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Facts: Chronic disease, cost and longevity and impact of prevention and lifestyle intervention

With the advancement of science, sanitation and industrialization, health and lifespan has changed. We are now seeing less disease and death related to infections and people are living longer, not necessarily healthier. Replacing infectious diseases had been a dramatic rise in the incidence and prevalence of lifestyle-related and stress related chronic degenerative diseases. Chronic diseases—including heart disease, cancer, stroke, diabetes, arthritis, and related risk factors, such as tobacco use, physical inactivity, poor diet, and obesity—are the leading causes of death and disability in the United States, accounting for 7 of every 10 deaths and affecting the quality of life of 90 million Americans. Chronic diseases represent 83% of all U.S. health care spending; medical care costs of people with chronic diseases account for more than 75% of the nation's \$2 trillion medical care costs. The direct and indirect costs of diabetes alone are \$174 billion a year. The estimated direct and indirect costs associated with smoking exceed \$193 billion annually. Although chronic diseases are among the most common and costly health problems, they are also among the most preventable. [CDC](#)

The How To Live Younger program and educational materials such as the book “Vibrance for Life: How to Live Younger and Healthier,” addresses preventing and treating these lifestyle related chronic diseases using evidenced based medicine and lifestyle interventions. By tapping into the synergistic power of good nutrition, supplements, exercise, hormone modulation, stress management and lifestyle, people can make a significant impact on their health.

The State of Health

Chronic Diseases are the Leading Causes of Death and Disability in the U.S.

- 7 out of 10 deaths among Americans each year are from chronic diseases. Heart disease, cancer and stroke account for more than 50% of all deaths each year.
- In 2005, 133 million Americans – almost 1 out of every 2 adults – had at least one chronic illness.
- Obesity has become a major health concern. 1 in every 3 adults is obese and almost 1 in 5 youth between the ages of 6 and 19 is obese (BMI ≥ 95th percentile of the CDC growth chart).
- About one-fourth of people with chronic conditions have one or more daily activity limitations.
- Arthritis is the most common cause of disability, with nearly 19 million Americans reporting activity limitations.
- Diabetes continues to be the leading cause of kidney failure, nontraumatic lower-extremity amputations, and blindness among adults, aged 20-74.



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- Chronic diseases (e.g., diabetes, heart disease, cancer, stroke, and arthritis) are the leading causes of morbidity and mortality and are among the most common, costly, and preventable health problems in the United States
- Each year, seven of 10 deaths are the result of chronic diseases.

Overweight and Obesity

- Effects of overweight and obesity in the United States continue to be a major health priority. Overweight and obesity increase the risk for various chronic diseases (e.g., diabetes, heart disease, hypertension, stroke, gall bladder disease, and arthritis-related disabilities), and certain cancers (e.g., colon, breast, esophagus, endometrial, and kidney).
- Obesity and type 2 diabetes coexist in specific geographic patterns on the basis of socioeconomic status, community and environmental factors, and genetic risk factors among similar ethnic groups. This comorbid relation between obesity and type 2 diabetes demonstrates the complexity of chronic disease indicators and the need to develop comprehensive intervention strategies to address both components
- In addition, a direct association between a high BMI (BMI ≥ 35 kg/m²) and years of life loss (YLL) exists.

Diabetes Prevalence

- Diabetes is a group of diseases characterized by increased levels of blood glucose resulting from defects in insulin production by the pancreas or because cells in the muscles, liver, and fat do not use insulin efficiently
- Diabetes is a highly prevalent and debilitating disease that increases the risk for other serious health conditions (e.g., heart disease, stroke, kidney disease, blindness, and lower-extremity amputations)
- Control and monitoring of high glucose levels and participation in certain types of physical activity can prevent, delay, or decrease the negative health outcomes from diabetes.

Coronary Heart Disease

- Heart disease continues to be the leading cause of mortality in the United States.
- Cardiovascular disease refers to several diseases and conditions affecting the heart and blood vessels. CHD, including angina and myocardial infarction, is the most prevalent cardiovascular disease.



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- CHD is a widely studied and complex disease with modifiable risk factors (e.g., high blood pressure, high cholesterol, inactivity, obesity, and smoking).

Stroke

- Stroke is the third-leading cause of death in the United States.
- Nonfatal, stroke is a leading cause of permanent disability and economic loss because of physical impairment.
- In 2006, one in 17 deaths were caused by stroke.
- Approximately 795,000 persons suffer a stroke each year.
- Risk factors associated with stroke are high blood pressure, diabetes, heart disease, atrial fibrillation, high blood cholesterol levels, physical inactivity, alcohol and tobacco use, and obesity.
- The incidence of stroke varies by age and race/ethnicity, and the risk for stroke increases with age; however, stroke can occur at any age. Blacks have nearly twice the risk for having a stroke compared with whites, and both blacks and Hispanics are more likely to die following a stroke than whites. Health-care services, medications, and loss of work because of stroke costs approximately \$68.9 billion per year.

References:

- CDC Chronic Disease Overview [CDC](#)
- CDC Morbidity and Mortality Weekly Reports [CDC MMWR MMWR 2010](#)
- CDC Stroke [CDC Stroke](#)

Living Longer with Chronic Disease– It's at a Cost

A Boom in Living Longer

- Population projections of the Bureau of the Census project an increase in life expectancy at birth by 2050 to 86 years for males and 92 years for females. Considerable increases over the current figures of 72.5 and 15.5 for males, and 79.3 and 19.2 for females. [Administration On Aging Statistics](#)
- After January 1, 2011 the leading edge of the 77 million baby boomers began reaching retirement age. Previously, about 7,000 people hit retirement age every day and that number



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increased from 10,000 each day and will stay at that level for 18 years. [Alliance for Aging Research](#)

Increase in Chronic Disease and Costs

- Chronic diseases associated with aging account for more than 75% of Medicare and other federal health care costs. The Congressional Budget Office projects that unprecedented increases in age-related diseases resulting from population aging is one reason that total spending on healthcare will continue to rise from 17% to 25% of GDP by 2025. [Alliance for Aging Research](#)
- Direct and indirect costs associated with just one age-related disease, Alzheimer's disease, are estimated at \$172 billion. That number is expected to grow to \$1.078 trillion in 2050. By that time as many as 13.5 million people will have Alzheimer's disease. Simply put, our nation does not have the luxury of time to put off addressing the health research needs to meet the challenges posed by this population. [Alliance for Aging Research](#)

Modifying Risk Factors Makes a Difference

Four Common Causes of Chronic Disease can be Modified

- Four modifiable health risk behaviors—lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption—are responsible for much of the illness, suffering, and early death related to chronic diseases.
- More than one-third of all adults do not meet recommendations for aerobic physical activity based on the 2008 Physical Activity Guidelines for Americans, and 23% report no leisure-time physical activity at all in the preceding month.
- In 2007, less than 22% of high school students and only 24% of adults reported eating 5 or more servings of fruits and vegetables per day.
- More than 43 million American adults (approximately 1 in 5) smoke.
- In 2007, 20% of high school students in the United States were current cigarette smokers.
- Lung cancer is the leading cause of cancer death, and cigarette smoking causes almost all cases. Compared to nonsmokers, men who smoke are about 23 times more likely to develop lung cancer and women who smoke are about 13 times more likely.
- Smoking causes about 90% of lung cancer deaths in men and almost 80% in women.
- Smoking also causes cancer of the voicebox (larynx), mouth and throat, esophagus, bladder, kidney, pancreas, cervix, and stomach, and causes acute myeloid leukemia.

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- Reference CDC Chronic Disease Overview [CDC](#)

Fitness

- In an important study of 6,200 men by researchers from the Veterans Affairs Palo Alto Health Care System/Stanford University published in 2002, physical fitness was determined to be more important a factor in longevity than high blood pressure, sky-high cholesterol levels, or bad habits such as smoking. In fact, the researchers found that men with the lowest exercise capacity were roughly four times more likely to die during the study than the fittest participants. Altogether, physical fitness was shown to have a bigger impact on the risk of death than all of the well- publicized heart disease risk factors. [NEJM](#)
- Archives of Internal Medicine December 2009: Being physically fit, not smoking, and maintaining a normal waist girth is associated with lower risk of CHD events, and CVD and all-cause mortality in men. [Archives Internal Medicine](#)

Nutrition

- The Center for Nutrition Policy and Promotion conducted a survey in 2005 called the Healthy Eating Index and looked at the number of servings of food categories consumed. Scores were 48% below requirements for every- thing except grains, meat, and beans, and were less than half for dark green and orange vegetables, legumes, and whole grains. [Journal of Nutrition Healthy Eating Index](#)
- The U.S. Department of Health and Human Services and U.S. Department of Agriculture Dietary Guidelines for Americans 2005 found that the following nutrients may be low enough to be of concern for adults: calcium, potassium, fiber, magnesium, and Vitamins A (as carotenoids), C, and E. [USDA Dietary Guidelines 2005](#)
- A study of two U.S. populations found nutritional deficits of Vitamin A, E, folic acid, potassium, and calcium that were very low, and marginally low for Vitamin C and some B vitamins. They concluded that most elderly U.S. citizens were likely to be deficient in five micronutrients and marginally insufficient in four others. [Journal of Nutrition and Aging](#)

Dietary Supplements

- Dietary supplement use is increasingly common in the United States. Multivitamin formulations with or without minerals are typically the most common type of dietary supplement reported in surveys and studies that collect data relating to dietary supplement use. In the National Health and Nutrition Examination Survey (NHANES) 1999-2000, 52% of adults reported taking a dietary supplement in the past month, and 35% reported regular use of a multivitamin-multimineral

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(MVMM) product. NHANES III data indicate an overall prevalence of dietary supplement usage of 40%, with prevalence rates of 35% in NHANES II and 23% in NHANES [AJCN NHANES](#)

- In April 2002, Dr. Bruce Ames et al of the University of California/Berkeley reported in The American Journal of Clinical Nutrition that they were able to treat more than 50 genetic diseases with high doses of vitamins. [American Journal of Clinical Nutrition](#)

Hormones

- The one third of the population that is most insulin resistant is at greatly increased risk to develop cardiovascular disease (CVD), type 2 diabetes, hypertension, stroke, nonalcoholic fatty liver disease, polycystic ovary disease, and certain forms of cancer. [Recent Progress in Hormone Research](#)
- Obesity, type 2 diabetes mellitus (formerly known as non–insulin-dependent diabetes), hypertension, lipid disorders and heart disease are common in most Western societies and are collectively responsible for an enormous burden of suffering. Many people have more than one—and sometimes all—of these conditions, leading to the hypothesis that the coexistence of these diseases is not a coincidence, but that a common underlying abnormality allows them to develop. In 1988 it was suggested that the defect was related to insulin, and the insulin resistance syndrome was first described. It is estimated that this syndrome affects 70 to 80 million Americans [American Family Physician](#)
- Elevated plasma cortisol levels were associated with raised fasting glucose and total cholesterol levels Elevated plasma cortisol is also associated with a greater prevalence of ischemic heart disease, independent of conventional risk factors. [Journal of Clinical Endocrinology and Metabolism](#)
- High levels of the stress hormone cortisol in the urine were associated with a dramatic increase in death from cardiovascular disease years later. [Web MD](#)
- Lower cortisol response to metabolic challenge may reflect improved endocrine regulation relevant to the disease-preventing effects of transcendental meditation in older women. [Annals of NY Academy of Science](#)
- Studies with transcendental meditation have revealed reductions in blood pressure, carotid artery intima-media thickness, myocardial ischemia, left ventricular hypertrophy, mortality, and other relevant outcomes. The magnitudes of these effects compare favorably with those of conventional interventions for secondary prevention. [Behavioral Medicine](#)

Diabetes can be prevented or delayed



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- The Diabetes Prevention Program (DPP), a large prevention study of people at high risk for diabetes, showed that lifestyle intervention to lose weight and increase physical activity reduced the development of type 2 diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Treatment with the drug metformin reduced the risk by 31% overall and was most effective in younger (aged 25–44 years) and in heavier (body mass index ≥ 35) adults.
- Prevention or delay of type 2 diabetes with either lifestyle or metformin intervention was effective in all racial and ethnic groups studied and has been shown to persist for at least 10 years.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.

Reference CDC [2011 National Diabetes Fact Sheet](#)