Tobacco Use in New Hampshire: Prevalence, Health Consequences, and Strategies to Reduce Use

Background

Tobacco use is an addiction and a behavior. As a result it is very difficult to quit. Smoking remains the leading preventable cause of disease and death in the United States. According to the 2014 Surgeon General’s Report, *The Health Consequences of Smoking—50 Years of Progress*, nearly all tobacco use begins before 18 years of age. Trying smoking for the first time is a risk-taking behavior that quickly changes to an addiction as a result of the chemical nicotine.1

This report presents data and trends on tobacco use among youth and adults in New Hampshire over the past 20 years. It also highlights mortality from smoking-related diseases, evidence-based strategies for reducing tobacco use, and the status of these strategies in New Hampshire.

Addiction Cycle of Nicotine

Nicotine is a chemical stimulant found in combustible products, such as cigarettes and cigars, and noncombustible products, such as electronic cigarettes, e-hookahs, and spit tobacco. Stimulants are drugs that cause temporary improvements in mental or physical functions. When nicotine enters the brain it causes an increase in the level of dopamine, a neurotransmitter (chemical messenger) responsible for managing the pleasure center of the brain. Increasing dopamine levels overstimulate the nervous system and produce a feeling of well being, which strongly reinforces the behavior of smoking, teaching the user to continue to want to smoke.2 As dopamine levels decrease, withdrawal occurs and the body feels cold, tired, and lacking in energy. Other withdrawal effects include feeling apathetic, being irritable, and having trouble focusing on tasks. This withdrawal process leaves the person needing to smoke to regain the positive feeling created by nicotine.

Impact on Public Health

Smoking costs lives. Tobacco use continues to be the leading cause of preventable morbidity and mortality in the United States. Nationally, deaths from tobacco use total more than deaths from car crashes, illegal drug use, suicides, murders, alcohol, and AIDS, combined. Secondhand and thirdhand smoke exposures are linked to thousands of additional deaths. Additionally, fires started by unattended cigarettes cause over 1,000 deaths per year.1

In New Hampshire, the annual death toll from smoking is estimated to be 1,700 to 2,000 individuals. (See Table 1 for estimates.)

Smoking costs money. In the United States, the annual economic cost of smoking is estimated to be in the hundreds of billions of dollars. For the years 2009-2012, it was between $289-332.5 billion.1,3

- $132.5–175.9 billion in direct medical care for adults
- More than $156 billion in lost productivity because of premature death and exposure to secondhand smoke

In New Hampshire, the annual economic cost of smoking and secondhand smoke exposure, measured by annual healthcare expenditures and lost productivity, is estimated to be $1,260,500,000.4 Productivity loss is from smoking-attributable mortality and years of potential life lost. Even larger productivity losses come from smoking-caused work absences, on-the-job performance declines, and disability-shortened productive work lives, shown in Table 1. Other non-health costs caused by tobacco use include direct residential and commercial property losses from smoking-caused fires and smoking-caused cleaning and maintenance costs.5
Table 1. Annual Tobacco-Related Morbidity, Mortality and Lost Productivity Estimates for New Hampshire

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Annual number of New Hampshire deaths per year attributed to smoking</td>
<td>1900 people</td>
</tr>
<tr>
<td>2 Annual amount of health care costs directly caused by smoking</td>
<td>$729 million</td>
</tr>
<tr>
<td>3 Annual portion of health care costs covered by the New Hampshire Medicaid Program</td>
<td>$139.2 million</td>
</tr>
<tr>
<td>4 Estimated annual health care expenditures in New Hampshire from secondhand smoke exposure</td>
<td>$24.6 million</td>
</tr>
<tr>
<td>5 Annual smoking-caused productivity losses in New Hampshire</td>
<td>$506.9 million</td>
</tr>
<tr>
<td>6 Annual state &amp; federal tax burden from smoking-caused government expenditures per New Hampshire household</td>
<td>$798 (hundreds)</td>
</tr>
</tbody>
</table>

(Adding rows 2, 4, and 5 equals $1,260,500,000)

Tobacco Use in New Hampshire

According to the 2014 Behavioral Risk Factor Surveillance Survey (BRFSS), smoking is the most common way that tobacco is used in New Hampshire with 17.5% of New Hampshire adults smoking. Using chewing tobacco, snuff, or snus is much less common (about 2.3%; every day and someday use).

When comparing the percentage of adults who smoked in New Hampshire with other New England States, in 2013 New Hampshire had a similar rate but was almost three percentage points less than the United States overall.

Table 2. Prevalence of Smoking among Adults, BRFSS, New England States and United States, 2013*

<table>
<thead>
<tr>
<th>State</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hampshire</td>
<td>16.2</td>
</tr>
<tr>
<td>Connecticut</td>
<td>15.5</td>
</tr>
<tr>
<td>Maine</td>
<td>20.2</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>16.6</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>17.4</td>
</tr>
<tr>
<td>Vermont</td>
<td>16.6</td>
</tr>
<tr>
<td>United States</td>
<td>19.0</td>
</tr>
</tbody>
</table>

*2014 BRFSS data from surrounding states was not available at the time this report was produced.

The percentage of adults reporting they currently smoke (17.5%, 2014 NH BRFSS) has declined almost 10% since 1996 (Figure 1). This decline must be interpreted with caution, however, as the Behavioral Risk Factor Survey (BRFSS) weighting method changed. The BRFSS was expanded to include the ability to collect data from individuals using cell phones. These changes are indicated by a gap between 2010 and 2011 in each figure based on BRFSS data.

Figure 1. Percent of adults reporting that they currently smoke, BRFSS, New Hampshire, 1996-2014

The weighting methodology change is indicated by a gap between 2010 and 2011 in each figure based on BRFSS data.

Figure 2 shows the variation of smoking prevalence by age groups. Young and middle-aged adults are more likely to smoke than older adults, especially adults 65 years and older. Smoking prevalence has declined...
since 1996 for most groups, but prevalence shows a possible increase for 2014, particularly among young adults (Figure 2).

Social Determinants of Health and Smoking

Social determinants of health can be defined as conditions in the social, physical, and economic environment in which people are born, live, work, and age. They consist of policies, programs, and institutions and other aspects of the social structure, including the government and private sectors, as well as community factors.

Social determinants of health influence smoking behavior. For example, in New Hampshire, smoking among adults is associated with education level. In 2014, 42.6% of adults with less than a high school education were current smokers but only 7.2% of those with a college degree reported being a current smoker. Additionally, since 1996, smoking prevalence has not declined among those with less than a high school education, compared with other groups with higher levels of education (Figure 4).
level and smoking for most years, particularly noticeable since 2010 (Figure 5).

Youth and Initiation of Tobacco Use
About 80% of adult tobacco users start by the age of 13, and 99% start by the age of 26.\(^8\) Fifteen to twenty percent of high school aged youth participating in the New Hampshire Youth Tobacco Survey (YTS) reported being current smokers in 2011, the most recent year the YTS was administered. Smoking rates declined from 2001 to 2007, but smoking rates since 2007 have been fairly level and possibly increasing (Figure 6). Smoking rates in middle school have not been measured since 2004, but at that time they were much lower than those for high school aged youth: 4% versus 19%, respectively.

Prevalence rates from the Youth Risk Behavior Survey (YRBS), depicted in Figure 7, show similar levels of smoking for high school aged youth and similar temporal patterns for the years covered by both surveys. In 2013, the percentage of high school aged youth overall who reported current cigarette smoking dropped from the 2011 rate of 20% to 14%, a decline of about six percentage points. Though the decline is not statistically significant, future YRBS data will reveal whether this decline represents a resumption of the decline observed from 1995 to 2013, or just a temporary drop.
Health Consequences of Tobacco Use

- Smoking causes about 83% of all lung cancer deaths in men and women. More women die from lung cancer each year than from breast cancer.
- About 80% of all deaths from chronic obstructive pulmonary disease (COPD) are caused by smoking.
- About 25% of ischemic heart disease deaths and about 10% of strokes are caused by smoking.
- Cigarette smoking increases risk for death from all causes in men and women.
- The risk of dying from cigarette smoking has increased over the last 50 years in men and women.

Figure 8 shows the annual death rate in New Hampshire from four conditions associated with smoking.

Figure 8. Death rates from ischemic heart disease, stroke, lung cancer, and chronic lower respiratory disease (CLRD), New Hampshire, 1979-2013

A change in methodology is indicated by a gap between 1997 and 2000.

In addition to causing most lung cancers, smoking also increases the risk for developing the following types of cancer: bladder, blood (acute myeloid leukemia), cervix (cervical), colon and rectum (colorectal), esophagus, kidney and ureter, larynx, liver, oropharynx (includes parts of the throat, tongue, soft palate, and the tonsils), pancreas, and stomach. If nobody smoked, one of every three cancer deaths in the United States would not happen.

Smoking also causes other health problems, including adverse pregnancy outcomes, reduced male fertility, lower bone density and increased risk of broken bones in older women, tooth loss, and gum disease, cataracts, and rheumatoid arthritis. Smoking increases the risk by 30–40% of developing type 2 diabetes and makes controlling diabetes harder for those who have it.

Quitting smoking can reduce the risk for many of the diseases mentioned previously. Quitting smoking reduces the risk of cardiovascular disease. One year after quitting smoking, a person’s risk for a heart attack drops sharply.

- Within 2 to 5 years after quitting smoking, a person’s risk for stroke declines to about the same risk as a nonsmoker’s.
- Within 5 years of quitting smoking, a person’s risk for developing cancers of the mouth, throat, esophagus, and bladder declines by about 50%.
- Ten years after quitting smoking, a person’s risk for lung cancer drops by half.

There are effective clinical and community-based strategies for reducing tobacco use and secondhand smoke exposure. These are summarized in Tables 4 and 5.
### Strategies to Prevent and Reduce Tobacco Use

Table 4. The U.S. Preventive Services Task (USPSTF): Recommendations for Reducing Tobacco Use in Adults and Pregnant Women.12

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Date Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Adults</td>
<td>The USPSTF recommends that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products.</td>
<td>April 2009</td>
</tr>
<tr>
<td>Pregnant Women</td>
<td>The USPSTF recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who smoke.</td>
<td>April 2009</td>
</tr>
</tbody>
</table>

Table 5. The Community Guide: Recommended Interventions for Reducing Tobacco Use and Secondhand Smoke Exposure.13

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes Addressed</th>
<th>Date Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive tobacco control programs</td>
<td>Secondhand smoke exposure, cessation, initiation</td>
<td>August 2014</td>
</tr>
<tr>
<td>Incentives and competitions to increase smoking cessation among workers, when combined with additional interventions</td>
<td>Cessation</td>
<td>June 2005</td>
</tr>
<tr>
<td>Interventions to increase the unit price for tobacco products</td>
<td>Cessation, initiation, health disparities</td>
<td>November 2012</td>
</tr>
<tr>
<td>Mass-reach health communication interventions</td>
<td>Cessation, initiation</td>
<td>April 2013</td>
</tr>
<tr>
<td>Mobile phone-based cessation interventions</td>
<td>Cessation</td>
<td>December 2011</td>
</tr>
<tr>
<td>Quitline Interventions</td>
<td>Cessation</td>
<td>August 2012</td>
</tr>
<tr>
<td>Reducing out-of-pocket costs for evidence-based cessation treatments</td>
<td>Cessation</td>
<td>April 2012</td>
</tr>
<tr>
<td>Smoke-free policies</td>
<td>Secondhand smoke exposure, cessation, initiation</td>
<td>November 2012</td>
</tr>
<tr>
<td>Community mobilization with additional interventions</td>
<td>Initiation</td>
<td>June 2001</td>
</tr>
</tbody>
</table>
About New Hampshire

Tobacco revenue and funding of tobacco control programs

In 2014, New Hampshire received approximately $210 million in cigarette tax revenue and $42 million in tobacco settlement revenue. The average cost of a pack of cigarettes was $6.08, and the per capita consumption was 91 packs.\cite{14,15}

Table 6. Regional Variation of per Capita Sales and User Fees.\cite{15,16}

<table>
<thead>
<tr>
<th>New England Region</th>
<th>2014 per Capita Sales (per pack)</th>
<th>2014 User Fee (per pack)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hampshire</td>
<td>90.6</td>
<td>$1.78</td>
</tr>
<tr>
<td>Connecticut</td>
<td>30.1</td>
<td>$3.40</td>
</tr>
<tr>
<td>Maine</td>
<td>47.4</td>
<td>$2.00</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>27.4</td>
<td>$3.51</td>
</tr>
<tr>
<td>New York</td>
<td>15.4</td>
<td>$4.35</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>36.7</td>
<td>$3.50</td>
</tr>
<tr>
<td>Vermont</td>
<td>40.4</td>
<td>$3.08</td>
</tr>
</tbody>
</table>

In 2013, The New Hampshire Department Health and Human Services, Division of Public Health Services was provided $125,000 in general funds ($250,000 in the biennium) to support State quitline operations. The Department also received funding from the Centers for Disease Control and Prevention, Office on Smoking and Health in the amount of $834,840.\cite{16} The 2014 CDC Best Practices for Comprehensive Tobacco Control Programs annual recommended level of investment for New Hampshire was $16.5 million with the following distribution:\cite{17}

- State and community interventions (30.3%)
- Health communication interventions (24.8%)
- Cessation interventions (32.1%)
- Surveillance and evaluation (8.5%)
- Administration and management (4.2%)

Youth access to cigarettes

New Hampshire State law sets a minimum age of 18 years for purchasing, possessing, and using cigarettes. There are no provisions related to access or location of cigarette vending machines.\cite{18} These provisions vary state to state.

Unit price for tobacco products

In 2014, New Hampshire had a tax of $1.78 on the retail sale of a pack of cigarettes and little cigars. For the United States, the weighted average state excise tax rate is $1.28 per pack of cigarettes with a range from $0.17 per pack in Missouri to $4.35 per pack in New York.\cite{15} There is no New Hampshire tax on the retail sale of cigars, pipe tobacco, or other tobacco products.

Smoke-free policies

The 2007 amendment to the New Hampshire Indoor Smoking Act, RSA 155:64-77, prohibits indoor smoking in most public places. The On-Premises Cigar, Beverage, and Liquor Licenses Act, RSA 178:20, allows operation of cigar bars which appears to conflict with the Indoor Smoking Act (amended 2009).

New Hampshire Tobacco Helpline

The New Hampshire Department of Health and Human Services provides a tobacco treatment service to all New Hampshire residents in the form of the New Hampshire Tobacco Helpline (1-800-QUIT-NOW/1-800-784-8669 and TryToStopNH.org). The Helpline went into operation in 2005.

Conclusions

Since the first Surgeon General’s report on smoking was published in 1964, an overwhelming body of evidence has been developed about the health consequences of using tobacco products. The health and economic well being of New Hampshire residents are compromised by the use of tobacco products.

Sound public health policies and the implementation of effective strategies will assist in the prevention of initiation of tobacco use as well as the treatment of those using tobacco who want to quit. Continued monitoring of tobacco use and electronic cigarette use and their consequences among youth and adults,
including tools such as the BRFSS, YRBS, and YTS, provide information to guide these strategies and to assess their effectiveness.

**What We Can Do in New Hampshire**

1. It is important that we continue our collective collaborations in order to develop and manage highly effective cross-sector and multi-stakeholder partnerships that address major social and developmental challenges.
   a. Health in All Policies is a collaborative approach to improving the health of all people by incorporating health considerations into decision-making across sectors and policy areas.

2. Actively support efforts to inform, educate, and empower decision makers about the importance of the effect of increasing the unit price of tobacco products. This activity is an evidence-based activity as outlined in *The Community Guide* and has the following effects:
   a. Reduces the total amount of tobacco consumed
   b. Reduces the prevalence of tobacco use
   c. Increases the number of tobacco users who quit
   d. Reduces initiation of tobacco use among young people
   e. Reduces tobacco-related morbidity and mortality

3. Actively support efforts to strengthen the New Hampshire Indoor Smoking Act in order to assist the State in meeting Healthy People (HP) 2020 Tobacco Use (TU) Objectives: TU 13 is focused on smoke-free indoor air that prohibits smoking in public places and worksites. Examples of New Hampshire gaps as compared with Healthy People 2020 include: public workplaces such as cigar bars (HP TU-13.4), multi-unit housing (HP TU-13.10), vehicles with children (HP TU-13.11), colleges and universities (HP TU-13.17), and gaming halls (HP TU-13.5).

4. Support efforts to increase funding for a comprehensive tobacco prevention and control program. This activity is evidence-based as outlined in *The Community Guide*. Evidence indicates these programs reduce the prevalence of tobacco use among adults and young people, reduce tobacco product consumption, increase quitting, and contribute to reductions in tobacco-related diseases and deaths. Economic evidence indicates that comprehensive tobacco control programs are cost effective, and savings from averted healthcare costs exceed intervention costs.¹
   a. Join mobilized community partnerships including the New Hampshire Regional Public Health Networks to become involved with other community members to increase the health of all people in New Hampshire.
   b. Develop policies and plans that support individual and community health efforts.¹

5. Monitor use of all combustible and non-combustible tobacco products and electronic cigarettes through the use of national and state surveillance tools, including NH Health WISDOM.
   a. Be mindful of terminology of electronic cigarette use. The terms vape, vaping, juice, e-juice have been developed by the industry selling the products.

**Methods**

**Definitions**

- Tobacco use is defined as either smoking cigarettes or cigars or using other tobacco products, as defined below. Use of e-cigarettes does not constitute tobacco use.
- Smoking is defined as use of 100 or more cigarettes during a person’s life. Current smoking is defined as either some or frequent smoking of cigarettes.
- Other tobacco products are defined as tobacco products that deliver nicotine to the brain, but are not burned. These include chewing tobacco, moist snuff, and snus (*rhymes with moose*), which are packaged in tins and deliver nicotine through the mucosal (mouth) tissue when placed between the cheek and gum.

**Data Sources**

**Behavioral Risk Factor Surveillance System (BRFSS)**

The BRFSS is the largest telephone survey that assesses the health status of non-institutionalized...
adults in each of the 50 states, the District of Columbia, American Samoa, Palau, Puerto Rico, the U.S. Virgin Islands, and Guam. The CDC established the BRFSS in 1984 with 15 participating states. The survey is currently administered by each state and territory with overall coordination and technical assistance provided by the U.S. Centers for Disease Control and Prevention. Until 2010, the BRFSS sampled only “land-line” telephone numbers to generate estimates for state and U.S. populations. Because of the increasing use of mobile telephones and decreasing response rates, the BRFSS extended its sampling in 2011 to include land-line and mobile telephones. Due to this change in sampling, estimates prior to 2011 are not directly comparable to estimates for 2011 and later. In BRFSS-based figures in this report, a break in trend lines between 2010 and 2011 estimates indicates this change. More information about the methods used for the BRFSS is available from New Hampshire (http://www.dhhs.nh.gov/dphs/hsdm/brfss/) and CDC BRFSS (http://www.cdc.gov/brfss/index.html) websites.

Youth Risk Behavior Survey (YRBS)

The YRBS was developed in 1990 to monitor health-risk behaviors that contribute to the leading causes of death, disability, and social problems among youth and adults, including tobacco use. The survey is administered every two years to high school students and is composed of a national survey, conducted by CDC, and state and local surveys, conducted by state and local health and education departments. More information about the YRBS is available from the New Hampshire (http://www.dhhs.nh.gov/dphs/hsdm/yrbs.htm, http://www.education.nh.gov/instruction/school_health/hiv_data.htm), and CDC YRBS (http://www.cdc.gov/healthyyouth/data/yrbs/index.htm), websites.

Youth Tobacco Survey (YTS)

The YTS collects data from students in grades 6 through 12 in participating states. Individual state health departments plan and implement the survey with assistance from the CDC’s Office on Smoking and Health. The YTS is intended to enhance the capacity of state agencies and organizations to design, implement, and evaluate tobacco prevention and control programs for the purposes of preventing young people from using tobacco and helping current users quit. More information about the YTS is available from the CDC YTS website: http://www.cdc.gov/tobacco/data_statistics/surveys/yts/.

CDC Resources


CDC. Youth Tobacco Survey (YTS) [Internet]. Available at: http://www.cdc.gov/tobacco/data_statistics/surveys/yts/index.htm.

CDC. Smoking & Tobacco Use: National Adult Tobacco Survey (NATS) [Internet]. Available at: http://www.cdc.gov/tobacco/data_statistics/surveys/yts/index.htm.


CDC, OSH. Tables of Surveys Brochure: Youth Tobacco Surveys (YTS, NYTS), Adult Tobacco Surveys (ATS, NATS), Population Specific Surveys (Alaska Native Adult Tobacco Survey (AN ATS), American Indian Adult Tobacco Survey (AI ATS), Hispanic/Latino Adult Tobacco Survey Guide (H/L ATS)). Available at: http://www.cdc.gov/tobacco/data_statistics/surveys/pdfs/surveys-brochure.pdf.

CDC. Smoking & Tobacco Use: Tobacco-Related Mortality [Internet]. Available at: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/.

Other Resources

Available at:

NH Health WISDOM. Available at:
http://wisdom.dhhs.nh.gov/wisdom/

U.S. Preventive Services Task Force. Final Update Summary: Tobacco Use in Adults and Pregnant Women: Counseling and Interventions. July 2015. Available at:


7 Healthy People 2020 Secretary’s Advisory Committee: An Opportunity to Address Societal Determinants of Health in the United States.


9 Centers for Disease Control and Prevention. Smoking & Tobacco Use: Health Effects of Cigarette Smoking [Internet]. Available at:
http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/ [accessed 2015 August 10]


11 Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File


12 U.S. Preventive Services Task Force. Final Update Summary: Tobacco Use in Adults and Pregnant Women: Counseling and Interventions. July 2015. Available at:


16 Centers for Disease Control and Prevention. State


NH Department of Health and Human Services
Division of Public Health Services
Tobacco Prevention and Control Program
29 Hazen Drive, Concord, NH 03301
http://www.dhhs.nh.gov 1-800-852-3345 ext. 6891