REDUCING THE IMPACT OF RESPIRATORY DISEASE IN ARIZONA: A THREE-YEAR PLAN
Reducing the Impact of Respiratory Disease in Arizona: A Three-Year Plan

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LETTER FROM
Arizona Department of Health Services

Dear Fellow Arizonans,

It is with much enthusiasm that I present to you, “Reducing the Impact of Respiratory Disease in Arizona: A Three-Year Plan.” It is of critical importance that we continue to look at the diseases that impact our residents, communities, and economy and implement robust and proactive plans that will improve the state of those diseases in Arizona. Chronic Lower Respiratory Disease (CLRD) has particularly caught our attention because it recently rose to the number three cause of death in Arizona and, while deaths attributed to the top two causes of death (heart disease and cancer) continue to decline, death rates due to CLRD are stagnant. It is estimated that 5.3% of Arizona’s population has Chronic Obstructive Pulmonary Disease (COPD), 13.5% of Arizona adults have asthma, and 10.9% of Arizona children have asthma. It is also important to note that COPD costs Arizona an estimated $360 million per year and asthma brings an additional $2 billion annual economic burden.

There currently are no cures for the diseases listed above, but there is much that can be done to address risk factors leading to prevention, promote early detection, educate on effective disease management, and improve quality of life. That is why the Arizona Department of Health Services has created an opportunity to convene CLRD stakeholders throughout the state to address what can be done to change our current staggering statistics. More than sixty organizations were involved in discussing the needs of the CLRD community and identifying areas of opportunity that would create collaborative efforts leading to sustained action.

Thanks to those stakeholders, this three-year plan has been developed to set priorities, objectives, and strategies that aim to reduce prevalence, disability, and deaths attributable to CLRD. It is intended to be used as a guide that will assist stakeholders, policymakers, healthcare professionals, educators, and public health workers in finding their place of influence within this effort toward reducing the impact of lung disease in Arizona. We hope you will join us and look forward to the progress we will achieve by working together.

Sincerely,

Cara M. Christ, MD
Director

Cara M. Christ, MD
Director
LETTER FROM
American Lung Association in Arizona

Dear Arizonans,

The American Lung Association in Arizona is so pleased to have been able to partner with the Arizona Department of Health Services to bring Reducing the Impact of Respiratory Disease in Arizona: A Three-Year Plan to Arizona residents and, in particular, those who struggle with Chronic Lower Respiratory Disease (CLRD). CLRD can greatly impact the quality of life of those affected including limited activity, missed school and work, anxiety, fear, and depression to name a few. Most importantly, those with CLRD are acutely aware of something many of us take for granted, their ability (or often inability) to breathe. This plan is the signal patients need to know their community is committed to improving their health and that there is hope in what future action is on the horizon. It demonstrates Arizona’s initiative to address this disease from all angles: creating awareness, promoting prevention and early detection, improving systems of care, and providing evidence-based management programs.

Convening CLRD stakeholders has been the great privilege of the American Lung Association throughout the process of building this plan. Establishing community linkages is a critical first step in the development of a long-term, sustainable course of action. The outcome of the work by these stakeholders is nothing short of inspiring. As an organization that works daily to improve lung health and prevent lung disease, we have been thrilled to see the number of stakeholders who have expressed their interest, offered their expertise, and displayed their passion for lung health. This plan is the catalyst to great things on the horizon!

The American Lung Association in Arizona is committed to the work you will see outlined in this document. We are happy to have the support of the Arizona Department of Health Services as well as the community stakeholders who have stepped forward. These collaborations will lead this effort to great success, and we are excited to watch the state of lung disease in Arizona realize positive change.

Sincerely,

Julie Reid
Executive Director
Acknowledgements

The American Lung Association in Arizona is grateful to many individuals and organizations in the development of this strategic plan to address Chronic Lower Respiratory Disease (CLRD) in Arizona. In particular, we thank the Arizona Department of Health Services (ADHS) for its support to our efforts to strengthen the systems and community linkages necessary to improve access to needed services by high-risk populations in rural and disparate communities. In partnership with ADHS and many other stakeholders, the Lung Association looks forward to implementing the cross cutting, evidence-based approaches focused on the prevention, detection and management of chronic lung diseases outlined in this three-year plan.

We would also like to specifically acknowledge the contributions of our CLRD Leadership Team. These individuals were extremely generous in offering their time and expertise in laying the foundation for a statewide planning effort and identifying key initiatives that can positively address the impact of CLRD in Arizona.

CLRD Leadership Team Members:
Toni Rodriguez, EdD, RRT, FAARC, Gateway Community College, Chairman
Mark Brown, MD, Banner-University Medical Center, Tucson
Scott Cerreta, COPD Foundation
Julie Finke, Arizona Department of Environmental Quality
Jan Karlbon, Patient Representative
Alicia Simpson, PhD, RRT, Simpson Consulting
Corin Walters, MSHE, RRT, RCP, AE-C, AstraZeneca

Lastly, we offer special thanks to the staff members of the ADHS Bureau of Tobacco and Chronic Disease from whom we have received invaluable assistance and encouragement, and we thank the many collaborative partners who devoted time and expertise to developing this plan. This includes the efforts of Doug Hirano, Hirano and Associates, LLC and Tom Rodriguez, TJR Designs, in the production of this document, with additional research provided by Sarah Benberou, Benjamin Sebreros and Lawrence Sands, DO, MPH from Midwestern University, Arizona College of Osteopathic Medicine. In addition, we thank Saguaro Evaluation Group, LLC for its assistance in developing the evaluation framework for the plan.
About This Plan

This three-year strategic plan was commissioned by the Arizona Department of Health Services as part of a grant award to the American Lung Association in Arizona relating to chronic lower respiratory disease (CLRD). Broadly, this document is intended to be a primer on CLRD; a roadmap for structured efforts to prevent, detect and manage chronic lung disease; and an open invitation to interested individuals and organizations to become involved in addressing CLRD.

SPECIFICALLY, THE PLAN INTENDS TO:

• Set priorities, objectives, and strategies to reduce prevalence, disability, and deaths attributable to CLRD, with particular attention to high-risk populations (e.g. disparate populations);
• Promote improvements in the system of care for individuals diagnosed with CLRD;
• Promote the prevention and early detection of lung disease;
• Assist stakeholders, policymakers, health care professionals, educators, and public health workers in developing and coordinating approaches to address CLRD among their constituents;
• Raise awareness of the serious public health problem of CLRD; and
• Provide a framework for long-term, sustained action to reduce the impact of lung disease in Arizona.
Vision, Mission, and Goals

This strategic plan is based upon the collective efforts of a large coalition of individuals and organizations with a common interest in decreasing the impact of CLRD among Arizona residents. The intent of the CLRD Coalition is to promote sustainable and scalable systems and policy changes aimed at preventing CLRD, improving detection of CLRD, and enhancing its management among those already diagnosed. Provided below is the vision, mission, and goals of the CLRD Coalition.

VISION
Healthy Living for Healthy Lungs

MISSION
Promoting sustained action to reduce the impact of CLRD in Arizona through effective accessible prevention and care.

GOALS

- Advocate for the health and safety of CLRD patients throughout the areas in which they live, work, learn and receive care;
- Increase patient self-efficacy and ensure appropriate support and education is available and provided to CLRD patients;
- Raise awareness of CLRD, its risk factors, and best-practice management guidelines to the greater community;
- Advance and support CLRD research efforts in Arizona through increased public awareness and facilitation of participation in those efforts; and
- Provide a platform inclusive of all CLRD stakeholders, which will strengthen community partners and allow for community collaboration.
Executive Summary

While significant progress has been made in reducing preventable illness and death related to disease conditions such as heart disease and cancer, progress has been more incremental in addressing chronic lower respiratory disease (CLRD). CLRD, which includes the lung conditions of chronic bronchitis, emphysema and asthma, is the third leading cause of death in the United States. In conjunction with the Arizona Department of Health Services (ADHS), the American Lung Association in Arizona and many community partners have developed a three-year plan to accelerate progress related to CLRD. This statewide coalition of partners includes public health agencies, community organizations, health care providers, individuals affected by CLRD, and many other stakeholders and partners.

With a plan in place, the statewide CLRD Coalition can accelerate efforts in Arizona to address CLRD and ensure that the goals and objectives of this plan are realized.

PROJECT GOALS

RESEARCH AND DATA
- Increase the number of health care systems capturing CLRD risk and protective factors through Electronic Health Record systems (EHRs)
- Provide health care systems with information on how to enroll patients into the local Asthma and COPD Registries and incorporate the option for the patient to enter into a “research pool” into the EHR system

HEALTH EDUCATION
- Increase the number of individuals exposed to evidence-based CLRD and Chronic Disease Self-Management education programs
- Develop an early detection/screening program for at-risk individuals in Arizona

POLICY/ADVOCACY
- Initiate and advocate for new State level policies that improve the lung health of individuals and communities while creating and delivering education on current policies affecting CLRD
- Strengthen current policies and develop new policies that promote health and safety where we live, learn, work, and play

FUND AND RESOURCE DEVELOPMENT
- Increase community resources and funding opportunities that will increase the reach of smoking cessation programs and additional CLRD evidence-based programs
- Leverage existing funding by identifying community partners and provide partners the opportunity to share current projects
- Raise awareness of CLRD and best practices related to CLRD through education summits

MARKETING/COMMUNICATIONS
- Increase community and health care linkages that promote sustained action to reduce the impact of CLRD in Arizona through effective and accessible prevention and care
- Increase outreach to health care professionals about prevention and management of chronic diseases
- Raise awareness for the public regarding CLRD
What is CLRD?

_Chronic lower respiratory disease_ (CLRD) is used to describe a group of diseases generally consisting of chronic bronchitis, emphysema, and asthma. These diseases affect the lower lung and are all characterized by shortness of breath due to airway obstruction. Prior to 1999, CLRD was synonymous with Chronic Obstructive Pulmonary Disease (COPD); however, in 1999, the definition of CLRD was expanded to include asthma. In this document, we will use CLRD when referring to the complete group of lung diseases (asthma, chronic bronchitis and emphysema), and we will use COPD when referring just to chronic bronchitis and emphysema. This is an important distinction, as the epidemiology of asthma differs from that of chronic bronchitis and emphysema.

**Chronic bronchitis** is an inflammation or irritation of the airways in the lungs. Bronchitis generally causes a cough that produces mucus, which often leads to shortness of breath, wheezing, and chest tightness. Acute bronchitis is generally caused by a viral or bacterial infection and usually resolves itself fairly quickly. Cigarette smoking is the most common cause of chronic bronchitis. A clinical diagnosis of chronic bronchitis requires the presence of a productive cough (i.e. mucus producing) occurring most days of the month for at least three months of the year for two consecutive years. In chronic bronchitis, persistent inflammation can eventually cause scarring and thickening of the body’s airways, exacerbating the problem.

**Emphysema** is characterized by damage to the air sacs (alveoli) of the lungs. Clinically it is defined as “abnormal and permanent enlargement of air spaces distal to the terminal bronchioles.” The alveoli of the lungs are responsible for oxygen exchange between the air and the blood. In emphysema, damage to the alveoli leads to inadequate oxygen intake and makes it very difficult for patients to properly breathe. The primary symptom is shortness of breath, which eventually worsens as the disease progresses. Smoking is the most common cause but emphysema can also be caused by an inherited condition called alpha-1 antitrypsin (ATT) deficiency in which ATT, a protein that prevents the production of elastase, a lung-damaging protein, is deficient or absent.

**Asthma** is an airway disease caused by hypersensitivity reactions in the airways that leads to them becoming swollen and inflamed. During an asthma attack, the muscles surrounding the airways tighten, causing the airways to narrow and making it difficult to breathe. Symptoms of asthma include coughing, wheezing, chest tightness, and shortness of breath. The exact cause of asthma is not entirely known but there is thought to be a genetic component. Asthma triggers differ from person to person but may include allergens such as dust and pollen, chemicals and other irritants such as smoke or pollution, physical activity, and even some foods.

CLRD includes **CHRONIC BRONCHITIS, EMPHYSEMA** and **ASTHMA**, each characterized by shortness of breath due to airway obstruction.
Burden of CLRD

Currently in the United States, an estimated 23 million people have asthma and approximately 15 million people have been diagnosed with COPD. However, it is estimated that as many as 50 percent of pulmonary disorders go undiagnosed and therefore untreated. Lung diseases that are undiagnosed, untreated, and/or poorly managed lead to missed days of school and work and preventable emergency room visits and hospitalizations — increasing the impact on the individual in terms of life quality and on society due to higher insurance rates and lost productivity. Factors that contribute to effective management of CLRD include proper diagnosis and access to health care and disease management resources. Unfortunately, limited financial resources, lack of health insurance coverage, geographic isolation, and language barriers impede access to these resources.

CLRD Epidemiology

In the United States, CLRD is the 3rd leading cause of death, behind only cancer and heart disease. In Arizona, while mortality rates for the top two leading causes of death, cancer and heart disease, have been decreasing over the past two decades, death rates from CLRD remain stubbornly persistent (Figure 1 below).

Figure 1. Age-adjusted death rates (per 100,000) for the leading causes of death in Arizona

Source: Arizona Department of Health Services, 2013
In Arizona, deaths due to CLRD vary by race/ethnicity (Figure 2 below), with age-adjusted death rates highest among Whites. In 2013, according to the Arizona Department of Health Services (ADHS), there were 167 more CLRD deaths in Arizona among women than men, with an average age of death of 77 years.2

**Figure 2. Age-Adjusted Mortality Rates for CLRD by Race/Ethnic Group, Arizona, 2013**

To further examine the epidemiology of CLRD, we will be reviewing COPD and asthma separately because of the differences in the epidemiology between these disease conditions. It is important to note, however, that these chronic lung conditions share many of the same risk factors and approaches to prevention, screening and treatment, which will be further discussed in this document.
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)
Nationally, 6.3% of U.S. adults (an estimated 15 million) have been told by a health care provider that they have COPD. The American Lung Association estimates that an additional 24 million have COPD but have not been diagnosed. Annually, there are approximately 150,000 deaths due to COPD. By gender, men have higher COPD age-adjusted mortality rates than women; however, these mortality rates for men have been decreasing over time, while rates remain level for women. Since 2000, the number of deaths due to COPD among women outnumbers that of men.

Figure 3. COPD Mortality Rates by Gender, U.S.

Data were obtained from the National Vital Statistics System at http://wonder.cdc.gov.
COPD as the underlying cause of death was defined by ICD-10 codes J40-J44.
Death rates are reported per 100,000 population and were age-standardized to the 2000 U.S. Standard population.
In Arizona, COPD is the 3rd leading cause of death, trailing heart disease and cancer. The 2013 crude COPD death rate for women (52.4 per 100,000) was higher than that for men (47.8 per 100,000). The prevalence of COPD increases with age, with 12% of all Arizonans over 65 years of age having been told they have COPD (Figure 5). Non-Hispanic Whites have the highest rates of COPD, when compared to other racial groups. COPD prevalence varies significantly by county, with the highest rates in the rural counties of Navajo, Gila, Mohave, and La Paz (Figure 4).
Reducing the Impact of Respiratory Disease in Arizona: A Three-Year Plan

ASTHMA

Asthma is a serious personal and public health issue that has far-reaching medical, economic and psychosocial implications. The prevalence of asthma has been increasing since 1980. It is estimated that 22.6 million Americans have asthma – approximately one in every 14 people. This includes 16.5 million adults and 6.1 million children.\(^6\)

Asthma affects people of every race, and by gender and age (Figure 6). However, significant disparities in asthma morbidity and mortality exist, in particular for low-income and minority populations. Populations with a higher prevalence of asthma include: children, women (among adults) and boys (among children), African Americans, and people living below the federal poverty level.\(^6\)

While there is not a cure for asthma yet, there are guidelines for diagnosis and treatment that are aimed at ensuring people with asthma live full and active lives. Indeed, the death rate due to asthma has been decreasing in this country since the mid-1990s.

It is estimated that 22.6 million Americans have asthma – approximately one in every 14 people.

Arizona asthma prevalence data from the ADHS 2012 Behavioral Risk Factor Surveillance Survey (BRFSS) is provided in Figure 8 on page 14. This data pertains only to individuals 18 years and older. Groups with higher asthma prevalence include females and Non-Hispanic whites. Figure 7 provides county level asthma prevalence data, indicating the highest prevalence of asthma in La Paz and Graham Counties.\(^7\)

It should be noted that while 13.5% of adults in Arizona report having been diagnosed with asthma, the actual prevalence is likely far higher given that many individuals with asthma have never been formally diagnosed.
The prevalence of childhood asthma in Arizona is estimated to be 10.9%. This equates to 174,000 individuals between the ages of 0 – 18 years currently with asthma. Among the 33 states with similarly available data, Arizona ranks sixth in terms of current childhood prevalence.

Figure 8. Asthma Prevalence, ADHS 2012

Figure 7. Asthma Prevalence by County, ADHS, 2011
Life Quality

CLRD usually requires several lifestyle alterations and presents new limitations, which can result in fear, anxiety, depression, and stress, particularly in the newly diagnosed. A 2001 survey conducted by the American Lung Association, “Confronting COPD in America,” revealed that millions of Americans suffer from COPD so severely that the illness interferes with their daily activities. Survey results:

- Over half (51%) of the COPD sufferers interviewed said their COPD limited their ability to work.
- Nearly half reported that they got short of breath while doing light housework (46%) or washing and dressing (44%).
- Nearly one-third (32%) got short of breath while talking, while 28% had difficulty breathing even when sitting down or lying still.
- Almost one-fourth (25%) reported that their COPD had made them an invalid; 8% were too breathless to leave home.

The American Lung Association’s National Asthma Survey revealed that asthma patients make a wide range of adjustments in their lifestyle to accommodate their disease. Nearly three-quarters (73%) of parents of asthmatic children and 61% of adult asthma respondents reported that preparing for asthma attacks is always a consideration when planning family activities. The severity of the disease was found to be greater among African-American and Hispanic patients and families, with more parents reporting their children had problems in sports, exercise, and missing school. Adult African-Americans and Hispanics were more likely to miss time from work or school.
According to the National Heart Lung and Blood Institute, the national annual cost for CLRD in 2009 was $106.1 billion. This includes $81.5 billion in direct health care expenditures and $24.6 billion in indirect mortality costs.\(^\text{10}\)

**COPD**

In 2010, in the United States, there were an estimated 26 million COPD-related doctor’s office visits and 164,000 hospital discharges, a discharge rate of 19.9 per 10,000 persons.\(^\text{11}\) In addition, COPD accounted for 285,000 emergency department visits in 2011.\(^\text{12}\) Moreover, a study of Medicare beneficiaries who were admitted to the hospital for COPD found that 19.6% of these patients were readmitted within 30 days of their initial hospitalization.\(^\text{13}\)

The data in Table 1 below describes the COPD disease burden in Arizona. With a total aggregate cost of nearly $360 million, it is clear that COPD exerts a significant burden on individuals and families with COPD, as well as the health care system more generally.

**Asthma**

The annual cost of asthma in the United States is estimated to be $56 billion with direct expenses accounting for nearly $50.1 billion of this figure and hospitalizations being the single largest portion of direct expenses.\(^\text{14}\) In 2014, Medicaid spent approximately $67 per member per year on asthma

### Table 1. Disease burden due to COPD, Arizona, 2011

<table>
<thead>
<tr>
<th></th>
<th>Number of discharges</th>
<th>Average Cost</th>
<th>Average Length of Stay</th>
<th>Aggregate Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals with multiple chronic conditions</td>
<td>4,672</td>
<td>$32,834</td>
<td>4.7</td>
<td>$153,441,213</td>
</tr>
<tr>
<td>Individuals with a chronic condition</td>
<td>4,715</td>
<td>$28,128</td>
<td>3.9</td>
<td>$132,622,124</td>
</tr>
<tr>
<td>Individuals without another chronic condition</td>
<td>3,536</td>
<td>$20,893</td>
<td>3.0</td>
<td>$73,878,104</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,923</strong></td>
<td>—</td>
<td>—</td>
<td><strong>$359,941,441</strong></td>
</tr>
</tbody>
</table>

Source: BRFSS Annual Report, 2011, Arizona Department of Health Services
medications which is the third highest of any category.\textsuperscript{15} In 2010, asthma was listed as the primary diagnosis for 14.2 million physician office visits\textsuperscript{16} and 1.8 million emergency department visits.\textsuperscript{12} Finally, asthma was listed as primary diagnosis for approximately 439,000 hospital discharges, with an average of 3.6 days length of stay.\textsuperscript{11}

Indirect costs of asthma were calculated at $5.9 billion in 2014.\textsuperscript{17} This figure includes lost earnings due to illness or death and lost productivity due to missed school or workdays. For adults, asthma is the leading cause of work absenteeism and loss of productivity with more than 14 million work days lost each year and accounts for approximately $2 billion of asthma’s indirect costs. Among children ages 5 to 17 years, asthma is one of the leading causes of school absences and accounts for more than 10.5 million missed school days per year.\textsuperscript{14}

In Arizona in 2012, there were 166,666 asthma-related emergency department visits and inpatient hospitalizations (Figure 9 below). As can be seen, asthma impacts individuals across the age spectrum. With a total of more than $2 billion in asthma-related hospital inpatient and emergency department charges, asthma has a profound effect on the health care system.

\textbf{Figure 9. Asthma discharge data and charges, Arizona, 2012}

\textbf{Inpatient and Emergency Department Discharges Related to Asthma}

<table>
<thead>
<tr>
<th>DISCHARGES</th>
<th>CHARGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 55+</td>
<td>Under Age 18</td>
</tr>
<tr>
<td>37,904</td>
<td>$933,451,350</td>
</tr>
<tr>
<td>Age 40-55</td>
<td>Age 18-24</td>
</tr>
<tr>
<td>31,287</td>
<td>19,403</td>
</tr>
<tr>
<td>Age 25-40</td>
<td>Age 25-40</td>
</tr>
<tr>
<td>37,293</td>
<td>37,293</td>
</tr>
</tbody>
</table>

\textbf{Total: 166,666}  \textbf{Total: $2,087,972,652}

Source: BRFSS Annual Report, 2012, Arizona Department of Health Services
Reducing the Impact of CLRD

Risk Factors
According to the Centers for Disease Control and Prevention (CDC), smoking is the primary risk factor for chronic respiratory diseases, such as emphysema and chronic bronchitis, both of which are major conditions of COPD. In addition, more than 126 million non-smoking Americans continue to be exposed to secondhand smoke in homes, vehicles, workplaces, and public places. Nationally, nearly 60 percent of U.S. children ages 3 – 11 years are exposed to secondhand smoke. Direct or secondhand exposure to tobacco smoke is therefore a key risk factor for CLRD.

Figure 10 summarizes the various risk factors associated with CLRD. It is important to note that there are two classes of risk factors associated with lower respiratory diseases: those that are a direct cause of disease (e.g., cigarette smoking among those with emphysema) and those that worsen or serve as a trigger for existing disease (e.g., exposure to allergens among those with asthma).

Figure 10. Risk Factors for CLRD

<table>
<thead>
<tr>
<th>Behavioral – Smoking, poor nutrition (asthma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hereditary – Deficiency of alpha-1 antitrypsin (COPD) and atopy (asthma)</td>
</tr>
<tr>
<td>Biological – Age, gender, poor lung growth and development</td>
</tr>
<tr>
<td>Environmental – Secondhand smoke, occupational exposure, outdoor air pollution, indoor air pollution from heating or cooking biomass in a poorly ventilated area</td>
</tr>
<tr>
<td>Other – Respiratory infections, socioeconomic status, comorbidities</td>
</tr>
</tbody>
</table>
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Cigarette Smoking. As already noted, tobacco smoking is by far the most important risk factor for COPD (chronic bronchitis and emphysema). Most people who have COPD smoke or used to smoke. The American Lung Association states that cigarette smokers are 10 times more likely to die of COPD than nonsmokers.18

Cigarette smoke affects the lungs in several ways. It increases mucus production in the airways (even contributing to an increase in the number of mucus glands), while at the same time stopping the cilia from working, allowing the buildup of mucus and the contaminants it contains. Over time, this results in obstruction of the airways, causing chronic bronchitis.

Secondhand Smoke. Secondhand smoke is a mixture of mainstream smoke that is exhaled by a smoker and side stream smoke that comes from the lighted cigarette, pipe, or cigar (and actually is higher in concentrations of toxins than exhaled smoke). Numerous studies have documented the direct association between lower respiratory difficulties and exposure to secondhand smoke. Passive smoke exposure is a risk factor for symptoms of cough and sputum production, and may account for some of the COPD that develops in nonsmokers.20

Occupational Exposures. Exposure to vapors, gases, dust, or fumes on the job can also cause COPD and asthma independently of cigarette smoking and genetic factors and increase the risk and disease severity among smokers. These irritants can include mineral dusts (e.g., gold, coal, iron), organic dusts (e.g., grain, cotton, red cedar), and paint and chemical fumes.

Air Pollution. Outdoor air pollution can trigger an asthma attack, and the CDC advises individuals with asthma to pay attention to air quality forecasts and plan outdoor activities when air pollution levels will be low. Other asthma triggers include dust mites, cockroach allergen, pets, mold, and smoke from burning wood or grass.21

Approximately 75% of COPD cases are attributed to cigarette smoking.19
Action Framework

For respiratory diseases, progress towards national Healthy People 2020 goals has been challenging. Of the 15 objectives for which data are available, only one objective has been met, some progress has been made for four objectives, and for the remaining 10 objectives there has been little or no change or things have gotten worse.22

Provided below in Figure 11 is a framework for approaching CLRD in a manner that acknowledges the individual and social environmental factors influencing new cases of CLRD and appropriate care and treatment for those diagnosed with CLRD. This socio-ecological framework offers a way to conceptualize the multiple levels of action necessary to successfully ameliorate the impact of CLRD on society.

As indicated within the Socio-Ecological Model, interventions can be promulgated on an individual level (e.g., direct patient care and treatment), a community level (e.g., mass media campaigns) and/or at a societal level (e.g., clean indoor air laws). To the extent possible, selected interventions should have a strong evidence base. Table 2 provides a summary of recommendations of the national review panels – U.S. Preventive Services Task Force (USPSTF) and the Community Preventive Services Task Force (CPSTF) – regarding the use of clinical and population-wide approaches to addressing respiratory disease and associated risk factors.23,24

Organizations and coalitions should give strong consideration to adopting or facilitating one or more of these recommended interventions. Other activities can include 1) clinical and health systems approaches, 2) public education and chronic disease self-management training, 3) policy advocacy, and 4) research and evaluation.

<table>
<thead>
<tr>
<th>Advisory Body</th>
<th>Recommendation</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPSTF</td>
<td>All current smokers should receive smoking cessation counseling and be offered pharmacologic therapies demonstrated to increase cessation rates</td>
<td>Grade A (USPSTF recommends the service. There is high certainty that the net benefit is substantial)</td>
</tr>
<tr>
<td>USPSTF</td>
<td>Do not screen for COPD using spirometry among healthy adults (does not apply to individuals with a family history of alpha-1 antitrypsin deficiency)</td>
<td>Grade D (USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits)</td>
</tr>
<tr>
<td>CPSTF</td>
<td>All patients 50 years of age or older should be offered influenza immunization annually</td>
<td>Recommended</td>
</tr>
<tr>
<td>CPSTF</td>
<td>All patients 65 years or older should be offered one-time pneumococcal immunization</td>
<td>Recommended</td>
</tr>
<tr>
<td>CPSTF</td>
<td>Home-based multi-trigger, multicomponent interventions with an environmental focus for persons with asthma aim to reduce exposure to multiple indoor asthma triggers (allergens and irritants)</td>
<td>Recommended</td>
</tr>
<tr>
<td>CPSTF</td>
<td>School-based health centers provide health services to students preK-12 and may be offered on-site (i.e., school-based centers) or off-site (i.e., school-linked centers). Improved health outcomes asthma morbidity.</td>
<td>Recommended</td>
</tr>
<tr>
<td>CPSTF</td>
<td>Programs combine and integrate evidence-based educational, clinical, regulatory, economic, and social strategies at local, state or national levels</td>
<td>Recommended</td>
</tr>
<tr>
<td>CPSTF</td>
<td>Programs target large audiences through television and radio broadcasts, print media, out-of-home placements and digital media to change knowledge, beliefs, attitudes, and behaviors affecting tobacco use</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

Sources: www.thecommunityguide.org and www.uspreventiveservicestaskforce.org
CLINICAL AND HEALTH SYSTEMS
Since smoking is the predominant risk factor for CLRD and since secondhand smoke exacerbates asthma, decreasing the overall prevalence of smoking through smoking cessation is a key CLRD intervention strategy. On an individual level, it is critical that health care providers discuss cessation with smokers and provide these individuals with the tools they need to quit, including pharmacologic assistance as indicated. Significantly increased quit rates have been observed with patients who undergo counseling with their physician or other health care professional.

Health care systems and provider practices can benefit from education and training that increases adherence to national guidelines in CLRD diagnosis, treatment and care management. In addition, health care practices should include CLRD in quality monitoring and quality improvement.

PUBLIC AWARENESS AND HEALTH EDUCATION
As previously mentioned, a sizable percentage of individuals with treatable lung disease have not yet been diagnosed for CLRD. A targeted public education campaign can raise awareness about CLRD among the general public, increasing the likelihood of early diagnosis and treatment and prevention of avoidable illness and mortality. In addition, for individuals with CLRD, access to evidence-based chronic disease management workshops (e.g., Stanford’s Chronic Disease Self Management Program) can assist individuals in optimally managing their condition.

POLICY/ADVOCACY
Policies that support and promote tobacco abstinence, reduce occupational exposure to dusts and chemicals, and reduce indoor and outdoor air pollutants are critically important in the overall reduction of CLRD morbidity and improvement of quality of life of persons with chronic respiratory disease. Increased awareness of CLRD as an important health problem by decision makers can set the stage for such measures. In addition, the relationship between secondhand smoke and CLRD exacerbation justifies continuing pursuit of policies decreasing exposure to secondhand smoke in multi-unit housing, automobiles, and other closed spaces not currently included in indoor smoke free laws. Advocacy for school policies and procedures that allow students to successfully manage their asthma is also of critical importance.

RESEARCH AND EVALUATION
There are still large gaps in the understanding of CLRD related to causation, epidemiology, and care and treatment. Ongoing efforts are needed to improve the collection, analysis, dissemination and reporting of CLRD-related data, further evaluate prevention strategies, and improve our understanding of CLRD development, prevention and treatment. This research is the collective responsibility of public health and health care agencies, academia, funders, CLRD advocates and stakeholders, and community-based organizations.
Planning Goals and Objectives

The Planning Process

The CLRD strategic planning process was a systematic effort to create a multi-disciplinary approach towards addressing preventable illness and death due to CLRD. This process brought together diverse stakeholders from across Arizona through planning meetings held from November 2014 to June 2015. Participating agencies included public health departments, community-based organizations, universities, hospital systems, behavioral health organizations, membership organizations, foundations, and pharmaceutical companies, among many others. A full listing of participating agencies is provided in Appendix A.

Planning team members developed the initiative’s mission and vision and then divided into five workgroups (Marketing/Communications, Policy and Advocacy, Fund and Resource Development, Health Education, and Research/Data) to develop workgroup-specific goals, objectives and strategies.

Within the planning process, team members were asked to take into account CLRD efforts already underway, the value of and need for new partnerships, and the strength of the evidence-base supporting recommended goals, objectives, and strategies, which are listed below.
**RESEARCH AND DATA**

**Goal 1**
Increase the number of health care systems capturing CLRD risk and protective factors through Electronic Health Record systems (EHRs).

**Strategies**
1. Create an inventory of health care systems collecting CLRD risk factors via EHR and manually.
2. Develop standardized CLRD measures and a list of CLRD risk and protective factors.
3. Create awareness among health care administrators and providers not collecting CLRD risk factors and provide them with an enrollment process.
4. Enable providers not collecting CLRD risk factors to collect and provide this information via an easily implementable tool.
5. Develop a reporting process that facilitates CLRD data reporting to the Arizona Department of Health Services.

**Goal 2**
Develop an educational campaign targeted at both patients and providers focused on the importance of participation in research studies that can advance treatments and find cures for CLRD.

**Strategies**
1. Create awareness materials that can be distributed to patients and providers elevating the level of comfort and understanding of research participation.
2. Conduct outreach to local researchers and build a database of current CLRD research studies that patients can access when looking for CLRD resources.
3. Incorporate research options and information into the referral process for patients seeking CLRD resources.

**POLICY/ADVOCACY**

**Goal 1**
Initiate and advocate for new State level policies that promote lung health for individuals and communities while creating and delivering education on current policies affecting CLRD.

**Strategies**
1. Identify legislative priorities related to CLRD and review applicable state law to determine revisions and/or legislative initiatives to support those priorities.
2. Establish a “quick response” team of stakeholders who will address and advocate on proposed legislation.
3. Research legislators who have previously supported lung health issues, e.g., indoor smoking restrictions.
4. Develop community constituent impact statements to share with legislators.
5. Establish a “news brief” to keep legislators updated on current issues.
6. Utilize the Lung Association’s e-advocacy system for message distribution.
7. Link local public health advocacy experts to establish priorities and update coalition on current issues.

**HEALTH EDUCATION**

**Goal 1**
To increase the number of individuals exposed to evidence-based Chronic Lower Respiratory Disease and Chronic Disease Self-Management education programs.

**Strategies**
1. Identify and review existing programs/resources that could be recommended to patients, caregivers, and providers.
2. Create a referral system allowing the provider to immediately connect the patient with the programs identified.
3. Tailor and develop an educational program that meets the needs of all community health care providers.
4. Make programs available to all statewide communities through outreach, marketing, and webinars.

**Goal 2**
To develop an early detection/screening program for at-risk individuals in Arizona communities.

**Strategies**
1. Identify necessary screening and components (equipment, diagnostics, questionnaires).
2. Identify and reach out to potential partners, sponsors, and volunteer groups.
3. Utilize existing programs and relationships to develop a model health event to educate on early detection and screening.
4. Identify areas to host event across the State to maximize participation and utilization of the event.
FUND AND RESOURCE DEVELOPMENT

Goal 1
Increase community resources and funding opportunities that will increase the reach of smoking cessation programs (e.g., Freedom from Smoking) and additional CLRD evidence-based programs.

Strategies
1. Train smoking cessation facilitators for greater program reach.
2. Establish partnerships with colleges/universities in Arizona to develop programs for graduate students in health promotion to get credit for such training and implementation.
3. Identify potential partners that have funds and resources to support smoking cessation efforts.
4. Identify and advocate for reimbursement mechanisms to support services, programs and facilitators.

Goal 2
Leverage existing funding by identifying community partners and provide partners the opportunity to share current projects.

Strategies
1. Create and distribute a survey to obtain information from stakeholders on what programs are currently receiving funding relevant to CLRD.
2. Create a referral grid as a tool for all partners to identify where their efforts may complement another effort taking place.

Goal 3
Raise awareness of CLRD and best practices related to CLRD through education summits.

Strategies
1. Invite targeted communities that work with underserved populations.
2. Secure funders who support large-scale educational health events.
3. Make continuing medical education credits (CMEs) available for participation in CLRD-related educational events.
4. Partner with Area Health Education Centers for additional outreach and participation.
5. Review results of Community Health Needs Assessment every 3 years to understand needs of the community and address how the summit will assist in these areas.

MARKETING/COMMUNICATIONS

Goal 1
Increase community and health care linkages that promote sustained action to reduce the impact of CLRD in Arizona through effective and accessible prevention and care.

Strategies
1. Develop a strong functioning CLRD Coalition that promotes sustained action to reduce the impact of CLRD in Arizona through effective accessible prevention and care.
2. Develop membership materials that outline the expectations of each participating member.
3. Develop marketing pieces that introduce CLRD and the CLRD Coalition.
4. Develop coalition goals, structure, procedures and policies.
5. Identify one member of each health care organization/system to act as a coalition advocate to secure opportunities to communicate with their stakeholders.
6. Prepare communication items geared toward organization stakeholders.
7. Identify professionals from Arizona’s academic and/or medical institutions to identify and/or present at 3rd party events (e.g., conferences) on CLRD risk factors, best practices, evidence based programs and current issues as identified by the Coalition.

Goal 2
Increase outreach to health care professionals about prevention and management of chronic diseases.

Strategies
1. Identify organizations and their internal communication channels.
2. Place articles in various organizational publications and other forms of communication.
3. Deliver CLRD presentations to health care professionals.

Goal 3
Raise awareness to the public regarding CLRD.

Strategies
1. Develop a strategy for launching a CLRD website and Facebook page and subsequent promotions of these pages.
2. Identify individuals with asthma, Alpha 1, COPD, pulmonary fibrosis to share their stories.
3. Develop CLRD-related health and safety messaging that can be shared through outreach and awareness efforts (e.g. presentations, health fairs, screenings, online and social media).
Evaluating CLRD Efforts

The identification of key metrics and a process for tracking progress in achieving these metrics will be critically important to the efforts of the CLRD Coalition. A local firm, Saguaro Evaluation Group (SEG), has been selected to evaluate progress towards achieving the goals and objectives outlined in this plan. Using a community-based participatory research (CBPR) approach, SEG will utilize various methods and multiple sources to assess progress in impacting CLRD on an individual, programmatic, and community level. The CBPR model was selected because it promotes collaboration among stakeholders, community members, subject matter experts, and evaluators allowing equitable participation during each phase of the evaluation process – design, data collection, interpretation, and dissemination. This increases the community’s capacity to address social change with more effective and relevant interventions.

Due to the complex nature of CLRD and related intervening variables, it is difficult to determine direct causation between the strategies implemented in this plan and any foreseeable outcomes. Rather, the outcome evaluation will serve to demonstrate how the collective actions of this plan contribute to the observed outcomes of interest. When possible, pre-post comparisons and comparisons between intervention groups and control groups will be utilized to help determine outcomes attributable to specific interventions.

EVALUATION GOALS

Process and outcome evaluations, as well as ongoing needs assessments, will be utilized to achieve the following:

- Monitor the extent to which the plan is implemented as designed
- Track policy decisions and community-based interventions
- Ensure fidelity of evidence-based approaches
- Assess the extent to which desired outcomes are achieved
- Empower communities to take ownership of social change efforts
- Develop integrated strategies to address gaps in services and data collection
- Inform ongoing adaptations and strategies to address implementation challenges
- Identify areas for increased funding, partnerships, and resources
- Guide sustainability

PROCESS EVALUATION

While process evaluations will change as strategies evolve, the following examples are possible metrics to determine whether the plan is implemented as designed:

- Types and quantities of services delivered
- Beneficiaries of services (whether target populations are reached)
- Number of individuals exposed to lung health messaging
- Collaborations and partnerships
- Health care systems with Electronic Health Records that capture and report CLRD risk factors
- Number of individuals enrolled in Asthma and COPD Registries
- Referrals and percentage of referred individuals who access care in a timely manner
- Advocacy efforts and number of participants advocating for the adoption of proposed policies that improve the lung health of individuals and communities
- Fidelity of evidence-based programs
- Functioning of CLRD Coalition, as measured by Coalition Functioning Assessments

OUTCOME EVALUATION

Outcome evaluation will be conducted to assess the extent to which the desired results outlined in this plan are achieved. Outcomes may be assessed using:

- Longitudinal changes in statewide CLRD surveillance data
- Knowledge, attitude, and behavior change related to risk and protective factors of CLRD and chronic disease self-management
- Types of proposed and approved State and local level policies designed to improve the lung health of individuals and communities
- Implementation of policies designed to improve the lung health of individuals and communities
Advancing CLRD Efforts

The process of developing a strategic plan often generates new energy and new ideas. But, as with most plans, success in meeting goals and objectives over the long term requires that initial efforts and energy be sustained, new partnerships developed and progress documented.

As such, advancing this plan will take collaborative and coordinated efforts by CLRD Coalition members, community leaders, those affected by CLRD, and many other partners and stakeholders. For measureable success, all involved must be willing to unite around a disease condition that has seen relatively little progress from a statistical perspective over the past 25 years. We encourage interested individuals to advocate for needed advancements, strive for better outcomes, and reach out to others regarding CLRD.

Individuals and/or organizations interested in getting involved in CLRD efforts can contact the American Lung Association in Arizona at (602) 258-7505 and/or visit www.breatheeasyaz.org.
# Appendix A

## Participating Agencies

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<td>American Academy of Pediatrics, Arizona Chapter</td>
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<td>Apache County Public Health Services</td>
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<td>Area Agency on Aging</td>
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REFERENCES


19. CDC. Available at: http://www.cdc.gov/asthma/triggers.html.


