



Well-being and You

*AN INTRODUCTION TO KEY
CONCEPTS AND YOURSELF*

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LEARNING OBJECTIVES

- › **ASSESS** your physical fitness and your readiness to make behavior changes that will increase your well-being.
- › **DEFINE** well-being, list the dimensions of well-being, and explain the importance of balancing the dimensions of you for greater well-being.
- › **IDENTIFY** and explain the determining factors that affect your well-being.
- › **EXPLAIN** how your lifestyle choices impact your well-being.
- › **DEFINE** “lifestyle medicine,” and explain why it is an effective way to improve your health and well-being.
- › **DESCRIBE** ways in which you can advance the goals of the Healthy People 2020 initiative.

Find Your Path to Well-being

Your journey to better well-being should not start by memorizing scientific terms, facts, or research statistics. While this book offers scientific concepts that are important for the understanding of personal well-being and coaching well-being, the best starting point is **self-assessment**. Where are you now, and where do you want to go? Taking stock of who you are today, and how your current attitudes and behaviors affect your overall well-being is a crucial first step. Going through the self-assessment process is an important first step in a physical fitness program, but also an important skill that will help you achieve a fulfilling life.

FitQuest includes online self-assessments that build a profile about a person you may not know as well as you think you do—yourself. To begin to develop your profile, you need to identify what drives you, pinpoint your likes and dislikes, and explore the circumstances in your life that may get in your way. Your profile will illuminate your “tendencies,” which influences how you live your life.

You should answer these self-assessments as accurately as possible. The right answer is an honest answer. Honest choices will provide you with feedback in your profile that reflects the truest view of yourself.

Knowing yourself is vital. Your personal well-being and fitness journey will require that you embrace positive behaviors and overcome barriers to make healthful choices. Following completion of the assessments, we will share your personal results with you. Be honest in your responses; you might find some things out about yourself that you never knew. Reviewing your profile results will make the introductory concepts covered in the remaining portion of this chapter more applicable.



Figure 1: Being physically active does not mean you have to go to the gym. Walking is great form of exercise.

How Physically Active Are You?

Keep in mind that “exercise” may include brisk walking, jogging, swimming, aerobic dancing, biking, rowing, weight lifting, and so on. You can do physical activity in many different ways; you should find the activity that is best for you (**Figure 1**).

You may enjoy sedentary activities, like bowling or golfing with a cart, but do not count them as exercise. “Regular” exercise is defined as five days a week of 30+ minutes of moderate intensity exercise OR three or more days a week of vigorous intensity exercise totaling 75+ minutes OR an adequate combination of the two.¹

Do You Make Time to Exercise?

Do you prefer to exercise with friends or alone? How do stressful life events, such as moving or starting school, affect whether you exercise or not? It is important to assess and understand the circumstances in which you are more likely to exercise and the circumstances in which you are less likely to exercise (**Figure 2**). Self-assessment will help you look at your life and identify circumstances that may affect how much physical activity you are doing each week. Knowing yourself better this way will help you develop strategies and tactics for a regular exercise plan.

How a Typical College Student Spends a Day

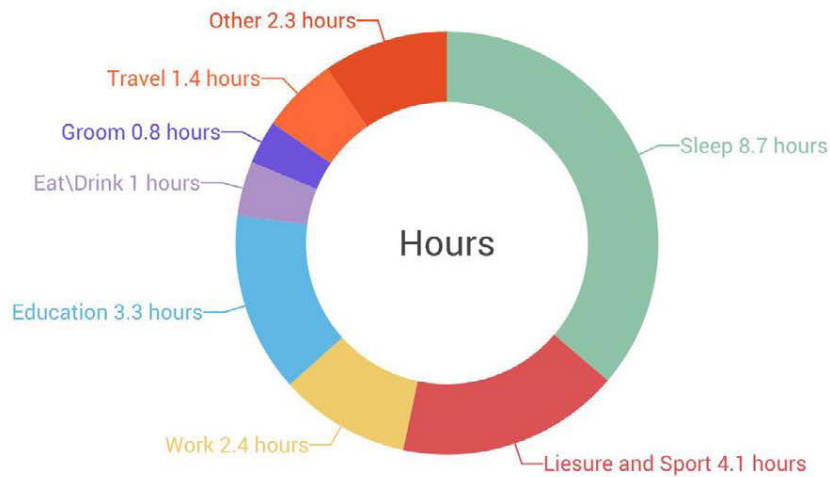


Figure 2: How do you choose to use your time? (U.S Bureau of Labor Statistics, Time User Survey)

What is Your Confidence Level?

Do you ever worry that you don't know the proper exercise techniques or that you won't be able to perform all the necessary movements? If so, you are not alone. For these and many other reasons, people don't feel confident in their ability to exercise, which is an integral component of well-being. Sun Tzu, a sixth-century military Chinese general said, "If you know the enemy and know yourself, you need not fear the result of a hundred battles." Facing personal fears and pinpointing the factors that affect your confidence level are important to understand your exercise and wellness deterrents (**Figure 3**).



Figure 3: Trying something for the first time can be scary, but you can build your confidence with practice and help from others.

How Motivated Are You to Exercise?

Understanding your motivation towards exercise is just as important as identifying your confidence level. Recognize what drives you: aerobic exercise or resistance training, intrinsic or extrinsic motivators. It has been determined that **intrinsic motivation** (motivation influenced by internal awards) is more powerful than **extrinsic motivation** (motivation influenced by external rewards or punishment) for long-term adherence to regular exercise.²



Figure 4: Doing a push-up is a form of resistance exercise.

Aerobic exercise elevates your heart rate for an extended period of time, such as 20 to 30 minutes. These activities include: brisk walking, jogging, swimming, aerobic dancing, biking, and rowing. Resistance exercise loads the muscle and bone. These activities may include: lifting free weights, using resistance bands, weighted balls, weight machines, kettle bells, counteracting buoyancy in water, or using body weight (**Figure 4**).

Self-assessment: Evaluation of how your current attitudes and behaviors affect your overall well-being

Intrinsic Motivation: Motivation that is influenced by internal awards

Extrinsic Motivation: Motivation that is influenced by external rewards or punishment

Your Profile and Key Well-being Concepts

The content in the remaining portion of this chapter is foundational to understanding well-being and fitness and intended to support your personal journey. Before continuing, take time to reflect: Are your self-assessment results surprising, or are they confirmation of what you already knew?

YOUR PERSONAL JOURNEY

Overcoming a Crazy Busy Life

Tenzin Gyatso, the 14th Dalai Lama and spiritual leader of the people of Tibet, was once asked, “What thing about humanity surprises you the most?” He responded:

Man. Because he sacrifices his health in order to make money. Then he sacrifices money to recuperate his health. And then he is so anxious about the future that he does not enjoy the present; the result being that he does not live in the present or the future; he lives as if he is never going to die, and then dies having never really lived.

Finding balance to live a happy life challenges most of us. Embracing your well-being requires monitoring numerous dimensions of yourself, which the next section explains in detail. Well-being encompasses a purposeful, holistic lifestyle in order to fulfill the potential in all dimensions of your life.

IDENTIFY YOUR DIMENSIONS OF WELL-BEING

Well-being is feeling positive and content with your life. No one formula exists for achieving well-being, as variables or factors change with time. The core dimensions of well-being are: physical, mental, emotional, intellectual, spiritual, and social. These dimensions are fluid and echo off the other, they integrate and influence your daily life. If you change one it shapes another. Well-being requires daily attention. Significant research has found that the mind and body work as one. Regular physical activity, for example, improves cognitive function and mood, which are mental and emotional dimensions of well-being.³

The balance of these dimensions will determine your well-being and the overall quality of your life. “Quality of life” is *not* an objective evaluation of the dimensions from an outside perspective. Rather it is a deep, inner reflection of yourself. Innate ability has little to do with perceived quality. How you choose to think about and act upon your ability seems to be more important. This is the very reason why some people can have so much going for them and others so little and the outward embodiment seems the opposite.

In addition to these 6 core dimensions of well-being, there are additional dimensions of well-being—occupational, environmental, and financial—that are significant factors to your life.³ For example, money is a requirement for shelter, food, transportation, education, and entertainment. Yet money, or the lack of it, can be a significant constraint on your well-being, particularly if it limits access to health care, good education, safe environments, good foods, and so on.

Well-Being: Feeling positive and content with your life in various dimensions, including physical, mental, emotional, intellectual, spiritual, and social

Well-being Requires Intentional Action

The demands of life are challenging: school, work, socializing, personal relationships, exercise, food choices, and other things compete for your time. Taking care of yourself—your mind and body—can be hard. Even in the pursuit of worthy accomplishments, such as attaining an advanced degree or working on an entrepreneurial venture, you can sacrifice your health. While there may not be a cure for your hectic, stressful life, you do still have a significant say in your well-being and fitness.

Ultimately, the path to wellness is about the intentional choices you make in your day-to-day living. Empirical research data indicates that regular, purposeful, physical activity and appropriate nutritional choices are paramount for reducing the risk of chronic disease and enhancing multiple components of well-being.^{4,5} Research has estimated that smoking, sleep deprivation, inadequate exercise, and poor nutritional choices account for nearly 80 percent of all illnesses.⁵ Recognize that healthful living is in your control. Even in the presence of sickness, accidents, and disease, proper lifestyle choices often mitigate the severity of deleterious outcomes.

Well-being Requires Time

Many people wonder how well-being can happen. The answer may be as simple as it is complex. When your life choices are exposed, you accomplish what you schedule. The reason that work (occupational well-being) gets time devoted to it is because the consequence of not going to work means losing a job and not getting paid. The reason that you attend parties, sporting events, weddings, religious services, school classes, or take vacations is because you schedule them into your life.

If you want to achieve greater physical well-being, you must schedule time for it. The journey to well-being is the accumulation of positive choices, which result from the appropriate and considered responses to life’s positive and negative events. Aspects of well-being can be communal, but the heart of well-being is about individual quality of life. Choices towards well-being must be intentional and made lifelong.

Serving as a model of appropriate well-being choices can encourage well-being living in patients. People seldom improve when they have no other model but themselves to copy.

— Oliver Goldsmith

Catch Yourself Being You

Recognize that scheduling well-being time becomes more difficult for those who score low on “confidence to exercise” and also for those who exercise for “extrinsic” motivational factors. Recognizing your tendencies in these areas—catching you being you—is critical if you want to achieve your lifestyle goals. Leverage your confidence and motivational sources to engage in exercise and other healthy activities (**Figure 5**). You have to choose to make well-being happen.



Figure 5: Eating well while at school or work is a good way to model a healthy behavior and will give you more energy to be productive.

CONSIDER HOW YOUR PERSPECTIVE, ATTITUDES, AND LIFESTYLE IMPACT WELL-BEING

You must look at yourself in the mirror and be honest—you have significant control over your health. This is not to mitigate the fact that you cannot control all factors related to your well-being, but to achieve any goal, you must know yourself, understand where you are now, and identify your destination.

In the course of a busy, stressful day, remind yourself about the value of scheduling time for well-being. Taking the time to care for yourself and make healthy choices reduce risks to your health, like chronic disease, and contribute to your overall happiness. Below are important lifestyle factors that influence well-being and fitness.

Mental Health Affects Well-being

A key component of mental health is self-image. A healthy self-image—the way you think about yourself, your abilities, or appearance⁶—is crucial to mental health. Moreover, mental health is a linchpin component of overall well-being. For instance, significant stressors, including the death of a loved one, a divorce, or a life-threatening illness, are triggers for depression or relapse into depression.

Significant stressors can influence or overtake the other dimensions of wellness as epitomized at the highest level by the “self-sabotage” or “breakdown” of high-profile individuals. Amy Winehouse (**Figure 6**), a talented musician who died of alcohol poisoning at age 27, and NBA-star Lamar Odom, who survived from drug overdose, are public reminders that having a lot of money (financial well-being) or being professionally successful (occupational well-being) does not guarantee well-being in other parts of life.



Figure 6: Amy Winehouse was a successful musician whose life was cut short by alcohol abuse.

We are all vulnerable. Amy Winehouse and Lamar Odom are tragic cautionary tales from which everyone should learn. No one is immune.

The World Health Organization has been quoted: “There is no health without mental health. In this positive sense, mental health is the foundation for well-being and effective functioning for an individual and for a community.”⁷ Your attitude and thoughts, gathered and generated by your surroundings, serve as a significant determinant to your mental health, which support or undermine healthy behaviors.

There is empirical evidence connecting physical activity with positive changes in self-esteem, self-efficacy, and cognitive functioning and negative changes in anxiety, stress, and depression.⁸ In effect, these are all fortuitous outcomes. Moreover, there is evidence of the effectiveness of physical activity in mental health care plans for persons with serious mental illness—showing similar effects as psychotherapeutic intervention.⁹

Lifestyle Choices Affect Well-being

Lifestyle choices are the central determinants of well-being. They are the modifiable risk factors that affect your personal health, but your lifestyle choices affect others as well. Decision makers of public health policy and legislation focus on lifestyle choices to enact widespread influence to manage the burden of chronic disease in our communities.

Physical Activity and Food Choices

Regular physical activity and nutritional choices are linked to overall health and wellness. There are volumes of scientific studies that prove this, and we discuss that evidence throughout the rest of *FitQuest*. For now, we'll cover the three key concepts regarding physical activity and food choices: recommendations for daily physical activity, recommendations for weight management, and recommendations for eating well.

Recommendations for Daily Physical Activity^{1, 4}

The minimal recommendation for physical activity is 150 minutes of moderate intensity aerobic exercise each week (5 days of 30 minutes is often looked at as the default). An achievement of 75 minutes of vigorous intensity aerobic exercise, with a duration of 20 or more minutes each session, is also adequate (usually, 3 days of 20 minutes or more accumulating to 75 minutes is viewed as the default). A combination of the two is also appropriate, such as walking the dog for 30 minutes 2 days a week (**Figure 7**) and a vigorous bike ride for 20 minutes 1 or 2 days a week.

Moreover, a flexibility and resistance training program targeting the major tendon and muscle groups of the body, respectively, needs to be performed twice weekly to meet minimum recommendation for health. The flexibility program stretches the major tendons, and the resistance training program strengthens the musculature. There are numerous health complications that could improve or be mitigated from an attainment of more aerobic (namely cardiovascular), flexibility (oddly, as an example, arterial stiffness), and resistance (functional independence as we age) training.



Figure 7: Walking a dog is physical activity and it counts towards the recommended amount of physical activity that you should do each day.

Recommendations for Weight Loss and Maintenance^{1, 4}

The recommendation for weight maintenance and weight loss is above the minimum recommendation of 150 moderate (or 75 minutes of vigorous) exercise each week. A dose-response relationship exists up to about 300 minutes of moderate and 150 minutes of vigorous exercise for increases in fitness and greater control of unhealthy weight gain. It is important to recognize that 150 minutes of exercise each week is often not adequate for weight maintenance or weight loss. This understanding leads directly to our recommendation for eating well.

Recommendations for Eating Well¹⁰

It is extremely difficult to exercise your way out of the consequences of a poor diet. Speaking metaphorically, if you want your car to run well, you need to use the right kind of fuel and change the oil. If you do not do these things, your car will not perform well, and it will begin to break down. And the consequences don't stop there. Repairs become more expensive and impede on your work-life priorities. What may have seemed to be an insignificant decision early on has now become a big expensive problem.

The human body is very much the same. Your food is your fuel. You need carbohydrates, proteins, and fats. The quantities vary. Over fueling with only one type of fuel can become problematic overtime. When you fail to eat a balanced and varied diet, the likelihood of inadequate intake of vitamins, minerals, and fiber, or the overconsumption of salt, fat, or simple sugars, increases.

Weight Control and Body Composition

One result of intentional, healthful living with regards to physical activity and food choices is an increased likelihood of long-term weight control. As physiologists and behavioral scientists, we can ensure you that weight control, and more importantly body composition, influences your well-being through numerous mechanisms.

While weight provides you a simple metric (and may be used as one component to assess body mass index), body composition is a more useful metric. Research shows that higher levels of body fat are connected to changes in insulin resistance, C-reactive proteins, and inflammatory markers, just to name a few. Managing your body weight and body composition are equally important.

Sleep Quality

Sleep is an important well-being factor. Sleep quantity and quality can be influenced by many factors. Examples include: friends and family ("social"), mental anguish or financial stress ("psychological"), use of caffeine ("behavioral"), loud sounds ("environmental"), or chronic pain ("pathophysiological").

While the behavior of sleep is shared near daily by each person, science has yet to elucidate the underlying mechanisms that result in the need for sleep or how sleep interacts bi-directionally with health. Nevertheless, there is enough empirical evidence to know that sleep is restorative and vital.¹¹ In a systematic review and meta-analysis of prospective studies, both short- and long-sleep durations have been associated with greater risk of death.¹² The operational definitions of normal sleep in these studies fell primarily between 7 to 8 hours. As you may already know, lack of sleep can affect your performance in other areas of life (**Figure 8**).



Figure 8: It's likely that you know what it's like when you don't get enough sleep at night. It can affect how well you do at school or at work.

Original research has shown that hypertension and mortality rates from heart disease, cancer, and stroke are lowest when sleeping between 7 and 8 hours a night.¹²⁻¹⁵ It is meaningful to note that these relationships might be lessened, but they still held true, when statistically adjusting for potential mediators and moderators (e.g., age, sex, race, economic status, physical health, smoking history, physical inactivity, alcohol consumption, weight status, caffeine consumption, insomnia symptoms, depression symptoms, sleep efficiency, and others).

The discussion of sleep apnea, depression, endocrine function, and changes in inflammatory markers may very well be relevant topics within this section but they are beyond the scope of this book. As a practitioner, it should be very clear: the current and amassing evidence continues to illustrate the importance of sleep and the topic is worthy for inclusion when counseling patients and clients.

Stress Management

Part of life is seeking opportunities for growth—you apply for admittance to a school, you seek employment for a competitive position, you train to run a 5-k race, and so on. You push yourself to be better or be your best. Intentionally taking on normal, positive stress—termed **eustress**—helps challenge you to reach accomplishments or realizations. Eustress is psychologically (e.g., personal aspirations accomplished) or physiologically (e.g., exercise training) beneficial to you. Proper choices help challenge you with eustress to live a full, engaged life.

On the other hand, **distress** is stress that jeopardizes psychological or physiological well-being. **Stressors** are those things (e.g., people, places, situations, conditions) that lead to distress (**Figure 9**).



Figure 9: If you feel overwhelmed by the daily demands of life, you are not alone. Scheduling time for fitness and well-being is vital, as a healthful lifestyle relies on intentional choices.

For each phase of life (childhood, adolescence, college age, young adulthood, older adulthood), the eustresses and distresses are distinct. Among the most distressing situations of adult life are death of a spouse or child, divorce, death of friend, and financial concerns. Among collegiate-age individuals, the commonly identified normal stressors include changes in sleeping habits and eating habits, increased workload, and new responsibilities.¹⁷ Being aware of the distress in your life and taking healthy actions to mitigate it will help you avoid engaging in risky behaviors (i.e., alcohol or other substances) as a means to cope.

Eustress: Normal, positive stress that helps challenge you to reach accomplishments or realizations

Distress: Stress that jeopardizes psychological or physiological well-being

Stressors: Those things, such as people, places, situations, or conditions, that lead to distress

Drug, Alcohol, and Tobacco Abuse

Use of drugs, alcohol, and tobacco can increase the risk of chronic diseases, including heart disease, stroke, lung cancer, and other cancers (**Figure 10**). Responsible use of legal substances and elimination of use of illegal substances is a *starting point* for curtailing the serious effects (morbidity, mortality, financial burden) attributable to use of these items.

In combination, the illnesses, injuries, and deaths attributable to drugs, alcohol, and tobacco use create an overwhelming public health concern and economic burden (approximately \$400 billion every year). The aggregated impact of drug, alcohol, and tobacco abuse is the single-greatest preventable factor in the discussion of well-being.



Figure 10: Smoking is a behavior with severe health consequences for the person who does it as well as the people who are exposed to the second-hand smoke.

Economic/Financial Stability

Living within your financial means contributes to your well-being. Financial stability is not making a certain quantity of money. For many people who have large salaries, life is nothing more than cashing larger checks and writing bigger ones as well. In the end, there may be little financial stability. Financial stability is about being about to manage cash flow, consider risks, and have monetary backing when unexpected costs arise. The dynamic flow of life means that financial stability can change over time.

A study of a quarter million European and American individuals showed that psychological well-being was connected in different ways to both macro (national) and microeconomic (personal) economic patterns.²⁴

On a personal level, diving into an occupation is also a financial decision. Job satisfaction and work environment serve as crucial factors for decisions regarding a work-life balance. You will spend a large portion of your adult life in a work setting. Taking note of your natural talents and personal preferences will help guide you to a fulfilling career.

Your career should not create disproportionate stress or “cause” you to choose risky coping behaviors (i.e., sedentary lifestyle, risky behaviors with alcohol, drugs, or sexual activity). On top of making a reasoned choice about your career and workplace, monitoring your financial situation with a monthly budget can go a long way in helping you establish long-term financial security as well as enable you to afford to buy things that you want (**Figure 11**). Any good financial model should also include retirement savings in some form or fashion.



Figure 11: Financial well-being means having enough money to live a healthy lifestyle and achieve your financial goals. However, not having enough money for basic necessities, such as health care, increase health risks.

Social Determinants of Well-being

We may not recognize the health disparities or inequalities that exist around you or that are created by the familial unit or neighborhood locale. Nevertheless, your well-being is affected by where you live, your family and friends, and the schools that you attend. You may face additional barriers or increased risk to their well-being because of your race, ethnicity, or neighborhood.

It is easy to overlook the social determinants of health. The World Health Organization (WHO) defined the social determinants of health as, “The conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems.”²⁵



Figure 12: Pollution is an environmental factor that increases your health risk. While you have less control over your environment than you do your own behaviors, you should be aware of how you impact the environment and how it impacts you.

There are five key social determinants of health:

- Economic stability (poverty, food security, housing stability)
- Education (high school graduation, language and literacy)
- Social and community context (social cohesion, perceptions of discrimination and equity)
- Health and health care (access to health care, health literacy)
- Neighborhood and built environment (access to healthy foods, lack of crime and violence).²⁶

Being aware of outside influences on your well-being will help you develop intervention strategies and recommendations goals and action plans that are more likely to meet with success.²⁷ For example, if you live in a neighborhood where there are few safe outside places to run, bike, or do other types of physical activity, the environment in which you live is a barrier that you would need to overcome by finding a safer area to exercise—if possible, move to a safer neighborhood. It is important to be aware of how your surroundings affect you (**Figure 12**).

BE AWARE THAT LIFESTYLE IS LINKED TO RISK OF DISEASE

Over the course of the last century, life expectancy has increased by more than two decades. Advances in medical technology have contributed to these changes. At the same time, the prevalence of chronic diseases, such as heart disease, cancer, and diabetes, are increasing to alarming rates. These are often lifestyle diseases—diseases that, in most cases, are caused by behaviors, such as a lack of physical activity, poor eating habits, and tobacco use. These diseases cost people their function, overall quality, and, many times, their life.

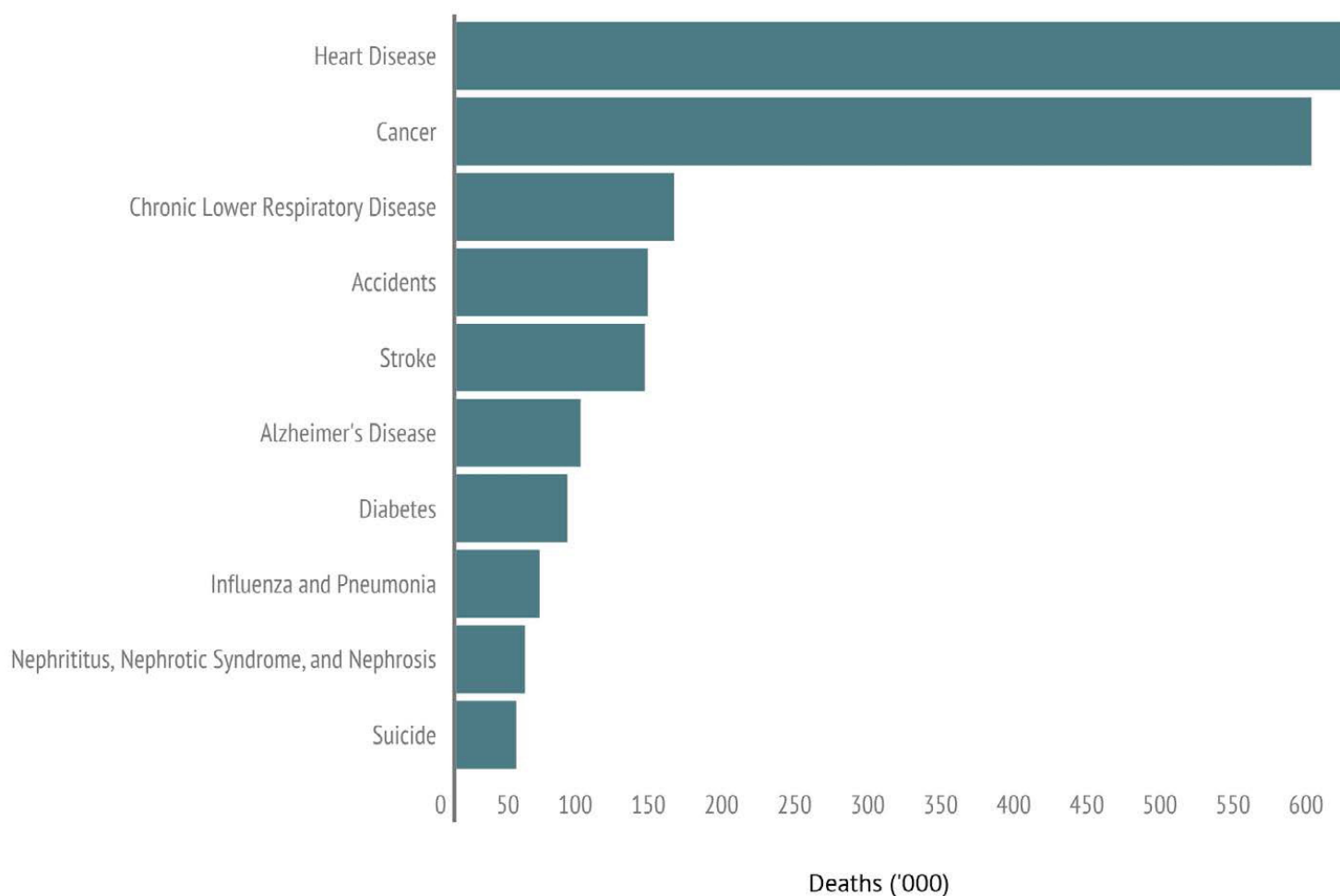


Figure 13: This graph shows the leading causes of death in the United States.

The Centers for Disease Control and Prevention notes that chronic diseases are responsible for 70 percent of deaths each year and treatment for these patients claims 86 percent of our nation's health care costs.³³

Now let's consider several specific chronic diseases to understand the very nature of the conditions. Life is a whole lot more enjoyable when a person is as healthy as possible. Life is better when we make wise choices and avoid the risk factors that are getting people into these illnesses at younger ages than ever before. It would not be unusual for you to know someone your age who is already dealing with a chronic disease.

Cardiovascular Disease

Cardiovascular disease (CVD) affects both the heart (cardio) and blood vessels (vascular) and it is the number one cause of death in the United States. Because of the number of possible types of cardiovascular disease, we will only address the most prevalent forms of chronic CVD. Physical inactivity, poor diet, being overweight, smoking cigarettes, abusing alcohol, or using cocaine all increase the risk for CVD.

Most of the following information has been gleaned from the American Heart Association www.heart.org.

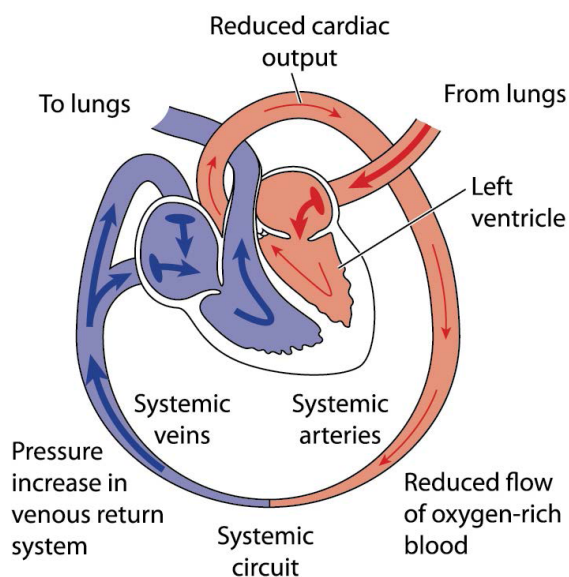


Figure 14: A heart that is in failure is not able to pump enough oxygen-rich blood to the body's tissues.

Heart Failure

The failing heart works inefficiently and does not pump out all the blood that returns to it. This means the heart is not pumping enough blood and oxygen to the organs of the body (**Figure 14**). The heart tries to accommodate through pathological enlargement and by beating faster. Blood pressure also increases to try to compensate for the weak pumping of the heart.

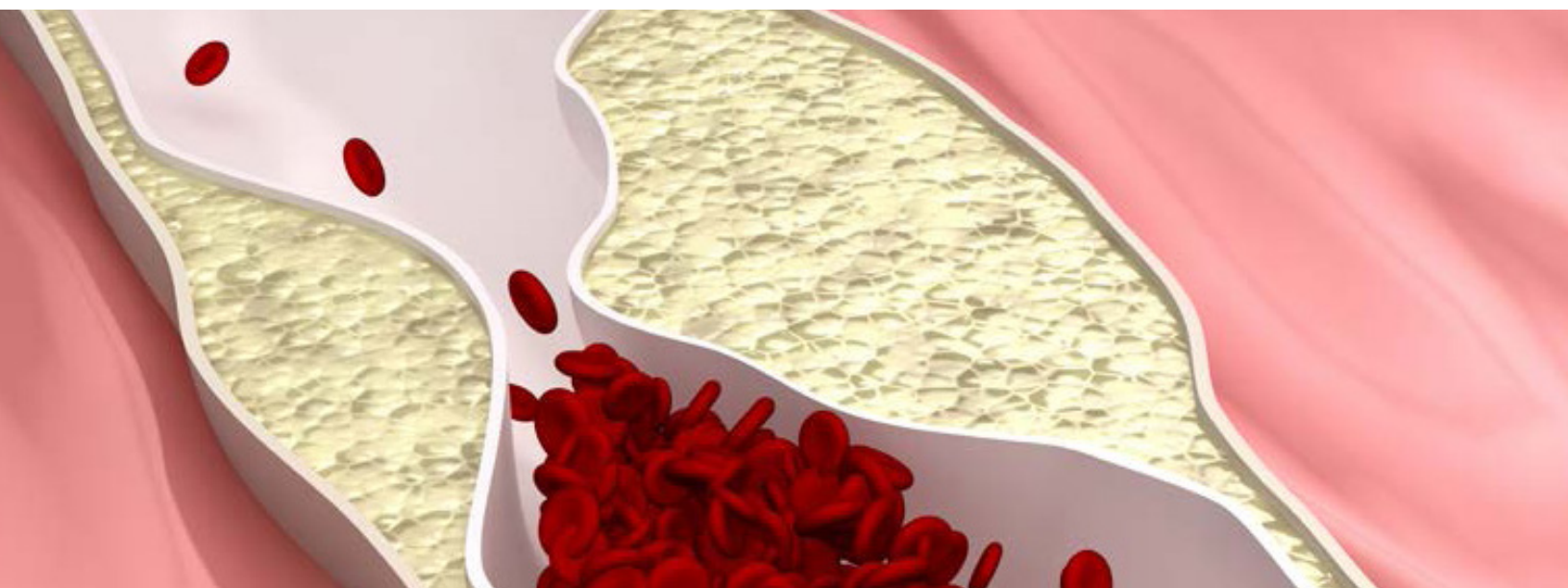


Figure 15: Coronary heart disease is caused by the narrowing of the cardiac arteries that supply the heart muscle.

Coronary Heart Disease (CHD)

The atherosclerotic narrowing of the coronary arteries, those inside the heart, causes coronary heart disease. Coronary heart disease results when any coronary artery is narrowed by at least 60%, blocking its ability to provide the heart with its normal blood supply (**Figure 15**).

Stroke

A stroke occurs when blood does not reach the brain. When this is caused by a blood clot blocking a blood vessel it is called an **ischemic stroke**. When it is caused by a blood vessel leaking blood into the brain due to a cerebral aneurysm or trauma, it is called a **hemorrhagic stroke**. An **aneurysm** is a weakened and distended area of the wall of an artery, a vein, or the heart. They can be present at birth or caused by illness or trauma. Strokes can damage a person's brain, resulting in problems with speaking and possible paralysis.

The warning signs for strokes are:

- Temporary difficulty speaking
- Dizziness or unexplained falls
- Adverse effects on vision, often in only one eye
- Sudden numbness on one side of the body (face, arm, or leg)



Figure 16: The blood pressure reading your doctor measures and reports to you is actually a combination of two pressures: the pressure when the heart's ventricles contract (systolic pressure) and the pressure when they relax (diastolic pressure).

Hypertension

Hypertension is chronic high blood pressure. **Blood pressure** is the pumping action of the heart exerting a force on the walls of the blood vessels. The heart contraction phase that pushes blood into the aorta and pulmonary artery is called systole. Blood pressure increases during systole, producing the systolic phase or **systolic blood pressure**. This is the top number of the blood pressure reading. Between beats when the heart muscle relaxes, the blood pressure decreases, producing the **diastolic blood pressure**—the bottom number of the blood pressure reading (**Figure 16**).

Normal blood pressure is 120/80 or just below these numbers (low blood pressure does not contribute to cardiovascular disease). Hypertension occurs when blood pressure is 140/90 mmHg or higher. Pre-hypertension levels are 120–139/80–89 mmHg.

Cancer

Cancer is a collective name for a variety of diseases that act very differently. What they have in common is that normal cell growth has become disruptive and out of control. The proliferation of these abnormal cells takes over the role of normal cells. Beyond this commonality, cancers can be quite different from one another and require treatments specific to each form. Most of the following information comes from the American Cancer Society.

Lung Cancer

Lung cancer is categorized as either small cell lung cancer (SCLC), non-small cell lung cancer (NSCLC), or lung carcinoid tumor. More people die of lung cancer than from all the colon, breast, and prostate cancers combined. According to the American Cancer Society, in 2014 lung cancer was the number one cause of cancer death for men and women, with 224,210 new cases and 159,260 deaths, representing 27% of all cancer deaths. Only 5% of lung cancers are lung carcinoid tumors.

The symptoms of lung cancer are difficulty breathing, persistent cough, hoarseness, chest pain, loss of appetite, repeated bronchial infections, and bloody spit. Nine out of ten cases of lung cancer are due to smoking of any kind, including water pipes or Hookahs. Second-hand smoke, also called environmental tobacco smoke (ETS), causes over 3,000 deaths each year in non-smokers.

Colorectal Cancer

Colorectal cancer originates in the colon or the rectum and usually starts as polyps or growths in the tissue lining these structures. Colorectal cancer is the third most prevalent cancer among both men and women, with 49,920 deaths in 2009.

In the past two decades, the death rate from colorectal cancer has been declining due to better screening. Individuals age 50 and over are encouraged to have a colonoscopy or the equivalent every five years. When surgery is needed following early detection, the success rate is very high.

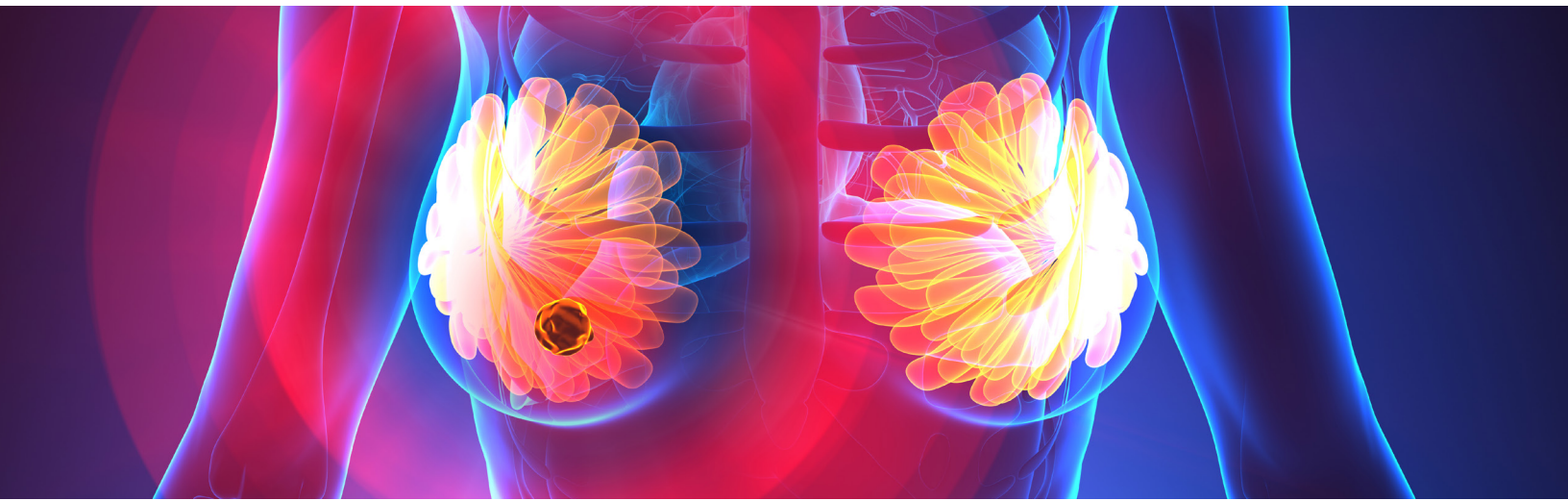


Figure 17: Breast cancer usually begins in the milk duct cells of the breast, but can also spread to other breast tissues and to the lymphatic cells in the breast and armpit area.

Breast Cancer

It is possible for men to get breast cancer, but it is far more prevalent in women (**Figure 17**). Breast cancer is the second leading cause of cancer death in women, with 40,170 deaths and 192,370 new cases in 2009. The chances of a woman developing breast cancer are about 1 in 8, but the chances of dying from breast cancer are only about 1 in 35. Earlier detection and more effective treatments account for this and for the over 2.5 million breast cancer survivors living now.

Prostate Cancer

The prostate gland, only present in men, is below the bladder and in front of the rectum (**Figure 18**). The urethra tube that carries urine from the bladder goes through the prostate gland. Prostate cancer starts in the glandular cells and grows slowly. One in six men will get prostate cancer, but only 1 in 35 will die from it. Similar to breast cancer in women, there are over 2 million survivors of this cancer alive now and the numbers of deaths are steadily declining thanks to better screening and treatments. CDC data show that in 2009, there were 27,360 deaths and 192,280 new cases of prostate cancer.

Testicular Cancer

Testicular cancer is very rare but is included here because it is known as a young man's disease, particularly affecting men in their twenties and early thirties. The chance of a man having this cancer is 1 in 300, and the chance of dying from it is about 1 in 5,000. According to CDC data, in 2009 there were 380 deaths and 8,400 new cases of testicular cancer.

Almost all testicular cancers begin in the cells that make sperm. Usual symptoms include the testicle being swollen or uncomfortable, and a general feeling of aching in the lower abdomen or scrotum.

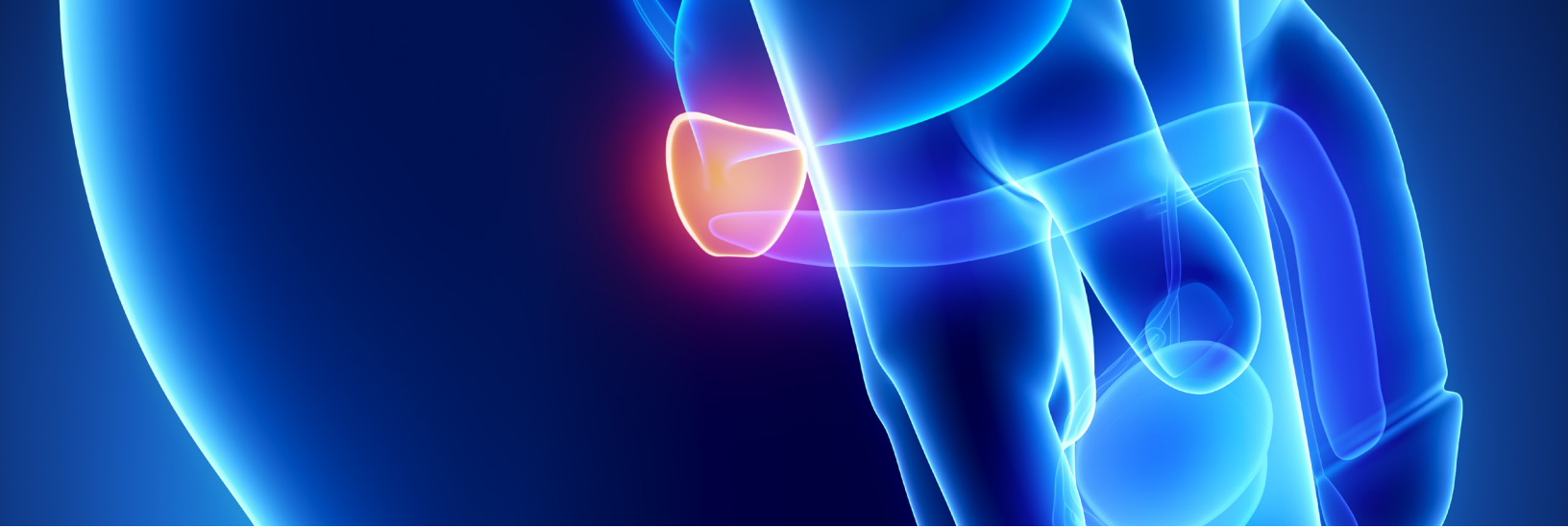


Figure 18: The prostate gland, present only in men, is located below the bladder and in front of the rectum. A digital prostate exam allows the doctor to palpate the prostate for bumps, hardened areas, or other signs of potential problems.

Skin Cancer

Skin cancer is the most common cancer and it comes in two forms—melanoma and keratinocyte carcinomas. The melanomas originate in the melanocytes, the cells that make melanin—the brown pigment in the outer layer of the skin (epidermis). The keratinocyte carcinomas are known as basal cell cancer or squamous cell cancer.

Over exposure to ultraviolet (UV) radiation is the main cause of all skin cancers. The sun is the main source of UV rays. Protecting yourself from sunburn is the best way to avoid skin cancer. This is particularly true of children. Tanning booths are a dangerous source of UV radiation. Persons with numbers of dark moles are more apt to develop melanoma. If a spot on your skin gets scaly, changes color, or bleeds easily, you should get it checked by a doctor.

Diabetes Mellitus

There are two forms of diabetes mellitus—Type 1 and Type 2. Both forms involve a disruption of insulin, which is a hormone responsible for enabling the body's cells to use glucose from food for energy. In Type 1 diabetes, the body does not produce insulin, while in Type 2 diabetes the body does not use insulin properly. The American Diabetes Association reports that in 2012 there were 23.6 million children and adults, or 7.8% of the population, who have diabetes.

Type 1 diabetes is managed rather than cured. People with Type 2 diabetes can eliminate their symptoms through diet and increased physical activity. Some people with Type 2 diabetes may also require insulin injections, but it is usually controlled with medication and a healthy lifestyle. For people that are overweight or obese, even a modest amount of weight loss will help manage their diabetes, especially if the person loses abdominal fat.

Arthritis

Arthritis means inflammation of the joints. This inflammation causes pain and may also cause swelling and stiffness. There are over 100 types of arthritis and other rheumatic diseases. All are painful but can be treated successfully.

Asthma

Asthma is a chronic inflammation of the airways of the lungs, which can cause airways to narrow, interfering with normal breathing. Some triggers that adversely affect the airways are dust, pollutants in the air, cigarette smoke, and animal dander. Asthma can also be aggravated by stress, cold air, and intense exercise. Changing from one's home environment to a college dorm or apartment can be especially challenging for a person with asthma. There is no known cause or cure for asthma, but it can be controlled.

Chronic Pain

A certain amount of pain is expected when healing from an injury or illness. But when the pain exceeds the normal time for healing, it can be called chronic pain. Chronic pain often affects older adults. Complaints include headaches, low back pain, cancer pain, arthritis pain, neurogenic pain, and psychogenic pain. Treatments include medications, acupuncture, psychotherapy, relaxation, biofeedback, and behavior modification. Studies have shown that people with chronic pain have lower than normal levels of endorphins in their spinal fluid.

Osteoporosis

The National Osteoporosis Foundation (NOF) explains that osteoporosis is a disease in which bones become fragile and more likely to break. It is a metabolic bone disease in which bones lose density and the spaces within them become enlarged. It is easier to prevent than to treat. Fractures typically occur in the hip, spine, and the wrist. Women are four times more likely than men to develop osteoporosis, but men can also contract this disease.

Building strong bones, especially before the age of 30, is the best defense against developing osteoporosis. A healthy lifestyle can be critically important for keeping bones strong. Osteoporosis is largely preventable for most people. These are NOF's five steps to bone health and osteoporosis prevention:

1. Get your daily recommended amounts of calcium and vitamin D
2. Engage in regular weight-bearing exercise
3. Avoid smoking and excessive alcohol
4. Talk to your healthcare provider about bone health
5. When appropriate, have a bone density test and take medication if needed

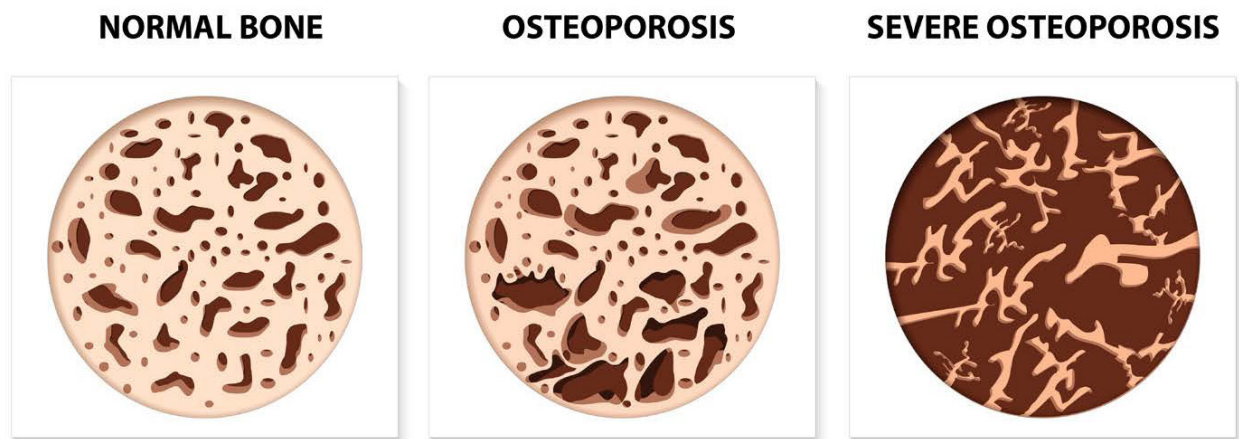


Figure 19: Osteoporosis is the loss of hard bone matrix (the lighter tissue shown in this figure) and the accompanying larger void spaces within the bone (the darker areas).

Depression

Depression is a disabling disorder that takes many forms. Depression is an illness that affects the individual and the people closest to the individual. Depression keeps a person from functioning normally. Most people with depression will improve with medication, therapy, or engaging in a physically active lifestyle.

The symptoms of depression will vary with different individuals and forms of depression. Commonly observed symptoms may include:

- Continuing sadness, empty feelings
- Feelings of hopelessness, pessimism
- Feelings of worthlessness, helplessness, guilt
- Irritability, restlessness, fatigue, decreased energy
- Loss of interest in sex and other significant aspects of life
- Disruption of eating, sleeping, concentration
- Thoughts of suicide, suicide attempts

Depressive illnesses are disorders of the brain that may be caused by genetic, biochemical, environmental, or psychological factors. Typically, those with bipolar disorder experience fewer highs and more lows. This manic-depressive illness can be managed so the disorder is not debilitating. Half of all cases begin before age 25 and can last throughout one's life. Between episodes, a person may be totally balanced. Although it tends to run in families, most people with this disorder in their family will not develop the illness. Other problems, such as alcohol or substance abuse and compulsive or anxiety issues, may accompany bipolar disorder. Healthy living is helpful to offset the symptoms of bipolar disorder, and doctors may also prescribe various medications based on individual differences.

Cardiovascular Disease: Disease that affects both the heart and blood vessels

Ischemic Stroke: A stroke caused by a blood clot blocking a vessel

Hemorrhagic Stroke: A stroke caused by a blood vessel leaking blood into the brain due to a cerebral aneurysm or trauma

Aneurysm: A weakened and distended area of the wall of an artery, a vein, or the heart

Blood Pressure: The pumping action of the heart exerting a force on the walls of the blood vessels

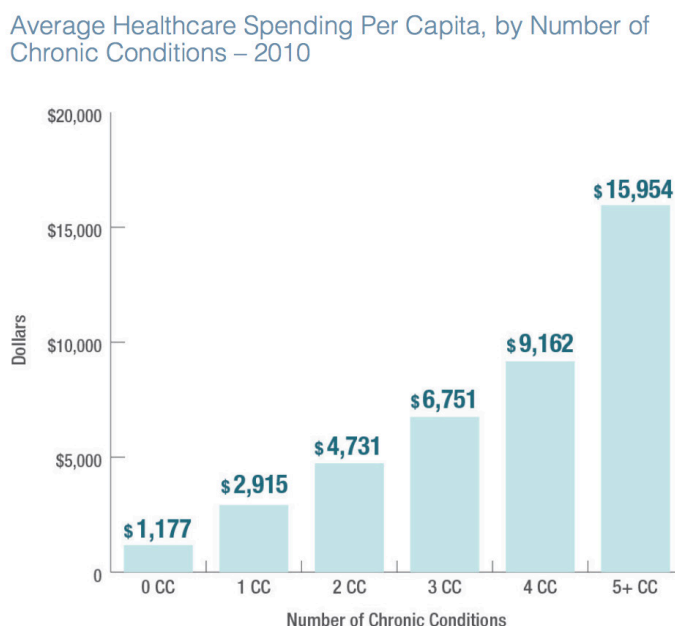
Systolic Blood Pressure: The upper number of a blood pressure measurement; the pressure of the blood when the heart's ventricles contract

Diastolic Blood Pressure: The bottom number of a blood pressure measurement; the pressure of the blood when the heart's ventricles are relaxed

LIFESTYLE MEDICINE: USE IT AND LIVE IT

The United States health care system operates largely in “disease care.” This means that a large majority of the medical system is focused on treating disease, not preventing it. The Institute of Medicine has stated that increased morbidity and mortality and lower quality of life are consequences of inadequate disease prevention.³⁴ A need for skilled doctors and emerging technologies will always exist but an increase in proactive medicine is also needed. You see, while the United States medical system is renowned for the skill of its doctors, quality of research, and innovative technology, it is also the most expensive in the world. It is more expensive to treat a disease than prevent it.

Overall, clinical preventive services are underutilized.^{5, 35} Apart from just recommending vaccination or scheduled screenings (mammogram, prostate, etc.), lifestyle medicine uses strategies and tactics that reach people before they become seriously ill. These efforts include workplace wellness initiatives, telehealth services, nutritional labeling (at restaurants and supermarkets), legislation (smoking bans and consumer safety laws), and community services. Health professionals who practice lifestyle medicine endeavor to coach their patients to practice healthier behaviors that will lower risk to disease and increase their overall wellbeing. Preventive medicine is not just distributed in the clinic.



DATA HIGHLIGHTS

Compared to those without any chronic conditions:

- Spending is almost 2.5 times more for those with one chronic condition.
- Spending is almost 6 times more for those with three chronic conditions.
- Spending is 13.5 times more for those with five or more chronic conditions.

Figure 20: It is much less expensive to prevent disease than to treat it. Treatment and management of chronic disease makes up a majority of our health care costs. Source: Agency for Health Care Research and Quality, Multiple Chronic Conditions Chart Book, 2010 Medical Expenditure Panel Survey Data

Even though medicine or surgery may cure or mitigate complications with a disease, in most cases, lifestyle changes address the underlying cause. Lifestyle diseases require lifestyle medication. Plain and simple, chronic choices related to poor physical activity, poor eating habits, and substance abuse are among the chief issues. Be sure to modify much of what wrecks overall well-being. If the Centers for Disease Control and Prevention estimates that 70 percent of deaths each year (and 86 percent of our nation’s health care costs) are related to chronic diseases,³³ a societal goal of collective behavioral change could eviscerate the public health burden. **Figure 20** shows how much chronic disease consumes health care costs. The difficult coupling of words in the previous sentence is “collective behavioral change.” Behavior change is not easy, but it is possible.

THE HEALTHY PEOPLE INITIATIVE

In the United States, the national health standards, programming objectives, and programming strategies are found in the **Healthy People program** now administrated by the United States Department of Health and Human Services (HHS). Your individual health and wellness are your responsibility, and it is important to understand that your health contributes to the health of society. Governments are concerned with individuals, but they are particularly concerned with the welfare of the society. Countries throughout the world have health standards that are usually found in some kind of program. In the United States, those health standards can be found in the Healthy People program.

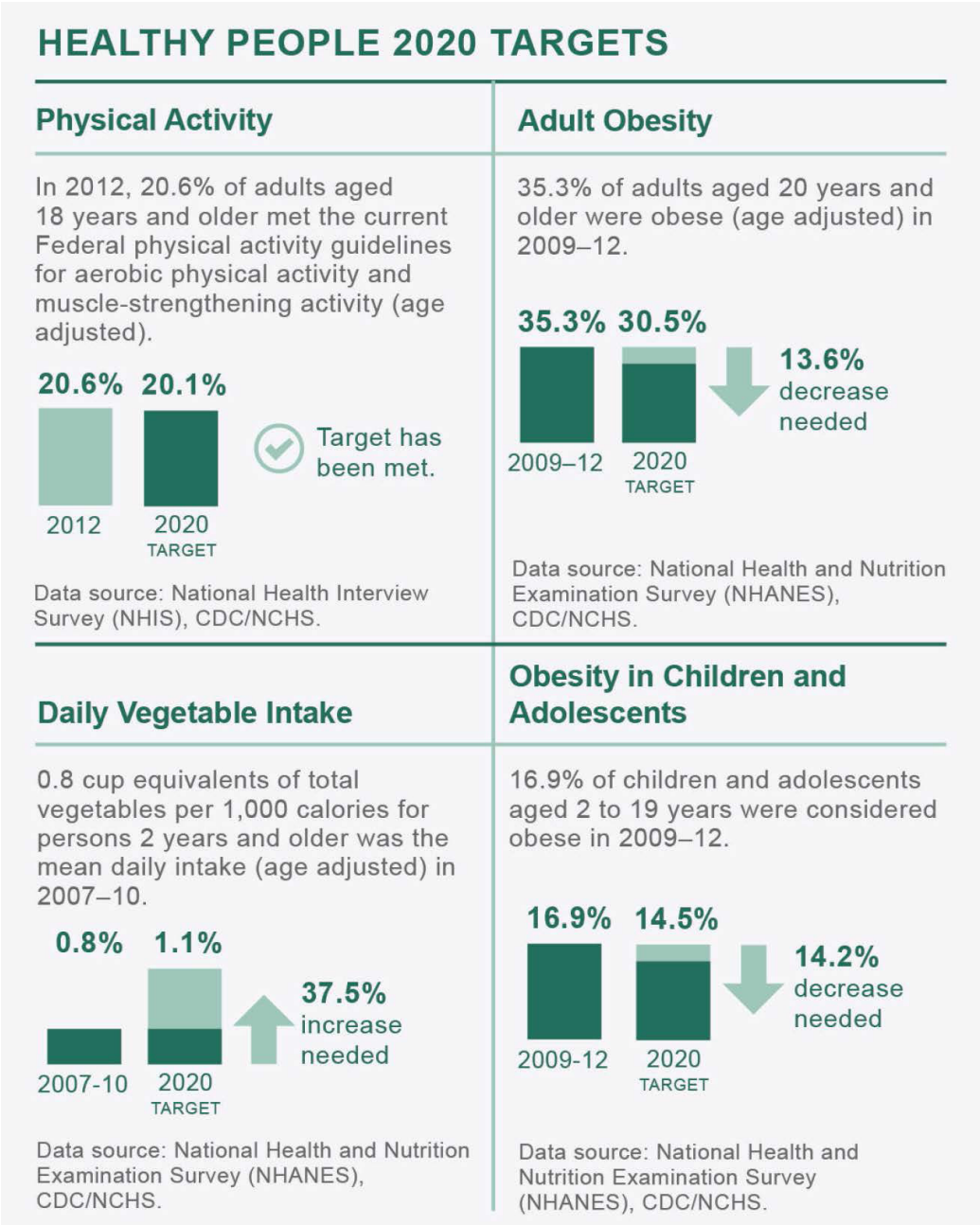


Figure 21: The Healthy People 2020 goals for physical activity, diet, and obesity.

Every decade since the 1980s, the United States Department of Health and Human Services (HHS) has published science-based 10-year goals perceived as realistic for attaining a healthy society. These goals are a comprehensive health promotion and disease prevention program for the entire nation. The intent is to provide guidelines for improving the health of all Americans and challenge communities to support health-promoting policies. The desire for a healthier culture must include all citizens regardless of race, sex, or income. **Figure 21** shows the Healthy People 2020 targets for physical activity, diet, and obesity.

Healthy People 2020 goals are:

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups.
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

You can serve the Healthy People mission by the way in which you lead your life. You can aid your community and nation through your personal choices leading to individual well-being. Moreover, using what you learn in *FitQuest*, you can model that well-being through action and speech, and assist your family and friends with their personal, positive choices.

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