

2016

Tobacco and Chronic Disease

Summary

Chronic disease is a general term that refers to all illnesses that are long in duration and have a slow progression (World Health Organization [WHO], 2014). Chronic diseases are leading causes of death and sickness in the United States and Wyoming (Centers for Disease Control and Prevention [CDC], 2014c). “Smoking remains the leading preventable cause of premature disease and death in the United States” (U.S. Department of Health and Human Services [USDHHS], 2014, p. iii).

The Wyoming Tobacco Prevention and Control Program (TPCP) shares four goals with the federal tobacco prevention and control program that will reduce tobacco-related chronic disease, morbidity, and mortality: (a) reduce tobacco initiation (CDC, 2014d), (b) increase tobacco cessation attempts and successes (CDC, 2015), (c) decrease exposure to secondhand smoke, and (d) eliminate tobacco-related disparities (Starr et al., 2005).

Smoking-attributable chronic disease is preventable. Tobacco control efforts in the United States aim to increase public awareness of the hazards of smoking, restrict smoking in public places, increase cigarette prices, and limit underage access to cigarettes (American Cancer Society [ACS], 2016; WYSAC, 2012a). Tobacco prevention and control programs, if properly implemented, can be effective at reducing the health consequences and economic burden of smoking (USDHHS, 2014).

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Smoking, Chronic Disease, and Death

“Tobacco smoke damages every organ in the body and causes disease and death” (p. i, USDHHS, 2014). As of 2015, more than 16 million people in the United States live with at least one serious illness or disease caused by smoking (USDHHS, 2015). In the United States, 480,000 people die prematurely each year from tobacco-related chronic disease (USDHHS, 2014). For each person who dies from tobacco use, another 20 people have at least one tobacco-related illness (CDC, 2003). The total private and state economic costs of smoking are high in Wyoming: almost \$240 million in total health care costs and \$450 million from lost productivity in 2010 (WYSAC, 2012b).

Although there is no safe level of exposure to tobacco smoke, greater exposure increases the risk for and severity of chronic disease. Cigarette smoke contains carcinogens and chemicals linked to biological mechanisms that cause cardiovascular diseases, pulmonary diseases, respiratory diseases, and contribute to poor reproductive and dental health. More than 7,000 toxic chemicals comprise cigarette smoke, including ammonia, tar, and carbon monoxide. These chemicals increase the risk for developing several preventable chronic diseases for smokers and those who breathe

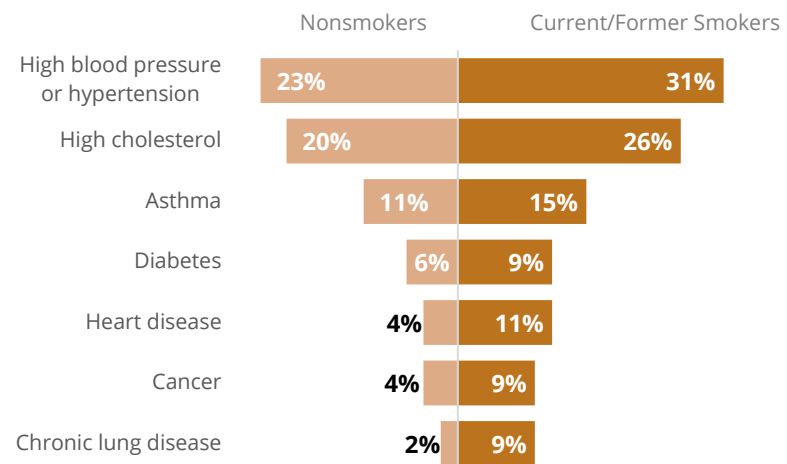
secondhand smoke (USDHHS, 2014).

Prevalence of Chronic Diseases and Cigarette Smoking

Based on the Wyoming Adult Tobacco Survey, Wyoming current and former smokers (people who had smoked at least 100 cigarettes in their lifetime) were significantly more likely to be diagnosed with high blood pressure, high cholesterol, asthma, diabetes, heart disease, cancer (all types other than skin cancer), and/or chronic lung disease

Figure 1: Chronic Diseases More Common in Individuals Who Have Smoked

Percentage of nonsmokers, current, and former smokers who were told by a health care professional they had ...



Note: Nonsmokers are those who have smoked fewer than 100 cigarettes in their lifetime. Current and former smokers are those who have smoked at least 100 cigarettes in their lifetimes. Chronic lung disease does not include asthma. Cancer does not include skin cancer.

Source: WYSAC, 2014.

than were people who had smoked fewer than 100 cigarettes in their lifetime (Figure 1; WYSAC, 2014).

Smoking Contributes to Leading Causes of Death

Tobacco use is the leading preventable cause of chronic diseases and leading causes of death including cancer, heart disease, respiratory diseases, and high blood pressure (USDHHS, 2014). In 2013, cancer, cardiovascular disease, and chronic lower respiratory diseases were the first, second, and third leading causes of death in Wyoming, respectively (CDC, 2014b; 2016). In Wyoming, 7% of current and former smokers, compared to 4% of nonsmokers, have been told by a healthcare professional they had heart disease (Behavioral Risk Factor Surveillance System [BRFSS], 2014).

The 2014 Surgeon General's Report (USDHHS, 2014) included several additions to the list of smoking-attributable diseases and other health effects (Figure 2). These include liver and colorectal cancer, diabetes mellitus, ectopic pregnancy, erectile dysfunction, age-related macular degeneration, orofacial clefts in newborns (as a result of maternal smoking), rheumatoid arthritis, and adverse health effects such as inflammation and impaired immune functioning. In addition, exposure to secondhand smoke is now a listed cause of stroke.

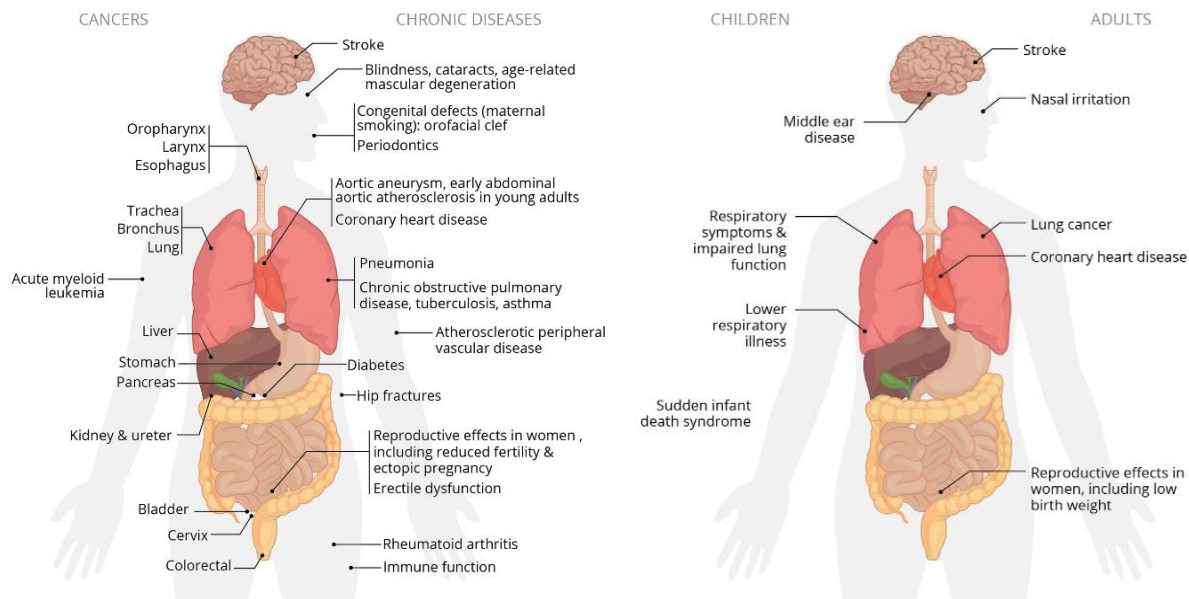
Cancer

In 2013, cancer was the leading cause of death in Wyoming (CDC, 2014c). When adjusting for age, lung cancer was the most deadly and third most common form of cancer in Wyoming and the United States between 2008 and 2012 (U.S. Cancer Statistics Working Group, 2013). Smoking increases the risks of many other cancers (Figure 2; USDHHS, 2014).

Quitting smoking reduces the risk of cancer. Ten years after quitting, risks of cancers of the mouth, throat, esophagus, and bladder are cut in half. Cervical cancer risk falls to that of a nonsmoker (ACS, 2014). Moolgavkar et al. (2012) estimated the impact of tobacco control policies on lung cancer mortality in the United States from 1975 to 2000. Approximately 800,000 lung cancer deaths were averted due to changes in smoking behavior.

Figure 2: Health Burdens Causally Linked to Smoking and Secondhand Smoke

"Tobacco smoke damages every organ in the body and causes disease and death" (p. i.)



Source: U.S. Department of Health and Human Services (USDHHS), 2014.

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Cardiovascular Disease

In 2013, diseases of the heart were the second leading cause of death in Wyoming (CDC, 2014c). National and international research over the past three decades has deemed cigarette smoking to be one of the top three leading risk factors for coronary heart disease (Roger et al., 2011). Cigarette smoking both by itself and in combination with other risk factors greatly increases the risk of poor heart health (American Heart Association [AHA], 2014). In fact, the AHA considers smoking to be the most important risk factor for preventable heart disease among men and women. The risk of developing coronary heart disease is two to four times greater for smokers than for nonsmokers. Nonsmokers who are exposed to secondhand smoke, depending on frequency and duration of the exposure, are also at greater risk for developing coronary heart disease than those who are not exposed to secondhand smoke.

Quitting smoking reduces the risk of cardiovascular diseases: One year after quitting smoking, the excess risk of coronary heart disease is half that of a smoker. Fifteen years after quitting, the risk is the same as a nonsmoker (ACS, 2014).

Chronic Obstructive Pulmonary Disease (COPD)

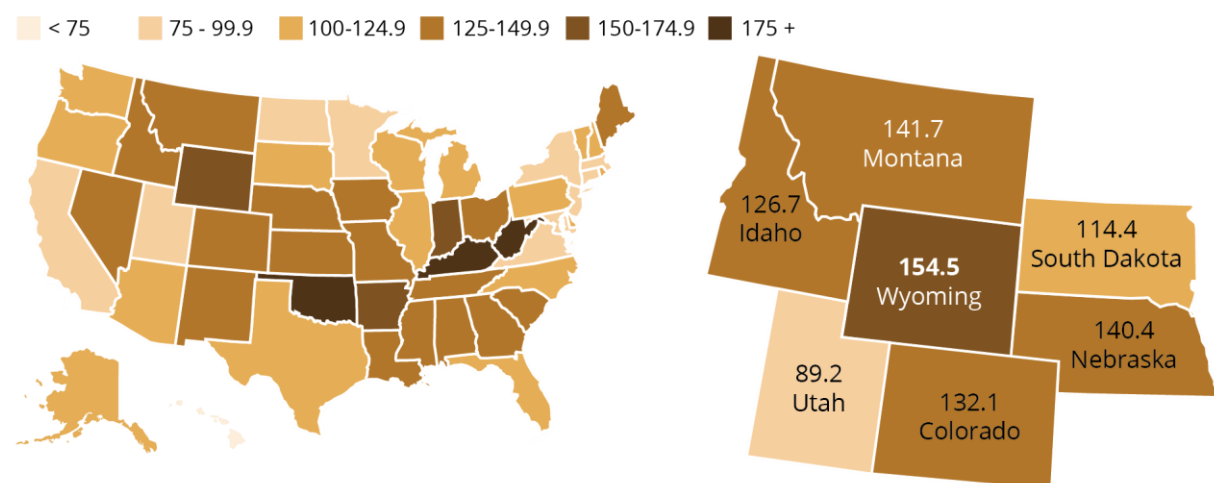
In 2013, chronic lower respiratory diseases, such as chronic obstructive pulmonary disease (COPD), were the third leading cause of death in Wyoming (CDC, 2014c). COPD refers to a group of lung diseases characterized by obstruction of airflow that interferes with normal breathing. Smoking cigarettes is the main cause of COPD (Decramer, Janssens, & Miravittles, 2012) with approximately 85–90% of COPD cases attributable to smoking (ALA, 2013b).

Respiratory diseases are among the most costly preventable diseases caused by smoking. In 2010, the National Institutes of Health (NIH) projected the national annual cost of COPD to be \$49.9 billion. This includes \$29.5 billion in direct healthcare expenditures, \$8.0 billion in indirect morbidity costs, and \$12.4 billion in indirect mortality costs (American Lung Association [ALA], 2013b).

Cigarette smoke causes direct injury of airway cells (Decramer et al., 2012) and may hasten the aging of lungs, thus accelerating the progression of COPD (Kazuhiro & Barnes, 2009). In 2013, more than 11 million U.S. adults had COPD, but approximately 24 million may have it without knowing (ALA, 2013a). Wyoming's 2010 COPD-related death rate was among the thirteen highest states (Figure 3; CDC, 2016). Quitting smoking has health benefits related to lung function. One to nine months after quitting, cilia in the lungs regain normal function, increasing the ability to handle mucus, clean the lungs, and reduce the risk of infection (ACS, 2014).

Figure 3: Wyoming Highest Death Rate for COPD in the Region

Age-standardized death rate (per 100,000 population) for COPD in the United States, 2014



Source: CDC, 2014b.

Stroke

In 2013, cerebrovascular disease (stroke) was the fifth leading cause of death in Wyoming (CDC, 2014c). Compared to nonsmokers, smoking doubles the risk of stroke for both men and women (National Stroke Association [NSA], 2013). According to a recent meta-analysis of 20 studies, breathing secondhand smoke significantly increases the chance of stroke in nonsmokers, even with low levels of exposure (Ono, Mackay, & Pell, 2011). Evidence suggests that quitting smoking greatly reduces the risk for smoking-induced strokes. Two to five years after quitting, the risk of stroke decreases to that of nonsmokers (ACS, 2014).

Risks of Secondhand Smoke

Research has consistently shown that exposure to secondhand smoke is detrimental to human health (e.g., Ono et al., 2011). Even with low levels of exposure, chemicals in cigarette smoke increase the risk of cardiovascular illness, cancer, respiratory disease, and death. Each year in the United States (CDC, 2014a),

- Nearly 34,000 nonsmokers die of heart disease;
- More than 7,300 nonsmokers die of lung cancer; and
- More than 100,000 of the smoking-caused deaths over the last 50 years were of babies who died of SIDS or other health conditions.

Akinbami, Kit, and Simon (2013) found that tobacco smoke exposure (including secondhand smoke and smoking) was associated with increased probability of children with asthma having asthma symptoms compared to children with asthma who were not exposed to tobacco smoke. The asthma symptoms exacerbated by tobacco smoke were asthma-caused sleep disturbance, activity limitations, and wheezing during exercise. In other research, exposure to secondhand smoke has been associated with impaired lung function in children, which is related to COPD in adulthood (Johannessen, Bakke, Hardie, & Eagan, 2012).

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