Advocating for Chronic Disease Management and Prevention 2011

WEST VIRGINIA
Department of
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Bureau for Public Health
Office of Community Health Systems and Health Promotion
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Chronic Disease: An Introduction

Chronic diseases and conditions have been described as the "public health challenge of the 21st century" (1). Chronic diseases are illnesses or conditions such as cardiovascular disease, asthma, diabetes, and cancer that generally persist over a long period of time and require ongoing medical care and supervision. These diseases and conditions impose a huge burden on the quality of life of individuals and their families and create tremendous financial costs for individuals, families, employers, insurers, and the health care system as a whole.

Advances in medical technology and public health have resulted in Americans today living longer than any previous generation. Longer life spans, however, have resulted in an increase in the number of people living with chronic disease, often with more than one illness or condition. It is estimated that currently more than 125 million people in America live with chronic illness; 48% of these persons have more than one chronic condition (2). One-fourth (25%) of people with chronic conditions have some type of activity limitation (2). Eight of the 10 leading causes of death in West Virginia and seven of the 10 leading causes of death in the United States in 2008 were chronic diseases (3).

In 2005, chronic disease accounted for more than 75% of the $2 trillion dollars spent on direct health care in the United States (4). An even greater proportion of Medicare (96%) and Medicaid (83%) spending was due to the treatment of chronic illness (4). According to a study by the Partnership to Fight Chronic Disease, if the trend is not reversed, the numbers of people suffering from chronic conditions will continue to increase, costing an estimated $4.1 trillion dollars in health care in 2023 (4). Disturbingly, these figures do not include the indirect costs to businesses such as absenteeism (estimated at $1 trillion in 2005) (4). Our economy cannot withstand the unchecked escalation of these costs.

The good news is that chronic diseases are among the most preventable health conditions. Many of the illnesses and conditions described as chronic can be attributed to three main risk factors: poor nutrition, cigarette smoking, and physical inactivity (Table 1). If these behaviors can be modified, much of the morbidity and mortality they cause could be greatly reduced.

Table 1. Selected Chronic Diseases Associated with Cigarette Smoking, Poor Nutrition, and Physical Inactivity

Risk Factors	Cancer	Cardiovascular Disease	Diabetes	Chronic Lower Respiratory Disease
Cigarette Smoking; Secondhand Cigarette Smoke	Smoking: Cancers of the lung, bladder, cervix, colon/rectum, esophagus, kidney, larynx, pancreas. Secondhand smoke: lung cancer	Heart disease and stroke	Lower extremity amputations	Smoking: Chronic bronchitis and emphysema. Secondhand smoke: asthma
Poor Nutrition	Cancer of the mouth, pharynx, esophagus, larynx, lung, stomach, kidney, colon, rectum, ovary, bladder	Heart disease and stroke	Type 2 diabetes	Asthma
Physical Inactivity	Breast, colon, possibly endometrial and prostate cancer	Heart disease and stroke	Type 2 diabetes	

A study funded by the Trust for America's Health (TFAH), the Urban Institute, the New York Academy of Medicine, and the Robert Wood Johnson Foundation (RWJF) and released in a report entitled *Prevention for a Healthier America* concluded that an annual investment of $10 per person in proven community-based programs. These programs would be aimed at preventing smoking, improving nutrition, and increasing physical activity would result in a savings of $16 billion annually within five years, a return of $5.60 for every $1 invested (5). Examples of such proven programs included providing access to fresh produce through farmers' markets; making nutritious foods more affordable in low-income areas; keeping schools open after hours to allow children to play with adult supervision; and offering information and support for people trying to quit smoking. According to Jeff Levi, PhD, the executive director of TFAH, "This study shows that with a strategic investment in effective evidence-based disease prevention programs, we could see tremendous returns in less than five years – sparing millions of people from serious diseases and saving billions of dollars." Potential savings to Medicare are estimated to be $5 billion, with $1.9 billion saved by Medicaid and $9 billion saved by private payers. The study estimated that West Virginia could save $124 million within five years, a return of investment of 6.9 to 1. (See Appendix A for estimates of state-level savings by payer.)

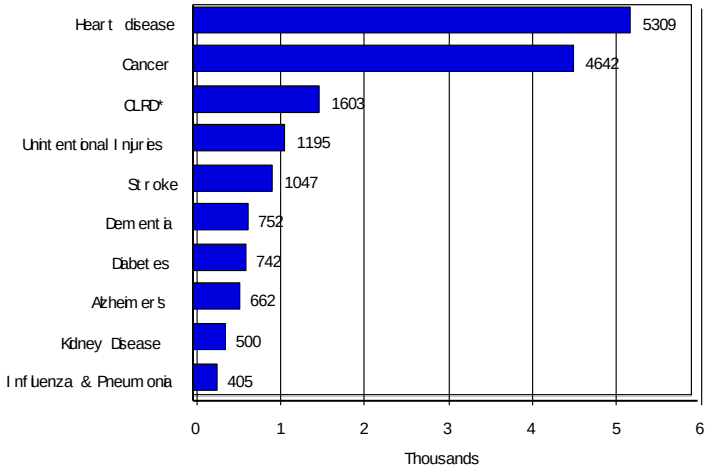
As West Virginia acts to meet the health challenges of the next decades, the reversal of the current trends in chronic disease morbidity and mortality must be a primary goal. Chronic disease prevention must be the focus of any strategy to improve the health of our citizens and reduce health care spending in our state. The Division of Health Promotion and Chronic Disease, located in the West Virginia Bureau for Public Health's Office of Community Health Systems and Health Promotion, is a key player in the challenge to reduce chronic disease. The programs specifically target cardiovascular disease, cancer, osteoporosis and arthritis, diabetes, physical activity and nutrition, and asthma. The Division has developed partnerships throughout the state with schools, health care facilities, and community organizations to affect policy, environmental, and system wide change and is committed to continue working with all interested parties in the attack on chronic disease.

This report presents data on the current state of chronic disease in West Virginia, as well as the most recent data available on the socioeconomic and behavioral risk factors that contribute to the development of chronic conditions among our residents. (See Appendix B for more information on the methodologies used to derive the data in the report.) Many of these risk factors are preventable; the course of chronic illness in West Virginia can be changed. The report also includes a discussion of the direction the Division of Health Promotion and Chronic Disease and its partners will take to reverse the toll of chronic disease on our citizens and our economy. The challenge lies in creating an integrated approach at the state level aimed at addressing the fact that many individuals in our state suffer from more than one chronic illness or condition and have more than one risk factor for these diseases. Coordination between our state resources and those of our partners is essential in effectively meeting this challenge.

Chronic Disease in West Virginia

In 2008, eight of the 10 leading causes of death in West Virginia were chronic diseases; these eight causes accounted for 15,257 deaths, 70.8% of the total 21,551 deaths in the state in that year (Fig. 1). Heart disease was the biggest killer with 5,309 deaths; cancer followed with 4,642 deaths. (Appendix C presents age-adjusted rates for the leading causes of chronic disease death by county.)

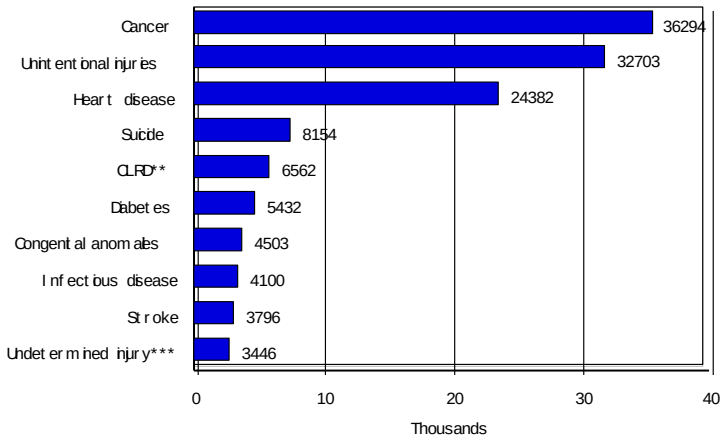
Fig. 1. 10 Leading Causes of Death
West Virginia Residents, 2008



*Chronic Lower Respiratory Disease

Premature deaths are those deaths that occur before the age of 75. They are measured through years of potential life lost (YPLL), i.e., those extra years that the person would have had if he or she had lived until the age of 75 (an average life span). The years lost before age 75 are added together for all people who died from a particular cause to give the total YPLL for that cause. In 2008, chronic diseases represented five of the 10 leading causes of premature death in West Virginia (Fig. 2). Nearly half (45.0%) of the total YPLL before 75 in 2008 (170,033) was attributable to those five chronic diseases.

Fig. 2. 10 Leading Causes of Premature
West Virginia Residents, 2008



*As measured by years of potential life lost before age 75
**Chronic Lower Respiratory Disease
***Undetermined if unintentional or intentional

Chronic Disease: Social Determinants

Chronic disease has been disproportionately associated with socioeconomic factors such as low income, unemployment, low levels of education, and poor access to health care, all of which affect the development and progression of disease. There is now heightened awareness of the role these social determinants play in the health of an individual; a national survey of registered voters sponsored by the RWJF found that 78% of respondents agreed that "it is important to make sure health differences between groups of people in this country no longer exist because of factors such as education and income" (6).

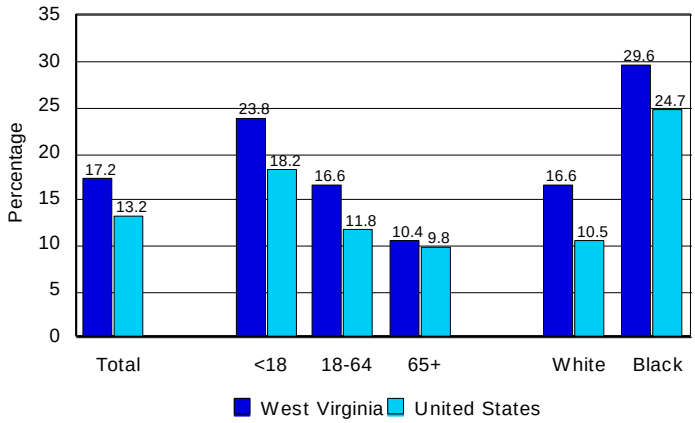
Education. Level of education has a tremendous impact on health. More educated individuals have a greater knowledge of correct choices for a healthful lifestyle. People who have some education beyond high school have expanded opportunities to develop and maintain healthy behaviors and are more likely to live longer than someone with less education (7). A 1998 study by Pincus et al. found that noncompletion of high school was a greater risk factor than biological factors for the development of several diseases, independent of age, gender, smoking status, and race and ethnicity (8).

According to the 2006-2008 American Community Survey conducted by the U.S. Census Bureau, 18.5% of West Virginians aged 25 years and older had not completed high school, compared with 15.5% of their counterparts nationwide. A marked difference was found for those persons having a bachelor's degree or higher; only 17.0% of West Virginians 25 and older had completed at least four years of college, compared with 27.4% nationally (9). Even the college-educated population in West Virginia was found to be dramatically less healthy than that population in the nation as a whole, however. One-third (33.1%) of the state's most educated adults reported being in less than very good health, while the national percentage was 19.0%. The RWJF's Commission to Build a Healthier America reported that West Virginia had the highest rate among all states in the percentage of college graduates who were nonsmokers and engaged in leisure-time physical activity who still reported being in less than very good health (10).

Income. Low income and poverty are strongly associated with chronic illness. As stated in *Health, United States, 2009*, "The relationship between income and health problems reflects both the effect of income on health and the effect of poor health on the ability to work and earn a living" (11). West Virginia has traditionally ranked in the bottom tier of states in median household income. In 2009, the state ranked 49th among the 50 states and the District of Columbia with a median household income of $37,994 (in 2008 dollars) (12). The national household median income was $50,303.

The 2006-2008 American Community Survey estimated that 17.2% of West Virginia's population lives below the poverty level, compared with 13.2% of the national population (13). The state had higher percentages of its population living in poverty than the nation in all age groups and for both white and African American residents, as illustrated in Figure 3 on the following page.

Fig. 3. Percentage of Population Living Below Poverty Level, by Age and Race
West Virginia and United States, 2006-2008

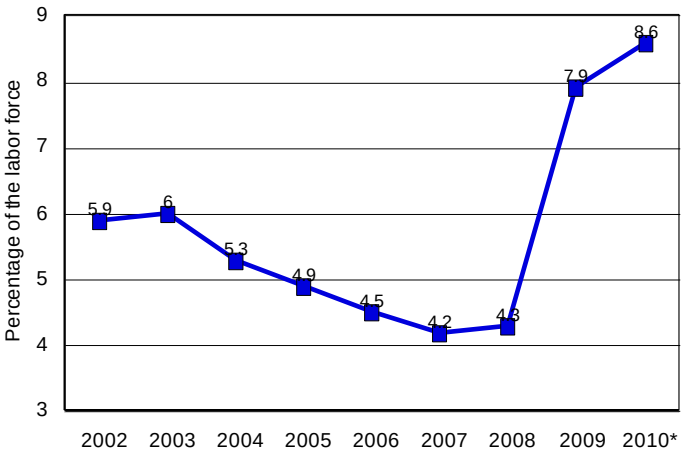


Source: U.S. Census Bureau, American Community Survey

Unemployment. It is obvious that the loss of a job can affect an individual's health by cutting off access to health insurance; however, a study published in *Demography* in 2009 revealed findings that losing a job can actually make a person sick (14). Research conducted at the Harvard School of Public Health showed that even when people find a new job quickly, there is an increased risk of developing a new chronic illness such as hypertension, diabetes, heart disease, heart attack, or stroke. Among both blue and white collar workers who lost their job through no fault of their own, reports of poor or fair health increased by 54%; among individuals with no pre-existing health conditions, the odds of developing a new condition rose by 83%.

The economic crisis that hit the nation affected West Virginia as well, although the full impact was not felt until a year or so later. Recovery from the recession has also been slower in the state. As Figure 4 indicates, the unemployment rate in West Virginia rose from a low of 4.2 in 2007 to a high of 8.6 recorded in September 2010 (15). An 8.6 unemployment rate represents approximately 69,000 members of the state's labor force.

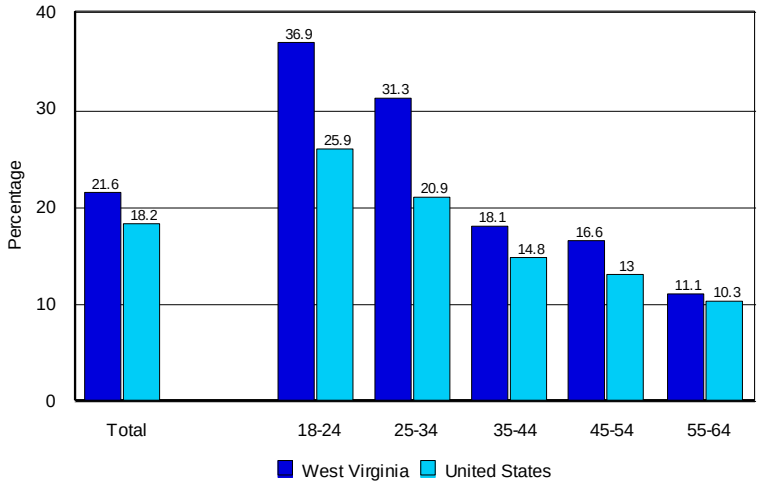
Fig. 4. Unemployment Rates by Year
West Virginia, 2002-2010



*As of September 2010

Lack of Health Insurance. If an individual lacks health care coverage, their access to necessary health services is limited, including preventive care, cancer screenings, and management of existing disease. In 2009, Behavioral Risk Factor Surveillance System (BRFSS) data showed that more than one in five, or 21.6%, of West Virginia's adults aged 18-64 lacked any kind of health care coverage, compared with a national average of 18.2%. West Virginian adults of all ages were less likely to have health care coverage than their counterparts nationally (Fig. 5). Over one-third of West Virginia's young adults (18-25) did not have any health care coverage in 2009.

Fig. 5. Prevalence (%) of Population Aged 18-64 Who Lack Health Care Coverage, by Age West Virginia and United States* BRFSS, 2009



Chronic Disease: Behavioral Risk Factors

Thirteen behavioral risk factors monitored in the 2009 BRFSS survey were identified as chronic diseases or chronic conditions themselves or contributors to chronic disease. The state's prevalence for these selected risk factors are listed in Table 2 below, as well as the U.S. prevalence and West Virginia's ranking among the 54 participants in the 2009 survey (the 50 states, District of Columbia, Guam, Virgin Islands, and Puerto Rico). (Risk factor prevalence by county is found in Appendix D.)

West Virginia ranked **highest** among the 54 participants in five of the 13 selected risk factors and conditions: current smoking, no exercise, hypertension, ever been told you have angina or coronary heart disease, and ever been told you had a heart attack. The state was second only to Puerto Rico in diabetes prevalence and ranked third highest in the rates of both poor nutrition and arthritis. West Virginia had statistically significantly higher rates than the United States as a whole for all the risk factors and conditions except high cholesterol, cancer, and asthma.

Table 2. Selected Chronic Disease Risk Factors and Chronic Conditions
West Virginia BRFSS, 2009

Risk Factor or Disease/Condition	WV (%)	95% CI	US Average (%)	95% CI	WV Rank (54 participants)
Poor nutrition*[#]	83.8	82.6 – 85.1	76.2	76.0 – 76.5	3
Current smoking*	25.6	24.0 – 27.2	18.0	17.7 – 18.3	1
No exercise*	33.2	31.6 – 34.8	24.6	24.4 – 24.9	1
Obesity*	31.7	30.0 – 33.4	24.6	24.4 – 24.9	6
Diabetes*	12.4	11.3 – 13.4	9.1	8.9 – 9.2	2
Hypertension*	37.6	36.0 – 39.3	29.3	29.0 – 29.5	1
High cholesterol	38.5	36.7 – 40.2	38.0	37.7 – 38.3	22
Asthma	8.8	7.8 – 9.8	8.4	8.3 – 8.6	27
Ever had stroke*	3.7	3.2 – 4.3	2.5	2.5 -2.6	4
Have coronary heart disease*	7.1	6.4 – 7.8	4.0	3.9 – 4.1	1
Ever had heart attack*	6.5	5.8 – 7.2	4.0	3.9 – 4.0	1
Arthritis*	33.9	32.3 – 35.4	25.9	25.7 – 26.1	3
Cancer	10.4	9.5 – 11.3	9.6	9.5 – 9.8	15

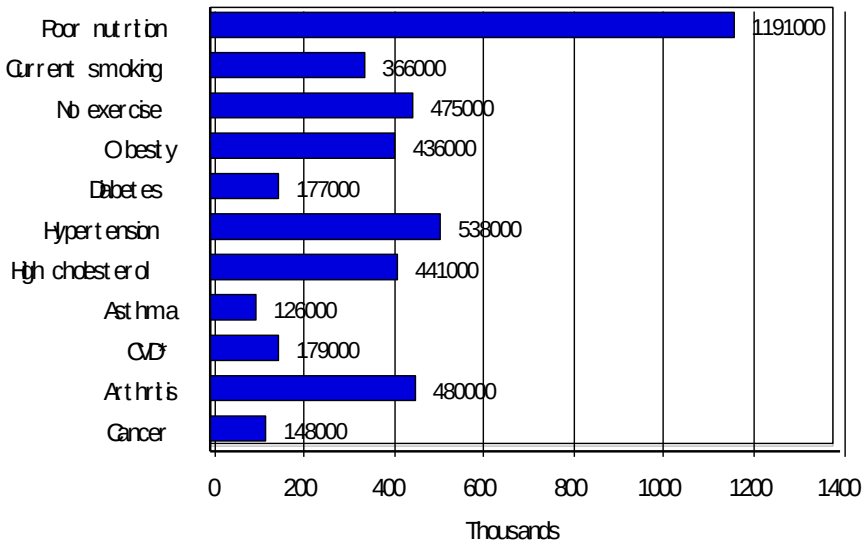
*West Virginia's rate is significantly higher than the national rate.
[#] Consumption of fewer than five servings of fruits and vegetables daily.

Chronic Disease Risk Factors: The Numbers

Prevalences, or percentages, are helpful in examining trends and comparing risk factors among states or with the United States as a whole. Numbers, however, show the problem within a state in more concrete terms. For example, as shown in Figure 6, the BRFSS data estimate that over one million of West Virginia's adults are at risk for chronic disease from consumption of fewer than five servings of fruits and vegetables daily, with over a half million suffering from hypertension. Close to a half million adults do not exercise; roughly 480,000 have arthritis. Over four hundred thousand state adults are obese. An estimated 366,000 of West Virginia's adults currently smoke cigarettes. Given West Virginia's relatively small population (an estimated 1,814,468 in 2008), these numbers are staggering.

Each number represents a citizen of West Virginia. The same individual who is a current cigarette smoker may also have hypertension, or not exercise, or not eat the recommended servings of fruits and vegetables every day. Health care professionals are well aware that most patients have multiple risk factors, adding to the complexity of prevention and treatment of their chronic illnesses. Each time a risk factor or chronic condition is added, treatment of that individual becomes more complex and disease management more difficult. Treating chronic disease is a tremendous challenge.

Fig. 6. Estimated Number of West Virginia Adu
From Selected Chronic Disease Risk Fact
West Virginia BRFSS, 2009



*Ever told had a heart attack, coronary heart disease, and/or a stroke

The Big Three: Poor Nutrition, Smoking, and Physical Inactivity

Three risk factors in particular -- poor nutrition, smoking, and physical inactivity (no leisure-time exercise) -- have been highlighted as the root causes for nearly 35% of all chronic disease (16). The Centers for Disease Control and Prevention (CDC) estimates that eliminating these three risk factors would prevent 80% of heart disease and stroke, 80% of type 2 diabetes, and 40% of cancer (4). Eating a healthy diet, not using tobacco, and engaging in moderate exercise could dramatically reduce an individual's risk of developing many of the leading causes of death in our state.

Multiple Risk Factors. A combination of risk factors can have a synergistic effect on the chances of developing a chronic disease, as well as on the severity of the disease. Any effort to address unhealthy behaviors must involve the determination of realistic goals in motivating life style changes. The unwillingness of an individual to change one unhealthy behavior does not necessarily extend to other behaviors under his or her control. Even the elimination of one unhealthy behavior can make a difference in the likelihood of developing a chronic illness. Table 3 presents the 2009 prevalence of the three primary chronic disease risk factors discussed in this section by the prevalence and estimated number of respondents who reported having none, one, two, or all three. **Nearly one in 10 (9.1%) adults in West Virginia currently practices poor nutrition, smokes cigarettes, *and* does not exercise.**

Table 3. West Virginia Adults at Risk for Chronic Disease due to Poor Nutrition, Current Smoking, and/or No Exercise
WVBRFSS, 2009

Risk Factor(s)	% at Risk	Estimated No. of Adults
None of the Big Three Risk Factors	9.8	139,000
One Risk Factor	47.0	667,000
Poor Nutrition	41.6	590,000
Current Smoking	2.6	37,000
No Exercise	2.8	40,000
Two Risk Factors	34.1	483,000
Poor Nutrition and Current Smoking	12.9	182,000
Poor Nutrition and No Exercise	20.3	288,000
Current Smoking and No Exercise	0.9	13,000
Three Risk Factors	9.1	129,000
Poor Nutrition, Current Smoking, and No Exercise	9.1	129,000

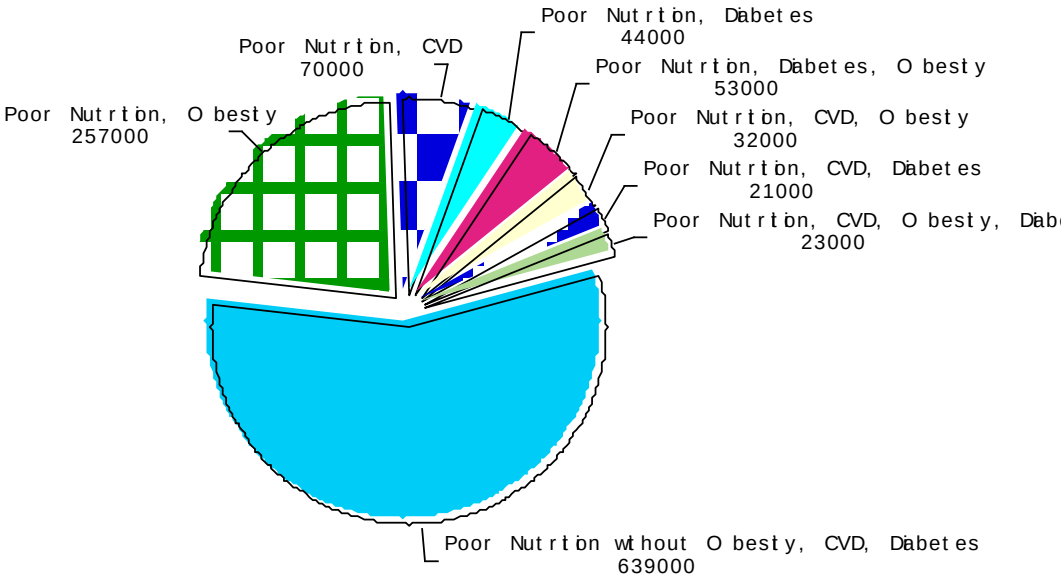
While one or more of the "big three" risk factors are implicated in the etiology of all of the chronic diseases targeted by the Division of Health Promotion and Chronic Disease, one or more of the chronic illnesses addressed by Division programs are, in turn, linked with each risk factor. For example, cardiovascular disease and diabetes are both associated with poor nutrition and physical inactivity; asthma is associated with cigarette smoking. The current report examines 2009 BRFSS data for each of the three risk factors in terms of respondents who reported the risk factor by itself or in combination with one or more of the selected related chronic illnesses. For each risk factor, the three most prevalent chronic diseases or conditions associated with the risk factor (and monitored by the BRFSS) were chosen for the analysis. The totals in Figures 7 through 9 reflect only those respondents who answered survey questions on the risk factors and illnesses shown and thus will not match the totals given in Figure 6.

Poor Nutrition and Obesity, Cardiovascular Disease, and Diabetes

Poor nutrition is defined in this report and by the CDC as answering "no" to the question in the BRFSS Survey that asks "Do you consume five or more servings of fruits and vegetables every day?" In 2009, 83.8% of respondents reported that they did not meet the recommendation, compared with 76.6% of survey respondents nationwide. Poor nutrition was analyzed in combination with obesity, cardiovascular disease (CVD), and diabetes; the results are illustrated in Figure 7.

Among those respondents with poor nutrition, more than two in five (43.9%) had already developed one or more of the related chronic diseases when surveyed. Translated into numbers, approximately 500,000 West Virginia adults practice poor nutrition and report CVD, obesity, and/or diabetes. Approximately 365,000 people who reported poor eating habits are obese, with or without the other two risk factors. An estimated 23,000 West Virginians are receiving poor nutrition and living with CVD, obesity, *and* diabetes.

Fig. 7. Estimated Number* of Respondents Who Reported Poor Nutrition** And Also Reported Other Selected Chronic Diseases or Conditions West Virginia BRFSS, 2009

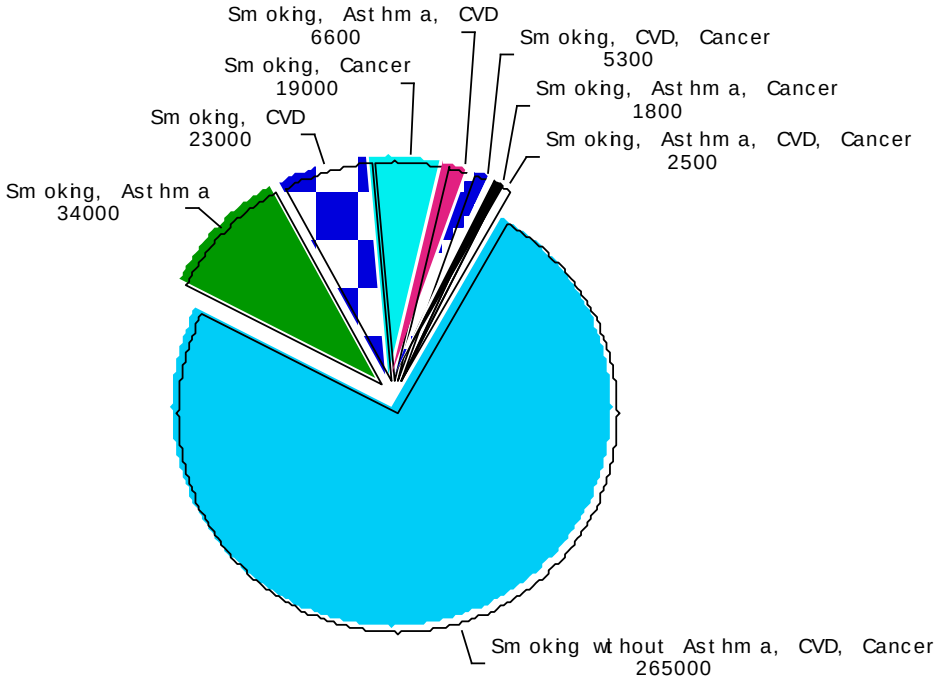


*Weighted frequencies from sample data
**Defined as consumption of fewer than 5 servings of fruits and vegetables daily
Note: CVD = Ever been told had a heart attack, coronary heart disease, and/or a stroke

Current Smoking and Asthma, Cardiovascular Disease, and Cancer

Current smoking is defined as having smoked at least 100 cigarettes in one's lifetime and currently smoking every day or on some days. The 2009 BRFSS data indicate that approximately one-fourth (25.6%) of the state's adult population currently smokes cigarettes, compared with 18.0% nationwide. Approximately one-fourth of smokers, an estimated 92,000 individuals, also have asthma, cardiovascular disease, and/or some type of cancer. Over 35,000 state residents who report being current smokers have two or all three of the chronic diseases included in the analysis. Figure 8 presents the relationship between current smoking and asthma, cancer, and cardiovascular disease.

Fig. 8. Estimated Number* of Respondents Who Reported Current Smoking** And Also Reported Other Selected Chronic Diseases or Conditions West Virginia BRFSS, 2009

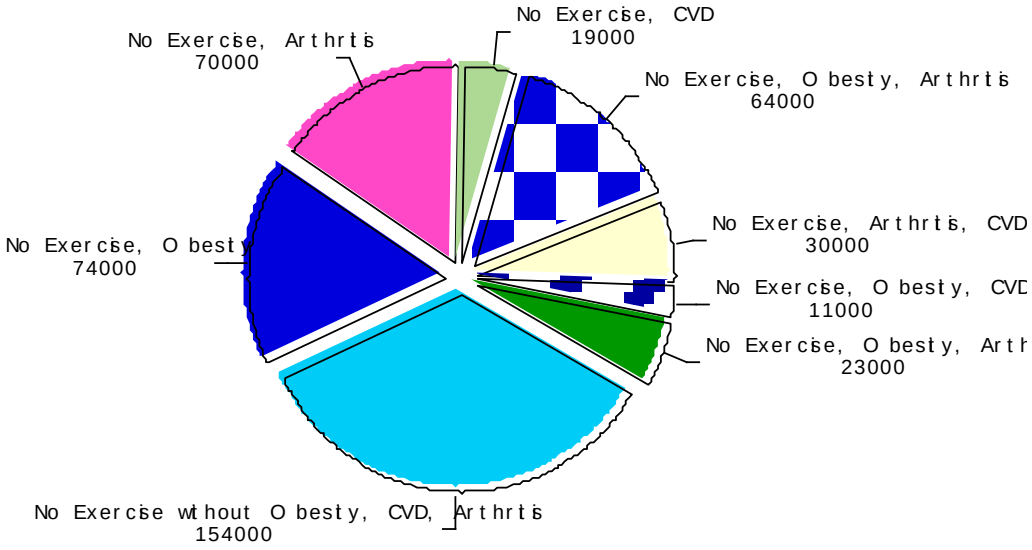


*Weighted frequencies from sample data
**Defined as having smoked more than 100 cigarettes in one's lifetime and currently smoking
Note: CVD = Ever been told had a heart attack, coronary heart disease, and/or a stroke

No Exercise and Arthritis, Obesity, and Cardiovascular Disease

No exercise is defined as having participated in no leisure-time physical activity in the month preceding the interview. West Virginia ranked highest in this behavior among the 2009 BRFSS participating entities, with one in three (33.2%) of the state's adults reporting no exercise; the U.S. average was 24.6%. Approximately 187,000 physically inactive respondents also reported having arthritis, either alone or in conjunction with obesity and/or CVD. An estimated 74,000 people who were physically inactive reported obesity without CVD or arthritis, while another 98,000 were obese and reported either CVD, arthritis, or both. Figure 9 illustrates these findings.

Fig. 9. Estimated Number* of Respondents Who Reported No Exercise** And Also Reported Other Selected Chronic Diseases or Conditions West Virginia BRFSS, 2009



*Weighted frequencies from sample data
**Defined as having participated in no leisure-time activity in the month before the survey
Note: CVD = Ever been told had a heart attack, coronary heart disease, or stroke

WV Division of Health Promotion and Chronic Disease: Its Mission, Accomplishments, and Plan for Future Strategies

The mission of the Division of Health Promotion and Chronic Disease is to "advocate for chronic disease management and prevention." The Division has a long history of successfully addressing health promotion and chronic disease in our state. There have been many accomplishments by the programs housed within the Division; however, the impacts of these programs have primarily been felt in the specific settings addressed by each program. Outcomes on a statewide level have been more difficult to evaluate and analyze.

Until recently, strategies to address chronic disease have been shaped by a focus on the specific diseases or conditions addressed within a program, e.g., cardiovascular disease, arthritis, diabetes, and so on. The focus of the Division is now on creating efforts to address chronic disease as a whole. However, the programs themselves do not individually have the resources or funding to accomplish a systematic evaluation of all health promotion and chronic disease impacts. In 2010, the Division set goals that each program will address in the process of integrating strategies. The charge is to **SHAPE** West Virginia by working within the Division, Office, and Bureau and with outside partners to:

Create **S**ystems change
Generate **H**ealth outcomes
Advocate
Change **P**olicy
Share **E**xpertise

The following goals were selected with attention to those factors that affect all chronic disease prevention and management. The Division's programs will work together to develop and implement strategies to meet these goals. Strategies at the highest level were developed with a focus on addressing those most in need. The strategies listed focus on intervening at the (1) state level where decisions are made for the benefit of all citizens; (2) health provider/health systems level where health providers practice, and (3) community level where people live, work, and play. Action toward these strategies will be an ongoing process given resources, health reform initiatives, and continuing development of evidence-based interventions. Data are from BRFSS and YRBS.

GOALS	STRATEGIES
1. Increase fruit and vegetable consumption among youth and adults ***Youth Baseline***: In 2009, 18% of youth aged 15-19 reported they ate five servings of fruits and vegetables every day. 2015 Target: 20% 2020 Target: 22% ***Adult Baseline***: In 2009, 16% of adults reported they ate five servings of fruits and vegetables every day.	**Health Provider/Health Systems Strategies:** ● Refer patients to venues where fruits and vegetables are available **Community Strategies:** ● Support development of local food systems in all communities ● Implement "fresh fruit and vegetable snack program" initiative in all schools ● Require fruit and vegetable availability whenever food is offered or sold ● Increase availability of fruit and vegetables in convenience stores

2015 Target: 18% 2020 Target: 20%	● Increase number of farmers' markets in convenient locations ● Increase grassroots support for community policy changes
2. Increase physical activity among youth and adults ***Youth Baseline:*** In 2009, 42% of youth reported being physically active. 2015 Target: 44% 2020 Target: 46% ***Adult Baseline:*** In 2009, 35.2% of adults reported being physically active according to CDC guidelines. 2015 Target: 69% 2020 Target: 71%	**Health Provider/Health Systems Strategies:** ● Refer patients to venues where physical activity is accessible **Community Strategies:** ● Support daily physical education for all students ● Promote "safe routes to schools" initiative ● Increase safe and attractive places in communities for physical activity ● Develop connecting walking and biking paths ● Increase grassroots support for community policy changes
3. Reduce obesity among adults ***Baseline:*** In 2009, 32% of adults were obese. 2015 Target: 30% 2020 Target: 28%	**Health Provider/Health Systems Strategies:** ● Refer patients to venues where fruits and vegetables and physical activity opportunities are available ● Promote breastfeeding **Community Strategies:** ● Implement "fresh fruit and vegetable snack program" initiative in all schools ● Support daily physical education for all students ● Promote "safe routes to schools" initiative ● Require fruit and vegetable availability whenever food is offered or sold ● Increase availability of fruit and vegetables in convenience stores ● Increase number of farmers' markets in convenient locations ● Increase safe and attractive places in communities for physical activity ● Develop connecting walking and bike paths ● Increase grassroots support for community policy changes
4. Improve key chronic disease health indicators ***High Blood Pressure Baseline:*** In 2009, 38% of adults reported having high blood pressure. 2015 Target: 36% 2020 Target: 33%	**State Level Policy Strategies:** ● Develop a standardized data collection reporting system for community health centers ● Create a centralized chronic disease registry ● Provide an incentive to medical practices that implement evidence-based guidelines for chronic disease

High Cholesterol Baseline: In 2009, 39% of adults reported having high cholesterol. 2015 Target: 37% 2020 Target: 34%	• Support statewide tobacco policy initiatives **Health Provider/Health Systems Strategies:** • Refer to self-management programs: Chronic Disease Self Management; Breathe Well, Live Well; Dining with Diabetes; Asthma 101; Tai Chi, etc. • Train health care professionals on use of evidence-based guidelines as part of curriculum and continuing education requirements • Implement Planned Care Model (whole system of care within clinic systems) • Professional development with all school personnel • Promote breastfeeding **Community Strategies:** • Implement self-management programs: Chronic Disease Self Management; Breathe Well, Live Well; Dining with Diabetes; Asthma 101 classes; Tai Chi, etc. • Recognize schools (Asthma-Friendly School Award) • Partner with wellness organizations to promote healthy weight among companies and employees • Promote and provide supportive environments for breastfeeding
5. Increase percentage of health care professionals who are advising their patients on weight management ***Baseline:*** In 2003, 18% of health care professionals advised their patients on weight management. 2015 Target: 20% 2020 Target: 23%	**State Level Policy Strategies:** • Encourage third-party payers to reimburse for weight-management counseling **Health Provider/Health Systems Strategies:** • Train health care professionals on use of evidence-based guidelines as part of curriculum and continuing education requirements • Include an alert system in the electronic medical record to flag a patient record for counseling when a patient has increased weight as part of quality improvement protocols
6. Decrease emergency room utilization for chronic disease management ***Baseline:*** Data sources to be developed	**State Level Policy Strategies:** • Support the development of data sources in partnership with state organizations as a way to assess needs for prevention and management of chronic diseases, specifically asthma and congestive heart failure

Division Partnerships

One of the main accomplishments of the Division of Health Promotion and Chronic Disease has been the forging of partnerships with other state organizations to implement statewide strategies. Through these partnerships, interventions take place in communities around West Virginia through community health clinics, schools, places of worship, and other community organizations. The value of partnering with other organizations interested in improving the health of West Virginians is inestimable; continuing and adding to these partnerships is essential as the Division moves forward to meet West Virginia Healthy People 2020 goals and combat the problem of chronic disease. The role of the Division is to work cooperatively with its partners on policy, environmental, and systems change; data collection and surveillance; evidence-based best practices and research; public health expertise; and providing support and training through technical assistance.

The programs within the Division have already had many successes in collaborating with partners in various activities affecting state level initiatives, health provider trainings and health systems efforts, and community level strategy implementation. Examples of these successful ventures include:

- ***Green Thumbs, Healthy Joints*** is a program designed to assist persons with arthritis and osteoporosis in engaging in safe and meaningful gardening efforts by providing ergonomic gardening tools and resources to build raised gardens for growing fruit, vegetables, and flowers. The Osteoporosis and Arthritis Program works in collaboration with the West Virginia University Center for Excellence in Disabilities to target long-term care facilities, nursing homes, senior centers, and other community agencies and facilities that serve seniors. Over the past four years, 20 gardens have been established that serve approximately 1,000 persons.

- ***Dining with Diabetes*** increases self efficacy and builds skills for lifestyle changes for persons with diabetes. The Diabetes Prevention and Control Program, partnering with the WVU Extension Service, offers the program at no cost to participants. Each class has a lecture component and a cooking demonstration. Results show that program participants increase their confidence in their abilities to make needed lifestyle changes and healthier food choices.

- The Asthma Prevention and Education Program, the Cardiovascular Health Program, and the Diabetes Prevention and Control Program, in collaboration with the WVU Office of Health Services Research, work with community health clinics to assist with the ***establishment of electronic management systems and health care provider education*** to address chronic conditions. Examples of successful interventions include Roane County Family Health Center, which has shown improvement in diabetes management (including improved control of hemoglobin A1c levels, blood pressure, and cholesterol levels among patients), and Williamson Memorial Hospital Management Clinic, where patients have shown improvement in hemoglobin A1c levels and increased success in meeting their self-management goals targeting healthier eating and increased physical activity.

- The West Virginia ***Charleston Asthma Management Program (ChAMP***S) will continue to aid the Charleston Area Medical Center (CAMC) Respiratory Care Department in meeting their goal of reducing impairment, preventing chronic symptoms, and maintaining near-normal lung function and normal activity levels in its patient population. The ChAMPS program assists in training CAMC staff to populate an established data registry to track patient history and admissions among asthma patients as well as those diagnosed with COPD, emphysema, chronic bronchitis, chronic heart failure, and pneumonia. To date, 118 CAMC respiratory therapists and nursing staff have been trained to enter data and maintain the registry. Pre- and post-training tests

show a statistically significant improvement among participants in basic asthma 101 knowledge, including medications, triggers, signs/symptom recognition, etc.

- ***Utilization of the Tobacco Quitline has been promoted by all of the Division programs*** in collaboration with the Division of Tobacco Prevention through public service announcements, dissemination of brochures and newsletters, and provider trainings. Callers to the Quitline who have diabetes, heart disease, and/or asthma are given specialized educational materials and coaching tailored to their individual medical needs. Quitline utilization has tripled in the past year.

- The Comprehensive Cancer Program's Ovarian Initiative implemented a ***"Survivors Teaching Students Program"*** at the Joan C. Edwards Marshall University School of Medicine. This unique program of the Ovarian Cancer National Alliance brings ovarian cancer survivors and their family members into the classroom to share stories and information with medical students. Since 2009, 68 Marshall medical students have participated in the program and have indicated that the program is a valuable part of their educational experience. In addition, the participating survivors feel that by telling their stories our future doctors will be more aware, leading to earlier diagnoses of ovarian cancer.

- The ***Chronic Disease Self Management Program*** **(CDSMP)** developed by Stanford University has been supported by the Division of Health Promotion and Chronic Disease programs in partnership with Marshall University. This is a participatory skill-based program that teaches people to deal with the symptoms and emotions of living with chronic conditions. Currently there is a strong network of 35 master trainers and a network of 148 leaders who have taught more than 130 six-week classes, reaching over 600 participants across West Virginia.

- The ***School Bus Idle Free Zone*** policy, a combined effort between the WV Department of Education and the Department of Environmental Protection (Policy 4336), targets reduction of diesel emissions from school buses as well as exhaust emissions from passenger vehicles and delivery trucks on school property. The pollutants from diesel and regular gas vehicles are a common trigger of asthma attacks. The policy, supported by the Asthma Education and Prevention Program, Division of Tobacco Prevention, and the West Virginia Asthma Coalition, was written to minimize idling and offer a smart, effective, and immediate way to reduce diesel emissions at little or no cost. Also, all new buses purchased since 2009 have an electronic shutoff of the motor after 10 minutes of idling. The Department of Environmental Protection offers free signs that can be posted at the schools to remind people not to let their vehicles idle for extended periods.

Conclusion

As the assessment of progress toward the West Virginia Healthy People 2010 goals continues, the Division of Health Promotion and Chronic Disease is restructuring to facilitate the implementation of the community, policy, and systems based strategies outlined above. State policy level changes will ensure that all Mountain State residents, regardless of income, education, and employment status, will have access to environments supporting healthy choices, such as safe places for physical activity and ready access to fruits and vegetables. Working with health care providers will ensure quality initiatives to align efforts to link community resources and create community models where healthy choices are part of the everyday experience. At the community level, changing the context of the choices people make where they live, work, play, and pray will help make health the "easy" choice.

References

1. Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion. *The Power of Prevention: Chronic Disease . . . the Public Health Challenge of the 21st Century.* Atlanta, GA: U.S. Department of Health and Human Services, 2009.
2. Partnership for Solutions. *Chronic Conditions: Making the Case for Ongoing Care*. Baltimore, MD: Johns Hopkins University, 2002.
3. *Vital Health Statistics of West Virginia, 2008*. West Virginia Bureau for Public Health, Office of Epidemiology and Health Promotion, Health Statistics Center, June 2010.
4. Partnership to Fight Chronic Disease. *Almanac of Chronic Disease, 2008 Edition*. Accessed online at: http://www.fightchronicdisease.org/pdfs/PFCD_FINAL_PRINT.pdf.
5. Trust for America's Health. *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities*. Washington, DC: Trust for America's Health, 2009.
6. Robert Wood Johnson Foundation Commission to Build a Healthier America. Issue Brief 7: *Breaking Through on the Social Determinants to Health and Health Disparities.* Accessed online at: http://www.commissiononhealth.org.
7. Jemal A, Ward E, Anderson RN, Murray T, and Thun MJ. Widening of socioeconomic inequities in U.S. death rates, 1993-2001. Accessed online at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0002181.
8. Pincus T, Esther R, DeWalt DA, and Callahan LF. Social conditions and self-management are more powerful determinants of health than access to care. *Ann Intern Med* 1998;129(5):406-411.
9. U.S. Census Bureau. American Community Survey. S1501. Educational attainment: 2006-2008 American Community Survey 3-year estimates. Accessed online at: http://factfinder.census.gov.
10. Robert Wood Johnson Foundation Commission to Build a Healthier America. Adult Health Status: A Snapshot of West Virginia. Accessed online at: http://www.commissiononhealth.org.
11. National Center for Health Statistics. *Health, United States, 2009, with Special Feature on Medical Technology*. Washington, DC: U.S. Department of Health and Human Services, 2010.
12. United Health Foundation. *America's Health Rankings*. Accessed online at: http://www.americashealthrankings.org.
13. U.S. Census Bureau. American Community Survey. S1701 Poverty status in the past 12 months: 2006-2008 American Community Survey 3-year estimates. Accessed online at: http://factfinder.census.gov.
14. Strully KW. Job loss and health in the U.S. labor market. *Demography* 2009;46(2): 221-246.
15. U.S. Department of Agriculture. Economic Research Service. County-level unemployment and median household income for West Virginia. Accessed online at: http://www.ers.usda.gov.
16. Centers for Disease Control and Prevention and The Merck Company Foundation. *The State of Aging and Health in America 2007*. Whitehouse Station, NJ: The Merck Company Foundation, 2007.

Appendix A: Estimated Return on Investment in Preventive Care, West Virginia

West Virginia Return on Investment of $10 per Person (Net Savings in 2004 Dollars)			
Total Annual Intervention Costs (at $10 per person): $18,110,000			
	1-2 Years	**5 Years**	**10-20 Years**
Total State Savings	$42,300,000	$142,600,000	$156,600,000
State Net Savings (total savings minus intervention costs)	$24,200,000	$124,500,000	$138,500,000
ROI*	1.34:1	6.88:1	7.65:1
Estimated State-level Savings by Payer			
	1-2 Years	**5 Years**	**10-20 Years**
Medicare Net Savings	$6,540,000	$33,600,000	$37,400,000
Medicaid Net Savings (federal share)	$1,710,000	$8,820,000	$9,810,000
Medicaid Net Savings (state share)	$635,000	$3,260,000	$3,620,000
Private Payer and Out-of-Pocket Net Savings	$15,300,000	$78,800,000	$87,600,000
*Return on investment Source: Trust for America's Health (5) calculations from preliminary Urban Institute estimates, based on national parameters applied to state spending data. www.healthyamericans.org			

Appendix B: About the Data

Several data sources were used in this report: the Behavioral Risk Factor Surveillance System (BRFSS), West Virginia vital statistics, the U.S. Bureau of Labor Statistics, and U.S. Census Bureau.

Prevalence and Number Estimates. Prevalence estimates, also called prevalence rates, and estimated numbers, or weighted frequencies, are presented for the BRFSS. Prevalence is the percentage of people in a specified population with a risk factor or disease at a given point in time. The BRFSS data are weighted on a number of fields. Some weighting is done to remove known sampling bias and to adjust data to the state's adult population (ages 18 and over). Among the fields used to weight the BRFSS data are age of respondent, gender of respondent, number of telephone numbers reaching the household, number of adults in the household, and number of completed interviews.

Rates. A rate is the number of events (or specified people) in a given population or subpopulation divided by the total number of people in that population within a given time period. Mortality rates are reported as the cause of death per every 100,000 population. Age-adjusted rates are calculated using the 2009 population estimates found online at http://www.census.gov/popest/counties/asrh/CC-EST2009-alldata.html and adjusted by age to the 2000 U.S standard million. Unemployment rates are expressed as a percentage of the labor force (ages 16 through 64) in a given population.

Appendix C
Age-Adjusted Rates* for the Four Leading Causes of Chronic Disease Death in West Virginia by County
West Virginia Residents, 2004-2008

County	Heart Dis.	Cancer	CLRD**	Stroke	County	Heart Dis.	Cancer	CLRD**	Stroke
Barbour	245.2	214.2	64.0	52.7	Monongalia	225.9	173.6	45.3	41.5
Berkeley	227.0	201.4	56.1	43.8	Monroe	213.7	193.3	57.7	54.4
Boone	286.2	258.2	69.3	59.4	Morgan	231.3	218.7	44.7	41.5
Braxton	233.0	206.8	70.6	54.5	Nicholas	251.9	215.9	72.8	48.2
Brooke	250.3	190.3	53.4	45.5	Ohio	208.1	204.9	59.5	48.5
Cabell	230.0	211.3	66.8	57.1	Pendleton	266.9	155.4	37.3	34.7
Calhoun	262.9	191.6	65.8	33.1	Pleasants	267.0	181.1	54.6	60.3
Clay	209.0	257.3	81.9	54.8	Pocahontas	270.5	221.8	68.6	53.7
Doddridge	276.0	236.9	73.9	53.9	Preston	264.2	181.6	52.5	51.7
Fayette	250.7	228.8	57.5	52.4	Putnam	214.4	194.3	57.3	42.0
Gilmer	263.2	196.8	72.4	78.6	Raleigh	269.0	187.8	62.1	49.0
Grant	212.6	151.1	46.1	37.2	Randolph	270.0	181.2	58.9	49.5
Greenbrier	239.2	212.5	53.8	55.0	Ritchie	274.3	182.1	71.8	71.8
Hampshire	191.3	217.6	41.5	48.1	Roane	233.5	208.2	82.3	59.6
Hancock	274.3	212.2	47.6	43.7	Summers	196.5	196.2	56.3	40.1
Hardy	258.8	172.1	44.4	36.1	Taylor	212.1	184.2	62.1	45.2
Harrison	219.8	209.3	59.6	49.7	Tucker	220.2	194.6	58.8	42.2
Jackson	198.3	203.9	56.9	47.3	Tyler	218.9	213.5	46.0	43.6
Jefferson	224.9	200.1	55.1	49.9	Upshur	231.3	199.0	67.6	66.3
Kanawha	227.5	219.0	54.8	55.8	Wayne	215.9	229.5	66.0	55.6
Lewis	288.9	230.4	61.5	60.8	Webster	250.6	227.4	70.2	52.2
Lincoln	256.8	256.4	67.8	66.1	Wetzel	259.7	207.4	53.6	56.6
Logan	315.5	268.1	87.1	67.6	Wirt	211.2	306.1	52.3	37.4
McDowell	324.4	266.2	82.6	36.7	Wood	256.6	182.1	52.6	55.2
Marion	224.9	199.0	58.0	37.9	Wyoming	315.1	238.8	89.3	52.5
Marshall	258.6	200.5	56.2	49.5	WV Total	242.3	208.1	60.5	50.6
Mason	261.5	210.6	66.4	49.8					
Mercer	242.2	206.4	72.1	41.9					
Mineral	245.8	214.6	64.7	66.3					
Mingo	337.1	259.9	118.1	52.4					

*Age-adjusted to the 2000 U.S. standard million

** Chronic Lower Respiratory Disease

Appendix D. Prevalence (%) of Selected Chronic Disease Risk Factors by County, WV BRFSS						
Years of Data Collection	**2004-2009**					
County	**Current Smoker**	**Obesity**	**Diabetes**	**Physical Inactivity**	**Current Asthma**	**Had Stroke**
Berkeley	28.9	32.9	8.5	27.6	8.8	2.0
Brooke	25.7	35.6	11.3	32.7	6.2	2.2
Cabell	24.8	31.0	12.4	26.6	8.4	3.6
Fayette	25.9	29.1	11.8	28.9	9.9	2.4
Hancock	22.1	32.0	12.1	29.6	7.3	2.3
Harrison	24.6	29.8	12.3	27.6	9.8	4.5
Jefferson	26.0	29.0	7.9	26.0	10.7	1.9
Kanawha	23.8	30.0	11.3	29.1	7.8	4.1
Logan	35.4	38.0	16.9	37.1	12.7	4.9
McDowell	34.0	33.8	15.2	48.0	14.7	5.3
Marion	22.6	26.6	7.8	28.8	8.6	3.1
Marshall	24.3	29.7	10.3	29.4	5.3	2.6
Mason	34.5	36.6	13.1	31.4	13.0	4.2
Mercer	28.0	28.0	11.0	30.7	10.9	5.4
Mingo	35.7	33.1	11.9	42.4	11.6	4.9
Monongalia	20.2	26.2	7.5	14.8	9.0	1.8
Ohio	29.7	25.7	9.9	24.1	11.2	3.0
Putnam	20.8	27.3	9.2	22.6	6.5	3.3
Raleigh	23.0	29.2	13.0	27.4	9.3	3.9
Randolph	31.1	25.4	7.9	28.6	6.4	2.5
Upshur	28.9	31.3	13.6	27.4	8.9	1.8
Wayne	32.3	36.7	10.7	31.9	9.1	5.8
Wood	26.9	29.1	11.3	27.5	8.0	4.4
Wyoming	34.8	35.2	14.9	44.2	9.8	5.5
Grouped Counties*						
Boone, Lincoln	31.1	37.3	16.1	34.0	10.6	3.9
Greenbrier, Summers, Monroe	24.8	31.7	12.1	29.9	9.6	4.6
Braxton, Nicholas, Webster	30.4	32.7	9.5	29.9	8.4	4.4
Hardy, Pendleton, Pocahontas	21.4	30.8	9.3	23.6	5.0	3.0
Calhoun, Clay, Gilmer, Roane	32.1	34.8	9.7	32.5	13.9	4.2
Jackson, Wirt	26.9	35.1	11.4	31.8	8.8	3.6
Doddridge, Lewis, Ritchie	29.6	33.2	13.9	28.8	7.1	3.3
Pleasants, Tyler, Wetzel	30.6	32.8	10.5	25.3	5.8	1.5
Barbour, Taylor	24.7	29.7	10.4	30.9	9.2	5.2
Preston, Tucker	23.8	30.2	11.4	27.9	8.4	2.4
Grant, Mineral	17.9	31.1	8.8	25.9	11.0	2.5
Hampshire, Morgan	26.3	31.1	9.4	26.6	8.3	2.6

*Some counties were grouped to obtain an adequate sample size for analysis. For these counties, the prevalence is representative of the combined counties. Individual county estimates are not available for the grouped counties.

Appendix D. Prevalence (%) of Selected Chronic Disease Risk Factors by County, WV BRFSS (cont'd.)						
Years of Data Collection	**2004-2009**		**2002, 2003, 2005, 2007, 2009**			**2001, 2003, 2005, 2007, 2009**
County	**Had Coronary Heart Dis.**	**Had Heart Attack**	**High Blood Pressure**	**High Cholesterol**	**Poor Nutrition**	**Arthritis**
Berkeley	6.9	4.9	26.8	36.9	82.1	26.2
Brooke	8.6	5.5	37.4	38.7	82.9	32.7
Cabell	5.8	7.4	31.7	40.9	80.2	32.5
Fayette	6.9	8.4	33.5	37.5	81.3	36.8
Hancock	8.6	5.6	28.4	37.6	83.0	32.3
Harrison	7.0	5.7	31.4	36.6	81.2	32.4
Jefferson	4.2	4.5	25.9	29.9	78.9	29.7
Kanawha	7.2	6.1	33.8	39.9	78.9	31.0
Logan	9.4	10.8	39.9	44.6	87.5	40.8
McDowell	10.5	9.9	42.2	51.5	82.2	47.1
Marion	7.5	5.3	32.8	33.1	77.9	29.9
Marshall	10.4	10.3	26.6	44.8	81.4	34.0
Mason	8.0	6.3	33.7	37.0	83.4	35.3
Mercer	8.7	6.6	35.2	39.4	80.3	35.6
Mingo	13.3	6,9	42.7	44.6	88.2	41.6
Monongalia	4.4	2.9	23.0	30.0	79.6	20.9
Ohio	6.7	8.8	29.6	38.6	85.9	31.2
Putnam	5.8	4.0	32.3	40.5	81.1	26.7
Raleigh	9.1	8.5	34.5	38.8	80.3	38.1
Randolph	7.6	5.1	35.2	32.5	79.0	35.2
Upshur	5.8	8.8	26.0	41.7	81.4	31.0
Wayne	10.2	8.5	35.4	41.7	84.3	40.2
Wood	8.3	6.4	33.6	39.0	79.1	35.6
Wyoming	10.0	9.0	36.6	43.8	87.2	42.8
Grouped Counties*						
Boone, Lincoln	8.3	8.1	38.9	39.1	84.3	38.9
Greenbrier, Summers, Monroe	8.0	8.4	37.3	43.2	78.9	35.5
Braxton, Nicholas, Webster	8.1	7.6	33.1	38.2	82.7	35.0
Hardy, Pendleton, Pocahontas	6.5	3.8	34.2	42.9	77.9	32.0
Calhoun, Clay, Gilmer, Roane	5.9	6.3	35.1	43.5	83.9	36.5
Jackson, Wirt	9.5	7.2	34.4	43.5	78.4	35.9
Doddridge, Lewis, Ritchie	6.7	8.9	32.2	44.7	84.0	35.5
Pleasants, Tyler, Wetzel	6.2	6.7	32.4	38.1	78.5	35.3
Barbour, Taylor	8.1	8.1	34.7	40.9	78.9	33.8
Preston, Tucker	5.8	3.4	31.7	33.3	80.2	34.9
Grant, Mineral	7.1	6.1	33.9	42.7	78.7	35.1
Hampshire, Morgan	7.8	4.0	31.7	39.0	75.6	32.8

*Some counties were grouped to obtain an adequate sample size for analysis. For these counties, the prevalence is representative of the combined counties. Individual county estimates are not available for the grouped counties.

Appendix E
Division of Health Promotion and Chronic Disease Staff
(As of May 2011)

Jessica G. Wright, RN, MPH, CHES, Director
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Brandon Lewis, BS, Healthy Lifestyles Manager
Lora Lipscomb, Asthma Coordinator
Lee Ann Phalen, CTR, Comprehensive Cancer Coordinator
Joy Schade, Osteoporosis and Arthritis Coordinator
Debra Sizemore, MSW, LPC Community Health Coordinator
Belinda Summerfield, RN, CCM, Diabetes Coordinator
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Germaine Weis, MA, M.Div., Osteoporosis and Arthritis Manager
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