disorder (such as uncontrolled seizures or progressive encephalopathy) until the condition has stabilized.
- Persons with a history of a severe local reaction following a prior dose of a tetanus and/or diphtheria toxoid-containing vaccine. These individuals should generally not receive Tdap or Td vaccination until at least 10 years have elapsed after the last Td-containing vaccine.
- Moderate or severe acute illness; for whom vaccination is deferred until their condition improves.

Slide 39
Herpes-Zoster
Slide 40
Varicella-Zoster virus is an exclusively human pathogen that infects approximately 98% of the adult population in the United States. The primary infection typically occurs during childhood and causes varicella (chicken pox). Herpes-zoster virus is caused by reactivation of latent varicella virus. Relationship between varicella and herpes zoster were made in 1888, when children without evidence of varicella immunity acquired varicella after contact with herpes zoster. Varicella-Zoster Virus was isolated from vesicular fluid of both varicella and zoster lesions in cell cultures. Varicella-Zoster Virus is a DNA virus and is a member of the herpesvirus group. Like other herpesviruses, Varicella-Zoster virus has the capacity to persist in the body after the primary (first) infection as a latent infection. Varicella-Zoster virus persists in sensory nerve ganglia. The virus is believed to have a short survival time in the environment.

Slide 41
Factors associated with reactivation of the virus include aging and immunocompromised conditions. However, intrauterine exposure to Varicella-Zoster virus and having had Varicella at a young age (younger than 18 months) may predispose to reactivation of the virus at an earlier age. Zoster is usually less severe in children and younger adults. Zoster or shingles is a localized, generally painful cutaneous eruption that occurs most frequently among older adults and individuals who are immunocompromised. In people who are immunocompromised, Zoster may disseminate, causing generalized skin lesions, involvement of the central nervous system, pulmonary, and hepatic systems. The vesicular eruption of Zoster generally occurs unilaterally in the distribution of a sensory nerve and does not cross the mid-line.

Slide 42
Herpes-Zoster is not a notifiable condition. An estimated 500,000 to 1 million episodes of Zoster occur annually in the United States. Approximately 50% of
persons who live to age 85 years will have experienced Zoster. Age is the most important factor for development of Zoster.

**Slide 43**
A common complication of Zoster is post herpetic neuralgia, a chronic often debilitating pain condition that can last months or even years. Another complication is eye involvement which occurs in 10%-25% of Zoster episodes and can result in prolonged or permanent pain, facial scarring, and loss of vision. Deaths due to Zoster are uncommon among persons who are not immunocompromised.

**Slide 44**
Zoster lesions contain high concentrations of virus that can spread, by the airborne route, and cause primary Varicella (chicken pox) in exposed susceptible persons. Localized Zoster is only contagious after rash erupts and until the lesions crusts. Zoster is less contagious than Varicella. Because Zoster reflects reactivation of latent Varicella-Zoster virus, the primary risk factor and a necessary precondition for Zoster is previous Varicella-Zoster infection. Approximately 99.5% of the US population >40 years of age, has serologic evidence of previous infection, therefore all older adults are at risk for Zoster. Herpes zoster has no seasonal variation and occurs throughout the year.

**Slide 45**
Herpes-Zoster Vaccines

**Slide 46**
Herpes-Zoster vaccination (Zostavax) is recommended for all adults 60 years and older who have not had the vaccine before.
**Slide 47**
Efficacy for the Herpes-Zoster vaccine was highest for persons 60–69 years of age and declined with increasing age. The vaccine reduced the risk for developing Zoster in 51%. The severity by duration of Zoster was reduced by 57%. Vaccine recipients who developed Zoster generally had less severe disease. Vaccine recipients also had about 66% less post herpetic neuralgia, the pain that can persist long after the Shingles rash has resolved.

**Slide 48**
The Advisory Committee of Immunization Practices recommends routine vaccination of all persons aged 60 years and older with 1 dose of Zoster vaccine. Persons who report a previous episode of Zoster and persons with chronic medical conditions such as chronic renal failure, diabetes mellitus, and chronic pulmonary disease can be vaccinated unless those conditions are contraindications or precautions. Zoster vaccination is not indicated to treat acute Zoster infection, to prevent persons with acute Zoster infection from developing post herpetic neuralgia, or to treat ongoing post herpetic neuralgia. Before routine administration of Zoster vaccine, it is not necessary to ask individuals about their history of Varicella (chicken pox) or to conduct serologic testing for Varicella immunity.

**Slide 49**
In the largest clinical trial of Zoster vaccine administration, local reactions (erythema, pain or tenderness, and swelling) were the most common adverse reactions reported by vaccine recipients, and were reported more commonly than by placebo recipients. A temperature of 101°F or higher within 42 days of vaccination occurred at a similar frequency among both vaccines (0.8%) and placebo (0.9%) recipients. No serious adverse reactions were identified during the trial. Vaccine recipients when compared to placebo recipients had Varicella-like lesions at the injection site; the lesions were tested for the Varicella-Zoster virus and results were negative in both groups.
Slide 50
As with all vaccines, Zoster vaccine is contraindicated for persons who have a history of anaphylactic reaction to any component of the vaccine, including gelatin and neomycin. As with other live virus vaccines, Zoster vaccine is contraindicated in women who are pregnant or planning to become pregnant within 4 weeks: although these women are unlikely to be in the vaccine target group. Zoster vaccine should not be administered to persons with primary or acquired immunodeficiency. Immunodeficiency includes:

- People with leukemia, lymphomas, or other malignant neoplasm affecting the bone marrow or lymphatic system
- People with AIDS or other clinical manifestations of HIV
- People receiving high-doses of corticosteroid therapy
- People with clinical or laboratory evidence of other unspecified cellular immunodeficiency
- People receiving recombinant human immune mediators and immune modulators, especially the antitumor necrosis factor agents

Physicians should assess the immune status of the recipient on a case-by-case basis to determine the relevant risks. As with all vaccines, in an individual with moderate or severe acute illness, vaccination should be postponed until recovery.

Slide 51
Hepatitis B

Slide 52
An estimated 2 billion individuals worldwide have been infected with Hepatitis B Virus, and more than 350 million persons have chronic, lifelong infections. Hepatitis B is a serious disease that affects the liver. Each year about 3,000 to 5,000 people die from cirrhosis or liver cancer caused by the Hepatitis B virus.
Slide 53
The clinical course of acute hepatitis B is indistinguishable from that of other types of acute viral hepatitis. The incubation period ranges from 60 to 150 days (average, 90 days). Clinical signs and symptoms occur more often in adults than in infants or children, who usually have an asymptomatic acute course. However, approximately 50% of adults who have acute infections are asymptomatic. Acute short term illness may lead to malaise, loss of appetite, nausea, vomiting, right upper quadrant abdominal pain, fever, headache, myalgia, skin rashes, arthralgia and arthritis, dark urine and jaundice (yellow skin or eyes). The symptoms and jaundice generally disappear after one to three months. During convalescence, malaise and fatigue may persist for weeks or months.

Slide 54
While most acute Hepatitis B Virus infections in adults result in recovery, about 200 to 300 Americans die of fulminant disease each year. Some people go on to develop chronic (long term) Hepatitis B infection. This can be very serious, and often leads to liver damage (cirrhosis), liver cancer and death.

Slide 55
Approximately 5% of all acute Hepatitis B virus infections progress to chronic infection. Individuals with chronic infection are often asymptomatic and may not be aware that they are infected; however, they are capable of infecting others and have been referred to as carriers. Chronic infection is responsible for most Hepatitis B virus-related morbidity and mortality, including chronic hepatitis, cirrhosis, liver failure, and liver cancer. Approximately 25% of persons with chronic Hepatitis B infection die prematurely from cirrhosis or liver cancer. An estimated 3,000 to 5,000 persons die of hepatitis B-related cirrhosis or liver cancer each year in the United States.

Slide 56
Hepatitis B virus is found in blood and certain body fluids. The highest concentrations of virus are in blood and serous fluids; lower titers are found in other fluids, such as saliva and semen. Saliva can be a vehicle of transmission through bites; however, other types of exposure to saliva, including kissing, are unlikely modes of transmission. It is spread when blood or body fluid from an infected person enters the body of a person who is not immune. Virus is spread through having sex with an infected person, sharing needles when shooting drugs, needle sticks or sharps exposures on the job or from an infected mother to her baby during birth. Exposure to blood in any situation can be a risk for transmission. Sharing personal items that might have blood on them, such as razors, toothbrushes, and wash cloths, or getting a tattoo or body piercing using tools or dye that may be contaminated with blood can transmit the virus.

**Slide 57**

When ever a woman is pregnant, she should be tested for hepatitis B; infants born to mothers who are infected with Hepatitis B should be given hepatitis B immune globulin and vaccine within 12 hours of birth. Routine vaccination for all persons 0-18 years of age, and for persons of all ages who are at high risk for Hepatitis B infection.

**Slide 58**

Hepatitis B Vaccine

**Slide 59**

Hepatitis B vaccine can prevent hepatitis B, and the serious consequences of Hepatitis B infection, including liver cancer and cirrhosis. Hepatitis B vaccine is usually given as a series of 3 or 4 doses. This vaccine series gives long-term protection from Hepatitis B infection; possibly lifelong.

After three intramuscular doses of hepatitis B vaccine, more than 90% of healthy adults and more than 95% of infants, children, and adolescents (from birth to 19 years of age) develop adequate antibody responses. Routine serologic testing to
assess immune status of individuals is not recommended. Individuals receiving hemodialysis, who have received the hepatitis B vaccination, should be screened for Hepatitis B antibody (antibody to hepatitis B surface antigen) annually. If antibodies decline below 10mIU/ml, a booster dose of Hepatitis B vaccine should be given and then annual testing should be continued.

Slide 60
Healthcare personnel who are at risk of exposure to blood or body fluids in the workplace, infants born to hepatitis B antigen positive mothers, people who are immunocompromised, people receiving dialysis, and other individuals who are at high risk should have serologic testing 1 to 2 months after completion of the 3-dose series to confirm immunity. However, a catch-up program of serologic testing for healthcare personnel vaccinated prior to December 1997 is not recommended. These individuals should be tested as necessary if they have a significant exposure to Hepatitis B virus. Hepatitis B vaccine, and or hepatitis B immunoglobulin is recommended as part of management to prevent hepatitis B infection following exposure to Hepatitis B virus. Depending on the exposure circumstance, the hepatitis B vaccine series may be started at the same time as treatment with hepatitis B immune globulin.

Slide 61
The most common adverse reaction following hepatitis B vaccine is pain at the site of injection. Mild systemic complaints, such as fatigue, headache, low grade fever and irritability, have been reported. Serious systemic adverse reactions and allergic reactions are rarely reported following hepatitis B vaccine.

Slide 62
A severe allergic reaction (anaphylaxis) to a vaccine component or following a prior dose of hepatitis B vaccine is a contraindication to further doses of vaccine. Persons with moderate or severe acute illness should not be vaccinated until
their condition improves. However, a minor illness, such as an upper respiratory infection, is not a contraindication to vaccination.

**Slide 63**
Medicare covers some vaccines and immunizations. The way Medicare covers them depends on which vaccine an individual needs. Medicare will cover 100 percent of the cost of a pneumonia vaccine with no Part B deductible required. Some individuals may have a co-pay. If an individual is at medium to high risk for hepatitis B, Medicare will cover 80 percent of the cost of the Hepatitis B vaccine after an annual deductible is paid. If an individual has a Medicare prescription drug plan (Part D), he or she may be able to get coverage for other types of vaccines, such as the vaccine for Shingles. Some plans cover administration fees. An individual will need to make sure he or she follows a particular plan’s rules in order for the vaccine to be covered. Please see the Centers for Medicare and Medicaid Services (CMS) for further information on vaccine coverage.

**Slide 64**
Material for this presentation was adopted from the Centers for Disease Control (CDC) and Prevention *Epidemiology and Prevention of Vaccine Preventable Diseases: The Pink Book* (11th Edition) 2009, the Centers for Medicare & Medicaid Services (CMS), and Medicare Interactive at the Medicare Rights Center. You may also visit www.TexasQualityMatters.org to find immunization schedules for adults and children.

**Slide 65 (Q&A)**
We will now be joined by Dr. Lilani Muthali to answer any questions or concerns you may have.

**Slide 66 (Contact Info)**
If you would like to contact us, please visit www.TexasQualityMatters.org. Our mailbox is qmpexpansion@dads.state.tx.us.
This concludes our webinar on Vaccine Preventable Diseases. Please remember to take a few moments to participate in the satisfaction survey, immediately following this webinar.