

Background

- Healthy eating and physical activity play a positive role in the prevention and control of many chronic diseases and conditions which are among the leading causes of death and major contributors to health care costs in North Carolina.
- According to the 2015 North Carolina Behavioral Risk Factor Surveillance System (BRFSS) survey:¹
 - Over half (52%) of adults do not get the recommended 150 minutes per week of moderate-intensity aerobic physical activity and almost three out of four (71%) do not meet the weekly muscle-strengthening exercise recommendations. (See health.gov/paguidelines/guidelines for adult physical activity guidelines.)
 - One out of five (22%) adults does not consume vegetables at least once a day.
 - Four out of every ten (43%) adults do not consume fruits at least once a day.
 - Two out of five (41%) adults are not taking any steps to watch or reduce their sodium or salt intake. (See medinsteadofmeds.com/intro for healthy eating guidelines.)

What chronic conditions can be prevented or controlled through healthy eating and physical activity?

- Examples of chronic diseases and conditions for which healthy eating and physical activity play a role in prevention and control include overweight and obesity, high blood pressure, prediabetes, diabetes, heart disease, stroke and cancer.
- Cancer, heart disease, stroke and diabetes are among the top ten leading causes of death in North Carolina, and in 2016 they accounted for over half of all deaths. (See Table 1.) These four conditions accounted for 196,285 hospital admissions (21% of all admissions) and over \$8.5 billion in hospital charges (28% of total hospital charges) in North Carolina in 2014.²

How are healthy eating and physical activity associated with chronic diseases and conditions?

Overweight and Obesity

- Overweight and obesity are conditions that result from excess body fat and/or abnormal body fat distribution.
- The basic cause of overweight and obesity is calorie (energy) imbalance whereby calorie intake is greater than calorie use. Reducing calorie intake through healthy eating and increasing calorie use through physical activity helps prevent overweight and obesity in those at a healthy weight and helps those who are overweight or obese lose weight.
- There is strong evidence that shows that physical activity leads to weight loss, especially when combined with reduced calorie intake. Physical activity is also beneficial in the prevention of weight gain, reduction of abdominal obesity and maintenance of weight after weight loss.³
- About five million adults in North Carolina (66%) are either overweight or obese.⁴ (See Table 2.)

High Blood Pressure (Hypertension)

- High blood pressure, also known as hypertension, is a disease that occurs when blood pressure stays above normal for a long time. As a

Table 1. Leading Causes of Death, NC, 2016

| Rank | Cause | Number | % |
|--------------------------------|---|---------------|------------|
| 1 | Cancer | 19,526 | 21.6 |
| 2 | Diseases of heart | 18,276 | 20.2 |
| 3 | Chronic lower respiratory diseases | 5,317 | 5.9 |
| 4 | Cerebrovascular diseases | 4,941 | 5.5 |
| 5 | Alzheimer's disease | 4,152 | 4.6 |
| 6 | All other unintentional injuries | 3,950 | 4.4 |
| 7 | Diabetes mellitus | 2,813 | 3.1 |
| 8 | Nephritis, nephrotic syndrome and nephrosis | 2,002 | 2.2 |
| 9 | Influenza and pneumonia | 1,896 | 2.1 |
| 10 | Septicemia | 1,559 | 1.7 |
| | All other causes (Residual) | 26,066 | 28.7 |
| Total Deaths—All Causes | | 90,498 | 100 |

Source: North Carolina State Center for Health Statistics. www.schs.state.nc.us/interactive/query/lcd/lcd.cfm

result, the walls of arteries get stretched beyond their healthy limit and damage occurs, creating a variety of other health problems.

- Unhealthy diet, especially eating foods high in sodium and low in potassium, and physical inactivity are risk factors for high blood pressure. There is strong evidence that links physical activity to a reduced risk of high blood pressure.³
- About 2.7 million adults in North Carolina (35%) have been diagnosed with high blood pressure.⁴ (See Table 2.)

Prediabetes

- Prediabetes is a condition whereby people have higher than normal blood glucose (sugar) levels, but not yet high enough to be diagnosed as diabetes. Prediabetes is a precursor of type 2 diabetes, as well as a risk factor for heart disease and stroke. Without lifestyle changes to improve their health, 15% to 30% of people with prediabetes will develop type 2 diabetes within five years.
- About 780,000 adults in North Carolina (10%) have been diagnosed with prediabetes.⁴ (See Table 2.)

Diabetes

- Diabetes is a group of diseases marked by high levels of blood glucose (sugar) resulting from defects in the production or action of insulin, a hormone that regulates blood glucose levels.
- There is strong evidence that links physical activity to a lower risk of type 2 diabetes.³
- About 820,000 adults in North Carolina (11%) have been diagnosed with diabetes.⁴ (See Table 2.)

Heart and Blood Vessel Disease

- Heart and blood vessel disease is a term used to describe all the abnormal conditions that affect the heart and blood vessels. This includes conditions such as coronary artery disease (CAD), myocardial infarction (commonly known as heart attack), heart failure, angina, arrhythmias (including atrial fibrillation), cardiomyopathy, and peripheral artery disease (PAD) among many other conditions.
- Daily consumption of fruits and vegetables and regular physical activity are associated with a reduced risk of heart attack.⁵
- About 540,000 adults in North Carolina (7%) have had a heart attack, angina or coronary heart disease in their lifetime.⁶ (See Table 2.)

Stroke

- A stroke occurs when the blood supply to the brain is blocked or when a blood vessel in or around the brain ruptures, causing brain tissue to die.
- Healthy eating and physical activity are strongly associated with decreased risk of stroke:⁷
 - Increased consumption of fruit and fish has been found to reduce the risk of stroke. Inversely, increased consumption of red meat, organ meats, eggs, fried foods, pizza and salty snacks, as well as cooking with lard, is associated with an increased risk of stroke.
 - Regular physical activity is associated with a reduced risk of stroke.
- About 280,000 adults in North Carolina (4%) have had a stroke.⁴ (See Table 2.)

To learn more about overweight and obesity, high blood pressure, prediabetes, diabetes, heart disease and stroke in North Carolina, visit communityclinicalconnections.com/Data.

Cancer

- Healthy eating and physical activity are associated with reduce risk of several types of cancer.⁸
- There is evidence that links physical activity to a reduced risk of colon, breast, lung and endometrial cancer.³
- The Cancer Prevention and Control Branch in the North Carolina Division of Public Health leads cancer prevention efforts for the state. To learn more about cancer prevention efforts in North Carolina, visit publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol.

What efforts are occurring in North Carolina to make healthy foods more easily available and increase opportunities for physical activity for the entire population?

- The Community and Clinical Connections for Prevention and Health Branch in the North Carolina Division of Public Health leads statewide efforts to improve healthy eating and physical activity which include:
 - Increasing access to farmers' markets in underserved areas.
 - Increasing awareness, use and the number of parks, trails and greenways in North Carolina.
 - Supporting communities in creating policies and environments where people have access to healthy foods and places to be physically active.
 - Promoting and implementing food service guidelines, nutrition standards, physical activity, and physical education standards in early care and education settings.
 - Promoting physical activity and healthy eating in faith communities.
 - Promoting and implementing policies and practices that create supportive nutrition environments, quality physical education and physical activity in K-12 schools.
 - Promoting physical activity and healthy eating in worksites.
- For more information about efforts occurring in North Carolina to make healthy foods more easily available and increase opportunities for physical activity, visit communityclinicalconnections.com/What_We_Do/improve.html.

Table 2. Estimated percentage of individuals with select chronic diseases/conditions who have poor diet and insufficient physical activity as a risk factor, BRFSS, NC, 2015

| | General Population | Overweight | Obesity | High Blood Pressure | Prediabetes | Diabetes | Heart Disease | Stroke |
|--|--------------------|------------|-----------|---------------------|-------------|----------|---------------|---------|
| Estimated number of individuals in population (18 years and above) | 7,752,234 | 2,700,000 | 2,333,000 | 2,700,000 | 780,000 | 820,000 | 540,000 | 280,000 |
| Percent not meeting aerobic physical activity recommendation | 51.9 | 50.5 | 58.8 | 56.8 | 55.1 | 62.5 | 58.0 | 61.4 |
| Percent not meeting muscle-strengthening recommendation | 70.9 | 67.7 | 78.3 | 75.8 | 77.3 | 80.9 | 83.1 | 81.8 |
| Percent consuming vegetables less than one time a day | 21.6 | 20.5 | 22.6 | 24.8 | 23.5 | 25.6 | 23.5 | 30.1 |
| Percent consuming fruits less than one time a day | 43.3 | 42.6 | 47.9 | 42.5 | 37.3 | 44.4 | 42.4 | 40.7 |
| Percent not watching salt | 41.3 | 40.9 | 35.4 | 26.1 | 25.2 | 19.8 | 20.0 | 20.1 |

Source: Prevalence estimates from 2015 NC BRFSS survey results www.schs.state.nc.us/data/brfss/2015/nc/all/topics.htm#chd and secondary analysis conducted by the North Carolina Department of Health and Human Services, Division of Public Health, State Center for Health Statistics upon request. Population estimates from: www.schs.state.nc.us/interactive/query/population/nchspop.cfm.

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