



Chronic Respiratory Disease Strategic Plan

**As Required By
S.B. 200, Sec. 2.31, 84th Legislature, Regular Session, 2015**



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Executive Summary

[S.B. 200, Section 2.31, 84th Legislature, Regular Session, 2015](#) requires the Texas Health and Human Services Commission (HHSC) to develop a strategic plan to significantly reduce morbidity and mortality from chronic respiratory disease. The strategic plan outlines an assessment of the chronic respiratory disease burden in both prevalence of disease and annual direct and indirect Medicaid costs to the State. The Department of State Health Services (DSHS) coordinates prevention, screening, and treatment activities, and addresses barriers to care. Increasing public awareness of risk factors and building partnerships with public and private entities are essential activities to address the disease burden. Promoting surveillance resources and training tools for health professionals will increase knowledge and best practices for chronic respiratory disease management.

In 2014, an estimated 1.3 million Texas adults reported having asthma and an estimated 1.1 million had chronic obstructive pulmonary disease (COPD). In fiscal year 2014, expenditures for child and adult asthma acute care Medicaid claims totaled \$118.5 million, and total expenditures for all acute care COPD claims were \$78.9 million. DSHS addresses prevention of chronic respiratory diseases and promotes strategies for screening and treatment through public health programs. Cigarette smoking is a common risk factor for asthma and COPD. DSHS's Tobacco Prevention and Control Program (TPCP) works with coalitions, worksites, universities, law enforcement, clinicians, and other stakeholders to prevent and reduce tobacco use. Additionally, DSHS's School Health Program works with Texas school districts, education service centers, school health advisory councils, coalitions, and local health departments on tobacco control and asthma management projects.

DSHS offers the following recommendations to reduce chronic respiratory disease in Texas:

- Promote the disease surveillance resources provided on the DSHS Center for Health Statistics website, which has a web tool that allows the public to review levels of chronic obstructive pulmonary disease (COPD) and older adult asthma potentially preventable hospitalizations throughout the State.
- Promote currently available online training tools for health professionals to increase knowledge and best practices for chronic respiratory disease management such as the Texas Health Steps asthma-related modules.
- Continue quality improvement efforts in the area of asthma management for patients enrolled in Texas Medicaid.
- Given the high prevalence of pediatric asthma, recommend that schools without a nurse have staff trained on how to manage asthma triggers, utilize asthma action plans, and recognize and respond to breathing emergencies.
- Within DSHS tobacco prevention and control efforts, enhance educational efforts regarding chronic respiratory diseases.
- Explore potential avenues to re-establish the DSHS Texas Asthma Control Program, and expand the program scope to include chronic respiratory diseases.
- Continue to promote efforts that avoid unnecessary hospitalizations focused on COPD and asthma through patient education, case management, provider and community education activities, and the development of local health networks.

- Support continued data collection and analysis for chronic respiratory disease surveillance activities, allowing for accurate assessments of their impact on Texas.

Mitigating the burden of chronic respiratory disease on Texans requires a coordinated effort that combines prevention with improved access to information and high-quality health care focused on the early identification and effective management of these conditions. Enhanced surveillance of these conditions will further characterize the burden of these diseases and can help target activities to areas and populations with the highest need.

Introduction

[S.B. 200, Section 2.31, 84th Legislature, Regular Session, 2015](#), requires the Health and Human Services Commission (HHSC) to develop a strategic plan to significantly reduce morbidity and mortality from chronic respiratory disease, including asthma and chronic obstructive pulmonary disease (COPD). In developing the strategic plan, HHSC and the Department of State Health Services (DSHS) must:

- Identify barriers to effective prevention, screening, medication adherence, and treatment
- Identify methods to increase awareness of the risk factors and symptoms
- Identify methods to increase the use of regular evidence-based screening
- Review current technologies and best practices for diagnosis, management, and treatment
- Develop methods for creating partnerships with public and private entities to increase awareness
- Review current prevention, screening, treatment, and other related activities in this state and identify areas in which the health care services provided through those activities are lacking
- Estimate the annual direct and indirect state health care costs
- Make recommendations to the Legislature on state policy changes and funding needed to implement the strategic plan

DSHS must submit the plan to the Governor and members of the Legislature.

Background

Chronic respiratory diseases are a group of illnesses and conditions affecting the lungs that make it difficult to breathe. The diseases, which are fairly common, are associated with high rates of morbidity and mortality. Lower chronic respiratory diseases, including asthma and COPD, are the third leading cause of death in the U.S and in Texas.^{1,2} Both asthma and COPD are progressive and long lasting, but exacerbations can be prevented or abated through adherence to evidence-based treatment protocols and effective self-management methods.

In 2014, an estimated 1.3 million Texas adults reported currently having asthma. In the same year, an estimated 480,000 Texas children had asthma.³ Asthma affects more children than any other chronic disease and is one of the most frequent reasons for school absences and hospital admissions among children.

Asthma is a chronic respiratory disease characterized by periodic attacks of impaired breathing due to inflammation, narrowing, and irritation of the airways. Symptoms may vary, but often include wheezing, coughing, and chest tightness. Asthma attacks may be mild and infrequent or severe and persistent, affecting one's quality of life. Asthma appears to be caused by an interaction of genetic and environmental factors, but little is known about its prevention. There is currently no cure for asthma, but exacerbations may be eased and controlled through proper management, education, and avoidance of allergens and environmental triggers. Effective self-management and use of prescribed medications to avert attacks can reduce the many complications associated with asthma attacks, including visits to the emergency department, hospitalizations, and associated health care system expenditures.⁴

An estimated 1.1 million Texans have COPD.⁵ It predominately occurs in adults aged 18 years and older, and is most common in middle-age to older patients. COPD encompasses two related diseases that cause airflow obstruction and breathing problems: emphysema and chronic bronchitis. Symptoms may include coughing that produces large amounts of mucus, wheezing, shortness of breath, and chest tightness. The airflow constriction is caused by an abnormal inflammatory response of the lungs, triggered by exposure to noxious particles and gases. Repeated exposures to chemicals, dust, fumes, air pollution, and secondhand smoke can also lead to the development of COPD.

The condition is not reversible, but treatment can lessen symptoms, slow its progression, and improve quality of life for people with COPD. COPD is a major cause of disability. As the disease progresses and symptoms worsen, activities of daily living become increasingly difficult to manage. It is known that approximately 75 percent of COPD cases are attributed to smoking; 15 percent are due to occupational exposure; and the remaining risk factors include genetic factors, asthma, respiratory infections, and indoor and outdoor air pollutants. Thus, COPD is a largely preventable disease. Public health initiatives like preventing smoking initiation among teenagers and young adults and encouraging smoking cessation for youth and adults can prevent COPD to a large extent. Also, it is critical to focus on reducing exposure to occupational dusts and chemicals among workers and to reduce exposure to outdoor and indoor air pollutants. Early treatment of asthma may also prevent the development of COPD.

Chronic respiratory diseases are incurable and often result in irreversible damage to the lungs. The incidence and poor outcomes of these diseases can be reduced through a combined public health and medical approach. This can be accomplished through strategies that increase awareness of risk factors and triggers, as well as promote early detection, diagnosis, treatment, and control using evidence-based clinical guidelines, teaching self-management capabilities, and improve environmental conditions. The goals for treatment and management of COPD include relieving symptoms and preventing disease progression, exacerbations, and complications. The management of COPD should include smoking cessation and limited exposure to outdoor and indoor air pollutants, pharmacological treatment including bronchodilators and corticosteroids, supplemental oxygen therapy, pulmonary rehabilitation, collaborative self-management, and surgery when indicated.

According to the [CDC's Public Health Strategic Framework for COPD Prevention, 2011](#), there are four public health goals that need to be considered and included in regards to COPD detection and response:

- Surveillance and evaluation
- Public health research and prevention strategies
- Programs and policies
- Communication

Specific strategies that can be useful in helping to achieve the four public health goals are described below.

Goal 1- Surveillance and Evaluation: improve collection, analysis, dissemination, and reporting of COPD-related public health data

- Strategy 1: Maximize the use of currently available data relevant to COPD in existing surveys (Examples include Texas Behavioral Risk Factor Surveillance System (BRFSS), National Health and Nutrition Examination Survey (NHANES), and National Health Interview Survey (NHIS))
- Strategy 2: Develop and initiate new data collection within existing surveys
 - Adding new questions to COPD-related surveys
 - Testing the new questions for validity and reliability
 - Include new questions related to environmental and genetic factors, family history, and asthma
 - Implementing standardized COPD-related questions
- Strategy 3: Improve the ability to collect, analyze, and report health care data from electronic health records
 - Developing templates for the collection of clinical data
 - Developing a standard format for reporting spirometry results
 - Developing and testing quality-of-care measures, including spirometry, to confirm COPD diagnosis

Goal 2 - Public Health Research and Prevention Strategies: improve understanding of COPD development, prevention, and treatment

- Strategy 1: Conduct assessment of COPD environmental risk factors in addition to smoking and occupational exposures.
 - New epidemiological investigations are needed to assess environmental factors and other risk factors
 - Publishing analysis of COPD related risk factors
- Strategy 2: Assess current health care practices, including the proper use of spirometry, regarding the diagnosis and treatment of COPD and COPD's relationship to asthma and other co-morbid conditions such as cardiovascular disease, stroke, depression, musculoskeletal disease, osteoporosis, and diabetes
 - Identifying gaps in the areas related to diagnosis and treatment of COPD

Goal 3 - Programs and Policies: increase effective collaboration among stakeholders with COPD-related interests

- Strategy 1: To enhance the collaboration between tobacco control programs and COPD related programs at state and local level. The DSHS Tobacco Control Program supports tobacco coalitions, which promote tobacco prevention and cessation and may work to develop clean air policies.
 - DSHS Potentially Preventable Hospitalization projects focus specifically on COPD to assist with local case management, and patient and provider education.
 - To support collaboration between state tobacco control programs and COPD programs to implement strategies and develop COPD related action plans
- Strategy 2: Support workplace programs and policies that reduce the risk of COPD
 - Indoor smoke-free policies
 - Providing insurance coverage for smoking cessation treatment programs
 - Workplace screening programs for at-risk workers and their families

- Providing education to employers at various types of work place locations

Goal 4 - Communication: heighten awareness of COPD among a broad spectrum of stakeholders and decision-makers

- Strategy 1: Developing educational resources for people with COPD, people with COPD risk factors, families, health professionals (especially primary care providers), provider systems, media, decision makers, policy makers, and the public

Estimated Annual Direct and Indirect State Health Care Costs

Asthma

Medicaid

For fiscal year 2014, among adults 18 years or older, the total expenditure for all acute care Medicaid claims (inpatient hospital, outpatient hospital, and professional claims) for asthma was \$28,769,513.42.⁷ For children age 0 through 17 years, the total expenditure for all acute care Medicaid claims (inpatient hospital, outpatient hospital, and professional claims) was \$89,796,074.56.⁸

Absenteeism Cost for Asthma

Among employed individuals in Texas, there were about 1.486 million missed days of work, or about 2.1 days per employed person related to asthma.⁹ Additionally, in Texas, around \$182 million in daily wages were lost related due to asthma. The total cost of asthma-related absenteeism was \$270 million.¹⁰

State of Texas Employees Previously Diagnosed with Asthma

In fiscal year 2015, for State of Texas employees previously diagnosed with asthma, the cost of paid medical claims was \$7,331.00 per participant, per year. This can be compared to a cost of \$4,254 per participant, per year, among those without an asthma diagnosis.¹¹ The cost of paid prescription claims among these same employees was \$1,786 per participant, per year, compared to \$1,213 per participant, per year, among those without diagnosed asthma.¹²

COPD

Medicaid

For fiscal year 2014, the total expenditure for all Medicaid acute care claims (inpatient hospital, outpatient hospital, and professional claims) for COPD was \$78,988,306.89.¹³

Absenteeism Costs for COPD

According to the most up-to-date data available, the cost of absenteeism in Texas for COPD in 2010 (adjusted for demographics) was \$370,446,000, placing Texas behind only California; the

total costs in 2012 dollars for medical treatment in Texas (adjusted for demographics) were \$4.2 billion, placing Texas third in the nation.^{14, 16} In 2015, Texas ranked third nationally for the number of total adults with COPD at 1,036,865; in Texas, the number of employed adults with COPD was 321,719.¹⁵

State of Texas Employees Previously Diagnosed with COPD

In fiscal year 2015, for State of Texas employees previously diagnosed with COPD, the cost of paid medical claims was \$10,871 per participant, per year. This can be compared to a cost of \$4,138 per participant, per year, among those without a COPD diagnosis.¹⁷ The cost of paid prescription claims among these same employees was \$2,256 per participant, per year, compared to \$1,199 per participant, per year, among those without COPD¹⁸

Current Prevention, Screening, and Treatment Activities

DSHS Activities

DSHS addresses prevention of chronic respiratory diseases and promotes strategies for screening and treatment of asthma and COPD through several programs: the Tobacco Prevention and Control Program (TPCP), the School Health Program, and the Potentially Preventable Hospitalizations (PPH) Program.

Cigarette smoking is a common risk factor for asthma and COPD. The TPCP, established in the early 1990s, works with coalitions, worksites, universities, law enforcement, clinicians, and other stakeholders across the state to prevent and reduce tobacco use. Current tobacco cessation efforts focus primarily on the prevention of diseases and conditions linked to the use of tobacco products, including asthma and COPD.

The School Health Program works with Texas school districts, Education Service Centers, school health advisory councils, coalitions, and local health departments throughout the state. The program is currently working on two initiatives related to students who have asthma. The first initiative related to developing a policies and procedures template to be implemented at nine school districts in the Corpus Christi area through Education Service Center. The evidence-based template allows for customization by each school to meet the needs of their students with asthma. For the second initiative, DSHS is contracting with Houston ISD and Chambers County Health Department to work with school-based health centers to provide education and collect data related to attendance rates, frequency of asthma symptoms, and academic performance among students with asthma. The project is designed to measure outcomes of asthma education and disease management among sub-populations of students with asthma. The DSHS Office of Surveillance, Evaluation and Research (OSER) will analyze the data and report outcomes of the project.

The PPH Program currently contracts with 13 Texas counties to use evidence-based strategies to reduce hospitalization rates for congestive heart failure (CHF), COPD, and diabetes through the implementation of 4 interventions: patient education, patient case management, health care provider education, and community education. Two projects within PPH focus on reducing

health care system costs, holding clinicians and health plans accountable for quality care, and improving the care and treatment provided to Texans with chronic respiratory disease. PPH also funds local pilot projects to help indigent individuals with chronic respiratory disease.

Other DSHS activities related to chronic respiratory diseases include assisting the Environmental Protection Administration (EPA) Region 6 Office with the planning for delivery of Healthy Homes workshops throughout Texas in the summer of 2015. Workshops provided health professionals with certified training to improve the home environments of children with asthma and/or lead contamination.

Until August 31, 2015, DSHS operated the Texas Asthma Control Program (TACP). The program was supported using Centers for Disease Control and Prevention (CDC) funding until February, 2015, when the final grant period ended. Previous TACP activities included conducting asthma surveillance, supporting and promoting state and local partnerships, promoting policies that address and improve asthma outcomes, funding effective interventions that increase asthma self-management and reduce the burden of asthma in Texas, and evaluating activities to guide the use of program resources and interventions.

HHSC Activities

In an effort to improve patient outcomes, the DSHS Center for Health Statistics analyzes health care facility discharge data for all payers to identify potentially preventable hospital readmissions and emergency room visits. Under the state Medicaid program, similar efforts are being made to reduce potentially preventable events, such as hospital readmissions, emergency room visits, and complications. Such efforts document the incidence and impact of chronic respiratory disease to the state, and provide opportunities to learn about the interventions that have been most effective at addressing these conditions.

Several efforts related to asthma and COPD are currently underway in the state Medicaid program and Children's Health Insurance Program (CHIP). HHSC mandates performance improvement projects implemented by managed care organizations (MCO) and tracks performance indicators; several of these activities are focused on respiratory health. HHSC publishes a "Performance Indicator Dashboard," which includes a series of measures that identify key aspects of performance to support transparency and MCO accountability. The Performance Indicator Dashboard is not an all-inclusive set of performance measures; HHSC measures other aspects of the MCO's performance as well. Rather, the Performance Indicator Dashboard assembles performance indicators that assess many of the most important dimensions of a MCO's performance and includes measures that incentivize excellence. The table below outlines the asthma/respiratory condition-related measures included on the 2016 dashboard.

Asthma/Respiratory 2016 Dashboard	
Chronic Obstructive Pulmonary Disease or Asthma in Older Adults (Agency for Healthcare Research and Quality –AHRQ Prevention Quality Indicators [PQI] (Adults ≥ 18 yrs))	STAR, STAR+PLUS
Asthma in Younger Adults (PQI (Adults ≥ 18 yrs))	STAR, STAR+PLUS
Chronic Obstructive Pulmonary Disease or Asthma in Older Adults (PQI (Adults ≥ 18 yrs))	STAR, STAR+PLUS
Asthma (AHRQ Pediatric Quality Indicators [PDI] (Children < 18 yrs))	STAR, STAR+PLUS, CHIP
Medication Management for People with Asthma - Medication Compliance 75% (HEDIS)	STAR, STAR+PLUS, CHIP
Asthma Medication Ratio > 50% (all ages) (Healthcare Effectiveness Data and Information Set – HEDIS)	STAR, STAR+PLUS, CHIP
Appropriate Treatment for Children with Upper Respiratory Infection (HEDIS)	STAR, CHIP
Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis (HEDIS)	STAR, STAR+PLUS
Appropriate Treatment for Children with Pharyngitis (HEDIS)	STAR, CHIP
Chronic Obstructive Pulmonary Disease or Asthma in Older Adults (AHRQ [PQI] (Adults ≥ 18 yrs))	STAR, STAR+PLUS

To ensure Medicaid MCOs are meeting all state and federal requirements related to providing care to Medicaid members, HHSC's external quality review organization conducts managed care organization administrative interviews and on-site visits to assess multiple domains, including care coordination and disease management (DM) programs. MCOs are contractually required to develop and maintain DM programs for members with certain chronic conditions, including asthma. The MCO must develop and maintain screening and evaluation procedures for the early detection, prevention, treatment, or referral of participants at risk for, or diagnosed with, asthma and other chronic conditions. At a minimum, DM programs must include:

- Patient self-management education
- Provider education
- Evidence-based models and minimum standards of care
- Standardized protocols and participation criteria
- Physician-directed or physician-supervised care
- Implementation of interventions that address the continuum of care
- Mechanisms to modify or change interventions that are not proven effective

- Mechanisms to monitor the impact of the program over time, including both the clinical and the financial impact

MCOs must report whether they have a DM program for asthma or COPD and describe, among other details, the activities included in the DM program, the measures used to gauge performance, and the populations included in the DM program.

The external quality review organization also recommends topics for performance improvement projects based on MCO performance results, data from member surveys, administrative and encounter files, medical records, and the immunization registry. HHSC selects two of these goals, which become projects that enable each MCO to target specific areas for improvement that will affect the greatest numbers of members. These projects are specified and measurable, and reflect areas that present significant opportunities for performance improvement for each MCO. When conducting performance improvement projects, MCOs are required to follow the ten-step Centers for Medicare & Medicaid Services (CMS) protocol published in the CMS External Quality Review Organization Protocols. One 2016 performance improvement plan topic for all STAR and CHIP MCOs relates to increasing access to, and utilization of, outpatient care to reduce positive pressure ventilations (provision of air under pressure by a mechanical respirator) due to respiratory tract infections (RTIs). One STAR+PLUS MCO was assigned a topic related to increasing access to care and improving management of COPD to reduce COPD-related preventable hospital admissions.

The Delivery System Reform Incentive Payment (DSRIP) pool created by the Texas Medicaid 1115 Transformation Waiver supports health care transformation and quality improvement projects statewide targeted to Medicaid and low-income uninsured patients. DSRIP performing providers include public and private hospitals, physician groups affiliated with an academic health science center, community mental health centers, and local health departments. There are currently 1,451 active DSRIP projects and 298 DSRIP performing providers. DSRIP funds are incentive payments earned based on achievement of project-specific metrics. DSRIP projects are funded at the Medicaid federal match rate with the non-federal share of funds coming from a local or state public entity in the form of intergovernmental transfers (IGTs). At least 59 DSRIP projects report having a chronic pulmonary or respiratory component. These projects have a cumulative valuation of approximately \$433.1 million for waiver demonstration years 2-5 (October 1, 2012 - September 30, 2016).

Other Activities

Texas school districts have developed programs aimed at addressing the asthma-related needs of students and staff. The Asthma Awareness Education Program (AAEP) of the North East Independent School District (NEISD) in San Antonio is one example of asthma programs offered within a school setting. The AAEP demonstrates the ability of school-based asthma care programs to effectively provide comprehensive asthma care and environmental management, ultimately reducing the burden of asthma for their students, families, and community. The multiple components that comprise the AAEP— awareness, education, environment, and medication/tools – effectively address the challenges and barriers to proper asthma care, control, and management commonly faced by children with asthma and their parents. NEISD’s proactive

approach provides the framework for school-based asthma control programs to be implemented across the state. Additional information on the program can be found at: http://www.neisd.net/env_health/.

A number of Texas universities are engaged in research in this area. The projects relate, in large part, to the study of the effects of various genetic, chemical, technological, and biological influences on the aggravation, abatement, or occurrence of asthma and COPD.

Texans can also leverage programs and resources related to asthma prevention and control being developed by national organizations, such as the American Lung Association (ALA); Asthma and Allergy Foundation of America; EPA; CDC; and National Heart, Lung, and Blood Institute (NHLBI). The ALA's Open Airways for Schools is an interactive program that teaches children ages 8-11 how to detect the warning signs of asthma, avoid triggers, and develop self-management skills. The Asthma Friendly Schools Initiative provides a framework and tools that communities and schools can use to work together on a comprehensive approach to asthma management, including planning tools, policy recommendations, and education programs. Freedom from Smoking helps adults quit smoking through group clinics, a self-help manual, and helpline. The Asthma and Allergy Foundation offers Meeting in a Box: Managing Asthma in Schools, a ready-to-go presentation covering asthma basics, environmental triggers, medications, and other topics specific to asthma management in schools. The EPA offers Sensible Steps for Healthy School Environments, Healthy Homes, and Managing Asthma Triggers, a comprehensive school nurse education module. CDC provides Strategies for Addressing Asthma within a Coordinated School Health Program. NHLBI offers curricula and online games targeting youth ages 7-15.

Pharmaceutical companies are also engaged in prevention, screening, treatment, and other activities. For example, one company has established Respiratory Care Specialists to work with patients and providers to improve care for patients suffering from asthma and COPD. Asthma camps seek to teach and empower children with asthma to effectively manage their condition, such as the Texas Asthma Camp for Kids at Lake Tyler, hosted by The Chest Foundation and University of Texas (UT) Health Northeast. Mobile clinics with state-of-the-art technology and a team of asthma specialists serve a variety of Texas schools to screen for and treat asthma. Children diagnosed with asthma receive a comprehensive, individualized asthma management program, as well as education on self-management so they can care for their asthma at home.

Barriers to Effective Prevention, Screening, Medication Adherence, and Treatment

Asthma

Literature cites a broad range of barriers to effective prevention, screening, medication adherence, and treatment for asthma. Barriers are primarily related to challenges in communicating information about medication and symptoms to patients and caregivers, or the financial limitations facing patients and caregivers.

Poor communication, miscommunication, and poor relationships can exist between patients and health care providers, particularly with regard to medication adherence and treatment.^{19, 20, 21, 22}

Patients may inaccurately communicate symptoms to health care providers. Symptom labeling (symptoms as described by the individual experiencing them) or misperceptions about symptoms (i.e. symptom severity) by patients and/or their caregivers can make this important element of effective asthma management and treatment especially challenging for children.^{23, 24}

Additionally, caregivers might rely on older children to manage their own asthma, despite the child's lack of adequate training or motivation, or being too young to successfully manage his or her asthma.²⁵

Patients and/or their caregivers may lack knowledge about how asthma or asthma medication works; for example, patients might not understand that they need to take their medication every day, even if they do not show symptoms.^{26, 27, 28} Additionally, they might worry about becoming dependent on the medication or experiencing adverse effects^{29, 30, 31, 32, 33}, lack confidence that the medication is helping them^{34, 35, 36, 37}, or not know how to correctly use their medications.^{38, 39}

The financial barriers to effective prevention, screening, medication adherence, and treatment for asthma are also multifaceted. The direct costs of asthma medications and asthma-related health care can be prohibitive for patients and caregivers.^{40, 41, 42, 43, 44} Additional costs can arise from adjustments made to the home environment in efforts to remove allergens such as dust mites or mold. Patients and caregivers might not be able to address home environment-related issues sufficiently, due to lack of support from landlords, or due to patients' financial constraints.^{45, 46}

Caregivers may face time constraints, such as the inability to take time off from work to take their children to appointments.^{47, 48} Patients might forget their complex treatment regimen, negatively impacting medication adherence.^{49, 50, 51} The difficulty in using spirometry (a lung test that measures how much air you inhale and exhale, and how quickly you exhale) in primary care settings and differentiating asthma diagnoses from diseases with similar symptoms, such as respiratory infections⁵², can also pose a barrier to effective screening. Inadequate support for children with asthma in schools and daycare is another common barrier to medication adherence and treatment.⁵³ A systematic review found that many teachers are not familiar with asthma management, school policies on asthma management, or what to do in an asthma emergency.⁵⁴ Limited access to school nurses can make this issue worse, both because nurses are often a source of education for teachers on conditions such as asthma, and because teachers might need to handle asthma-related emergencies without the aid of knowledgeable health care professionals if a nurse is not available.

COPD

A literature review also identified many barriers to effective prevention, screening, medication adherence, and treatment for COPD. The barriers cited ranged from physician non-adherence to accepted medication guidelines to low health literacy among patients, to poor physician-patient communications that were similarly cited for asthma. Financial challenges are also a significant barrier.

A survey of 500 primary care practitioners⁵⁵ explored barriers to physician adherence to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines involving spirometry and long-acting bronchodilators (medicines that decrease resistance in the respiratory airway and

increase airflow to the lungs). Familiarity and agreement with the guidelines, self-efficacy, perceived outcome expectancy, and availability of resources were all associated with increased adherence to GOLD guidelines. While spirometry can be a beneficial tool, the use of spirometry can have limitations for screening. Underdiagnoses of COPD among younger people and over diagnoses among older people can occur if spirometric measures are not calibrated for each age group.

A systematic review of interventions to improve COPD medication adherence differentiated between “intentional non-adherence”, which might be due to a poor understanding of COPD and treatment goals, and “unintentional non-adherence,” which might be due to cognitive impairments, language barriers, or physical disability (such as vision impairment).⁵⁷ The authors note that the complexity of treatment regimens (and learning any required techniques) can be a barrier, especially for older patients with multiple conditions. Other barriers to treatment identified include patient perceptions of the severity of disease, the impact of medication, and patient-provider communication.⁵⁸

Poor health literacy is another barrier to medication adherence. A study of COPD patients found that after adjusting for sociodemographic characteristics, low health literacy was associated with not understanding that COPD is a chronic disease.⁵⁹ Low health literacy was also associated with a higher level of concern about COPD medications such as worrying about negative side effects.

Depression was cited as a barrier to medication adherence as well. According to a study using data on Medicare beneficiaries with stand-alone Part D Plans and COPD diagnoses, while medication adherence was low for adults with COPD both with and without depression, a diagnosis of depression was associated with lower COPD maintenance medication adherence.⁶¹

Patient confidence in a provider’s skill and knowledge could also present a barrier to adherence. Using data from veterans in a clinical trial, authors found that for patients prescribed long-acting beta agonists (LABA) and patients prescribed inhaled corticosteroids, a high level of confidence in a provider’s skill and knowledge was associated with adherence after adjusting for sociodemographic variables, illness severity, comorbid conditions, and complexity of treatment regimen. Also, high confidence in self-management of COPD was associated with adherence among patients prescribed LABA.⁶³

As with asthma, the cost of medication is often a barrier to medication adherence. Patients with COPD who are discharged from a hospital might not fill prescriptions they are given, often due to medication costs.⁶⁴

Input provided by various stakeholders generally echoed the results of the literature review. Communication shortfalls also occur internally among the health care provider community. As a result, leaders at health systems are often unaware of existing resources and programs throughout the state. With regard to the financial barriers impacting chronic respiratory disease, stakeholders also brought attention to those within the health care setting, such as a lack of equipment and/or personnel to perform thorough diagnostic testing. When such shortages necessitate referral to a specialist for testing, the probability that the patient will attend the appointment declines. Disparities in access to pulmonary rehabilitation were also specifically mentioned as a barrier.

Methods to Increase Awareness of the Risk Factors and Symptoms

To identify methods to increase awareness of the risk factors and symptoms associated with asthma and COPD, a literature review was conducted. In addition to direct physician-to-patient communication in the health care setting, technology plays a key role, as do schools and other educational settings, and community-based approaches. Education for patients and professionals around risk factors, symptoms, and effective treatment is an important component to increasing awareness.

Asthma

Web-based technology, such as the Giving Asthma Support to Patients (GASP) program, is used by physicians to educate, monitor, and manage patients with asthma. The program acts as a decision support tool, which uses data to calculate asthma severity and inform the physician of patient care methods based on current asthma standards.⁶⁵ Other web-based technologies are geared towards families of children with asthma. The online intervention, Triple P: Positive Parenting Program, is used to increase the self-efficacy of parents by educating them on asthma management and the connections between asthma, their child's behavior, and management.⁶⁶

School-based methods are used to reach children. Asthma education classes are integrated into classroom curricula to teach students signs and symptoms of asthma, as well as how to assist peers experiencing an asthma attack.^{67, 68, 69} Some intervention methods also include distribution of asthma education materials to teachers, principals, coaches, and school nurses.⁷⁰ Some schools implement programs such as the EPA Indoor Air Quality Tools for Schools, to teach school officials, teachers, nurses, and custodial staff about environmental triggers and risk factors that may be present in schools. The staff are then able to identify problems and create a plan of action to reduce the number of asthma exacerbations among students.⁷¹

Other education interventions occur among primary care physicians. Physicians attend asthma education programs that included information on the pathophysiology, clinical, and psychosocial aspect of asthma and asthma management and prevention. Upon completion of the program, many of the physicians experience increased patient satisfaction and greater patient adherence to their asthma management and control methods.⁷²

Community-based approaches referenced by the literature reviewed included training medical, nursing, social work, speech and language pathology, health education, and occupational therapy students in asthma management. This training was then used to teach families of children with asthma within the community. Some hospital systems also develop education programs where pediatric nurses created home follow-up plans for children with asthma who were discharged. Through this program, other follow-up services, such as telephone interviews, mailed materials, and home visits were also provided.⁷³

COPD

Increased awareness of the risk factors and symptoms of COPD could be achieved through a combination of media campaigns and screenings specifically targeting high-risk groups via surveys, testing opportunities, and consultations. COPD advocacy organizations work to increase awareness of the disease worldwide. Coalitions and foundations advertise through television and internet to reach the public. One such campaign includes observance of an annual World COPD Day, which seeks to increase screening, education, and prevention of COPD. During the observance, communities are educated on COPD prevention through smoking cessation and provided testing and screening.⁷⁴

Stakeholders emphasized the need for efforts that are web-based and those that involve mass media, smoking cessation, and health care provider continuing education to improve public awareness. Specific suggestions from stakeholders include adding COPD to the lists of smoking-related diseases that are often mentioned in tobacco control related efforts and creating a clearinghouse for COPD awareness materials and screening questionnaires at DSHS, as well as including COPD in to community health fairs that already focus on blood pressure, blood sugar, and other common screenings.

Stakeholders also suggested creating partnerships that could reach the general public and vulnerable communities throughout Texas to increase awareness of the early signs of lung disease and actions that can be taken. Such partnerships would include outreach to state business associations; specific industries such as construction, energy, agriculture, transportation, and many manufacturing environments; and organizations focused on promoting the health of employees.

Methods to Increase the Use of Regular Evidence-based Screening

Asthma

Available literature indicates that a number of different methods for increasing the use of regular evidence-based screening for asthma have shown promise with varying levels of success. The *Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma* was developed and published in an effort to provide clinical practice guidelines to effectively diagnose, treat, manage, and control asthma among patients of all ages. The report makes recommendations on: assessment and monitoring, patient education, control of factors contributing to asthma severity, and pharmacologic treatment.⁷⁷ It also indicates that the methods to establish an asthma diagnosis include:

- Detailed medical history
- Physical exam focusing on the upper respiratory tract, chest, and skin
- Spirometry to demonstrate obstruction and assess reversibility (in children age 5 years or older)
- Additional tests as needed to rule out alternate diagnoses

Identification of children with undiagnosed asthma, at-risk for asthma, or with poorly controlled asthma can be assisted by surveys validated through studies of children with or at risk for asthma. These include the following:

- American College of Allergy, Asthma, and Immunology Asthma Screening Questionnaire - Study of inner city and urban elementary school-aged children in grades 3-5.⁷⁸
- The Easy Breather's Survey - A questionnaire specifically designed to assist primary care providers in making a diagnosis of asthma in children was developed and administered in four different primary care and subspecialty clinics, validated, and then used as part of an asthma management program called Easy Breathing.⁷⁹
- Asthma Screening Tool - Study of African-American children in an inner-city community.⁸⁰

A Work-Related Asthma Screening Questionnaire (WRASQ)⁸¹ study was conducted to assess whether the WRASQ long-version provided additional information about a patient's likelihood of work-related asthma beyond what is collected in standard care, and to assess the use of the survey in the primary care setting with adults aged 18-65.

COPD

With regard to possible methods to increase the use of regular evidence-based screening for COPD, the GOLD is a project initiated by the National Heart, Lung, and Blood Institute (NHLBI) and the World Health Organization (WHO). The most recent report from GOLD⁸² recommends that physicians perform spirometry to establish a diagnosis of COPD if any of the following indicators are present in individuals over age 40 years:

- Dyspnea (shortness of breath) that worsens over time, or with exercise
- Chronic cough that is intermittent or unproductive
- Chronic sputum production
- History of exposure to risk factors including tobacco smoke, smoke from home cooking and heating fuels, occupational dusts and chemicals
- Family history of COPD.

However, the American College of Physicians⁸³ and the U.S. Preventive Services Task Force⁸⁴ determined that screening adults who do not recognize or report respiratory symptoms for COPD using spirometry is not recommended, since there is no direct evidence that it improves long-term health outcomes. According to the U.S. Preventive Task Force, screening asymptomatic adults for COPD using spirometry would likely identify patients with mild to moderate airflow obstruction, but these patients would not experience additional health benefits by being diagnosed with COPD.

Research indicates that COPD may be diagnosed efficiently by employing a multistage evaluation of high-risk patients using a symptom-based questionnaire followed by spirometry testing, which is required to confirm COPD.⁸⁵ A variety of symptom-based questionnaires have been developed for COPD, some of which have specialized functions such as distinguishing COPD from asthma or assessing COPD in smokers.

Stakeholders provided feedback about increasing the use of evidence-based screening, which included promoting the use of scientifically-validated questionnaires across the state. Other feedback included increasing the use of pulmonary functions testing, via technologies such as spirometry and peak expiratory flow measurement, specifically targeting students and high-risk, rural and underserved populations.

Best Practices

Patients at risk for or currently suffering with symptoms of COPD should be identified and diagnosed as early as possible. This includes using spirometry appropriately as one of the diagnostic tests and using it appropriately.^{88, 89, 90}

Unfortunately, COPD is difficult to diagnose until it reaches advanced stages where patients require oxygen therapy, experience frequent flare ups which require hospitalization and diminished cardiac function. Even when the diagnosis is made, patients may not receive the patient-centered care necessary to manage COPD. Improved models of health care delivery for persons with COPD include an integrated, goal-directed approach involving multidisciplinary, skilled health professionals to assist the primary care clinician. A comprehensive approach that incorporates elements of a chronic care model is likely to improve COPD outcomes.⁹¹

Patients with COPD have better outcomes when they: 1) receive smoking cessation and diet/exercise counseling; 2) keep up to date with their vaccinations, especially influenza; 3) adhere to medications; and 4) set self-management goals. Smoking cessation is the most effective way to prevent COPD and retain lung function among smokers. Minimizing exposure to environmental triggers such as dust, gases, and fumes helps patients avoid COPD flare-ups. Physical activity to the extent possible helps some patients.^{92, 93}

Methods for Creating Partnerships with Public and Private Entities to Increase Awareness

Partnerships between public and private entities can assist in creating awareness for asthma and COPD. On a local level, Texas communities could explore working with community centers that have launched successful programs for people with disabilities related to strokes, Parkinson's disease, cancer, and Alzheimer's disease. Community-based events with private and public sponsors that seek to reduce the number of undiagnosed COPD patients could improve screening and diagnosis.

Bridging the gap between private and public sector efforts, Texas could partner with public sector entities to launch employee wellness programs. Current private sector efforts to improve the quality of patient care might be reviewed as examples for pilot programs that could be tested in the public sector or replicated across Texas. Partnerships with health systems, residency programs, as well as public health and community organizations, might be created, which could be instrumental in providing physician oversight and staffing for public clinics.

With regard to existing employee wellness programs at state agencies and institutions of higher education, asthma and COPD could be added to their addressed topics.

Recommendations to the Legislature

- Promote the disease surveillance resources provided on the DSHS Center for Health Statistics website, which has a web tool that allows the public to review levels of chronic obstructive pulmonary disease (COPD) and older adult asthma potentially preventable hospitalizations throughout the State.
 - <http://healthdata.dshs.texas.gov/Hospital/PotentiallyPreventableHospitalizations>
 - <http://healthdata.dshs.texas.gov/HealthRisks/BRFSS>
- Promote currently available online training tools for health professionals to increase knowledge and best practices for chronic respiratory disease management such as the Texas Health Steps asthma-related modules.
 - <http://www.txhealthsteps.com/cms/>
- Continue quality improvement efforts in the area of asthma management for patients enrolled in Texas Medicaid.
- Given the high prevalence of pediatric asthma, recommend that schools without a nurse have staff trained on how to manage asthma triggers, utilize asthma action plans, and recognize and respond to breathing emergencies.
- Within DSHS tobacco prevention and control efforts, enhance educational efforts regarding chronic respiratory diseases.
- Explore potential avenues to re-establish the DSHS Texas Asthma Control Program, and expand the program scope to include chronic respiratory diseases.
- Continue to promote efforts that avoid unnecessary hospitalizations focused on COPD and asthma through patient education, case management, provider and community education activities, and the development of local health networks.
- Support continued data collection and analysis for chronic respiratory disease surveillance activities, allowing for accurate assessments of their impact on Texas.

Conclusion

Mitigating the burden of chronic respiratory disease on Texans requires a coordinated effort that combines prevention with improved access to information and high-quality health care focused on the early identification and effective management of these conditions. Enhanced surveillance of these conditions will further characterize the burden of these diseases and can help target activities to areas and populations with the highest need.

Appendix A: Endnotes

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Appendix C: Recommendations from Public Stakeholders

The following is a complete list of recommendations gathered at the public hearing for the Chronic Respiratory Disease Strategic Plan held on October 12, 2016.

Summary of Recommendations

- Promote access to information and quality health services that facilitate the identification and management of chronic respiratory conditions
- Restoration of the Texas Asthma Control Program and expand its scope to cover other chronic respiratory diseases
- Fund a pilot project to address pediatric and adult asthma treatment and care in locations in Texas identified by available data as high-risk zones for Chronic Respiratory Disease
- Continue to expand the Potentially Preventable Hospitalizations program to address Chronic Obstructive Pulmonary Disease (COPD) patient education, case management, provider and community education activities, including funding for specific outreach activities and materials to be distributed statewide
- Continue tobacco prevention and control efforts at current funding levels and enhance the Tobacco Prevention and Control Branch to proactively address chronic respiratory disease through targeted tobacco prevention and cessation efforts
- Promote enhanced disease surveillance, given its crucial role in understanding the impact of chronic respiratory disease on Texans
- Promote access to the range of health care professionals with the skills to implement comprehensive care management for both asthma and COPD
- Fund a 2-year pilot program of Registered Respiratory Therapists' (RRT) who also hold the Certified Asthma Educator (AE-C) and COPD Educator Credentials. The RRT will provide spirometry tests in contracted primary care physicians' offices on a rotational basis to assess for Asthma and COPD in the two of the PPH program counties
- Add Respiratory Care Practitioners to the eligible providers listing for Telehealth, Telemedicine, and Telemonitoring
- Hire an RRT, AE-C, COPD Educator to direct the Strategic Plan
- Require all public colleges with a student health center to provide all freshman students a validated self-reporting questionnaire to evaluate Exercise Induced Bronchospasm (EIB) and asthma
- Require all college athletic departments to complete the American Lung Association's Asthma Basics Course
- Require all schools without a school nurse to identify at least two individuals to complete the American Lung Association's Asthma Basics Course
- Provide hospitals in the PPH counties information to develop and implement a pulmonary rehabilitation program
- Encourage primary care physicians to evaluate all COPD patients for depression using the Beck Depression Inventory
- Provide primary care physicians offices in the PPH counties updated information on the need to evaluate those with asthma and COPD over 60 years of age for confusion and memory loss

- Have the Health and Human Services System coordinate at least one asthma screening event in each region using volunteers including a pulmonologist and two RRTs to perform and interpret spirometry