

**State Plan for
*Streptococcus
pneumoniae***

**As Required by
Texas Health and Safety Code,
Section 94A.001**



TEXAS
Health and Human
Services

Texas Department of
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Executive Summary

Each year, an estimated 4 million Americans become ill as a result of infection with the bacteria *Streptococcus pneumoniae*, also known as pneumococcal disease, resulting in 445,000 hospitalizations and 22,000 deaths. Many people carry *Streptococcus pneumoniae* in their nose and throat and spread the bacteria to others by coughing, sneezing, or otherwise coming into contact with respiratory droplets that contain the bacteria. It can cause a myriad of diseases, including middle ear infections, pneumonia, bloodstream infections, and meningitis, among others.

There are two main ways to prevent pneumococcal disease: respiratory and hand hygiene, and vaccination. Two vaccines are currently licensed by the Food and Drug Administration to prevent pneumococcal disease: pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23), which differ in composition, the number of *Streptococcus pneumoniae* strains they protect against, vaccination schedules, and efficacy rates among different populations. Children under two years of age, high-risk populations, and adults over 65 are all recommended to receive a pneumococcal vaccine unless otherwise indicated. The Department of State Health Services (DSHS) provides low-cost PCV13 and PPSV23 vaccines for eligible children and adults through its Texas Vaccines for Children (TVFC) and Adult Safety Net (ASN) programs.

[Health and Safety Code Section 94A.001](#) directs DSHS to develop a state plan for prevention and treatment of diseases caused by *Streptococcus pneumoniae*, including strategies for demographic groups that are disproportionately affected by *Streptococcus pneumoniae* like the elderly, children under two years of age, persons living in long-term care facilities, persons with a chronic heart or lung disease, smokers, and persons with asplenia (abnormal spleen function). In developing the plan, DSHS shall seek the advice of stakeholders, including the public and public advocates, state agencies that provide services to people infected with *Streptococcus pneumoniae*, advisory bodies, providers, and medical associations. The plan must be updated at least once every five years, and may be updated biennially.

State Plan for *Streptococcus pneumoniae*

In order to develop the State Plan for *Streptococcus pneumoniae*, DSHS reached out to stakeholders, public health partners, and affected groups to learn from their experiences, identify opportunities for collaboration, and incorporate their advice and feedback into the final plan. The goals of the plan are to bolster pneumococcal disease prevention and enhance early detection and treatment, which are further defined into three objectives and 11 specific activities.

Objective 1: Publish Seasonal Educational Materials for the Public, Providers, and Stakeholders

Specific Activities:

- Send seasonal electronic newsletters
- Develop seasonal social media posts
- Forge partnerships with stakeholders to share seasonal information
- Hold biennial Texas Immunization Conference break-out sessions

Objective 2: Increase Awareness Among High-Risk Populations

Specific Activities:

- Educate older adults
- Target information to individuals with chronic health conditions
- Spread awareness among smokers
- Target information for children in childcare
- Educate hospitals and long-term care facility staff and residents

Objective 3: Continue to Support Vaccination for Children and Adults

Specific Activities:

- Offer pneumococcal vaccine to TVFC-eligible children
- Offer pneumococcal vaccine to ASN-eligible adults

New and expanded partnerships and cross-agency collaborations will be instrumental in meeting these goals and carrying out the activities of the State Plan. Through the outreach and educational activities outlined, along with continued support for pneumococcal disease vaccination through the TVFC and ASN programs, DSHS will be able to raise awareness, vaccinate vulnerable populations, and get information to those who need it most.

1. Introduction

House Bill 970, 85th Legislature, Regular Session, 2017, created [Health and Safety Code, Section 94A.001](#), which directs the Department of State Health Services (DSHS) to develop a state plan for prevention and treatment of diseases caused by *Streptococcus pneumoniae*. Within the plan, DSHS must include prevention and treatment strategies for specific demographic groups disproportionately affected by *Streptococcus pneumoniae*, including persons who are elderly, children under two years of age, persons living in long-term care facilities, persons with a chronic heart or lung disease, smokers, and persons with asplenia (abnormal spleen function). Furthermore, in developing the plan, DSHS shall seek the advice of:

- The public, including members of the public who have been infected with *Streptococcus pneumoniae*;
- Each state agency that provides services to persons infected with *Streptococcus pneumoniae* or that is assigned duties related to diseases caused by *Streptococcus pneumoniae*, including any appropriate health and human services agency described by [Government Code, Section 531.001](#), the Employees Retirement System of Texas, and the Teacher Retirement System of Texas;
- Any advisory body that addresses issues related to diseases caused by *Streptococcus pneumoniae*;
- Public advocates concerned with issues related to diseases caused by *Streptococcus pneumoniae*;
- Providers of services to persons with diseases caused by *Streptococcus pneumoniae*;
- A statewide professional association of physicians; and
- A statewide professional association of nurses.

DSHS shall review and modify the State Plan for *Streptococcus pneumoniae* at least once every five years, and may update it biennially.

2. Background

***Streptococcus pneumoniae* and Pneumococcal Disease Overview**

Each year, an estimated 4 million Americans become ill as a result of infection with the bacteria *Streptococcus pneumoniae*, also known as pneumococcal disease, resulting in 445,000 hospitalizations and 22,000 deaths.¹ Many people carry *Streptococcus pneumoniae* in their nose and throat and spread the bacteria to others by coughing, sneezing, or otherwise coming into contact with respiratory droplets that contain the bacteria.² Infection most commonly occurs in the winter and early spring when other respiratory diseases like the flu are circulating. According to the Centers for Disease Control and Prevention (CDC), 92 strains of *Streptococcus pneumoniae* have been identified, but the majority of infections are caused by a select few.³ Infection can take hold in various parts of the body, including the middle ear (otitis media), lungs (pneumococcal pneumonia), bloodstream (pneumococcal bacteremia), and the brain (pneumococcal meningitis), among others.

When *Streptococcus pneumoniae* infects parts of the body that are normally sterile, or free from bacteria, it is called invasive pneumococcal disease (IPD). Examples of IPD include pneumococcal bacteremia, pneumococcal meningitis, and infections of the joints or fluid surrounding the heart or lungs. Non-invasive forms of pneumococcal disease include sinus infections, ear infections, and pneumococcal pneumonia. IPD is often much more severe than non-invasive pneumococcal disease – approximately 10 percent of people who get IPD will die.⁴ The Department of State Health Services (DSHS) requires IPD cases to be reported, per

¹ Centers for Disease Control and Prevention (CDC). *Manual for the Surveillance of Vaccine-Preventable Diseases*. "Chapter 11: Pneumococcal." www.cdc.gov/vaccines/pubs/surv-manual/chpt11-pneumo.html. Accessed 19 October 2018.

² CDC. "Travelers' Health: Pneumococcal Disease (*Streptococcus pneumoniae*)." wwwnc.cdc.gov/travel/diseases/pneumococcal-disease-streptococcus-pneumoniae. Accessed 23 October 2018.

³ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. "Chapter 17: Pneumococcal Disease." Hamborsky, J., Kroger, A., Wolfe, S., eds. 13th Edition. Washington D.C. Public Health Foundation, 2015, pages 279-296. Available online at www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html.

⁴ CDC. *Manual for the Surveillance of Vaccine-Preventable Diseases*. loc. cit.

[Texas Administrative Code §97.3](#). Non-invasive forms, however, are not reportable. IPD case counts and incidence rates over the past five years is shown in Figure 1.

In 2017, there were 1,798 cases and 131 deaths due to IPD, with the majority of deaths occurring in adults over 60. As seen in Figure 2, adults over 60 have been disproportionately affected by IPD since 2012.

Figure 1. IPD Cases and Incidence Rates in Texas, 2012-2017

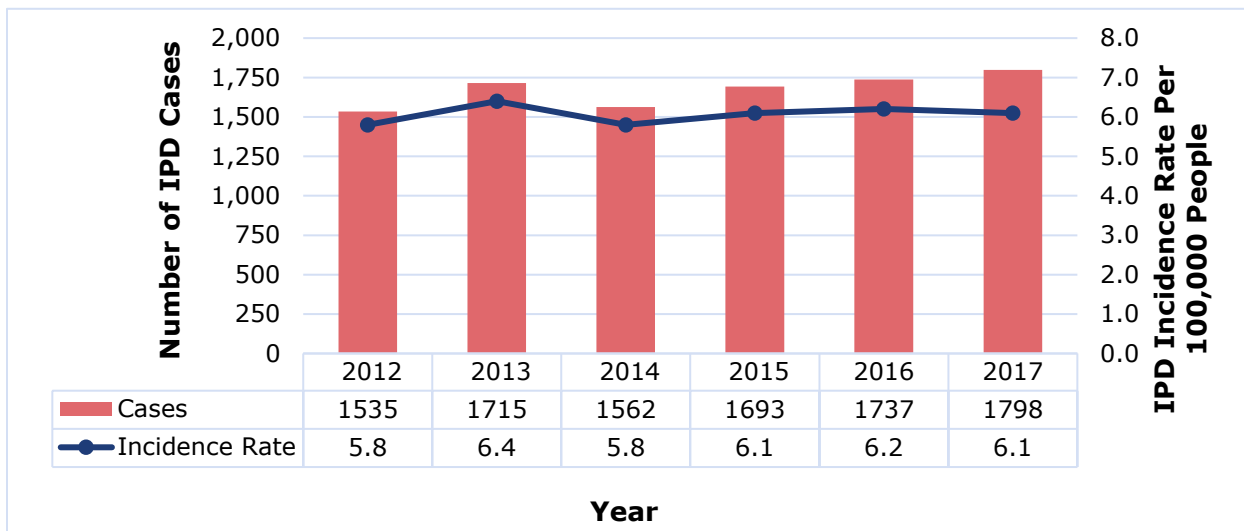
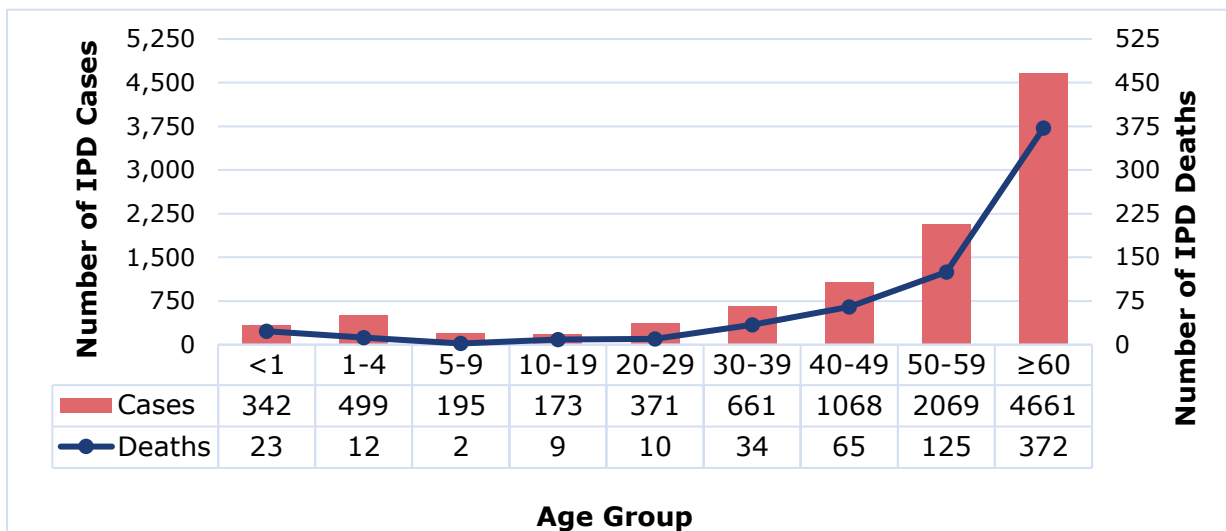


Figure 2. IPD Cases and Deaths by Age Group in Texas, 2012 – 2017
(Total IPD Cases: 10,040⁵; Total IPD Deaths: 652)



⁵ Includes one IPD case of unknown age, which is not pictured in Figure 2.

Risk Factors

Many people who have *Streptococcus pneumoniae* bacteria living in their nose and throat never get sick. However, a person's age, medical history, chronic health conditions, and smoking status can lead to greater risk of pneumococcal disease. Specific risk factors for children and adults can be found in Table 1. People with chronic bronchitis or the flu are also at increased risk, as these conditions can damage the respiratory tract and make it easier for *Streptococcus pneumoniae* bacteria to cause an infection.⁶

Table 1. Pneumococcal Disease Risk Factors for Children and Adults^{7,8}

Risk Category	Childhood Risk Factors	Adult Risk Factors
Age	Under 2 years of age	65 years of age or older
Demographics	Alaska Native, African American, Navajo or White Mountain Apache American Indian groups	Not applicable
Chronic Diseases	Heart, liver, kidney, or lung disease, sickle cell disease	Heart, liver, kidney, or lung disease (including chronic obstructive lung disease, emphysema, and asthma)
Medical Conditions	Immunocompromised, HIV infection, diabetic, nephrotic syndrome, functional or anatomic asplenia ⁹	Immunocompromised, HIV infection, diabetic, cancer, functional or anatomic asplenia ⁹
Medical History	Cochlear implants or cerebrospinal fluid (CSF) leaks ¹⁰	Cochlear implants or CSF leaks
Other	Attend childcare	Smoker, alcoholic

⁶ Bush, L., Schmidt, C. "Pneumococcal Infections." *Merck Manual – Consumer Version*. www.merckmanuals.com/home/infections/bacterial-infections-gram-positive-bacteria/pneumococcal-infections. Accessed 14 November 2018.

⁷ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

⁸ CDC. "Pneumococcal Disease: Risk Factors and Transmission." www.cdc.gov/pneumococcal/about/risk-transmission.html. Accessed 23 October 2018.

⁹ Functional asplenia: abnormal spleen function; anatomic asplenia: missing spleen

¹⁰ Cerebrospinal fluid leaks: escape of the fluid that surrounds the brain and spinal cord.

Symptoms, Treatment, and Potential Complications

Each form of pneumococcal disease has distinct symptoms, treatment, and potential complications. Early diagnosis and treatment are important so that appropriate antibiotic treatment can be initiated to help prevent severe illness. Data shows that pneumococcal bacteria are resistant to one or more antibiotics in 30 percent of cases, so antibiotic stewardship is of utmost importance.¹¹ Information on the four most common forms of pneumococcal disease is outlined below. This information is presented as a general guide and is not meant as prescriptive medical advice. Individuals should always consult with their healthcare provider.

Middle Ear Infections (Otitis Media)

Streptococcus pneumoniae causes up to 20 percent of acute middle ear infection cases. In the United States, middle ear infections are the most common reason for pediatric medical visits – at more than 18 million visits each year – and are the most common reason children receive antibiotics.¹² Symptoms, treatment, and potential complications can be found in Table 2.

Table 2. Disease Characteristics of Pneumococcal Middle Ear Infections^{13,14,15}

Disease Characteristic	Description
Symptoms	<ul style="list-style-type: none">• Ear pain• A red, swollen ear drum• Fever• Sleepiness
Treatment	<ul style="list-style-type: none">• Antibiotics may be recommended• Acetaminophen or ibuprofen can help relieve pain or fever

¹¹ CDC. "Pneumococcal Disease: Diagnosis and Treatment." www.cdc.gov/pneumococcal/about/diagnosis-treatment.html. Accessed 8 November 2018.

¹² CDC. "Pneumococcal Disease: Clinical Features." www.cdc.gov/pneumococcal/clinicians/clinical-features.html. Accessed 8 November 2018.

¹³ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

¹⁴ CDC. "Pneumococcal Disease: Symptoms and Complications." www.cdc.gov/pneumococcal/about/symptoms-complications.html. Accessed 8 November 2018.

¹⁵ CDC. "Antibiotic Prescribing and Use in Doctor's Offices: Ear Infection." www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/ear-infection.html. Accessed 8 November 2018.

Disease Characteristic	Description
Potential Complications	<ul style="list-style-type: none"> • Infection of the mastoid bone (mastoiditis) • Needing ear tubes • Meningitis

Lung Infections (Pneumococcal Pneumonia)

Pneumococcal pneumonia is the most common form of pneumococcal disease among adults, leading to 900,000 cases and 400,000 hospitalizations each year in the United States.¹⁶ Up to 36 percent of pneumonias acquired by adults outside of healthcare settings (community-acquired pneumonia) are attributed to *Streptococcus pneumoniae*. Between 25–30 percent of individuals with pneumococcal pneumonia also have pneumococcal bacteremia.¹⁷ Symptoms, treatment, and potential complications can be found in Table 3.

Table 3. Disease Characteristics of Pneumococcal Pneumonia^{18,19,20}

Disease Characteristic	Description
Symptoms	<ul style="list-style-type: none"> • Fever and chills • Cough • Rapid breathing or difficulty breathing • Chest pain • May cause confusion or low alertness in older adults in lieu of the symptoms mentioned above
Treatment	<ul style="list-style-type: none"> • Antibiotics • May require hospitalization
Potential Complications	<ul style="list-style-type: none"> • 5%-7% of patients will die overall; rate is higher among elderly patients • Infection of the space between membranes that surround the lungs and chest cavity (empyema) • Inflammation of the sac surrounding the heart (pericarditis) • Blockage of the airway that allows air into the lungs (endobronchial obstruction), with collapse within the lungs (atelectasis) and collection of pus (abscess) in the lungs • Pneumococcal bacteremia

¹⁶ CDC. "Pneumococcal Disease: Fast Facts." www.cdc.gov/pneumococcal/about/facts.html. Accessed 8 November 2018.

¹⁷ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

¹⁸ Ibid.

¹⁹ CDC. "Pneumococcal Disease: Diagnosis and Treatment." loc. cit.

²⁰ CDC. "Pneumococcal Disease: Symptoms and Complications." loc. cit.

Bloodstream Infections (Pneumococcal Bacteremia)

Pneumococcal bacteremia occurs when *Streptococcus pneumoniae* bacteria invades the bloodstream, often as a complication of pneumococcal pneumonia. There are more than 12,000 cases of pneumococcal bacteremia each year in the United States. Pneumococcal bacteremia cases with an unknown infection site make up approximately 70 percent of IPD cases seen in children under two years of age, and bacteremic pneumonia (where the patient has pneumococcal pneumonia and bloodstream infection at the same time) accounts for an additional 12–16 percent.²¹ Symptoms, treatment, and potential complications can be found in Table 4.

Table 4. Disease Characteristics of Pneumococcal Bacteremia^{22,23,24,25,26}

Disease Characteristic	Description
Symptoms	<ul style="list-style-type: none"> • Fever • Chills • Low alertness
Treatment	Antibiotics – typically begin with “broad spectrum” antibiotics that work against a wide range of bacteria and then move to more targeted antibiotics once bacterial sensitivity is established
Potential Complications	<ul style="list-style-type: none"> • Potential infection in other parts of the body such as the cells lining the heart valves and the heart, sac around the heart, tissues covering the brain, bones, and joints • Sepsis • Meningitis • Overall, 20% of people will die • 1% of children under 5 will die • As many as 60% of elderly patients will die

²¹ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

²² Ibid.

²³ CDC. “Pneumococcal Disease: Diagnosis and Treatment.” loc. cit.

²⁴ CDC. “Pneumococcal Disease: Symptoms and Complications.” loc. cit.

²⁵ Maggio, P. “Bacteremia.” *Merck Manual – Consumer Version*.

www.merckmanuals.com/home/infections/bacteremia,-sepsis,-and-septic-shock/bacteremia. Accessed 8 November 2018.

²⁶ Greenlee, J. “Acute Bacterial Meningitis.” *Merck Manual – Consumer Version*.

www.merckmanuals.com/home/brain,-spinal-cord,-and-nerve-disorders/meningitis/acute-bacterial-meningitis. Accessed 8 November 2018.

Brain Infections (Pneumococcal Meningitis)

Pneumococcal meningitis is an inflammation of the tissues covering the brain and spinal cord, most often arising as a complication of pneumococcal bacteremia, sinus infections, ear infections, or other infections in the head.²⁷ There are an estimated 3,000 to 6,000 cases of pneumococcal meningitis each year in the United States, and half of all bacterial meningitis cases are due to pneumococcal meningitis. It is the leading cause of bacterial meningitis in children under five years of age.²⁸ Symptoms, treatment, and potential complications can be found in Table 5.

Table 5. Disease Characteristics of Pneumococcal Meningitis^{29,30,31,32}

Disease Characteristic	Description
Symptoms	<ul style="list-style-type: none"> • Stiff neck • Fever • Headache • Increased eye sensitivity to light (photophobia) • Confusion • May cause poor eating and drinking, low alertness, and vomiting in babies
Treatment	Antibiotics – typically begin with “broad spectrum” antibiotics that work against a wide range of bacteria and then move to more targeted antibiotics once bacterial sensitivity is established
Potential Complications	<ul style="list-style-type: none"> • Hearing loss in up to 50% of people • Seizures • Developmental delay • 8% of children will die • 22% of adults will die

Prevention Methods

There are two main ways to prevent pneumococcal disease: respiratory and hand hygiene, and vaccination.

²⁷ Greenlee, J. “Acute Bacterial Meningitis.” loc. cit.

²⁸ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

²⁹ Ibid.

³⁰ Bush, L. “Pneumococcal Infections.” loc. cit.

³¹ CDC. “Pneumococcal Disease: Diagnosis and Treatment.” loc. cit.

³² CDC. “Pneumococcal Disease: Symptoms and Complications.” loc. cit.

Respiratory and Hand Hygiene

Since *Streptococcus pneumoniae* is spread from person to person via respiratory droplets left on surfaces or circulating in the air as a result of a cough or sneeze, practicing good hand hygiene, not sharing cups or utensils, and avoiding contact with others if you are sick can all help to stop the spread of disease. Simple things can also help, including washing your hands often (or using hand sanitizer with at least 60 percent alcohol if soap and water are not available), coughing or sneezing into a tissue or your elbow instead of your hands, and ensuring your hands are clean before touching your eyes, nose, or mouth.³³

Vaccination

Vaccination is the best defense against pneumococcal disease. Two vaccines are currently licensed by the Food and Drug Administration to prevent pneumococcal disease: pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23). PCV13 and PPSV23 differ in composition, the number of *Streptococcus pneumoniae* strains they protect against, vaccination schedules, and efficacy rates among different populations, as shown in Table 6.

Table 6. Pneumococcal Vaccines Currently Available in the United States^{34,35,36,37}

Vaccine Characteristics	Pneumococcal Conjugate Vaccine (PCV13)	Pneumococcal Polysaccharide Vaccine (PPSV23)
Brand Name	Prenar 13®	Pneumovax23®
Manufacturer	Wyeth	Merck
Licensed Date	2010	1983

³³ CDC. "Travelers' Health: Pneumococcal Disease (*Streptococcus pneumoniae*)." loc. cit.

³⁴ CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. loc. cit.

³⁵ Pevnar13.com. "Full Prescribing Information." <http://labeling.pfizer.com/showlabeling.aspx?id=501>. Accessed 12 December 2018.

³⁶ MerckVaccines.com. "Pneumococcal Vaccine Serotypes." www.merckvaccines.com/products/pneumovax23/pneumococcal-serotypes-ppsv23-pcv13. Accessed 7 November 2018.

³⁷ CDC. "Pneumococcal Vaccination: What Everyone Should Know." www.cdc.gov/vaccines/vpd/pneumo/public/index.html#who-should-not-get-vaccines. Accessed 7 November 2018.

Vaccine Characteristics	Pneumococcal Conjugate Vaccine (PCV13)	Pneumococcal Polysaccharide Vaccine (PPSV23)
Number of Strains Included	13 total: 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F	23 total: 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, 33F
ACIP-Recommended For³⁸	<ul style="list-style-type: none"> • All children <2 years old <ul style="list-style-type: none"> ◦ Four-dose series at 2, 4, 6, and 12 – 15 months old • All adults ≥65 years old • People 2 - 64 years old with certain high risk conditions 	<ul style="list-style-type: none"> • All adults ≥65 years old • People 2 - 64 years old with certain high risk conditions • Adults 19 - 64 years old who smoke
Efficacy	<ul style="list-style-type: none"> • >80% against vaccine-type IPD in babies <ul style="list-style-type: none"> ◦ Similar rates for children with/without high-risk conditions • 75% against vaccine-type IPD in adults ≥65 years old • 45% against vaccine-type pneumococcal pneumonia in adults ≥65 years old • Effective at preventing vaccine-type antibiotic-resistant pneumococcal infections 	<ul style="list-style-type: none"> • 50% – 85% against IPD in healthy adults

DSHS provides low-cost PCV13 and PPSV23 vaccines for eligible children and adults through the following programs:

- The [Texas Vaccines for Children \(TVFC\) Program](#) - Children 18 years of age or younger who meet at least one of the following criteria are eligible to receive TVFC vaccines: enrolled in Medicaid or Medicaid-eligible; enrolled in the Texas Children's Health Insurance Program (CHIP); American Indian or Alaska Native (as defined by 25 U.S.C. 1603); uninsured; or underinsured

³⁸ Full vaccination recommendations, including timing, catch-up schedules, special considerations for individuals with certain medical conditions, and contraindications can be found on the following CDC websites: For children - www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent; For adults - www.cdc.gov/vaccines/schedules/hcp/imz/adult. Individuals should consult their provider about which vaccine is right for them based on age, medical history, chronic health conditions, smoking status, and other health factors.

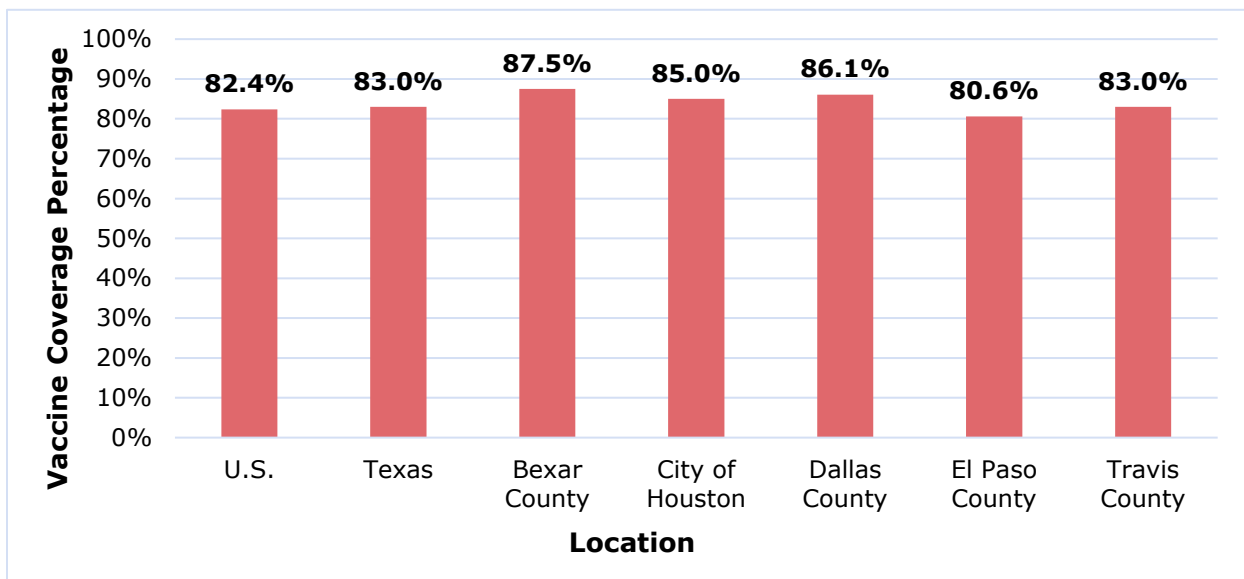
(defined as having private health insurance that does not cover vaccines or only covers selected vaccines).

- The [Adult Safety Net \(ASN\) Program](#) - Uninsured adults 19 years of age and older are eligible to receive ASN vaccines.

Pneumococcal Vaccination Rates

Data from the *2017 National Immunization Survey - Child* shows an 83.0 percent vaccine coverage rate for the four-dose PCV series among children 19 to 35 months old in Texas. This was similar to the national coverage estimate of 82.4 percent, but still less than the [Healthy People 2020](#)³⁹ goal of 90 percent coverage.⁴⁰ Geographic distribution of vaccine coverage in Texas is shown in Figure 3.

Figure 3. Estimated Vaccination Coverage with 4+ Doses of PCV Among Children 19-35 Months of Age, National Immunization Survey - Child, 2017⁴¹



³⁹ Healthy People is the national program coordinated by the U.S. Department of Health and Human Services to provide 10-year, science-based national objectives for improving the health of all Americans.

⁴⁰ CDC. *ChildVaxView: 2017 Childhood Pneumococcal Conjugate Vaccine (PCV) Coverage Report*. "Pneumococcal Conjugate Vaccine (PCV) Coverage Among Children 10-35 Months by State, HHS Region, and the United States, National Immunization Survey-Child (NIS-Child), 2017." www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/data-reports/pcv/reports/2017.html. Accessed 15 November 2018.

⁴¹ Ibid.

The Texas Behavioral Risk Factor Surveillance System (BRFSS) is an annual phone-based survey that collects data about Texas residents' health-related risk behaviors, chronic health conditions, and use of preventive services. It includes the question – "Have you ever had a pneumonia shot?" – which could include PCV13 and/or PPSV23. Responses can be analyzed by age and select high-risk groups like smokers, diabetics, or those with heart disease, lung disease, or cancer.

From 2012 to 2017, the percentage of respondents who had received a "pneumonia shot" grew by 9.1 percent for all adults over 18, 3.9 percent for adults between the ages of 18 and 64, and 5.1 percent for adults over 65, shown in Figure 4. In 2017, the percentage of respondents in high-risk groups who had received a "pneumonia shot" was higher than the overall population. However, coverage rates were particularly low for smokers and those with cancer, at 30.4 percent and 33.5 percent respectively, as shown in Figure 5. The highest rate was among adults over 65 at 74.2 percent.

Figure 4. Pneumonia Shot Coverage Rates for Adults, BRFSS, 2012 - 2017

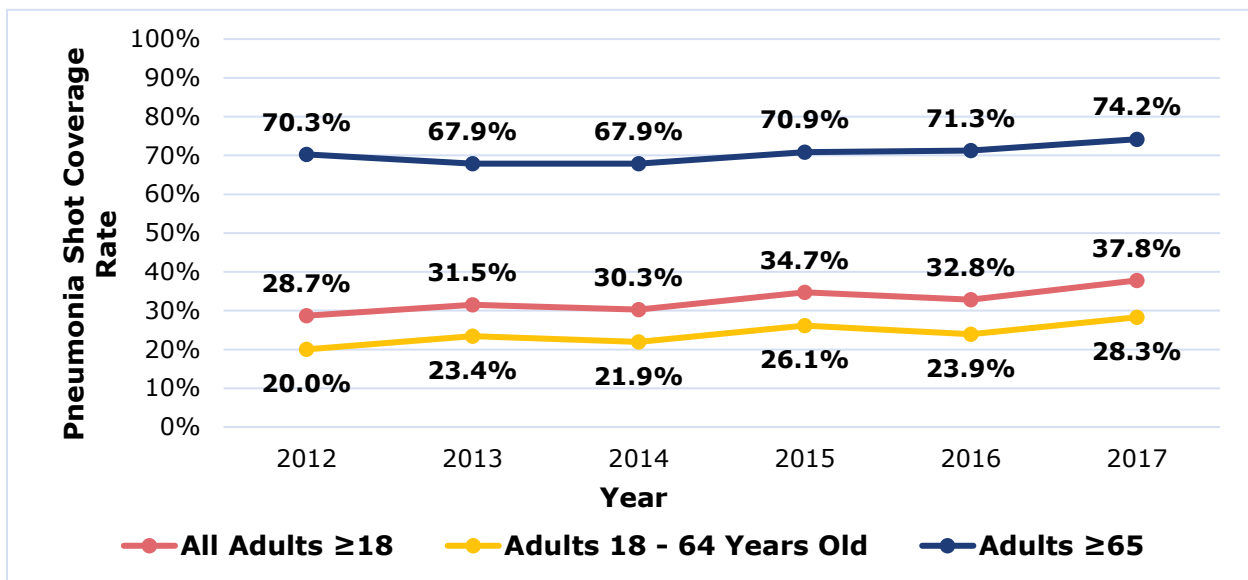
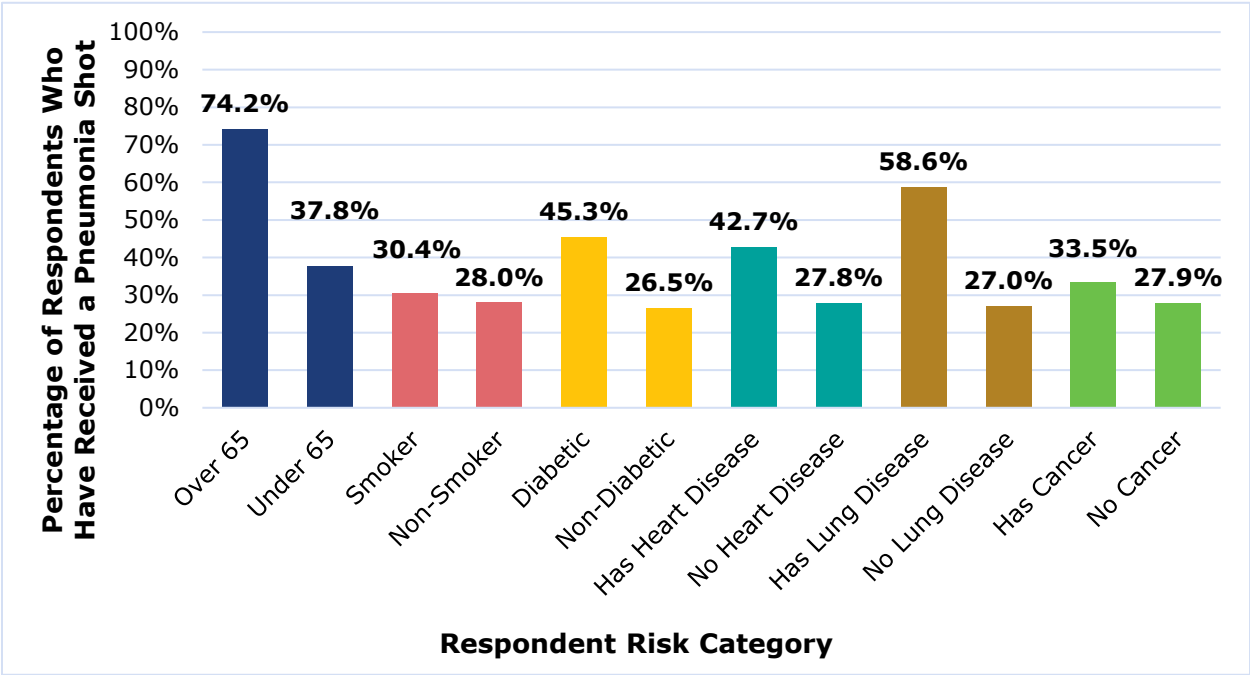


Figure 5. Percentage of Adults Ages 18 - 64 Who Have Received a Pneumonia Shot by Select High-Risk Category, BRFSS, 2017



3. State Plan for *Streptococcus pneumoniae*

In order to develop the State Plan for *Streptococcus pneumoniae*, the Department of State Health Services (DSHS) reached out to stakeholders, public health partners, and affected groups to learn from their experiences, identify opportunities for collaboration, and incorporate their advice and feedback into the final plan. This was accomplished through internal and external input and inter-agency collaboration, as described below.

Call for input from the Texas Immunization Stakeholder Working Group

DSHS oversees the Texas Immunization Stakeholder Working Group (TISWG), whose goal is to increase partnerships among public, private, and community groups across the state to improve immunization practices for all Texans. It currently has more than 400 members representing local and regional public health entities, hospitals, doctors, nurses, schools, universities, non-profit organizations, advocacy groups, professional organizations, medical associations, vaccine manufacturers, and the general public. At the November 30, 2017 TISWG meeting, DSHS gave an overview of pneumococcal disease, outlined the requirements of House Bill 970, 85th Legislature, Regular Session, 2017, and asked attendees a series of questions related to the State Plan for *Streptococcus pneumoniae* and potential outreach, education, and awareness activities. DSHS also emailed the questions out to the full TISWG distribution list so that those not in attendance would have the opportunity to provide advice and feedback. Twenty individuals provided responses.

Public Hearing on the State Plan for *Streptococcus pneumoniae* and Targeted Emails to Stakeholder Groups

On July 31, 2018, DSHS held a public hearing on the State Plan for *Streptococcus pneumoniae* in order to receive advice on prevention and treatment strategies to be included in the plan. It also gave the opportunity for written comments to be mailed, faxed, or emailed to DSHS for 30 days following the public hearing. To allow individuals outside of Austin to watch the hearing and have the opportunity to comment, DSHS live-streamed the event and posted a notice of the public hearing and 30-day commentary period in the *Texas Register* and on the [HHSC Communications and Events](#) website. In advance of the meeting, DSHS also sent emails to 15 entities representing all stakeholder groups required to be consulted

about the State Plan as listed in Health and Safety Code, [Section 94A.001 \(b\)](#). DSHS received comments from a representative of the [Texas Silver-Haired Legislature](#) and from the [Texas Medical Association](#).

Cross-Agency Collaboration with the Health and Human Services Commission (HHSC) Access and Eligibility Services/Community Access Programs

In November 2018, DSHS met with HHSC Access and Eligibility Services/Community Access Program staff to seek their input on the State Plan for *Streptococcus pneumoniae* and forge partnerships to enhance education and awareness among the older adults and people with disabilities that they serve. The Office of Aging and Disability Resource Centers (OADRC) oversees Texas' 22 contracted Aging and Disability Resource Centers (ADRCs) and the HHSC Foster Grandparent Program (FGP). The ADRCs are highly visible and trusted places where people of all ages, incomes, and disabilities can go to get information and one-on-one counseling on the full range of long-term services and supports available in Texas. The HHSC FGP operates in eight communities across Texas, providing income-eligible adults over 55 years of age with volunteer opportunities to serve children and youth with exceptional needs through one-on-one emotional support, mentoring, and tutoring. The Office of Area Agencies on Aging (OAAA) oversees 28 contracted Area Agencies on Aging (AAAs), which provide direct services statewide to support the needs of individuals age 60 and older, their family members, and caregivers and provide assistance navigating and accessing additional community-based services. OAAA also manages the federally funded State Health Insurance Assistance Program, which operates locally through the AAAs. Locally known as the Health Information, Counseling, and Advocacy Program, the program's certified benefits counselors at each AAA assist Medicare beneficiaries with addressing their healthcare needs through understanding their available benefits and exploring coverage options.

The goals of the State Plan for *Streptococcus pneumoniae* are to bolster pneumococcal disease prevention and enhance early detection and treatment. These goals are further defined into three objectives and 11 specific activities to be carried out over the next five years.

Objective 1: Publish Seasonal Educational Materials for the Public, Providers, and Stakeholders

DSHS produces targeted infection prevention awareness materials and educates the public, providers, and its immunization partners on the importance of vaccines. Pneumococcal disease is more prevalent in the winter and early spring, much like influenza, and coordinated, seasonal education and awareness can have an exponential impact to reduce outbreaks. In addition, close coordination with professional associations, universities, and chronic disease prevention organizations will enable DSHS to leverage its resources to the fullest extent possible.

Specific Activities:

- **Send Seasonal Electronic Newsletters** - DSHS will publish articles in its electronic newsletters to Texas Vaccines for Children (TVFC) and Adult Safety Net (ASN) program providers, stakeholders, and the general public regarding the State Plan for *Streptococcus pneumoniae*, pneumococcal disease, high-risk populations, immunization recommendations, and other information. Specialized content will be published on a yearly basis during fall and winter seasons.
- **Develop Seasonal Social Media Posts** - DSHS will post social media content raising awareness of pneumococcal disease and the vaccines available to prevent it on a yearly basis during National Immunization Awareness Month in August, and on World Pneumonia Day on November 12th.
- **Forge Partnerships with Stakeholders to Share Seasonal Information** - DSHS will forge partnerships with stakeholders like the Texas Medical Association and Texas Pediatric Society to share seasonal pneumococcal disease awareness materials through their existing communications methods (e.g. stakeholders' print publications, websites, mail-outs, email messages, social media posts, email signature blocks, etc.) to educate providers and the public.
- **Hold Biennial Texas Immunization Conference Break-Out Sessions** - DSHS will hold an educational break-out session on the State Plan for *Streptococcus pneumoniae*, pneumococcal disease, high-risk populations, immunization recommendations, and other clinical information at its biennial Texas Immunization Conference. The next conference is scheduled for the fall of 2019.

Objective 2: Increase Awareness Among High-Risk Populations

Children under two years of age, adults 65 years and older, and individuals who are immunocompromised or have certain health conditions are at highest risk for pneumococcal disease. Furthermore, group settings like childcare facilities, long-term care facilities, and hospitals provide ample opportunity for diseases to rapidly spread from person-to-person. *Streptococcus pneumoniae* educational and awareness materials targeted toward these high-risk populations can help increase vaccination rates and assist providers to detect diseases early and start treatment sooner, leading to better health outcomes for these vulnerable populations.

Specific Activities:

- **Educate Older Adults** - DSHS will collaborate with HHSC Access and Eligibility Services/Community Access Programs to increase pneumococcal disease education and awareness among older Texans and other eligible populations. This partnership, which began in late 2018, will work to accomplish a variety of initiatives.
 - ▶ DSHS will give presentations to ADRC and AAA contractors, members of the ADRC Advisory Committee, FGP volunteers, and participants of the Office of Area Agencies on Aging 2019 Benefits Counseling and Training Conference to build awareness of pneumococcal disease, treatment and prevention methods, the State Plan for *Streptococcus pneumoniae*, and ASN resources to increase access to vaccination services for uninsured adults.
 - ▶ DSHS will make pneumococcal disease educational materials available to all ADRC, AAA, and FGP locations for distribution to their clients and volunteers. This will include the new pneumococcal disease brochure developed in May of 2018, which is available to order free-of-charge at <https://secure.immunizetexasorderform.com/default.asp> with HHSC OADRC and OAAA leadership to ensure individuals providing information over the phone or within ADRC, AAA, and FGP physical locations are aware of the increased risk elderly adults face for pneumococcal disease, along with how to locate ASN providers in their area.
- **Target Information to Individuals with Chronic Health Conditions** - DSHS will integrate pneumococcal disease messaging into various educational materials, social media posts, and other outreach activities

targeted toward chronic conditions like diabetes or heart disease that put individuals at higher risk for pneumococcal disease. DSHS will also share information with participants in its [Texas Healthy Communities](#) program, which provides technical assistance to communities to assess their existing environments and implement locally-driven environmental, policy, or system changes. In 2018, 25 cities and counties across Texas participated in the Texas Healthy Communities program.

- **Spread Awareness Among Smokers** - DSHS will update its Tobacco Prevention and Control Branch's website, including the [Yes Quit](#) and [Worth It?](#) websites, to include information about the increased risk of pneumococcal disease among smokers and the vaccines available to prevent it. It will also share pneumococcal disease information and resources with the Tobacco Prevention and Control Coalitions, which serve as local representatives for community tobacco control initiatives and support education, awareness, and outreach efforts.
- **Target Information for Children in Childcare** - DSHS will raise awareness of pneumococcal disease among childcare facility employees and parents of children enrolled in childcare facilities through enhanced outreach and education. Currently, DSHS mails influenza educational packets to childcare facilities each September, including fact sheets and brochures for parents, letters to childcare providers and employees, and vaccine requirements for childcare and pre-kindergarten facilities. In 2018, DSHS sent packets to 13,665 facilities across Texas. Moving forward, this mailing will also include brochures and educational information on pneumococcal disease.
- **Educate Hospitals and Long-Term Care Facility Staff and Residents** - DSHS will raise awareness of pneumococcal disease among long-term care facility employees, providers, and residents through enhanced outreach and education. This initiative launched in May 2018 with the creation of a new DSHS brochure on pneumococcal disease risks and vaccine recommendations. Outreach print materials for staff, residents, and their families about pneumococcal vaccine, influenza vaccine, and the statewide immunization registry were mailed to approximately 1,230 long-term care facilities in Texas. When conducting site visits at long-term care facilities and hospitals, DSHS will present on the symptoms of, risk factors for, and prevention and treatment techniques available for pneumococcal disease.

Objective 3: Continue to Support Vaccination for Children and Adults

While most private insurance plans cover the pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23), some do not, and not every child or adult has private insurance. The Texas Vaccines for Children (TVFC) and Adult Safety Net (ASN) programs are vital vaccine safety nets that vaccinate and protect the health and well-being of the vulnerable populations they serve. Vaccinating these individuals also helps to protect the health of those who are immunocompromised or have medical contraindications and cannot be vaccinated.

Specific Activities:

- **Offer Pneumococcal Vaccine to TVFC-Eligible Children** - DSHS will continue to make pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23) available to TVFC-eligible children by retaining them on the TVFC formulary.
- **Offer Pneumococcal Vaccine to ASN-Eligible Adults** - Contingent upon available funding, DSHS will continue to make PCV13 and PPSV23 available to ASN-eligible adults by retaining them on the ASN formulary.

4. Conclusion

The goals of this first State Plan on *Streptococcus pneumoniae* are to bolster pneumococcal disease prevention and enhance early detection and treatment of *Streptococcus pneumoniae* over the next five years. New and expanded partnerships and cross-agency collaborations will be instrumental in meeting these goals and carrying out the activities of the State Plan. Through the outreach and educational activities outlined, along with continued support for pneumococcal disease vaccination through the Texas Vaccines for Children and Adult Safety Net programs, the Department of State Health Services will be able to raise awareness, vaccinate vulnerable populations, and get information to those who need it most. DSHS is grateful for all of the input and feedback it received in developing the State Plan on *Streptococcus pneumoniae*, and looks forward to working hand-in-hand with stakeholders to protect the health and well-being of our fellow Texans.

List of Acronyms

Acronym	Full Name
AAA	Area Agencies on Aging
ACIP	Advisory Committee on Immunization Practices
ADRC	Aging and Disability Resource Centers
ASN	Adult Safety Net
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CHIP	Children’s Health Insurance Program
CSF	Cerebrospinal Fluid
DSHS	Department of State Health Services
FGP	Foster Grandparent Program
HHSC	Health and Human Services Commission
IPD	Invasive Pneumococcal Disease
OAAA	Office of Area Agencies on Aging
OADRC	Office of Aging and Disability Resource Centers
PCV13	Pneumococcal Conjugate Vaccine

PPSV23	Pneumococcal Polysaccharide Vaccine
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TISWG	Texas Immunization Stakeholder Working Group
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TVFC	Texas Vaccines for Children
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