Lung disease is a term that describes many different health conditions. In children, the most common occurrence of lung disease is asthma. While many forms of lung disease are genetic, tobacco use is an important risk factor to these serious conditions that can be addressed.

National Perspective

Lung disease is a broad category of conditions affecting the lungs including: asthma, bronchitis, Chronic Obstructive Pulmonary Disorder [COPD], emphysema and pneumonia.¹ These diseases result in a significant negative impact to an individual in both quality of life and lives lost. According to the Centers for Disease Control and Prevention (CDC), chronic lower respiratory disease (CLRD) accounted for approximately 6% of all deaths and was the third leading cause of death in 2013 behind diseases of the heart and malignant neoplasms, respectively.²

Lung disease also negatively impacts quality of life either through a single condition or a co-occurring condition. Approximately 9% of children under the age of 18 have asthma³ and 13% of adults have asthma. Often times, lung diseases cause an inadequate supply of oxygen to be sent to other organ systems, thus creating a co-occurring condition, or comorbidity. For example, it is common for people with COPD to develop pulmonary hypertension and cor pulmonale (heart failure resulting from lung disease). Because of

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² Centers for Disease Control and Prevention, http://www.cdc.gov/nchs/data/hus/hus14.pdf#020
³ Centers for Disease Control and Prevention, http://www.cdc.gov/nchs/data/hus/hus14.pdf#020
the severity of these conditions, it is important to understand what causes lung disease in an effort to prevent illness.

Factors that cause lung disease range from causes that cannot be controlled, such as genetics, to those that can be modified, such as tobacco use. Occupational and environmental factors are also factors that contribute to lung disease, such as asthma. These include dust, mold and second- and third-hand smoke. While these can primarily be addressed through prevention efforts, **tobacco use is the single most important and modifiable risk factor**, especially because of the cost of tobacco-related disease.

In the United States in 2009, lung diseases (excluding lung cancer) resulted in $117 billion in direct costs, and $69 billion in indirect costs, making it the fifth most costly illness.\(^4\) The total cost of tobacco related disease is $300 billion a year.\(^5\) Tobacco is also impacting employers with an annual additional burden estimated at $5,800 by each tobacco user due to increased medical claims and lost productivity.\(^6\)

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\(^6\) Berman, Micah; et al, “Estimating the cost of a smoking employee,” [http://tobaccocontrol.bmj.com/content/early/2013/05/25/tobaccocontrol-2012-050888](http://tobaccocontrol.bmj.com/content/early/2013/05/25/tobaccocontrol-2012-050888)
Because of the high societal cost of tobacco use, the United States Department of Health and Human Services has placed tobacco use as a key priority within Healthy People 2020. Overall, Healthy People 2020 aims to reduce the use of both tobacco and smokeless tobacco products across all age ranges and through a wide-range of strategies. As the country works towards achieving these objectives, the OHC Region must also work collaboratively to improve the health of the area through targeted tobacco-prevention efforts.

**Justification for Health Issue**

Through the application of the Logic Model and associated priority ranking process described in the Methodology section, health issues were compared side-by-side. In the Lebanon Community, Lung Disease was one of the prioritized health issues. This is the result of supporting evidence from secondary data, primary data from the hospitals, the feasibility to change the issue and the community readiness to change the issues.

**Secondary Data**

In the OHC region, 23% of people smoke and 27% smoke within the Lebanon community; rates that are higher than the national average of 18% and well above the 12% goal of Healthy People 2020. In the Lebanon Community, nearly 11% adults have asthma, which is higher than the national rate of 13%. Approximately 52,000 children throughout the OHC Region have asthma. Additionally, 6% of the population is living with COPD. Lung cancer also occurs more commonly here than in the rest of the nation with an incidence rate of 72 per 100,000 people compared to 65 per 100,000 people. The age-adjusted rate of death (per 100,000 people) due to lung disease across the nation is 43; yet, in the OHC Region it is 57, and within the Lebanon Community it is 64.
Primary Data

Throughout the OHC Region, lung diseases account for 49% of all visits to the Emergency Department (ED) for health assessment issues. In the Lebanon Community, 14% of all ED visits, and 20% of all pediatric ED visits are due to respiratory illness. For the Lebanon Community, 14% of elderly patients (65+) present with respiratory issues compared to 18% of all ED visits by patients 65 years of age and older. Respiratory issues are the third highest for patients 65 years of age and older. For patients 0-17 years of age, 20% of all ED visits are due to respiratory illness. It is the second highest behind injury and poisoning (28%) Of the seven health issues evaluated in the health assessment, 56% of all visits to the ED in the Lebanon Community are due to respiratory illness.

Overall, children between the ages 0-17 present to the ED with significantly more respiratory needs than adults, representing 20% of the visits. Also to note, nearly 16% of all Medicaid visits are due to respiratory illness in the Lebanon Community, which is higher than other payer types. Approximately 50% of patients that visit the Lebanon ED either have Medicaid or are uninsured. This data reveals a relationship between poverty and increased visits due to respiratory illness. This relationship is significant when viewed in light of 2015 CDC findings that people living below the poverty level have a higher prevalence of smoking (26.3%) compared to people at or above this level (15.2%).7

What Can We Do?

Although the evidence against tobacco use is strong, the OHC Region and the Lebanon Community still face significant cultural and societal barriers to the reduction of tobacco use. Currently, Missouri has the lowest excise tax per pack of cigarettes in the nation at 17 cents per pack—compared to New York’s at $4.35. A significant raise would motivate current smokers to quit and prevent kids from starting. Within the eight-county Lebanon Community, only one county has a smoke-free ordinance in place: Baxter County, AR. The clean Indoor Air Act took effect in 2006, and made Arkansas one of 18 states in the nation to prohibit smoking in indoor workplaces and public areas. Policy

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6444a2.htm?s_cid=mm6444a2_w
changes are needed at the city, county and state level to create sustainable benefits to the Lebanon Community’s rates of lung disease and other chronic conditions.

**Future Economic and Society Impact**

The Lebanon Community, along with the OHC Region, is faced with a compelling case of the health impacts to the community as a result of lung disease. There is clear evidence that changing one behavior, tobacco use, can spur meaningful change to prevent diminished of quality of life and loss of life. The failure to act impacts far more than just those with lung disease. It impacts everyone, especially businesses. According to the Bureau of Labor Statistics in 2014, the Lebanon Community had a workforce of 69,352. In 2013 the smoking rate for the Community was 27%. This means an estimated 18,725 people are employed and smoking. Based on the national figure of an annual expense to employers of $5,800, smoking is costing the Lebanon Community employers $108,605,000 each year. Changing the percent of people who smoke just two percent, which happened from 2011 to 2013, saves employers an estimated $44 million. Making changes now not only helps reduce lung disease and death, it helps break the impact of the disease to future generations.

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Cardiovascular Disease

Cardiovascular disease is the leading cause of death for both men and women in the United States. It can be caused by and leads to many other serious health conditions. Lifestyle changes can make a huge impact in improving heart health and leading to a better quality of life.

National Perspective

Cardiovascular disease (CVD) is a disease of the heart and blood vessels. This includes conditions such as arrhythmias, congestive heart failure, hypertension, stroke and numerous other related conditions. CVD is the leading cause of death in the United States and is responsible for approximately 24% of all deaths.

Key risk factors for developing CVD include preexisting health conditions (high blood pressure, high cholesterol and diabetes), unhealthy lifestyles (poor diet, physical inactivity, obesity, alcohol abuse and tobacco use) and a family history of CVD. Three key risk factors: high blood pressure, high cholesterol and smoking, are present in nearly half (47%) of Americans. High blood pressure, or hypertension, occurs when the force in the blood vessels is too high. Approximately, one in three adults has hypertension, and 48% have hypertension that is not controlled. It is often known as the “silent killer” because many people are not aware of their elevated blood pressure until they have a more serious health issue, such as a heart attack. Likewise, there are no signs or symptoms of high cholesterol and it must be measured by a simple blood test. Approximately 39% of U.S. residents have elevated cholesterol levels. This occurs when cholesterol, a waxy-substance made by the liver and found in certain foods, builds up in the walls of the arteries. The buildup of cholesterol can narrow arteries and restrict blood flow to the heart, brain, and other areas of the body. If a clot forms,

10 Centers for Disease Control and Prevention, http://www.cdc.gov/heartdisease/risk_factors.htm
blood flow can stop which may cause a heart attack or stroke. Both hypertension and high cholesterol largely result from unhealthy lifestyles such as a poor diet high in salt, sugar and unhealthy fats and a lack of physical activity. Additionally, a clot is more likely to develop with smoking tobacco. Smoking raises triglycerides (a type of fat in blood) and increases the buildup of plaque causing blood vessels to thicken and reduce blood flow.

Yet, the smoker is not the only person with an increased risk of developing heart disease. Breathing second-hand smoke increases a nonsmoker’s risk of developing coronary heart disease by 25—30%. Nearly 34,000 nonsmokers die each year from coronary heart disease as a result of breathing second-hand smoke. It also increased the risk for stroke by 20—30%. Approximately 8,000 nonsmokers die each year from stroke caused by breathing in cigarette smoke.

CVD has negative implications that extend beyond the individual and impact the community at-large. In 2009, the total costs of CVD were $324.1 billion in direct costs and an additional $179.1 billion in indirect costs. With more than $503 billion in total cost, CVD is the most costly disease in the U.S., and represents 16% of total disease impact. Annual direct medical costs due to CVD are expected to exceed $818 billion by 2030. One of the most impactful risk factors to CVD is obesity.

Obesity alone contributes to various other diseases and has a significant impact on the quality of life and the U.S. economy. In 2008, the medical costs of obesity were estimated to be $147 billion, with an additional cost in lost productivity due to obesity-related absenteeism of more than $3 billion. According to CDC, medical costs for an obese individual are approximately $1,429 more than those for a person of normal weight. These costs are associated with direct medical costs, the contribution of obesity to the development of chronic conditions, lack of productivity at work, and other costs associated with obesity.

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17 American Heart Association, [http://circ.ahajournals.org/content/early/2013/12/18/01.cir.0000441139.02102.80.full.pdf](http://circ.ahajournals.org/content/early/2013/12/18/01.cir.0000441139.02102.80.full.pdf)
18 Centers for Disease Control and Prevention, [http://www.cdc.gov/obesity/adult/causes.html](http://www.cdc.gov/obesity/adult/causes.html)
20 Lloyd-Jones D; et al, American Heart Association Statistical Update – “Heart disease and stroke statistics—2010 update,” [https://circ.ahajournals.org/content/121/7/e46.full.pdf+html](https://circ.ahajournals.org/content/121/7/e46.full.pdf+html)
worker’s compensation\textsuperscript{21} and absenteeism\textsuperscript{22}

\textbf{Justification for Health Issue}

Through the application of the Logic Model and associated priority ranking process, described in the Methodology section, health issues were compared side-by-side. In the Lebanon Community, Cardiovascular Disease was one of the prioritized health issues. This is the result of supporting evidence from secondary data, primary data from the hospitals, the feasibility to change the issue and the community readiness to change the issues.

\textbf{Secondary Data}

In both the OHC Region (220.91) and the Lebanon Community (222.41), the rate of death due to coronary heart disease per 100,000 is higher than U.S. (184.55). Both within the Region and the Lebanon Community this is the leading cause of death. Additionally, in both the OHC Region (47.55) and the Lebanon Community (54.03), the rate of death due stroke per 100,000 is higher than the U.S. (40.39). In the Region, 5.8\% of people and 7.8\% of the Lebanon Community have coronary heart disease or angina, which are both higher than that of the U.S. (4.40\%). Overall, the Lebanon Community performs worse than the OHC region and the nation on several risk-factor indicators. The graphs below show how the Lebanon Community compares to the OHC Region and the nation for blood pressure, cholesterol levels, obesity and tobacco use. The ranking revealed that heart disease morbidity and mortality are higher for the Lebanon Community than the country. The following sections discuss these findings.


High Blood Pressure

- Lebanon Community: 34%
- Region: 30%
- United States: 28%

High Cholesterol

- Lebanon Community: 47%
- Region: 41%
- United States: 39%

Obese Adults

- Lebanon Community: 34%
- Region: 32%
- United States: 27%

Tobacco Use

- Lebanon Community: 27%
- Region: 23%
- United States: 18%
Primary Data

In the Lebanon Community, cardiovascular disease accounts for 16% of ED visits due to the assessment Health Issues. This is the second highest behind lung disease (56%). Cardiovascular disease accounts for 38% of ED visits for the age 65 and over population. This is the second highest behind lung disease (48%).

As the graph below indicates, the frequency of visits to the ED for cardiovascular disease increases as age increases.

ED by Principal Diagnosis by Age Group (Assessed Health Issues only)

Also, variations are seen among various payer types. CVD is highest among those with Medicare (64%), followed by patients with commercial insurance (20%), those patients with Medicaid (9%) and without health insurance (6%), (see graph at right).
Finally, the primary data reveals that over 19% of ED visits due to the assessment Health Issues with a secondary diagnosis of mental illness have a primary diagnosis related to the cardiovascular system. This finding is noteworthy because it illustrates the common co morbidity between cardiovascular disease and mental illness. Individuals with mental illness, such as depression, are more likely to have cardiovascular disease and those with cardiovascular disease, among other chronic diseases, are also more likely to suffer from depression\(^{23}\). In one study, depression was associated with a 31% higher rate for cardiovascular events\(^{24}\). This is largely explained by unhealthy behavior choices, including lack of physical activity, poor diet, smoking, and alcohol abuse.\(^{25}\)

**What can we do**

Cardiovascular Disease is a multi-faceted issue for which much can be done at the local level and there are already efforts underway in the community, both through partnership and organizations. A large portion of efforts that address risk factors associated with cardiovascular disease are associated with the CDC’s Healthy Eating Activity Living (HEAL) Grant several of the counties in the Lebanon Community have received. While work has been done within the Lebanon Community to improve systems around risk factors for CVD, there are still many steps that can be taken throughout the Community, from city and county policy to changes made within businesses and neighborhoods throughout towns in the Community.

**Future Economic and Societal Impact**


\(^{24}\) Hamer, Mark, PhD; Molloy, Gerard J., PhD; Stamatakis, Emmanuel, PhD, Journal of the American College of Cardiology – “Psychological Distress as a Risk Factor for Cardiovascular Events”, [http://content.onlinejacc.org/article.aspx?articleid=1188066](http://content.onlinejacc.org/article.aspx?articleid=1188066)

As the leading cause of death and the highest medical cost to society, effective prevention strategies are needed to reduce the increasing burden of CVD on the society, specifically as it relates to obesity. In the OHC Region, 31.81% of adults age 20 and over self-report that they are obese (body mass index >30). Basing estimates on the cost to employers for obesity at $1,429, an estimated $766 million of medical costs fall on the OHC Region due to obesity. In the Lebanon Community, these costs are $106 million per year. According to a recent study conducted by the Robert Wood Johnson Foundation (RWJF), obesity rates for adults are expected to climb over the next 20 years such that more than 60% of people could be obese in 13 states by 2030\textsuperscript{26}. The OHC Region is included in these 13 states. Thus, action must be taken to reduce obesity rates to lower costs associated to CVD.

\begin{table}[h]
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\begin{tabular}{|c|c|}
\hline
\textbf{Annual Cost of Obesity} & \textbf{Annual Cost of Obesity} \\
Springfield Community & Region \\
\hline
$123$ million & $766$ million \\
\hline
\end{tabular}
\caption{Annual Cost of Obesity}
\end{table}

\textsuperscript{26} Levi, Jeffrey; et al, Robert Wood Johnson Foundation – “F as in Fat: How Obesity Threatens America’s Future,” \url{http://www.rwjf.org/content/dam/farm/reports/reports/2012/rwjf401318}
Mental Health

Mental Health is powerfully connected to who gets sick and who stays well. It has a tremendous impact on both individuals and families. Failure to adequately address mental health needs results in enormous human, social and financial costs.

National Perspective

According to the U.S. Department of Health and Human Services (HHS), mental health may be defined as a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community. Oppositely, mental illness, which also is described by DHSS as all diagnosable mental disorders or health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning.27

Often used interchangeably with mental health, behavioral health may be described as a subspecialty that studies the reciprocal relationship between overall well-being of the person and human behavior.28 The Substance Abuse and Mental Health Services Administration describes behavioral health as promoting mental health, resilience and well-being; the prevention of mental health and substance abuse disorders; and the support of those who are in recovery from their conditions.29 The relationship between mental health and behavioral health needs to be considered and evaluated as a part of the overall solution to the challenges related to improving overall community mental health.

Deconstructing the challenges that face our nation—as well as the Lebanon Community—reveal problems that complicate addressing the mental health hurdles faced by many. It is impossible to separate mental and behavioral health from other health conditions, as the mind and body are physically connected and cannot operate independently. Physical illness such as chronic disease has been linked with mental and behavioral health diagnoses and can work interchangeably to exacerbate either condition. As stated by DHSS, it is estimated that only 17% of US adults are considered to be in a state of optimal mental health. Conversely, 83% of US adults exist in a state that is less than optimal related to their mental health.

Another complexity lies in the fact that access to mental health services is limited. Even when services are accessible, often times they are pricey. Mental Health Professional Shortage Areas demonstrate the great lack of access that exists throughout our nation. It is estimated that 89.3 million Americans live in one of those shortage areas. Where there is access, mental health treatment services are often perceived to be high cost and therefore a barrier to access. Kaiser Family Foundation research indicates that 45% of people not receiving mental health treatment services list cost as a barrier. Each of the challenges discussed complicates the layers of complexity involved with understanding mental health as a health concern for individuals and a public health threat for our communities and nation.

**Justification for Health Issue**

Through the application of the Logic Model and associated priority ranking process, described in the Methodology section, health issues were compared side-by-side. In the Lebanon Community, Mental and Behavioral Health was one of the prioritized health issues. This is the result of supporting evidence from secondary data, primary data from the hospitals, the feasibility to change the issue and the community readiness to change the issues.

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30 Centers for Disease Control and Prevention, [http://www.cdc.gov/mentalhealth/basics.htm](http://www.cdc.gov/mentalhealth/basics.htm)
Developmental Disabilities

Developmental disabilities affect approximately 15% of children between the ages of 3 and 17 years. Developmental disorders can include:

- ADHD
- Autism spectrum disorder
- Cerebral palsy
- Hearing loss
- Intellectual disability
- Learning disabilities
- Other developmental delays

Substance Abuse

It is estimated that 18% of Americans over the age of 18 have experienced a mental illness and in the past year more than 8% of people have experienced a substance abuse disorder. SAMHSA states that substance abuse disorders occur when the recurrent use of alcohol and/or drugs causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home.

Prescription drug misuse is a growing trend throughout the country, and the OHC Region has not escaped that trend. This trend is likely due to increasing ease of access and misperceptions about safety of using these drugs. Opioid drug sales have increased four-fold from 1999 through 2010. During that same time, overdose deaths and substance abuse treatment admissions have increased six-fold. Health systems in the OHC Region have experienced a similar trend and have treated many patients with

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33 Substance Abuse and Mental Health Services Administration, http://www.samhsa.gov/disorders
34 Substance Abuse and Mental Health Services Administration, http://www.samhsa.gov/prescription-drug-misuse-abuse
these types of disorders. More information is needed to fully understand the impact of this trend on our population. Also needed are resources available to treat addiction and the outcomes associated with it in order to appropriately address the situation and reverse this trend.

**Secondary Data**

This assessment provides a limited amount of data related to mental health and mental illness in the Lebanon Community.

The data for prevalence was obtained from Medicare fee-for-service population with depression. The data for mortality was from suicide rates, and the source of data was Centers for Disease Control and Prevention, National Vital Statistics System.

![chart](image)

**Primary Data**

Of the top six priority health concerns identified for the Lebanon Community, mental illness ties third with maternal, child health (11% of visits) in the amount of emergency department (ED) visits associated with this issue. It is also a common secondary diagnosis for ED visits.

This assessment process has revealed a number of limiting factors to truly understanding the mental health challenges in the Lebanon Community. For example, a striking discussion among healthcare provider partners early in the data collection process determined that the path forward to assess data revealed discrepancies in data collection and tracking methods among providers. This is not unique to the OHC Region. Evaluation of mental and behavioral health needs in provider settings varies greatly according to the facility and the individual providing care. The participating healthcare providers were able to determine a data set related to ED use that provides some basis for evaluating the documented need for the purpose of this assessment. This data showed ED visits were due to the following:
What Can We Do?

As mentioned previously, the data that was assessed and discussed for the purposes of this assessment is specific to the emergency department from the healthcare providers in the Lebanon Community. But more information is needed to truly understand and determine a path forward to adequately address the mental/behavioral health needs in our Community. Information needed would include:

- Mental/behavioral service providers
- Affordability of mental health services
- Ease of access/barriers to mental/behavioral health services
- Diagnosis rates of mental/behavioral health conditions in the community
- Unmet need of mental/behavioral health concerns
- Costs of mental/behavioral health treatment in the community
- Outcomes of interventions utilized to treat mental/behavioral illness in the community
- Strengths and gaps in mental health services in community
- Societal/community costs incurred by not treating mental health properly

Stigma associated with the diagnosis and care of being treated for mental and behavioral health concerns creates additional barriers for people accessing care. Individual concern for the perceptions associated with personally seeking care along

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35 National Consumer Supporter Technical Assistance, [http://www.ncstac.org/content/materials/CommunityNeedsAssessment.pdf](http://www.ncstac.org/content/materials/CommunityNeedsAssessment.pdf)
with institutional sensitivity to offering and encouraging individuals to seek care permeates this issue and affects actions that can be taken to overcome mental illness. As this issue is explored, the public health and health care communities can assist mental health providers by assisting with overcoming the perceptions and stigma associated.

Future Economic and Society Impact

While untreated mental and behavioral health conditions take a significant toll on individuals and their families, there is growing recognition that they also can carry a significant economic and societal burden as well. A 2008 study published in the American Journal of Psychiatry found that Serious Mental Illnesses (SMIs), which impact 6% of American adults, cost our society $193.2 billion dollars in lost earnings annually. 36

Lost earnings only scratch the surface of the total costs, however. It is possible to get some sense of the direct costs associated with untreated SMIs. In the same study, associated medical costs and disability benefits totaled $124.4 billion dollars. What is difficult to quantify though, is the indirect costs associated with these conditions. These costs can include reduced educational attainment, a diminished labor pool and greater demand on the criminal justice and social welfare systems. It is estimated that 22% of those in jail have been diagnosed with a mental illness as have one third of homeless adults. 37

Evaluation Plan

The plan for evaluating how health outcomes identified in this report are impacted over time will be included in our forthcoming Community Health Improvement Plan, which will also contain a plan of action for addressing the issues discussed above.