ORGANIZATIONAL HEALTH AND WELLNESS

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Organizational Health and Wellness (NWTC)

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CHAPTER OVERVIEW

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1.1: Dimensions of Wellness
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1.1: Dimensions of Wellness

What is Wellness?

Wellness is being in good physical and mental health. Because mental health and physical health are linked, problems in one area can impact the other. At the same time, improving your physical health can also benefit your mental health, and vice versa. It is important to make healthy choices for both your physical and mental well-being.

Remember that wellness is not just the absence of illness or stress. You can still strive for wellness even if you are experiencing these challenges in your life.

What are the Eight Dimensions of Wellness?

Learning about the Eight Dimensions of Wellness can help you choose how to make wellness a part of your everyday life. Wellness strategies are practical ways to start developing healthy habits that can have a positive impact on your physical and mental health.

The Eight Dimensions of Wellness are:

1. **Emotional**—Coping effectively with life and expressing emotions in an appropriate manner
2. **Environmental**—Occupying pleasant, healthy, and safe environments that support well-being; positively impacting the quality of our surroundings (including protecting and preserving nature)
3. **Financial**—Achieving satisfaction with current and future financial situations; handling finances wisely
4. **Intellectual**—Recognizing creative abilities and finding ways to expand knowledge and skills; being open-minded
5. **Occupational**—Personal fulfillment and enrichment from one's work and/or responsibilities
6. **Physical**—Recognizing the need for physical activity, healthy foods, and adequate sleep; avoiding unhealthy habits
7. **Social**—Developing a sense of connection, belonging, and sustained support system; having positive relationships
8. **Spiritual**—Having a sense of purpose and meaning in life; establishing peace, harmony, and balance in our lives

Learn more about the Eight Dimensions of Wellness by watching the video below:

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Your Own Views on Health and Wellness

Reflect on the following questions:

- What does health mean to you?
- How important is health to you?
- What are some of your healthy habits?
- Which dimensions of wellness do you need to work on the most?

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1.2: Healthy People 2020

In December 2010, the Department of Health and Human Services launched Healthy People 2020, which has four overarching goals:

- 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; and
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

Healthy People 2020 tracks approximately 1,200 objectives organized into 42 topic areas, each of which represents an important public health area. At the time of the December 2010 launch 911 objectives were measurable with baseline data and established targets. A few objectives that have achieved high levels of success are being tracked without a target for informational purposes. Targets will be set during the decade for these objectives if warranted. The rest of the objectives did not have baseline data and were considered developmental. Targets for the developmental objectives will be set when baseline data become available. Healthy People 2020 also includes a new Foundation section which addresses several important health topics: General Health Status, Health-Related Quality of Life and Well-Being, Determinants of Health, and Disparities.

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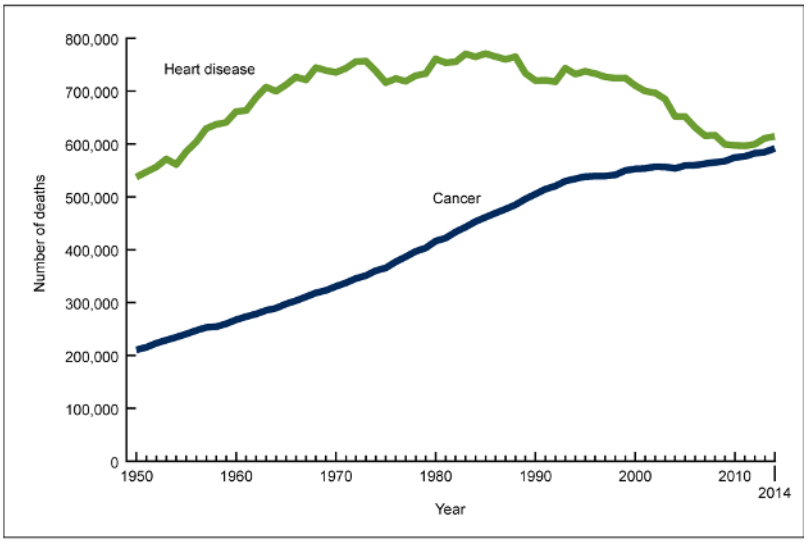
1.3: Major Health Concerns

Leading Causes of Death in the United States

Do you know what the top two leading causes of death are for Americans? Heart disease takes the number one spot, followed by cancer. As you can see by the graph below, cancer death rates have been steadily increasing throughout the years. What does this potentially mean for the future? Is cancer going to take over as the number one leading cause of death? It certainly appears to be headed in that direction.

Figure 1. Number of deaths due to heart disease and cancer: United States, 1950–2014



NOTES: Leading cause is based on number of deaths. Access data table for Figure 1 at: http://www.cdc.gov/nchs/data/databriefs/db254_table.pdf#1.
SOURCE: NCHS, National Vital Statistics System, Mortality.

The 10 Leading Causes of Death in the United States:

- Heart disease: 614,348
- Cancer: 591,699
- Chronic lower respiratory diseases: 147,101
- Accidents (unintentional injuries): 136,053
- Stroke (cerebrovascular diseases): 133,103
- Alzheimer's disease: 93,541
- Diabetes: 76,488
- Influenza and Pneumonia: 55,227
- Nephritis, nephrotic syndrome and nephrosis: 48,146
- Intentional self-harm (suicide): 42,773

CDC Winnable Battles

To keep pace with emerging public health challenges and to address the leading causes of death and disability, CDC initiated an effort called Winnable Battles to achieve measurable impact quickly. Winnable Battles are public health priorities with large-scale impact on health and known effective strategies to address them. By identifying priority strategies, defining clear targets and working closely with our public health partners, we are making significant progress in reducing health disparities and the overall health burden from these diseases and conditions.

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1.4: Risk Factors and Levels of Disease Prevention

What is a Risk Factor?

Part of learning how to take charge of your health requires understanding your risk factors for different diseases. Risk factors are things in your life that increase your chances of getting a certain disease. Some risk factors are beyond your control. You may be born with them or exposed to them through no fault of your own.

Some risk factors that you have little or no control over include your:

- Family history of a disease
- Sex/gender — male or female
- Ancestry

Some risk factors you can control include:

- What you eat
- How much physical activity you get
- Whether you use tobacco
- How much alcohol you drink
- Whether you misuse drugs

In fact, it has been estimated that almost 35 percent of all U.S. early deaths in 2000 could have been avoided by changing just three behaviors:

- Stopping smoking
- Eating a healthy diet (for example, eating more fruits and vegetables and less red meat)
- Getting more physical activity

You can have one risk factor for a disease or you can have many. The more risk factors you have, the more likely you are to get the disease. For example, if you eat healthy, exercise on a regular basis, and control your blood pressure, your chances of getting heart disease are less than if you are diabetic, a smoker, and inactive. To lower your risks, take small steps toward engaging in a healthy lifestyle, and you'll see big rewards.

People with a family health history of chronic disease may have the most to gain from making lifestyle changes. You can't change your genes, but you can change behaviors that affect your health, such as smoking, inactivity, and poor eating habits. In many cases, making these changes can reduce your risk of disease even if the disease runs in your family. Another change you can make is to have screening tests, such as mammograms and colorectal cancer screening. These screening tests help detect disease early. People who have a family health history of a chronic disease may benefit the most from screening tests that look for risk factors or early signs of disease. Finding disease early, before symptoms appear, can mean better health in the long run.

Levels of Disease Prevention

Prevention includes a wide range of activities — known as "interventions" — aimed at reducing risks or threats to health. You may have heard researchers and health experts talk about three categories of prevention: primary, secondary and tertiary. What do they mean by these terms?

Primary prevention aims to prevent disease or injury before it ever occurs. This is done by preventing exposures to hazards that cause disease or injury, altering unhealthy or unsafe behaviours that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur. Examples include:

- legislation and enforcement to ban or control the use of hazardous products (e.g. asbestos) or to mandate safe and healthy practices (e.g. use of seatbelts and bike helmets)
- education about healthy and safe habits (e.g. eating well, exercising regularly, not smoking)
- immunization against infectious diseases.

Secondary prevention aims to reduce the impact of a disease or injury that has already occurred. This is done by detecting and treating disease or injury as soon as possible to halt or slow its progress, encouraging personal strategies to prevent reinjury or

recurrence, and implementing programs to return people to their original health and function to prevent long-term problems. Examples include:

- regular exams and screening tests to detect disease in its earliest stages (e.g. mammograms to detect breast cancer)
- daily, low-dose aspirins and/or diet and exercise programs to prevent further heart attacks or strokes
- suitably modified work so injured or ill workers can return safely to their jobs.

Tertiary prevention aims to soften the impact of an ongoing illness or injury that has lasting effects. This is done by helping people manage long-term, often-complex health problems and injuries (e.g. chronic diseases, permanent impairments) in order to improve as much as possible their ability to function, their quality of life and their life expectancy. Examples include:

- cardiac or stroke rehabilitation programs, chronic disease management programs (e.g. for diabetes, arthritis, depression, etc.)
- support groups that allow members to share strategies for living well
- vocational rehabilitation programs to retrain workers for new jobs when they have recovered as much as possible.

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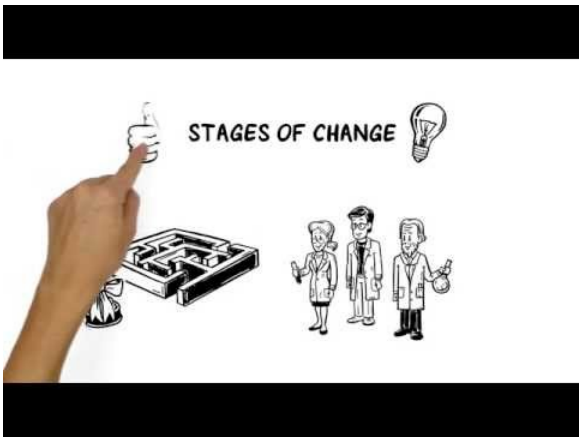
1.5: Behavior Change and Goal Setting

Transtheoretical Model (Stages of Change)

The **transtheoretical model** of behavior change, developed by Prochaska and DiClemente, assesses an individual's readiness to implement a healthier behavior, and provides insight into the decision making process that leads to action. For many people, changing or modifying a behavior that is unhealthy or potentially harmful can be quite challenging. Here are the stages that lead to behavior change:

- **Precontemplation** (Not Ready) – You are not intending to take action in the foreseeable future, and can be unaware that your behavior is problematic
- **Contemplation** (Getting Ready) – You are beginning to recognize that your behavior is problematic, and start to look at the pros and cons of your continued actions
- **Preparation** (Ready) – You are intending to take action in the immediate future, and may begin taking small steps toward behavior change
- **Action** – You are making actual changes to your problem behavior by incorporating healthy choices/behaviors into your life
- **Maintenance** – You have been able to sustain action for at least six months and are working to prevent relapse into previous unhealthy behaviors

Check out this supplemental video to review the main concepts of the Transtheoretical Model:



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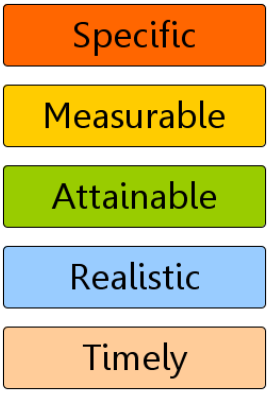
SMART Goal Setting

Have you ever said to yourself that you need to "eat healthier" or "exercise more" to improve your overall health? How well did that work for you? In most cases, probably not very well. That's because these statements are too vague and do not give us any direction for what truly needs to be done to achieve such goals. To have a better chance at being successful, try using the **SMART** acronym for setting your goals (**S**= Specific, **M**= Measurable, **A**=Attainable, **R**= Realistic, **T**= Time-oriented):



Specific – Create a goal that has a focused and clear path for what you actually need to do. Examples:

- I will drink 8 ounces of water 3 times per day
- I will walk briskly for 30 minutes, 5 times per week
- I will reduce my soda intake to no more than 2 cans of soda per week

Do you see how that is more helpful than just saying you will eat healthier or exercise more? It gives you direction.

Measurable – This enables you to track your progress, and ties in with the "specific" component. The above examples all have actual numbers associated with the behavior change that let you know whether or not it has been met.

Attainable – Make sure that your goal is within your capabilities and not too far out of reach. For example, if you have not been physically active for a number of years, it would be highly unlikely that you would be able to achieve a goal of running a marathon within the next month.

Realistic – Try to ensure that your goal is something you will be able to continue doing and incorporate as part of your regular routine/lifestyle. For example, if you made a goal to kayak 2 times each week, but don't have the financial resources to purchase or rent the equipment, no way to transport it, or are not close enough to a body of water in which to partake in kayaking, then this is not going to be feasible.

Time-oriented – Give yourself a target date or deadline in which the goal needs to be met. This will keep you on track and motivated to reach the goal, while also evaluating your progress.

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CHAPTER OVERVIEW

2: Physical Activity

2.1: Physical Activity Guidelines for Adults
2.2: Target Heart Rate Zone
2.3: Health Related Components of Physical Fitness
2.4: Health Benefits of Physical Activity
2.5: Developing a Personal Exercise Program

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2.1: Physical Activity Guidelines for Adults

Adults who are physically active are healthier and less likely to develop many chronic diseases than adults who are inactive. They also have better fitness, including a healthier body size and composition. These benefits are gained by men and women and people of all races and ethnicities who have been studied.

Adults gain most of these health benefits when they do the equivalent of at least 150 minutes of moderate intensity aerobic physical activity (2 hours and 30 minutes) each week. Adults gain additional and more extensive health and fitness benefits with even more physical activity. Muscle-strengthening activities also provide health benefits and are an important part of an adult's overall physical activity plan.

Key Recommendations:

Avoid Inactivity
All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.

Do Aerobic Activity
For substantial health benefits, adults should do at least one of the following:

- 150 minutes (2 hours and 30 minutes) each week of moderate-intensity aerobic physical activity (such as brisk walking or tennis)
- 75 minutes (1 hour and 15 minutes) each week of vigorous-intensity aerobic physical activity (such as jogging or swimming laps)
- An equivalent combination of moderate- and vigorous-intensity aerobic physical activity

Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.

For additional and more extensive health benefits, adults should increase their aerobic physical activity to one of the following:

- Increase moderate-intensity aerobic physical activity to 300 minutes (5 hours) each week
- Increase vigorous-intensity aerobic physical activity for 150 minutes (2 hours and 30 minutes) each week
- An equivalent combination of moderate- and vigorous-intensity activity

Additional health benefits are gained by engaging in physical activity beyond this amount.

Strengthen Muscles
Do muscle-strengthening activities (such as lifting weights or using resistance bands) that are moderate or high intensity and involve all major muscle groups on 2 or more days a week.

Examples of Different Aerobic Physical Activities and Intensities

Moderate Intensity

- Walking briskly (3 miles per hour or faster, but not race-walking)
- Water aerobics
- Bicycling slower than 10 miles per hour
- Tennis (doubles)
- Ballroom dancing
- General gardening

Vigorous Intensity

- Racewalking, jogging, or running
- Swimming laps
- Tennis (singles)
- Aerobic dancing
- Bicycling 10 miles per hour or faster
- Jumping rope

- Heavy gardening (continuous digging or hoeing, with heart rate increases)
- Hiking uphill or with a heavy backpack

Muscle-Strengthening Activity

Muscle-strengthening activities provide additional benefits not found with aerobic activity. The benefits of muscle-strengthening activity include increased bone strength and muscular fitness. Muscle-strengthening activities can also help maintain muscle mass during a program of weight loss.

Muscle-strengthening activities make muscles do more work than they are accustomed to doing. That is, they overload the muscles. Resistance training, including weight training, is a familiar example of muscle-strengthening activity. Other examples include working with resistance bands, doing calisthenics that use body weight for resistance (such as push-ups, pull-ups, and sit-ups), carrying heavy loads, and heavy gardening (such as digging or hoeing).

Muscle-strengthening activities count if they involve a moderate to high level of intensity or effort and work the major muscle groups of the body: the legs, hips, back, chest, abdomen, shoulders, and arms. muscle strengthening activities for all the major muscle groups should be done at least 2 days a week.

No specific amount of time is recommended for muscle strengthening, but muscle-strengthening exercises should be performed to the point at which it would be difficult to do another repetition without help. When resistance training is used to enhance muscle strength, one set of 8 to 12 repetitions of each exercise is effective, although two or three sets may be more effective. Development of muscle strength and endurance is progressive over time. Increases in the amount of weight or the days a week of exercising will result in stronger muscles.

View a summary.

To review the key recommendations, as well as learn more about “what counts” as moderate or vigorous intensity aerobic activity, watch the videos below:

https://youtu.be/lEutFrar1dI

https://youtu.be/GEvJlmpZCoM

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- Videos - Physical Activity Guidelines. **Authored by**: CDC. **Located at**: https://youtu.be/GEvJlmpZCoM. **License**: *Public Domain: No Known Copyright*

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2.2: Target Heart Rate Zone

Target Heart Rate and Estimated Maximum Heart Rate

One way of monitoring physical activity intensity is to determine whether a person's pulse or heart rate is within the target zone **during physical activity**.

For moderate-intensity physical activity, a person's target heart rate should be 50 to 70% of his or her maximum heart rate. This maximum rate is based on the person's age. An estimate of a person's maximum age-related heart rate can be obtained by subtracting the person's age from 220. For example, for a 50-year-old person, the estimated maximum age-related heart rate would be calculated as 220 – 50 years = 170 **beats per minute (bpm)**. The 50% and 70% levels would be:

- 50% level: 170 x 0.50 = 85 bpm, and
- 70% level: 170 x 0.70 = 119 bpm

Thus, moderate-intensity physical activity for a 50-year-old person will require that the heart rate remains between 85 and 119 bpm during physical activity.

For vigorous-intensity physical activity, a person's target heart rate should be 70 to 85% of his or her maximum heart rate. To calculate this range, follow the same formula as used above, except change "50 and 70%" to "70 and 85%". For example, for a 35-year-old person, the estimated maximum age-related heart rate would be calculated as 220 – 35 years = 185 beats per minute (bpm). The 70% and 85% levels would be:

- 70% level: 185 x 0.70 = 130 bpm, and
- 85% level: 185 x 0.85 = 157 bpm

Thus, vigorous-intensity physical activity for a 35-year-old person will require that the heart rate remains between 130 and 157 bpm during physical activity.

Taking Your Heart Rate

Generally, to determine whether you are exercising within the heart rate target zone, you must stop exercising briefly to take your pulse. You can take the pulse at the neck, the wrist, or the chest. We recommend the wrist. You can feel the radial pulse on the artery of the wrist in line with the thumb. Place the tips of the index and middle fingers over the artery and press lightly. Do not use the thumb. Take a full 60-second count of the heartbeats, or take for 30 seconds and multiply by 2. Start the count on a beat, which is counted as "zero." If this number falls between 85 and 119 bpm in the case of the 50-year-old person, he or she is active within the target range for moderate-intensity activity.

When starting an exercise program, calculating a target heart rate zone can be very beneficial to ensure that you are exercising safely and effectively. Heart rates are referred to as "beats per minute" or *bpm*.

220 – Age = Maximum Heart Rate

Finding Your Target Heart Rate Zone:

Age	Target Heart Rate Zone: 50-85%	Maximum Heart Rate: 100%
20	100-170 beats per min.	200 beats per min.
25	98-166 beats per min.	195 beats per min.
30	95-162 beats per min.	190 beats per min.
35	93-157 beats per min.	185 beats per min.
40	90-153 beats per min.	180 beats per min.
45	88-149 beats per min.	175 beats per min.
50	85-145 beats per min.	170 beats per min.
55	83-140 beats per min.	165 beats per min.
60	80-136 beats per min.	160 beats per min.
65	78-132 beats per min.	155 beats per min.
70	75-128 beats per min.	150 beats per min.

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2.3: Health Related Components of Physical Fitness

Examining the Relationship Between Physical Activity and Health

In many studies covering a wide range of issues, researchers have focused on **exercise**, as well as on the more broadly defined concept of physical activity. Exercise is a form of physical activity that is planned, structured, repetitive, and performed with the goal of improving health or fitness. So, although all exercise is physical activity, not all physical activity is exercise.

Studies have examined the role of physical activity in many groups—men and women, children, teens, adults, older adults, people with disabilities, and women during pregnancy and the postpartum period. These studies have focused on the role that physical activity plays in many health outcomes, including:

- Premature (early) death;
- Diseases such as coronary heart disease, stroke, some cancers, type 2 diabetes, osteoporosis, and depression;
- Risk factors for disease, such as high blood pressure and high blood cholesterol;
- **Physical fitness**, such as **aerobic capacity**, and muscle **strength** and endurance
- Functional capacity (the ability to engage in activities needed for daily living);
- Mental health, such as depression and cognitive function; and
- Injuries or sudden heart attacks.

These studies have also prompted questions as to what type and how much physical activity is needed for various health benefits. To answer this question, investigators have studied three main kinds of physical activity: aerobic, muscle-strengthening, and bone-strengthening.

Aerobic Activity

In this kind of physical activity (also called cardiorespiratory fitness), the body's large muscles move in a rhythmic manner for a sustained period of time. Brisk walking, running, bicycling, jumping rope, and swimming are all examples.

Aerobic activity causes a person's heart to beat faster than usual.

Aerobic physical activity has three components:

- **Intensity**, or how hard a person works to do the activity. The intensities most often examined are moderate intensity (equivalent in effort to brisk walking) and vigorous intensity (equivalent in effort to running or jogging);
- **Frequency**, or how often a person does aerobic activity; and
- **Duration**, or how long a person does an activity in any one session.

Muscle-Strengthening Activity

This kind of activity, which includes **resistance training** and lifting weights, causes the body's muscles to work or hold against an applied force or weight. These activities often involve relatively heavy objects, such as weights, which are lifted multiple times to train various muscle groups. Muscle-strengthening activity can also be done by using elastic bands or body weight for resistance (climbing a tree or doing push-ups, for example).

Muscle-strengthening activity also has three components:

- **Intensity**, or how much weight or force is used relative to how much a person is able to lift;
- **Frequency**, or how often a person does muscle strengthening activity; and
- **Repetitions**, or how many times a person lifts a weight (analogous to duration for aerobic activity). The effects of muscle-strengthening activity are limited to the muscles doing the work. It's important to work all the major muscle groups of the body: the legs, hips, back, abdomen, chest, shoulders, and arms.

Bone-Strengthening Activity

This kind of activity (sometimes called weight-bearing or weight-loading activity) produces a force on the bones that promotes bone growth and strength. This force is commonly produced by impact with the ground. Examples of bone-strengthening activity include jumping jacks, running, brisk walking, and weight-lifting exercises. As these examples illustrate, bone-strengthening activities can also be aerobic and muscle strengthening.

Overall Components of Physical Fitness

5 Main Components of Physical Fitness

- Cardiorespiratory fitness – ability to sustain aerobic activity for a prolonged period of time
- Muscular strength – amount of force a muscle is able to exert in one contraction
- Muscular endurance – ability of the muscle to continue to perform without fatigue
- Flexibility – ability to move joints freely through their full range of motion
- Body Composition – the relative proportions of fat mass and lean mass in the body

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2.4: Health Benefits of Physical Activity

Regular physical activity is one of the most important things you can do for your health. It can help:

- Control your weight
- Reduce your risk of cardiovascular disease
- Reduce your risk for type 2 diabetes and metabolic syndrome
- Reduce your risk of some cancers
- Strengthen your bones and muscles
- Improve your mental health and mood
- Improve your ability to do daily activities and prevent falls
- Increase your chances of living longer

If you're not sure about becoming active or boosting your level of physical activity because you're afraid of getting hurt, the good news is that **moderate-intensity aerobic activity**, like brisk walking, is generally **safe for most people**.

Start slowly. Cardiac events, such as a heart attack, are rare during physical activity. But the risk does go up when you suddenly become much more active than usual. For example, you can put yourself at risk if you don't usually get much physical activity and then all of a sudden do vigorous-intensity aerobic activity, like shoveling snow. That's why it's important to start slowly and gradually increase your level of activity.

If you have a chronic health condition such as arthritis, diabetes, or heart disease, talk with your doctor to find out if your condition limits, in any way, your ability to be active. Then, work with your doctor to come up with a physical activity plan that matches your abilities. If your condition stops you from meeting the minimum *Guidelines*, try to do as much as you can. What's important is that you avoid being inactive. Even 60 minutes a week of moderate-intensity aerobic activity is good for you.

The bottom line is – the health benefits of physical activity far outweigh the risks of getting hurt.

If you want to know more about how physical activity improves your health, the section below gives more detail on what research studies have found.

HomeControl Your Weight

Looking to get to or stay at a healthy weight? Both diet and physical activity play a critical role in controlling your weight. You gain weight when the calories you burn, including those burned during physical activity, are less than the calories you eat or drink. When it comes to weight management, people vary greatly in how much physical activity they need. You may need to be more active than others to achieve or maintain a healthy weight.

To maintain your weight: Work your way up to 150 minutes of moderate-intensity aerobic activity, 75 minutes of vigorous-intensity aerobic activity, or an equivalent mix of the two each week. Strong scientific evidence shows that physical activity can help you maintain your weight over time. However, the exact amount of physical activity needed to do this is not clear since it varies greatly from person to person. It's possible that you may need to do more than the equivalent of 150 minutes of moderate-intensity activity a week to maintain your weight.

To lose weight and keep it off: You will need a high amount of physical activity unless you also adjust your diet and reduce the amount of calories you're eating and drinking. Getting to and staying at a healthy weight requires both regular physical activity and a healthy eating plan. The CDC has some great tools and information about nutrition, physical activity and weight loss. For more information, visit Healthy Weight.

HomeReduce Your Risk of Cardiovascular Disease

Heart disease and stroke are two of the leading causes of death in the United States. But following the Guidelines and getting at least 150 minutes a week (2 hours and 30 minutes) of moderate-intensity aerobic activity can put you at a lower risk for these diseases. You can reduce your risk even further with more physical activity. Regular physical activity can also lower your blood pressure and improve your cholesterol levels.

HomeReduce Your Risk of Type 2 Diabetes and Metabolic Syndrome

Regular physical activity can reduce your risk of developing type 2 diabetes and metabolic syndrome. Metabolic syndrome is a condition in which you have some combination of too much fat around the waist, high blood pressure, low HDL cholesterol, high triglycerides, or high blood sugar. Research shows that lower rates of these conditions are seen with 120 to 150 minutes (2 hours to 2 hours and 30 minutes) a week of at least moderate-intensity aerobic activity. And the more physical activity you do, the lower your risk will be.

Already have type 2 diabetes? Regular physical activity can help control your blood glucose levels. To find out more, visit Diabetes and Me.

HomeReduce Your Risk of Some Cancers

Being physically active lowers your risk for two types of cancer: colon and breast. Research shows that:

- Physically active people have a lower risk of colon cancer than do people who are not active.
- Physically active women have a lower risk of breast cancer than do people who are not active.

Reduce your risk of endometrial and lung cancer. Although the research is not yet final, some findings suggest that your risk of endometrial cancer and lung cancer may be lower if you get regular physical activity compared to people who are not active.

Improve your quality of life. If you are a cancer survivor, research shows that getting regular physical activity not only helps give you a better quality of life, but also improves your physical fitness.

HomeStrengthen Your Bones and Muscles

As you age, it's important to protect your bones, joints and muscles. Not only do they support your body and help you move, but keeping bones, joints and muscles healthy can help ensure that you're able to do your daily activities and be physically active. Research shows that doing **aerobic, muscle-strengthening and bone-strengthening physical activity** of at least a moderately-intense level **can slow the loss of bone density** that comes with age.

Hip fracture is a serious health condition that can have life-changing negative effects, especially if you're an older adult. But research shows that people who do 120 to 300 minutes of at least moderate-intensity aerobic activity each week have a lower risk of hip fracture.

Regular physical activity helps with arthritis and other conditions affecting the joints. If you have arthritis, research shows that doing 130 to 150 (2 hours and 10 minutes to 2 hours and 30 minutes) a week of moderate-intensity, low-impact aerobic activity can not only improve your ability to manage pain and do everyday tasks, but it can also make your quality of life better.

Build strong, healthy muscles. Muscle-strengthening activities can help you increase or maintain your muscle mass and strength. Slowly increasing the amount of weight and number of repetitions you do will give you even more benefits, no matter your age.

HomeImprove Your Mental Health and Mood

Regular physical activity can help keep your thinking, learning, and judgment skills sharp as you age. It can also reduce your risk of depression and may help you sleep better. Research has shown that doing aerobic or a mix of aerobic and muscle-strengthening activities 3 to 5 times a week for 30 to 60 minutes can give you these mental health benefits. Some scientific evidence has also shown that even lower levels of physical activity can be beneficial.

HomeImprove Your Ability to do Daily Activities and Prevent Falls

A functional limitation is a loss of the ability to do everyday activities such as climbing stairs, grocery shopping, or playing with your grandchildren.

How does this relate to physical activity? If you're a physically active middle-aged or older adult, you have a lower risk of functional limitations than people who are inactive

Already have trouble doing some of your everyday activities? Aerobic and muscle-strengthening activities can help improve your ability to do these types of tasks.

Are you an older adult who is at risk for falls? Research shows that doing **balance** and **muscle-strengthening activities** each week along with **moderate-intensity aerobic activity**, like brisk walking, can help reduce your risk of falling.

HomeIncrease Your Chances of Living Longer

Science shows that physical activity can reduce your risk of dying early from the leading causes of death, like heart disease and some cancers. This is remarkable in two ways:

1. Only a few lifestyle choices have as large an impact on your health as physical activity. People who are physically active for about 7 hours a week have a 40 percent lower risk of dying early than those who are active for less than 30 minutes a week.
2. You don't have to do high amounts of activity or vigorous-intensity activity to reduce your risk of premature death. You can put yourself at lower risk of dying early by doing at least 150 minutes a week of moderate-intensity aerobic activity.

Everyone can gain the health benefits of physical activity – age, ethnicity, shape or size do not matter.

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2.5: Developing a Personal Exercise Program

Make Physical Activity a Regular Part of the Day

Choose activities that you enjoy and can do regularly. Fitting activity into a daily routine can be easy — such as taking a brisk 10 minute walk to and from the parking lot, bus stop, or subway station. Or, join an exercise class. Keep it interesting by trying something different on alternate days. Every little bit adds up and doing something is better than doing nothing.

Be physically active at least 10 minutes at a time, because shorter bursts of activity will not have the same health benefits. For example, walk your dog for 10 minutes before and after work, and go for a 10-minute walk at lunchtime. That adds up to 30 minutes of moderate exercise for the day. If you don't have a dog to walk, then you could take a brisk 10-minute walk to and from the parking lot or bus stop before and after work or class.

Gradually Increase Your Level of Physical Activity

Inactive adults or those who don't yet do 150 minutes of physical activity a week should work gradually toward this goal. The initial amount of activity should be at a light or moderate intensity, for short periods of time, with the sessions spread throughout the week. The good news is that "some is better than none."

To reduce risk of injury, it is important to increase the amount of physical activity gradually over a period of weeks to months. For example, an inactive person could start with a walking program consisting of 5 minutes of walking several times each day, 5 to 6 days a week. The length of time could then gradually be increased to 10 minutes per session, 3 times a day, and the walking speed could be increased (to ultimately meet the time and intensity guidelines).

Muscle-strengthening activities should also be gradually increased over time. Initially, these activities can be done just 1 day a week starting at a light or moderate level of effort. Over time, the number of days a week can be increased to 2, and then possibly to more than 2. Each week, the level of effort (intensity) can be increased slightly until it becomes moderate to high.

Warm-up and Cool-down

Commonly, the warm-up and cool-down involve doing an activity at a slower speed or lower intensity. A warm-up before moderate- or vigorous-intensity aerobic activity allows a gradual increase in heart rate and breathing at the start of the episode of activity. A cool-down after activity allows a gradual decrease at the end of the episode. Time spent doing warm-up and cool-down may count toward meeting the aerobic activity guidelines if the activity is at least moderate intensity (for example, walking briskly as a warm-up before jogging). A warm-up for muscle-strengthening activity commonly involves doing exercises with lighter weight. Stretching is often incorporated during the warm-up and cool-down, and is helpful for reducing the risk of injury, as well as improving flexibility.

Ways to Get Moving

- Many activities can be worked into your daily routine so that you don't have to go to the gym or an exercise class.
- Always be prepared. Keep a pair of walking or running shoes and some comfortable clothes readily available.
- Walk (briskly)! Do it in your neighborhood, find a local trail, or go to the mall and walk around before you shop. Walk during your lunch break, in between classes, or to do your errands. Take the stairs instead of the elevator. Park in the farthest parking spot and take an extended route to your classroom, office, or store.
- Make exercise a social event. Walk with friends, a family member, or even join a walking group to make it more fun. Take dancing lessons, or a Zumba class.
- Get a jump rope! Jumping rope is an inexpensive exercise that can be done anywhere.
- Add calisthenics (jumping jacks, push-ups, squats, crunches, etc.) to the mix for muscle strengthening.

- Participate in a sport such as tennis, softball, basketball or touch football. Play golf, but push or carry your golf bag rather than ride in a golf cart. Keep your activities interesting by trying something different on alternate days.
- Do household chores that increase your heart rate. Vacuuming, mopping, and sweeping can get your heart pumping. Mow the lawn with a push mower, garden/shovel, rake leaves, or wash and wax your car.
- Make exercise a family activity. Get outdoors and hike, ride bikes, skate, swim, go canoeing, kayaking, or just take a brisk walk together.

Achieving Target Levels of Physical Activity

Key Points:

- Going to the gym is NOT required for achieving the recommended guidelines
- Incorporating more brisk walking throughout the day can add up to reaching your goals – just be sure it occurs for at least **10 minutes** at a time
- Getting started is the first important step – gradually work your way to the recommended levels

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CHAPTER OVERVIEW

3: Stress Management

3.1: Stress Overview
3.2: Yerkes-Dodson Law
3.3: The Stress Response
3.4: Health Effects of Stress
3.5: Managing Stress

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3.1: Stress Overview

Stress — just the word may be enough to set your nerves on edge. Everyone feels stressed from time to time. Some people may cope with stress more effectively or recover from stressful events quicker than others. It's important to know your limits when it comes to stress to avoid more serious health effects.

What is stress?

Stress can be defined as the brain's response to any demand. Many things can trigger this response, including change. Changes can be positive or negative, as well as real or perceived. They may be recurring, short-term, or long-term and may include things like commuting to and from school or work every day, traveling for a yearly vacation, or moving to another home. Changes can be mild and relatively harmless, such as winning a race, watching a scary movie, or riding a rollercoaster. Some changes are major, such as marriage or divorce, serious illness, or a car accident. Other changes are extreme, such as exposure to violence, and can lead to traumatic stress reactions.

How does stress affect the body?

Not all stress is bad. All humans and animals have a stress response, which can be life-saving in some situations. The nerve chemicals and hormones released during stressful times prepares us to face a threat or flee to safety. When you face a dangerous situation, your pulse quickens, you breathe faster, your muscles tense, your brain uses more oxygen and increases activity—all functions aimed at survival.

However, with chronic stress, those same nerve chemicals that are life-saving in short bursts can suppress functions that aren't needed for immediate survival. Your immunity is lowered and your digestive, excretory, and reproductive systems stop working normally. Once the threat has passed, other body systems act to restore normal functioning. Problems occur if the stress response goes on too long, such as when the source of stress is constant, or if the response continues after the danger has subsided.

How does stress affect your overall health?

There are at least three different types of stress, all of which carry physical and mental health risks:

- Routine stress related to the pressures of work, family and other daily responsibilities.
- Stress brought about by a sudden negative change, such as losing a job, divorce, or illness.
- Traumatic stress, experienced in an event like a major accident, war, assault, or a natural disaster where one may be seriously hurt or in danger of being killed.

The body responds to each type of stress in similar ways. Different people may feel it in different ways. For example, some people experience mainly digestive symptoms, while others may have headaches, sleeplessness, depressed mood, anger and irritability. People under chronic stress are prone to more frequent and severe viral infections, such as the flu or common cold, and vaccines, such as the flu shot, are less effective for them.

Of all the types of stress, changes in health from routine stress may be hardest to notice at first. Because the source of stress tends to be more constant than in cases of acute or traumatic stress, the body gets no clear signal to return to normal functioning. Over time, continued strain on your body from routine stress may lead to serious health problems, such as heart disease, high blood pressure, diabetes, depression, anxiety disorder, and other illnesses.

How can I cope with stress?

The effects of stress tend to build up over time. Taking practical steps to maintain your health and outlook can reduce or prevent these effects. The following are some tips that may help you to cope with stress:

- Seek help from a qualified mental health care provider if you are overwhelmed, feel you cannot cope, have suicidal thoughts, or are using drugs or alcohol to cope.
- Get proper health care for existing or new health problems.
- Stay in touch with people who can provide emotional and other support. Ask for help from friends, family, or community organizations to reduce stress due to work burdens or family issues, such as caring for a loved one.
- Recognize signs of your body's response to stress, such as difficulty sleeping, increased alcohol and other substance use, being easily angered, feeling depressed, and having low energy.
- Set priorities – decide what must get done and what can wait, and learn to say no to new tasks if they are putting you into overload.
- Note what you have accomplished at the end of the day, not what you have been unable to do.
- Avoid dwelling on problems. If you can't do this on your own, seek help from a qualified mental health professional who can guide you.
- Exercise regularly – just 30 minutes per day of walking can help boost mood and reduce stress.
- Schedule regular times for healthy and relaxing activities.
- Explore stress coping programs, which may incorporate meditation, yoga, tai chi, or other related exercises.

If you or someone you know is overwhelmed by stress, ask for help from a health professional. If you or someone close to you is in crisis, call the toll-free, 24-hour National Suicide Prevention Lifeline at 1-800-273-TALK (1-800-273-8255).

Key Takeaway

We all have stress sometimes. For some people, it happens before having to speak in public. For other people, it might be before a first date. What causes stress for you may not be stressful for someone else. Sometimes stress is helpful—it can encourage you to meet a deadline or get things done. But feeling stressed for an extended amount of time can take a toll on your mental and physical health. Even though it may seem hard to find ways to de-stress with all the things you have to do, it's important to find those ways. Your health depends on it.

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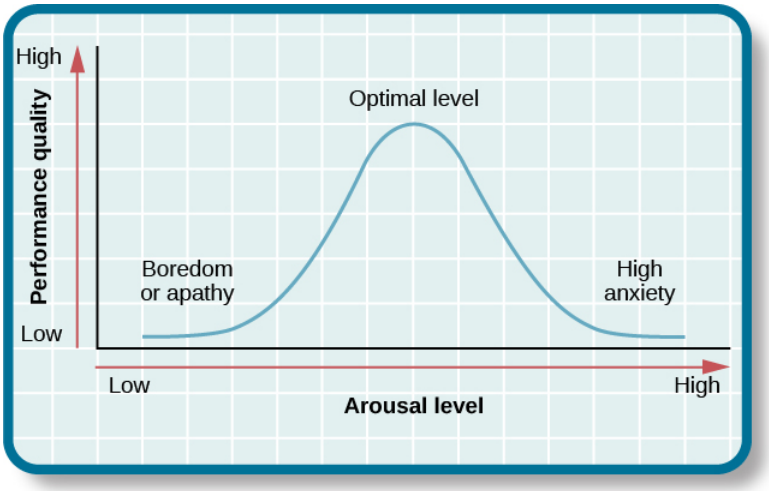
3.2: Yerkes-Dodson Law

Optimal Levels of Arousal (i.e. Stress)

Theories of learning assert that there is an optimal level of arousal (stress) that we all try to maintain. If we are under-aroused, we become bored and will seek out some sort of stimulation. On the other hand, if we are over-aroused, we will engage in behaviors to reduce our arousal/stress. Research shows that moderate arousal is generally best; when arousal (stress) is very high or very low, performance tends to suffer. The **Yerkes–Dodson law** is an empirical relationship between arousal and performance, originally developed by psychologists Robert M. Yerkes and John Dillingham Dodson in 1908. The law dictates that performance increases with physiological or mental arousal, but only up to a point. When levels of arousal become too high, performance decreases. The process is often illustrated graphically as a bell-shaped curve which increases and then decreases with higher levels of arousal.



Most students have experienced this need to maintain optimal levels of arousal (stress) over the course of their academic career. Think about how much stress students experience toward the end of spring semester—they feel overwhelmed with work and yearn for the rest and relaxation of summer break. Their arousal/stress level may be too high. Once they finish the semester, however, it doesn't take too long before they begin to feel bored; their arousal level is too low and their level of performance or productivity is also typically lower. Generally, by the time fall semester starts, many students are ready to return to school. This is an example of how arousal theory works.

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3.3: The Stress Response

The **fight-or-flight response** (also called the **stress response**) is a physiological reaction that occurs in response to a perceived threat or danger. This enables the body to take action quickly, and is intended to keep us out of (physical) harm's way. Unfortunately for our health, this response also occurs when we are not in any immediate physical danger, but are still experiencing stress. For example, this can happen when someone is running late for an appointment or class, and is feeling stressed about trying to get there.

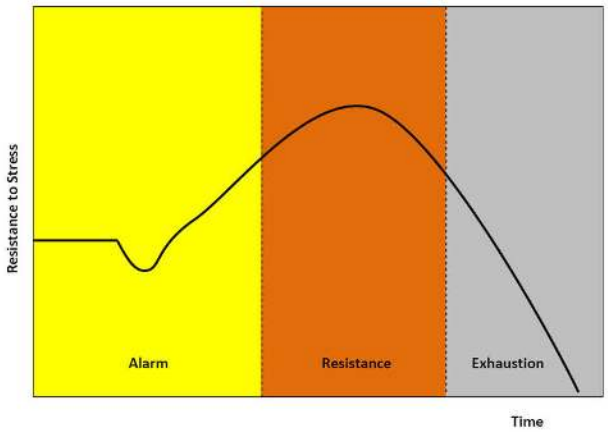
The physical changes that occur during this response can cause wear and tear within the body if the perception of stress persists. Here are a few examples of such bodily changes:

- Heart rate increases
- Blood pressure increases
- Blood sugar (i.e. glucose) levels rise
- Respiration rate increases
- Muscles tense up
- Perspiration increases
- Pupils dilate

Access additional information about how these physiological changes occur.

The fight-or-flight response is also recognized as the first stage of the General Adaptation Syndrome.

General Adaptation Syndrome



Stages of the General Adaptation Syndrome

Homeostasis is a state of physiological calmness or balance, and occurs when our bodily functions are running smoothly in conjunction with low stress levels. When exposed to stressors, this causes an imbalance to occur as the body responds to the perceived threat, and then tries to return to normal functioning.

The **general adaptation syndrome (GAS)**, developed by Hans Selye, describes the pattern of responses that the body goes through after being prompted by a stressor. There are three stages: alarm, resistance, and exhaustion.

- **Alarm** – This occurs when we first perceive something as stressful, and then the body initiates the fight-or-flight response (as discussed earlier).
- **Resistance** – If the perceived stress continues, the body stays activated at a higher metabolic level in an effort to offset the persistent stress. The body cannot maintain this level indefinitely, and its resources will eventually deplete.
- **Exhaustion** – Prolonged exposure to the stressor will result in the depletion of the body's resources, and the resulting wear and tear will suppress the immune system and cause bodily functions to deteriorate. This can lead to a variety of health issues and illnesses, including heart disease, digestive problems, depression, and diabetes.

These changes will occur in the body regardless of whether the perceived stressor is considered eustress (positive or pleasant) or distress (negative or unpleasant). Ultimately, this means that we need to take active steps in managing all of our stressors, as it can build up and potentially cause harm to our health otherwise.

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3.4: Health Effects of Stress

Stress is a feeling you get when faced with a challenge. In small doses, stress can be good for you because it makes you more alert and gives you a burst of energy. For instance, if you start to cross the street and see a car about to run you over, that jolt you feel helps you to jump out of the way before you get hit. But feeling stressed for a long time can take a toll on your mental and physical health. Even though it may seem hard to find ways to de-stress with all the things you have to do, it's important to find those ways. Your health depends on it.

HomeWhat are the most common causes of stress?

Stress happens when people feel like they don't have the tools to manage all of the demands in their lives. Stress can be short-term or long-term. Missing the bus or arguing with your spouse or partner can cause short-term stress. Money problems or trouble at work can cause long-term stress. Even happy events, like having a baby or getting married can cause stress. Some of the most common stressful life events include:

- Death of a spouse
- Death of a close family member
- Divorce
- Losing your job
- Major personal illness or injury
- Marital separation
- Marriage
- Pregnancy
- Retirement
- Spending time in jail

HomeWhat are some common signs of stress?

Everyone responds to stress a little differently. Your symptoms may be different from someone else's. Here are some of the signs to look for:

- Not eating or eating too much
- Feeling like you have no control
- Needing to have too much control
- Forgetfulness
- Headaches
- Lack of energy
- Lack of focus
- Trouble getting things done
- Poor self-esteem
- Short temper
- Trouble sleeping
- Upset stomach
- Back pain
- General aches and pains

These symptoms may also be signs of depression or anxiety, which can be caused by long-term stress.

HomeCan stress affect my health?

The body responds to stress by releasing stress hormones. These hormones make blood pressure, heart rate, and blood sugar levels go up. Long-term stress can help cause a variety of health problems, including:

- Mental health disorders, like depression and anxiety
- Obesity

- Heart disease
- High blood pressure
- Abnormal heart beats
- Menstrual problems
- Acne and other skin problems

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3.5: Managing Stress

How can I help handle my stress?

Everyone has to deal with stress. There are steps you can take to help you handle stress in a positive way and keep it from making you sick. Try these tips to keep stress in check:

Develop a new attitude

- **Become a problem solver.** Make a list of the things that cause you stress. From your list, figure out which problems you can solve now and which are beyond your control for the moment. From your list of problems that you can solve now, start with the little ones. Learn how to calmly look at a problem, think of possible solutions, and take action to solve the problem. Being able to solve small problems will give you confidence to tackle the big ones. And feeling confident that you can solve problems will go a long way to helping you feel less stressed.
- **Be flexible**. Sometimes, it's not worth the stress to argue. Give in once in awhile or meet people halfway.
- **Get organized**. Think ahead about how you're going to spend your time. Write a to-do list. Figure out what's most important to do and do those things first.
- **Set limits**. When it comes to things like work and family, figure out what you can really do. There are only so many hours in the day. Set limits for yourself and others. Don't be afraid to say NO to requests for your time and energy.

Relax

- **Take deep breaths**. If you're feeling stressed, taking a few deep breaths makes you breathe slower and helps your muscles relax.
- **Stretch**. Stretching can also help relax your muscles and make you feel less tense.
- **Massage tense muscles**. Having someone massage the muscles in the back of your neck and upper back can help you feel less tense.
- **Take time to do something you want to do**. We all have lots of things that we have to do. But often we don't take the time to do the things that we really want to do. It could be listening to music, reading a good book, or going to a movie. Think of this as an order from your doctor, so you won't feel guilty!

Take care of your body

- **Get enough sleep**. Getting enough sleep helps you recover from the stresses of the day. Also, being well-rested helps you think better so that you are prepared to handle problems as they come up. Most adults need 7 to 9 hours of sleep a night to feel rested.
- **Eat right**. Try to fuel up with fruits, vegetables, beans, and whole grains. Don't be fooled by the jolt you get from caffeine or high-sugar snack foods. Your energy will wear off, and you could wind up feeling more tired than you did before.
- **Get moving**. Getting physical activity can not only help relax your tense muscles but improve your mood. Research shows that physical activity can help relieve symptoms of depression and anxiety.
- **Don't deal with stress in unhealthy ways**. This includes drinking too much alcohol, using drugs, smoking, or overeating.

Connect with others

- **Share your stress**. Talking about your problems with friends or family members can sometimes help you feel better. They might also help you see your problems in a new way and suggest solutions that you hadn't thought of.
- **Get help from a professional if you need it**. If you feel that you can no longer cope, talk to your doctor. She or he may suggest counseling to help you learn better ways to deal with stress. Your doctor may also prescribe medicines, such as antidepressants or sleep aids.
- **Help others**. Volunteering in your community can help you make new friends and feel better about yourself.

What Are Relaxation Techniques?

Relaxation techniques include a number of practices such as *progressive relaxation*, *guided imagery*, *biofeedback*, self-hypnosis, and deep breathing exercises. The goal is similar in all: to produce the body's natural relaxation response, characterized by slower breathing, lower blood pressure, and a feeling of increased well-being.

Meditation and practices that include *meditation* with movement, such as yoga and tai chi, can also promote relaxation. You can find additional information about these practices on the NCCIH web site.

What Is Meditation?

Meditation is a *mind and body practice* that has a long history of use for increasing calmness and physical relaxation, improving psychological balance, coping with illness, and enhancing overall health and well-being. Mind and body practices focus on the interactions among the brain, mind, body, and behavior.

There are many types of meditation, but most have four elements in common: a quiet location with as few distractions as possible; a specific, comfortable posture (sitting, lying down, walking, or in other positions); a focus of attention (a specially chosen word or set of words, an object, or the sensations of the breath); and an open attitude (letting distractions come and go naturally without judging them).

What the Science Says About the Effectiveness of Meditation

Many studies have investigated meditation for different conditions, and there's evidence that it may reduce blood pressure as well as symptoms of irritable bowel syndrome and flare-ups in people who have had ulcerative colitis. It may ease symptoms of anxiety and depression, and may help people with insomnia.

No matter which techniques or strategies you select to help cope with stress more effectively, keep in mind that it takes time and effort to reap the benefits from them.

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- Relaxation Techniques for Health. **Authored by**: National Center for Complementary and Integrative Health. **Provided by**: National Institutes of Health. **Located at**: https://nccih.nih.gov/health/stress/relaxation.htm. **License**: *Public Domain: No Known Copyright*

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CHAPTER OVERVIEW

4: Weight Management

4.1: Prevalence of Overweight and Obesity
4.2: Balancing Calories
4.3: Body Mass Index
4.4: Health Effects of Overweight and Obesity

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4.1: Prevalence of Overweight and Obesity

Overweight and Obesity in the United States

- More than 2 in 3 adults are considered to be overweight or obese.
- More than 1 in 3 adults are considered to be obese.
- More than 1 in 20 adults are considered to have extreme obesity.
- About one-third of children and adolescents ages 6 to 19 are considered to be overweight or obese.
- More than 1 in 6 children and adolescents ages 6 to 19 are considered to be obese.

Normal weight or underweight (BMI under 24.9)
Overweight (BMI of 25 to 29.9)
Obesity (BMI of 30+)
Extreme obesity (BMI of 40+)

According to the pie graph, 31.2 percent of adults had BMIs under 24.9 and so were considered normal weight or underweight. Another 33.1 percent had BMIs from 25 to 29.9, and so they were considered overweight. The group with BMIs of 30 or higher—people considered to have obesity—amounted to 35.7 percent. Those considered to have extreme obesity, with BMIs of 40 or higher, amounted to 6.3 percent.

Estimated Percentage by Sex

According to the National Institutes of Health, 74 percent of men had overweight or obesity; 64 percent of women had overweight or obesity. Equal percentages (36) of men and women had obesity. Among men, 4 percent had extreme obesity; the percentage among women was double that of men, at 8 percent.

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4.2: Balancing Calories

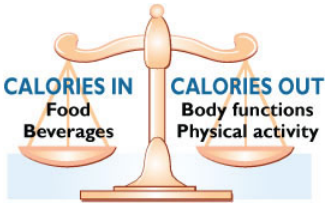
Finding a Balance

More than one third of U.S. adults are obese. Weight gain occurs when you consume more calories than your body uses. Reaching and maintaining a healthy weight will help you prevent and control many diseases and conditions. The key is "Finding a Balance" in your lifestyle that includes healthy eating and regular physical activity.

The Caloric Balance Equation

When it comes to maintaining a healthy weight for a lifetime, the bottom line is – **calories count!** Weight management is all about balance—balancing the number of calories you consume with the number of calories your body uses or "burns off."

- A *calorie* is defined as a unit of energy supplied by food. A calorie is a calorie regardless of its source. Whether you're eating carbohydrates, fats, sugars, or proteins, all of them contain calories.
- *Caloric balance* is like a scale. To remain in balance and maintain your body weight, the calories consumed (from foods) must be balanced by the calories used (in normal body functions, daily activities, and exercise).



If you are…	Your caloric balance status is…
Maintaining your weight	"**in balance**." You are eating roughly the same number of calories that your body is using. Your weight will remain **stable**.
Gaining weight	"**in caloric excess**." You are eating more calories than your body is using. You will store these extra calories as fat and you'll **gain** weight.
Losing weight	"**in caloric deficit**." You are eating fewer calories than you are using. Your body is pulling from its fat storage cells for energy, so your weight is **decreasing**.

HomeAm I in Caloric Balance?

If you are maintaining your current body weight, you are in caloric balance. If you need to gain weight or to lose weight, you'll need to tip the balance scale in one direction or another to achieve your goal.

If you need to tip the balance scale in the direction of losing weight, keep in mind that **it takes approximately 3,500 calories below your calorie needs to lose a pound of body fat**. To lose about 1 to 2 pounds per week, you'll need to reduce your caloric intake by 500—1000 calories per day.

To learn how many calories you are currently eating, begin writing down the foods you eat and the beverages you drink each day. By writing down what you eat and drink, you become more aware of everything you are putting in your mouth. Also, begin writing down the physical activity you do each day and the length of time you do it. Here are simple paper and pencil tools to assist you:

- Food Diary [PDF-3KB]
- Physical Activity Diary [PDF-42KB]

Want to try an interactive approach evaluate your food intake and physical activity? Go to the SuperTracker. The site will give you a detailed assessment and analysis of your current eating and physical activity habits.

Physical activities (both daily activities and exercise) help tip the balance scale by increasing the calories you expend each day. For examples, go to How Many Calories Does Physical Activity Burn?

Find out how many calories your body needs to maintain, lose, or gain weight by clicking here.

The bottom line is… each person's body is unique and may have different caloric needs. A healthy lifestyle requires balance, in the foods you eat, in the beverages you consume, in the way you carry out your daily activities, and in the amount of physical activity or exercise you include in your daily routine. While counting calories is not necessary, it may help you in the beginning to gain an awareness of your eating habits as you strive to achieve energy balance. The ultimate test of balance is whether or not you are gaining, maintaining, or losing weight.

Research suggests that safe weight loss involves combining a reduced-calorie diet with physical activity to lose 1/2 to 2 pounds a week (after the first few weeks of weight loss). Make healthy food choices. Eat small portions. Build exercise into your daily life. Combined, these habits may be a healthy way to lose weight and keep it off. These habits may also lower your chances of developing heart disease, high blood pressure, and type 2 diabetes.

To review these key concepts, watch the video below:

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- Finding a Balance video. **Authored by**: Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion. **Provided by**: Centers for Disease Control and Prevention. **Located at**: https://www.cdc.gov/cdctv/healthyliving/healthyeating/finding-balance-obesity.html. **License**: *Public Domain: No Known Copyright*

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4.3: Body Mass Index

What is BMI?

BMI is a person's weight in kilograms divided by the square of height in meters. BMI does not measure body fat directly, but research has shown that BMI is moderately correlated with more direct measures of body fat obtained from skinfold thickness measurements, bioelectrical impedance, densitometry (underwater weighing), dual energy x-ray absorptiometry (DXA) and other methods. Furthermore, BMI appears to be as strongly correlated with various metabolic and disease outcome as are these more direct measures of body fatness. In general, BMI is an inexpensive and easy-to-perform method of screening for weight category, for example underweight, normal or healthy weight, overweight, and obesity.

How is BMI used?

Adult BMI Calculator

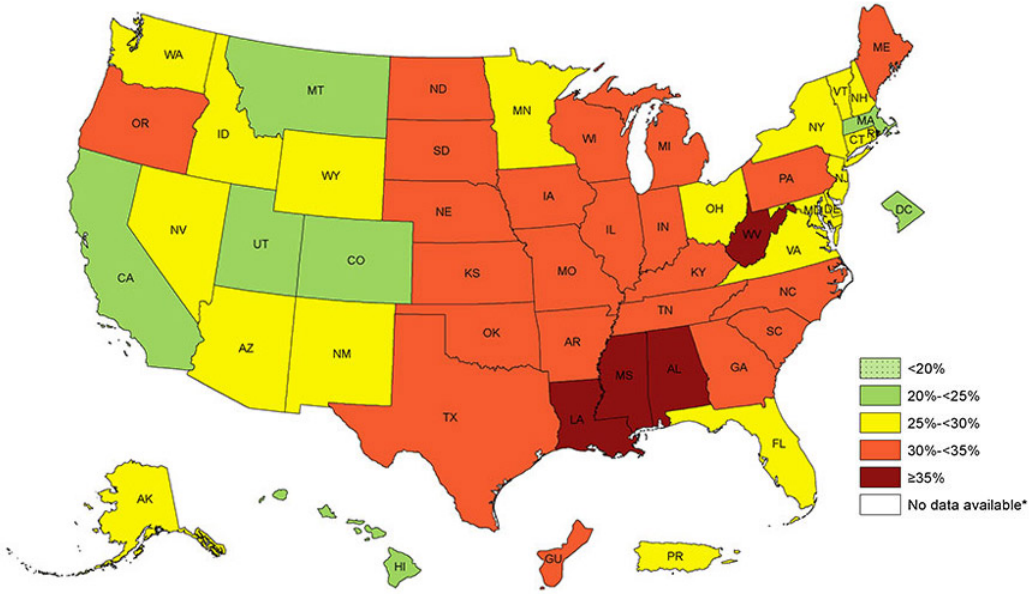
A high BMI can be an indicator of high body fatness. BMI can be used as a screening tool but is not diagnostic of the body fatness or health of an individual.

To determine if a high BMI is a health risk, a healthcare provider would need to perform further assessments. These assessments might include skinfold thickness measurements, evaluations of diet, physical activity, family history, and other appropriate health screenings.

What are the BMI trends for adults in the United States?

The prevalence of adult BMI greater than or equal to 30 kg/m^2 (obese status) has greatly increased since the 1970s. Recently, however, this trend has leveled off, except for older women. Obesity has continued to increase in adult women who are age 60 years and older.

Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2015



Why is BMI used to measure overweight and obesity?

BMI can be used for population assessment of overweight and obesity. Because calculation requires only height and weight, it is inexpensive and easy to use for clinicians and for the general public. BMI can be used as a screening tool for body fatness but is not diagnostic.

To see the formula based on either kilograms and meters or pounds and inches, visit How is BMI calculated?

What are some of the other ways to assess excess body fatness besides BMI?

Other methods to measure body fatness include skinfold thickness measurements (with calipers), underwater weighing, bioelectrical impedance, dual-energy x-ray absorptiometry (DXA), and isotope dilution [1,2,3]. However, these methods are not always readily available, and they are either expensive or need to be conducted by highly trained personnel. Furthermore, many of these methods can be difficult to standardize across observers or machines, complicating comparisons across studies and time periods.

How is BMI interpreted for adults?

For adults 20 years old and older, BMI is interpreted using standard weight status categories. These categories are the same for men and women of all body types and ages.

The standard weight status categories associated with BMI ranges for adults are shown in the following table.

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal or Healthy Weight
25.0 – 29.9	Overweight
30.0 and Above	Obese

For example, here are the weight ranges, the corresponding BMI ranges, and the weight status categories for a person who is 5′ 9″.

Height	Weight Range	BMI	Weight Status
5′ 9″	124 lbs or less	Below 18.5	Underweight
	125 lbs to 168 lbs	18.5 to 24.9	Normal or Healthy Weight
	169 lbs to 202 lbs	25.0 to 29.9	Overweight
	203 lbs or more	30 or higher	Obese

For children and teens, the interpretation of BMI depends upon age and sex.

For adults, the interpretation of BMI does not depend on sex or age.

How good is BMI as an indicator of body fatness?

The correlation between the BMI and body fatness is fairly strong, but even if 2 people have the same BMI, their level of body fatness may differ.

In general:

- At the same BMI, women tend to have more body fat than men.
- At the same BMI, Blacks have less body fat than do Whites, and Asians have more body fat than do Whites
- At the same BMI, older people, on average, tend to have more body fat than younger adults.
- At the same BMI, athletes have less body fat than do non-athletes.

The accuracy of BMI as an indicator of body fatness also appears to be higher in persons with higher levels of BMI and body fatness. While, a person with a very high BMI (e.g., 35 kg/m^2) is very likely to have high body fat, a relatively high BMI can be the results of either high body fat or high lean body mass (muscle and bone). A trained healthcare provider should perform appropriate health assessments in order to evaluate an individual's health status and risks.

If an athlete or other person with a lot of muscle has a BMI over 25, is that person still considered to be overweight?

According to the BMI weight status categories, anyone with a BMI between 25 and 29.9 would be classified as overweight and anyone with a BMI over 30 would be classified as obese.

However, athletes may have a high BMI because of increased muscularity rather than increased body fatness. In general, a person who has a high BMI is likely to have body fatness and would be considered to be overweight or obese, but this may not apply to athletes. A trained healthcare provider should perform appropriate health assessments in order to evaluate an individual's health status and risks.

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- Map: Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory. **Authored by**: Centers for Disease Control and Prevention. **Located at**: https://www.cdc.gov/obesity/data/prevalence-maps.html. **License**: *Public Domain: No Known Copyright*

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4.4: Health Effects of Overweight and Obesity

People who are overweight or obese, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions. The more body fat that you have and the more you weigh, the more likely you are to develop:

- All causes of death (mortality)
- High blood pressure (Hypertension)
- High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides (Dyslipidemia)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis (a breakdown of cartilage and bone within a joint)
- Sleep apnea and breathing problems
- Some cancers (endometrial, breast, colon, kidney, gallbladder, and liver)
- Low quality of life
- Mental illness such as clinical depression, anxiety, and other mental disorders
- Body pain and difficulty with physical functioning

Your weight is the result of many factors. These factors include environment, family history and genetics, metabolism (the way your body changes food and oxygen into energy), behavior or habits, and more.

You can't change some factors, such as family history. However, you can change other factors, such as your lifestyle habits.

For example, follow a healthy eating plan and keep your calorie needs in mind. Be physically active and try to limit the amount of time that you're inactive.

As shown in the video below, it is important to remember that obesity happens one pound at a time, and even relatively small weight gains can negatively affect one's health and well-being.

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- The Health Effects of Overweight and Obesity. **Authored by**: Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion. **Provided by**: Centers for Disease Control and Prevention. **Located at**: https://www.cdc.gov/healthyweight/effects/index.html. **License**: *Public Domain: No Known Copyright*
- Obesity happens one pound at a time - Video. **Authored by**: National Heart, Lung, and Blood Institute. **Provided by**: National Institutes of Health. **Located at**: https://www.nhlbi.nih.gov/health/health-topics/topics/obe. **License**: *Public Domain: No Known Copyright*

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CHAPTER OVERVIEW

5: Infectious Diseases

5.1: Influenza
5.2: STD/STI Data
5.3: Types of STDs/STIs
5.4: STD/STI Prevention
5.5: STD/STI Treatments

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5.1: Influenza

Key Facts About Influenza (Flu)

HomeWhat is Influenza (also called Flu)?

The flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. It can cause mild to severe illness, and at times can lead to death. The best way to prevent the flu is by getting a flu **vaccine** each year.

HomeSigns and Symptoms of Flu

People who have the flu often feel some or all of these signs and symptoms:

- Fever* or feeling feverish/chills
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Headaches
- Fatigue (very tired)
- Some people may have vomiting and diarrhea, though this is more common in children than adults.

**It's important to note that not everyone with flu will have a fever.*

HomeHow Flu Spreads

Most experts believe that flu viruses spread mainly by droplets made when people with flu cough, sneeze or talk. These droplets can land in the mouths or noses of people who are nearby. Less often, a person might also get flu by touching a surface or object that has flu virus on it and then touching their own mouth, eyes or possibly their nose.

HomePeriod of Contagiousness

You may be able to pass on the flu to someone else before you know you are sick, as well as while you are sick. Most healthy adults may be able to infect others beginning 1 day **before** symptoms develop and up to 5 to 7 days **after** becoming sick. Some people, especially young children and people with weakened immune systems, might be able to infect others for an even longer time.

HomeOnset of Symptoms

The time from when a person is exposed to flu virus to when symptoms begin is about 1 to 4 days, with an average of about 2 days.

HomeComplications of Flu

Complications of flu can include bacterial pneumonia, ear infections, sinus infections, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes.

HomePeople at High Risk from Flu

Anyone can get the flu (even healthy people), and serious problems related to the flu can happen at any age, but some people are at high risk of developing serious flu-related complications if they get sick. This includes people 65 years and older, people of any age with certain chronic medical conditions (such as asthma, diabetes, or heart disease), pregnant women, and young children.

HomePreventing Flu

The first and most important step in preventing flu is to get a flu vaccination each year. CDC also recommends everyday preventive actions (like staying away from people who are sick, covering coughs and sneezes and frequent handwashing) to help slow the spread of germs that cause respiratory (nose, throat, and lungs) illnesses, like flu.

HomeDiagnosing Flu

It is very difficult to distinguish the flu from other viral or bacterial causes of respiratory illnesses on the basis of symptoms alone. There are tests available to diagnose flu. For more information, see Diagnosing Flu.

HomeTreating

There are influenza antiviral drugs that can be used to treat flu illness.

For more information, see "Seasonal Influenza, More Information."
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5.2: STD/STI Data

CDC FACT SHEET

Reported STDs in the United States

2015 National Data for Chlamydia, Gonorrhea, and Syphilis

Many cases of chlamydia, gonorrhea, and syphilis continue to go undiagnosed and unreported, and data on several additional STDs — such as human papillomavirus, herpes simplex virus, and trichomoniasis — are not routinely reported to CDC. As a result, the annual surveillance report captures only a fraction of the true burden of STDs in America. However, it provides important insights into the scope, distribution, and trends in STD diagnoses in the country.

STDs are a substantial health challenge facing the United States. CDC estimates that nearly **20 million new sexually transmitted infections** occur every year in this country, half among young people aged 15–24, and account for almost $16 billion in health care costs. Each of these infections is a potential threat to an individual's immediate and long-term health and well-being. In addition to increasing a person's risk for acquiring and transmitting HIV infection, STDs can lead to chronic pain and severe reproductive health complications, such as infertility and ectopic pregnancy.

Snapshot: STDs in the United States, 2015

Despite recent declines, 2015 was the second year in a row in which increases were seen in all three nationally reported STDs. The approximately 1.5 million cases of chlamydia represent the highest number of annual cases of any condition ever reported to CDC. Substantial increases were also seen among reported cases of gonorrhea and syphilis. While young people and women are most severely affected by STDs, increasing rates among men contributed to the overall increase in 2015 across all diseases.

Chlamydia
- Cases reported in 2015: 1,526,658
- Rate per 100,000 people: 479; increase of 6% since 2014

Gonorrhea
- Cases reported in 2015: 395,216
- Rate per 100,000 people: 124; increase of 13% since 2014

Syphilis (primary and secondary)
- Cases reported in 2015: 23,872
- Rate per 100,000 people: 8; 19% increase since 2014

Syphilis (congenital)
- Cases reported in 2015: 487
- Rate per 100,000 live births: 12; 6% increase since 2014

Gonorrhea and chlamydia primarily affect young people

Surveillance data show both the numbers and rates of reported cases of chlamydia and gonorrhea continue to be highest among young people aged 15-24.

Both young men and young women are heavily affected by STDs — but young women face the most serious long-term health consequences. It is estimated that undiagnosed STDs cause infertility in more than 20,000 women each year.

Most Reported Chlamydia and Gonorrhea Infections Occur among 15–24-Year-Olds

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- CDC Fact Sheet. **Authored by**: Centers for Disease Control and Prevention. **Provided by**: U.S. Department of Health and Human Services. **Located at**: https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/std-trends-508.pdf. **License**: *Public Domain: No Known Copyright*

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5.3: Types of STDs/STIs

What are some types of sexually transmitted diseases or sexually transmitted infections (STDs/STIs)?

Approximately 20 different infections are known to be transmitted through sexual contact. Here are descriptions of some of the most common and well known:

- Chlamydia
- Gonorrhea
- Genital Herpes
- HIV/AIDS
- Human Papillomavirus (HPV)
- Syphilis
- Bacterial Vaginosis
- Trichomoniasis
- Viral Hepatitis

Chlamydia

Chlamydia is a common STD/STI caused by the bacterium *Chlamydia trachomatis*. Chlamydia can be transmitted during vaginal, oral, or anal sexual contact with an infected partner. While many individuals will not experience symptoms, chlamydia can cause fever, abdominal pain, and unusual discharge of the penis or vagina.

In women, whether or not they are having symptoms and know about their infection, chlamydia can cause pelvic inflammatory disease (PID). In PID, the untreated STD/STI progresses and involves other parts of the woman's reproductive system, including the uterus and fallopian tubes. This progression can lead to permanent damage to the woman's reproductive organs. This damage may lead to ectopic pregnancy (in which the fetus develops in abnormal places outside of the womb, a condition that can be life-threatening) and infertility.

Additionally, if the woman is pregnant, her developing fetus is at risk, because chlamydia can be passed on during her pregnancy or delivery and could lead to eye infections or pneumonia in the infant. If chlamydia is detected early, it can be treated easily with an antibiotic taken by mouth.

Gonorrhea

Gonorrhea is caused by the bacterium Neisseria gonorrhoeae, which can grow rapidly and multiply easily in the warm, moist areas of the reproductive tract. The most common symptoms of gonorrheal infection are a discharge from the vagina or penis and painful or difficult urination.

As with chlamydial infection, the most common and serious complications of gonorrhea occur in women and include pelvic inflammatory disease (PID), ectopic pregnancy, infertility, and the potential spread to the developing fetus if acquired during pregnancy. Gonorrhea also can infect the mouth, throat, eyes, and rectum and can spread to the blood and joints, where it can become a life-threatening illness.

In addition, people with gonorrhea can more easily contract HIV, the virus that causes AIDS. HIV-infected people with gonorrhea are also more likely to transmit the virus to someone else.

Genital Herpes

Genital herpes is a contagious infection caused by the herpes simplex virus (HSV). There are two different strains, or types, of HSV: herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2). Both can cause genital herpes, although most cases of genital herpes are caused by HSV-2. When symptomatic, HSV-1 usually appears as fever blisters or cold sores on the lips, but it can also infect the genital region through oral-genital or genital-genital contact. Symptomatic HSV-2 typically causes painful, watery skin blisters on or around the genitals or anus. However, substantial numbers of people who carry these viruses have no or only minimal signs or symptoms.

Neither HSV-1 nor HSV-2 can be cured, and even during times when an infected person has no symptoms, the virus can be found in the body's nerve cells. Periodically, some people will experience outbreaks in which new blisters form on the skin in the genital area; at those times, the virus is more likely to be passed on to other people.

Pregnant women, especially those who acquire genital herpes for the first time during pregnancy, may pass the infection to their newborns, causing life-threatening neonatal HSV, an infection affecting the infant's skin, brain, and other organs.

HIV/AIDS

HIV, or the human immunodeficiency virus, is the virus that causes AIDS (acquired immunodeficiency syndrome). HIV destroys the body's immune system by killing the blood cells that fight infection. Once HIV destroys a substantial proportion of these cells (CD4 cells), the body's ability to fight off and recover from infections is compromised. This advanced stage of HIV infection is known as AIDS.

The CD4 count is like a snapshot of how well your immune system is functioning. CD4 cells (also known as CD4+ T cells) are white blood cells that fight infection. The more you have, the better. These are the cells that the HIV virus kills. As HIV infection progresses, the number of these cells declines. When the CD4 count drops below 200 due to advanced HIV disease, a person is diagnosed with AIDS. A normal range for CD4 cells is about 500-1,500. Usually, when a person with low CD4 cells starts HIV medicines, the CD4 cell count increases as the HIV virus is controlled. Most, but not all, people will experience an increase in CD4 cells with effective HIV treatment.

People whose HIV has progressed to AIDS are very susceptible to opportunistic infections that do not normally make people sick and to certain forms of cancer.

AIDS can be prevented by early initiation of antiretroviral therapy in those with HIV infection. Transmission of the virus primarily occurs during unprotected sexual activity and by sharing needles used to inject intravenous drugs, although the virus also can spread from mother to infant during pregnancy, delivery, and breastfeeding.

In 2013, NIH-supported researchers reported that a 2-year-old child who was born with HIV and was treated starting in the first few days of life has had her HIV infection go into remission. This appears to be the first case of functional cure of HIV.

Human Papillomavirus (HPV)

HPV is the most common STD/STI. More than 40 HPV types exist, and all of them can infect both men and women. The types of HPVs vary in their ability to cause genital warts; infect other regions of the body, including the mouth and throat; and cause cancers of the cervix, vulva, penis, and mouth.

Although no cure exists for HPV infection once it occurs, regular screening with a Pap smear test can prevent or detect at an early stage most cases of HPV-caused cervical cancer. (A Pap smear test involves a health care provider taking samples of cells from the cervix during a standard gynecologic exam; these cells are examined under a microscope for signs of developing cancer).

A newly available vaccine protects against most (but not all) HPV types that cause cervical cancer. The American Academy of Pediatrics recommends this vaccine for school-aged boys and girls.

Syphilis

Syphilis infections, caused by the bacterium Treponema pallidum, are passed from person to person during vaginal, anal, or oral sex through direct contact with sores, called chancres. Between 2001 and 2009, the Centers for Disease Control and Prevention (CDC) data show that the syphilis rate increased each year. Those people at highest risk for syphilis include men having sex with both men and women and people residing in the south. The first sign of syphilis is a chancre, a painless genital sore that most often appears on the penis or in and around the vagina. Beyond being the first sign of a syphilis infection, chancres make a person two to five times more likely to contract an HIV infection. If the person is already infected with HIV, chancres also increase the likelihood that the virus will be passed on to a sexual partner. These sores typically resolve on their own, even without treatment. However, the body does not clear the infection on its own, and, over time, syphilis may involve other organs, including the skin, heart, blood vessels, liver, bones, and joints in secondary syphilis. If the illness is still not treated, tertiary syphilis can develop over a period of years and involve the nerves, eyes, and brain and can potentially cause death.

Expectant mothers harboring the bacterium are at an increased risk of miscarriage and stillbirth, and they can pass the infection on to their fetuses during pregnancy and delivery. Infants that acquire congenital syphilis during pregnancy may suffer from skeletal deformity, difficulty with speech and motor development, seizure, anemia, liver disease, and neurologic problems.

Bacterial Vaginosis

Bacterial vaginosis is a common, possibly sexually transmitted, vaginal infection in women of reproductive age. While it is healthy and normal for a vagina to have bacteria, just like the skin, mouth, or gastrointestinal (GI) tract, sometimes changes in the balance of different types of bacteria can cause problems.

Bacterial vaginosis occurs when problematic bacteria that are normally present only in small amounts increase in number, replace normal vaginal lactobacilli bacteria, and upset the usual balance. This situation becomes more likely if a woman douches frequently or has new or multiple sexual partners. The most common sign of a bacterial vaginosis infection is a thin, milky discharge that is often described as having a “fishy” odor. However, some women will have no symptoms at all.

Regardless of symptoms, having bacterial vaginosis increases the risk of getting other STDs/STIs and is also associated with pelvic inflammatory disease (PID), an infection of the female reproductive organs, including the uterus and the fallopian tubes (which carry eggs to the uterus), and postoperative infections. Preterm labor and birth are also possibly more common in women with bacterial vaginosis.

Trichomoniasis

Trichomoniasis infection is caused by the single-celled protozoan parasite Trichomonas vaginalis and is common in young, sexually active women. The parasite also infects men, though less frequently. The parasite can be transmitted between men and women as well as between women whenever physical contact occurs between the genital areas. Although *Trichomonas* infections do not always cause symptoms, they can cause frequent, painful, or burning urination in men and women as well as vaginal discharge, genital soreness, redness, or itching in women. Because the infection can occur without symptoms, a person may be unaware that he or she is infected and continue to re-infect a sexual partner who is having recurrent signs of infection. As with bacterial STDs/STIs, all sexual partners should be treated at the same time to avoid re-infection.

NICHD-sponsored research has shown that during pregnancy, Trichomonas infection is associated with an increased risk of premature birth and infants with low birth weight. Moreover, infants born to mothers with Trichomonas infection are more than twice as likely as infants born to uninfected women to be stillborn or to die as newborns.

Viral Hepatitis

Viral hepatitis is a serious liver disease that can be caused by several different viruses, which can be transmitted through sexual contact.

- Hepatitis A virus (HAV) causes a short-term or self-limited liver infection that can be quite serious, although it does not result in chronic infection. While there are other ways the virus can be transmitted, HAV can be spread from person to person during sexual activity through oral-rectal contact. Vaccination can prevent HAV infection.
- Hepatitis B virus (HBV) causes a serious liver disease that can result in both immediate illness and lifelong infection leading to permanent liver scarring (cirrhosis), cancer, liver failure, and death. HBV spreads through both heterosexual and homosexual contact as well as through contact with other bodily fluids, such as blood, through shared contaminated needles used for injecting intravenous (IV) drugs, tattooing, and piercing. Pregnant women with HBV can transmit the virus to their infants during delivery. HBV infection is preventable through vaccination.
- Hepatitis C virus (HCV) can cause an immediate illness affecting the liver, but it more commonly becomes a silent, chronic infection that leads to liver scarring (cirrhosis), cancer, liver failure, and death. HCV is most commonly transmitted through sharing needles or exposure to infected blood. However, it can spread through sexual contact or from mother to fetus during pregnancy and delivery. There is no vaccine for HCV, and treatments are not always effective.

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5.4: STD/STI Prevention

How to Prevent STDs

Every year, there are an estimated 20 million new STD infections in the United States.

Anyone who is sexually active can get an STD. Some groups are disproportionately affected by STDs:

- Adolescents and Young Adults
- Gay, Bisexual, & other Men who have Sex with Men
- Some Racial and Ethnic Minorities

The Good News: STDs ARE preventable. There are steps you can take to keep yourself and your partner(s) healthy.

Here's How You Can Avoid (or reduce the risk of) Giving or Getting an STD:

Practice Abstinence

The surest way to avoid STDs is to not have sex. This means not having vaginal, oral, or anal sex.

Use Condoms

Using a condom correctly every time you have sex can help you avoid STDs. Condoms lessen the risk of infection for all STDs. **You still can get certain STDs, like herpes or HPV, from contact with your partner's skin even when using a condom**.

Most people say they used a condom the first time they ever had sex, but when asked about the last 4 weeks, less than a quarter said they used a condom every time.

Have Fewer Partners

Agree to only have sex with one person who agrees to only have sex with you. Make sure you both get tested to know for sure that neither of you has an STD. This is one of the most reliable ways to avoid STDs.

Get Vaccinated

The most common STD can be prevented by a vaccine. The HPV vaccine is safe, effective, and can help you avoid HPV-related health problems like genital warts and some cancers.

Who should get the HPV vaccine?

- Routine vaccination for boys & girls ages 11 to 12

Catch-up vaccination for:

- Young women ages 13 to 26 and young men ages 13 to 21
- Gay, Bisexual, & other Men who have sex with Men up to age 26
- Men with compromised immune systems up to age 26

Talk With Your Partner

Talk with your sex partner(s) about STDs and staying safe before having sex. It might be uncomfortable to start the conversation, but protecting your health is your responsibility.

Get Tested

Many STDs don't have symptoms, but they can still cause health problems.

- Talk with your health care provider
- Search for CDC recommended tests
- Find a location to get tested for STDs

The only way to know for sure if you have an STD is to get tested.

If You Test Positive…

Getting an STD is not the end! Many STDs are curable and all are treatable. If either you or your partner is infected with an STD that can be cured, both of you need to start treatment immediately to avoid getting re-infected.

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5.5: STD/STI Treatments

Treatments for Specific Types of Sexually Transmitted Diseases and Sexually Transmitted Infections (STDs/STIs)

- Gonorrhea and Chlamydia
- Genital Herpes
- Human Papillomavirus (HPV)
- Syphilis
- Bacterial Vaginosis
- Trichomoniasis
- Viral Hepatitis
- HIV/AIDS
- During Pregnancy

Gonorrhea and Chlamydia

Gonorrhea and chlamydia are bacterial STDs/STIs that can be treated with antibiotics given either orally or by injection. Because the infections often occur together, people who have one infection are typically treated for both by their health care provider. Recent sexual partners should be treated at the same time.

Genital Herpes

Genital herpes outbreaks can be treated with antiviral drugs. Although this medication can limit the length and severity of outbreaks, it does not cure the infection. In addition, daily suppressive therapy (daily use of antiviral medication) for herpes can reduce the likelihood of transmission to partners. A pregnant woman known to have the infection must take additional care because she can pass the infection to her infant during delivery. Women who first acquire genital HSV during pregnancy are at highest risk of transmission to their infants. If a pregnant woman has an outbreak when she goes into labor, she may need to have a cesarean section (C-section) to prevent the infant from getting the virus during birth.

Human Papillomavirus (HPV)

A person who has an HPV infection cannot be cured. However, many HPV infections can be prevented with vaccination. Furthermore, a health care provider can treat genital warts caused by the virus as well as monitor and control a woman's risk of cervical cancer through frequent screening with Pap smear tests.

Syphilis

If recognized during the early stages, usually within the first year of infection, syphilis can be treated with a singular intramuscular injection of antibiotic. A person being treated for syphilis must avoid sexual contact until the chancre sores caused by the bacteria are completely healed to avoid infecting other people.

If a person does not recognize the infection early, or does not seek treatment immediately, longer treatment with antibiotics may be required. If left untreated, the infection can progress even further and potentially cause death. Although antibiotics can prevent the infection from getting worse, they cannot reverse damage that has already occurred.

Bacterial Vaginosis

Bacterial vaginosis can be treated with antibiotics, typically metronidazole or clindamycin. Generally, male sexual partners of women with bacterial vaginosis do not need to be treated because treatment of partners has not been shown to reduce the risk of recurrence.

Treatment during pregnancy is recommended primarily for women at risk for preterm labor or having a low birthweight infant.

Trichomoniasis

Trichomoniasis can be treated with a single dose of an antibiotic, usually either metronidazole or tinidazole, taken by mouth. Often, *Trichomonas* infection recurs, so it is important to make sure that both you and your sexual partners are treated if you are diagnosed with this infection.

Viral Hepatitis

- Hepatitis A virus (HAV) infects the liver and may cause abdominal pain, nausea, and vomiting. Usually the infection gets better on its own without requiring treatment. In some cases, however, individuals may have lasting damage to their livers or may have such severe nausea and vomiting that they must be admitted to the hospital.
- Hepatitis B virus (HBV) can cause a lifelong infection but can be treated with antiviral medications. People with HBV infection will need to see a liver specialist with experience treating individuals with chronic liver disease. These individuals need to take special care not to pass on the virus to their sexual partners, and sexual partners should receive hepatitis B vaccine if not already immune.
- Hepatitis C virus can cause immediate illness affecting the liver or, more commonly, it can be a silent, chronic infection. As with hepatitis B, individuals with HCV may have a lifelong infection and will always be at risk of passing the virus on to their sexual partners. New treatments are available that can clear the infection in some individuals.

More information about hepatitis A, B, and C can be found on the Centers for Disease Control and Prevention website.

HIV/AIDS

There is no cure for HIV/AIDS. However, research into new treatments has improved outcomes for people living with the disease. A combination of antiretroviral drugs can be given in highly active antiretroviral therapy to control the virus, promote a healthy immune system, help people with the virus live longer lives, and reduce the risk of transmission.

During Pregnancy

Pregnant women who have certain types of STDs/STIs may pass them on to their infants during pregnancy or delivery. Therefore, it is important for women to be tested for such STDs/STIs as part of their early prenatal care to help ensure delivery of a healthy infant.

The specific treatment will depend on which STD/STI is involved.
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CHAPTER OVERVIEW

6: Drug Use and Addiction

6.1: Understanding Drug Use and Addiction
6.2: Health Effects of Drug Abuse
6.3: Consequences of Drug Abuse
6.4: Treatment Approaches for Drug Addiction
6.5: Synthetic Drugs

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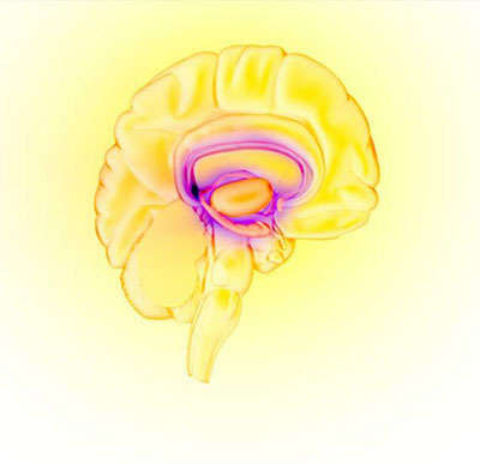
6.1: Understanding Drug Use and Addiction

Many people don't understand why or how other people become addicted to drugs. They may mistakenly think that those who use drugs lack moral principles or willpower and that they could stop their drug use simply by choosing to. In reality, drug addiction is a complex disease, and quitting usually takes more than good intentions or a strong will. Drugs change the brain in ways that make quitting hard, even for those who want to. Fortunately, researchers know more than ever about how drugs affect the brain and have found treatments that can help people recover from drug addiction and lead productive lives.

What Is drug addiction?

Addiction is a chronic disease characterized by drug seeking and use that is compulsive, or difficult to control, despite harmful consequences. The initial decision to take drugs is voluntary for most people, but repeated drug use can lead to brain changes that challenge an addicted person's self-control and interfere with their ability to resist intense urges to take drugs. These brain changes can be persistent, which is why drug addiction is considered a "relapsing" disease—people in recovery from drug use disorders are at increased risk for returning to drug use even after years of not taking the drug.

It's common for a person to relapse, but relapse doesn't mean that treatment doesn't work. As with other chronic health conditions, treatment should be ongoing and should be adjusted based on how the patient responds. Treatment plans need to be reviewed often and modified to fit the patient's changing needs.



What happens to the brain when a person takes drugs?

Most drugs affect the brain's "reward circuit" by flooding it with the chemical messenger dopamine. This reward system controls the body's ability to feel pleasure and motivates a person to repeat behaviors needed to thrive, such as eating and spending time with loved ones. This overstimulation of the reward circuit causes the intensely pleasurable "high" that can lead people to take a drug again and again.

As a person continues to use drugs, the brain adjusts to the excess dopamine by making less of it and/or reducing the ability of cells in the reward circuit to respond to it. This reduces the high that the person feels compared to the high they felt when first taking the drug—an effect known as tolerance. They might take more of the drug, trying to achieve the same dopamine high. It can also cause them to get less pleasure from other things they once enjoyed, like food or social activities.

Long-term use also causes changes in other brain chemical systems and circuits as well, affecting functions that include:

- learning
- judgment
- decision-making
- stress
- memory
- behavior

Despite being aware of these harmful outcomes, many people who use drugs continue to take them, which is the nature of addiction.

Why do some people become addicted to drugs while others don't?

No one factor can predict if a person will become addicted to drugs. A combination of factors influences risk for addiction. The more risk factors a person has, the greater the chance that taking drugs can lead to addiction. For example:

- **Biology**. The genes that people are born with account for about half of a person's risk for addiction. Gender, ethnicity, and the presence of other mental disorders may also influence risk for drug use and addiction.
- **Environment**. A person's environment includes many different influences, from family and friends to economic status and general quality of life. Factors such as peer pressure, physical and sexual abuse, early exposure to drugs, stress, and parental guidance can greatly affect a person's likelihood of drug use and addiction.
- **Development**. Genetic and environmental factors interact with critical developmental stages in a person's life to affect addiction risk. Although taking drugs at any age can lead to addiction, the earlier that drug use begins, the more likely it will progress to addiction. This is particularly problematic for teens. Because areas in their brains that control decision-making, judgment, and self-control are still developing, teens may be especially prone to risky behaviors, including trying drugs.

Can drug addiction be cured or prevented?

As with most other chronic diseases, such as diabetes, asthma, or heart disease, treatment for drug addiction generally isn't a cure. However, addiction is treatable and can be successfully managed. People who are recovering from an addiction will be at risk for relapse for years and possibly for their whole lives. Research shows that combining addiction treatment medicines with behavioral therapy ensures the best chance of success for most patients. Treatment approaches tailored to each patient's drug use patterns and any co-occurring medical, mental, and social problems can lead to continued recovery.

More good news is that drug use and addiction are preventable. Results from NIDA-funded research have shown that prevention programs involving families, schools, communities, and the media are effective for preventing or reducing drug use and addiction. Although personal events and cultural factors affect drug use trends, when young people view drug use as harmful, they tend to decrease their drug taking. Therefore, education and outreach are key in helping people understand the possible risks of drug use. Teachers, parents, and health care providers have crucial roles in educating young people and preventing drug use and addiction.

Points to Remember

- Drug addiction is a chronic disease characterized by drug seeking and use that is compulsive, or difficult to control, despite harmful consequences.
- Brain changes that occur over time with drug use challenge an addicted person's self-control and interfere with their ability to resist intense urges to take drugs. This is why drug addiction is also a relapsing disease.
- Relapse is the return to drug use after an attempt to stop. Relapse indicates the need for more or different treatment.
- Most drugs affect the brain's reward circuit by flooding it with the chemical messenger dopamine. This overstimulation of the reward circuit causes the intensely pleasurable "high" that leads people to take a drug again and again.
- Over time, the brain adjusts to the excess dopamine, which reduces the high that the person feels compared to the high they felt when first taking the drug—an effect known as tolerance. They might take more of the drug, trying to achieve the same dopamine high.
- No single factor can predict whether a person will become addicted to drugs. A combination of genetic, environmental, and developmental factors influences risk for addiction. The more risk factors a person has, the greater the chance that taking drugs can lead to addiction.
- Drug addiction is treatable and can be successfully managed.
- More good news is that drug use and addiction are preventable. Teachers, parents, and health care providers have crucial roles in educating young people and preventing drug use and addiction.

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6.2: Health Effects of Drug Abuse

In addition to the effects various drugs of abuse may have on specific organs of the body, many drugs produce global body changes such as dramatic changes in appetite and increases in body temperature, which may impact a variety of health conditions. Withdrawal from drug use also may lead to numerous adverse health effects, including restlessness, mood swings, fatigue, changes in appetite, muscle and bone pain, insomnia, cold flashes, diarrhea, and vomiting.

Marijuana

Marijuana is made from the hemp plant, *Cannabis sativa*. The main psychoactive (mind-altering) chemical in marijuana is delta-9-tetrahydrocannabinol, or THC.

Possible Health Effects	
Short-term	Enhanced sensory perception and euphoria followed by drowsiness/relaxation; slowed reaction time; problems with balance and coordination; **increased heart rate** and appetite; problems with learning and memory; hallucinations; anxiety; panic attacks; psychosis.
Long-term	Mental health problems, chronic cough, frequent respiratory infections.
Other Health-related Issues	Youth: possible loss of IQ points when repeated use begins in adolescence. Pregnancy: babies born with problems involving attention, memory, and problem solving.

Access additional details regarding marijuana use.

Cocaine

A powerfully addictive stimulant drug made from the leaves of the coca plant native to South America.

Possible Health Effects	
Short-term	Narrowed blood vessels; enlarged pupils; increased body temperature, heart rate, and blood pressure; headache; abdominal pain and nausea; euphoria; increased energy, alertness; insomnia, restlessness; anxiety; erratic and violent behavior, panic attacks, paranoia, psychosis; heart rhythm problems, heart attack; stroke, seizure, coma.
Long-term	Loss of sense of smell, nosebleeds, nasal damage and trouble swallowing from snorting; infection and death of bowel tissue from decreased blood flow; poor nutrition and weight loss from decreased appetite.
Other Health-related Issues	Pregnancy: premature delivery, low birth weight, smaller head circumference. Risk of HIV, hepatitis, and other infectious diseases from shared needles.

Methamphetamine

An extremely addictive stimulant amphetamine drug.

Possible Health Effects	
Short-term	Increased wakefulness and physical activity; decreased appetite; increased breathing, heart rate, blood pressure, temperature; irregular heartbeat.
Long-term	Anxiety, confusion, insomnia, mood problems, violent behavior, paranoia, hallucinations, delusions, weight loss, severe dental problems ("meth mouth"), intense itching leading to skin sores from scratching.
Other Health-related Issues	Pregnancy: premature delivery; separation of the placenta from the uterus; low birth weight; lethargy; heart and brain problems. Risk of HIV, hepatitis, and other infectious diseases from shared needles.

Access more about methamphetamine.

CNS Depressants

CNS depressants slow down brain activity and can cause sleepiness and loss of coordination. Continued use can lead to physical dependence and withdrawal symptoms if use is stopped.

Possible Health Effects	
Short-term	Drowsiness, slurred speech, poor concentration, confusion, dizziness, problems with movement and memory, lowered blood pressure, slowed breathing.
Long-term	Physical dependence, withdrawal, possibility of seizures from rebound effect.
Other Health-related Issues	Sleep medications are sometimes used as date rape drugs (e.g. Rohypnol). Risk of HIV, hepatitis, and other infectious diseases from shared needles.
In Combination with Alcohol	Further slows heart rate and breathing, which can lead to death.

Access more about the misuse of prescription drugs.

Prescription Opioids

Pain relievers with an origin similar to that of heroin. Opioids can cause euphoria and are often used nonmedically, leading to overdose deaths.

Possible Health Effects	
Short-term	Pain relief, drowsiness, nausea, constipation, euphoria, confusion, slowed breathing, death.
Long-term	Physical dependence, possible brain damage.
Other Health-related Issues	Pregnancy: Miscarriage, low birth weight, neonatal abstinence syndrome. Older adults: higher risk of accidental misuse or abuse because many older adults have multiple prescriptions, increasing the risk of drug-drug interactions, and breakdown of drugs slows with age; also, many older adults are treated with prescription medications for pain. Risk of HIV, hepatitis, and other infectious diseases from shared needles.
In Combination with Alcohol	Dangerous slowing of heart rate and breathing leading to coma or death.

Heroin

Possible Health Effects	
Short-term	Euphoria; warm flushing of skin; dry mouth; heavy feeling in the hands and feet; clouded thinking; alternate wakeful and drowsy states; itching; nausea; vomiting; slowed breathing and heart rate.
Long-term	Collapsed veins; abscesses (swollen tissue with pus); infection of the lining and valves in the heart; constipation and stomach cramps; liver or kidney disease; pneumonia.
Other Health-related Issues	Pregnancy: miscarriage, low birth weight, neonatal abstinence syndrome. Risk of HIV, hepatitis, and other infectious diseases from shared needles.
In Combination with Alcohol	Dangerous slowdown of heart rate and breathing, coma, death.

Access more about heroin and opioid abuse.

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6.3: Consequences of Drug Abuse

Drug abuse is a serious public health problem that affects many communities and families in some way. Each year drug abuse causes millions of serious illnesses or injuries among Americans. Examples of abused drugs include:

- Methamphetamine
- Anabolic steroids
- Club drugs
- Cocaine
- Heroin
- Inhalants
- Marijuana
- Prescription drugs

Drug abuse also plays a role in many major social problems, such as drugged driving, violence, stress, and child abuse. Drug abuse can lead to homelessness, crime, and missed work or problems with keeping a job. It harms unborn babies and destroys families. There are different types of treatment for drug abuse. But the best is to prevent drug abuse in the first place.

How it affects the family

When a person has a drug problem, they have a disease that can hurt the family.

Drug abuse puts a lot of stress on parents, brothers and sisters, children, grandparents—anyone who is part of the home.

When family members take drugs:

- You generally can't count on them to do what they say they will do.
- They may forget or get distracted because their focus is on getting and taking drugs.
- They might lie or steal money to buy drugs.
- They might get fired from their jobs.
- They might not come home at night.
- They may do bad things they would never do if they weren't abusing drugs.

Family members might fight a lot because of the problems the drug abuse is causing. The drug user might do and say things that upset neighbors and friends, and make the family ashamed.

Some people who are addicted don't believe that they are sick and out of control, so they don't look for treatment. They don't see the problems they are causing themselves and those around them. Other people who are addicted are aware of the problem, but may be so upset and confused that they do not know how to ask for or get help.

Drugs don't just hurt the person taking them. Everyone connected to the person can get hurt.

Drug abuse can cause many problems:

- Fighting and violence in and outside the home
- Money problems
- Trouble at school
- Trouble at work, losing a job
- Trouble in relationships
- Child abuse, neglect
- Driving accidents
- Arrests and jail

When you or a loved one abuse drugs, everyday life can feel out of control.

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6.4: Treatment Approaches for Drug Addiction

Can drug addiction be treated?

Yes, but it's not simple. Because addiction is a chronic disease, people can't simply stop using drugs for a few days and be cured. Most patients need long-term or repeated care to stop using completely and recover their lives.

Addiction treatment must help the person do the following:

- stop using drugs
- stay drug-free
- be productive in the family, at work, and in society

Principles of Effective Treatment

Based on scientific research since the mid-1970s, the following key principles should form the basis of any effective treatment program:

- Addiction is a complex but treatable disease that affects brain function and behavior.
- No single treatment is right for everyone.
- People need to have quick access to treatment.
- Effective treatment addresses all of the patient's needs, not just his or her drug use.
- Staying in treatment long enough is critical.
- Counseling and other behavioral therapies are the most commonly used forms of treatment.
- Medications are often an important part of treatment, especially when combined with behavioral therapies.
- Treatment plans must be reviewed often and modified to fit the patient's changing needs.
- Treatment should address other possible mental disorders.
- Medically assisted detoxification is only the first stage of treatment.
- Treatment doesn't need to be voluntary to be effective.
- Drug use during treatment must be monitored continuously.
- Treatment programs should test patients for HIV/AIDS, hepatitis B and C, tuberculosis, and other infectious diseases as well as teach them about steps they can take to reduce their risk of these illnesses.

How is drug addiction treated?

Successful treatment has several steps:

- detoxification (the process by which the body rids itself of a drug)
- behavioral counseling
- medication (for opioid, tobacco, or alcohol addiction)
- evaluation and treatment for co-occurring mental health issues such as depression and anxiety
- long-term follow-up to prevent relapse

A range of care with a tailored treatment program and follow-up options can be crucial to success. Treatment should include both medical and mental health services as needed. Follow-up care may include community- or family-based recovery support systems.

How are medications used in drug addiction treatment?

Medications can be used to manage withdrawal symptoms, prevent relapse, and treat co-occurring conditions.

Withdrawal. Medications help suppress withdrawal symptoms during detoxification. Detoxification is not in itself "treatment," but only the first step in the process. Patients who do not receive any further treatment after detoxification usually resume their drug use. One study of treatment facilities found that medications were used in almost 80 percent of detoxifications (SAMHSA, 2014).

Relapse prevention. Patients can use medications to help re-establish normal brain function and decrease cravings. Medications are available for treatment of opioid (heroin, prescription pain relievers), tobacco (nicotine), and alcohol addiction. Scientists are

developing other medications to treat stimulant (cocaine, methamphetamine) and cannabis (marijuana) addiction. People who use more than one drug, which is very common, need treatment for all of the substances they use.

- ***Opioids:*** Methadone (Dolophine®, Methadose®), buprenorphine (Suboxone®, Subutex®, Probuphine®), and naltrexone (Vivitrol®) are used to treat opioid addiction. Acting on the same targets in the brain as heroin and morphine, methadone and buprenorphine suppress withdrawal symptoms and relieve cravings. Naltrexone blocks the effects of opioids at their receptor sites in the brain and should be used only in patients who have already been detoxified. All medications help patients reduce drug seeking and related criminal behavior and help them become more open to behavioral treatments.
- ***Tobacco:*** Nicotine replacement therapies have several forms, including the patch, spray, gum, and lozenges. These products are available over the counter. The U.S. Food and Drug Administration (FDA) has approved two prescription medications for nicotine addiction: bupropion (Zyban®) and varenicline (Chantix®). They work differently in the brain, but both help prevent relapse in people trying to quit. The medications are more effective when combined with behavioral treatments, such as group and individual therapy as well as telephone quitlines.
- ***Alcohol:*** Three medications have been FDA-approved for treating alcohol addiction and a fourth, topiramate, has shown promise in clinical trials (large-scale studies with people). The three approved medications are as follows:
  - **Naltrexone** blocks opioid receptors that are involved in the rewarding effects of drinking and in the craving for alcohol. It reduces relapse to heavy drinking and is highly effective in some patients. Genetic differences may affect how well the drug works in certain patients.
  - **Acamprosate (Campral®)** may reduce symptoms of long-lasting withdrawal, such as insomnia, anxiety, restlessness, and dysphoria (generally feeling unwell or unhappy). It may be more effective in patients with severe addiction.
  - **Disulfiram (Antabuse®)** interferes with the breakdown of alcohol. Acetaldehyde builds up in the body, leading to unpleasant reactions that include flushing (warmth and redness in the face), nausea, and irregular heartbeat if the patient drinks alcohol. Compliance (taking the drug as prescribed) can be a problem, but it may help patients who are highly motivated to quit drinking.
- ***Co-occuring conditions:*** Other medications are available to treat possible mental health conditions, such as depression or anxiety, that may be contributing to the person's addiction.

How are behavioral therapies used to treat drug addiction?

Behavioral therapies help patients:

- modify their attitudes and behaviors related to drug use
- increase healthy life skills
- persist with other forms of treatment, such as medication

Patients can receive treatment in many different settings with various approaches.

Outpatient behavioral treatment includes a wide variety of programs for patients who visit a behavioral health counselor on a regular schedule. Most of the programs involve individual or group drug counseling, or both. These programs typically offer forms of behavioral therapy such as:

- *cognitive-behavioral therapy*, which helps patients recognize, avoid, and cope with the situations in which they are most likely to use drugs
- *multidimensional family therapy*—developed for adolescents with drug abuse problems as well as their families—which addresses a range of influences on their drug abuse patterns and is designed to improve overall family functioning
- *motivational interviewing*, which makes the most of people's readiness to change their behavior and enter treatment
- *motivational incentives* (contingency management), which uses positive reinforcement to encourage abstinence from drugs

Treatment is sometimes intensive at first, where patients attend multiple outpatient sessions each week. After completing intensive treatment, patients transition to regular outpatient treatment, which meets less often and for fewer hours per week to help sustain their recovery.

Inpatient or residential treatment can also be very effective, especially for those with more severe problems (including co-occurring disorders). Licensed residential treatment facilities offer 24-hour structured and intensive care, including safe housing

and medical attention. Residential treatment facilities may use a variety of therapeutic approaches, and they are generally aimed at helping the patient live a drug-free, crime-free lifestyle after treatment.

Points to Remember

- Drug addiction can be treated, but it's not simple. Addiction treatment must help the person do the following:
  - stop using drugs
  - stay drug-free
  - be productive in the family, at work, and in society
- Successful treatment has several steps:
  - detoxification
  - behavioral counseling
  - medication (for opioid, tobacco, or alcohol addiction)
  - evaluation and treatment for co-occurring mental health issues such as depression and anxiety
  - long-term follow-up to prevent relapse
- Medications can be used to manage withdrawal symptoms, prevent relapse, and treat co-occurring conditions.
- Behavioral therapies help patients:
  - modify their attitudes and behaviors related to drug use
  - increase healthy life skills
  - persist with other forms of treatment, such as medication
- People within the criminal justice system may need additional treatment services to treat drug use disorders effectively. However, many offenders don't have access to the types of services they need

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6.5: Synthetic Drugs

Synthetic Drugs (a.k.a. K2, Spice, Bath Salts, etc.)

Overview and History

- Synthetic cannabinoids, commonly known as “synthetic marijuana,” “K2,” or “Spice”, are often sold in legal retail outlets as “herbal incense” or “potpourri”, and synthetic cathinones are often sold as “bath salts” or “jewelry cleaner”. They are labeled “not for human consumption” to mask their intended purpose and avoid Food and Drug Administration (FDA) regulatory oversight of the manufacturing process.
- Synthetic cannabinoids are man-made chemicals that are applied (often sprayed) onto plant material and marketed as a “legal” high. Users claim that synthetic cannabinoids mimic Δ9-tetrahydrocannabinol (THC), the primary psychoactive active ingredient in marijuana.
- Use of synthetic cannabinoids is alarmingly high, especially among young people. According to the 2012 Monitoring the Future survey of youth drug-use trends, one in nine 12th graders in America reported using synthetic cannabinoids in the past year. This rate, unchanged from 2011, puts synthetic cannabinoids as the second most frequently used illegal drug among high school seniors after marijuana (see chart).
- Synthetic cathinones are man-made chemicals related to amphetamines. Synthetic cathinone products often consist of methylenedioxypyrovalerone (MDPV), mephedrone, and methylone.
- The Administration has been working with Federal, Congressional, state, local, and non-governmental partners to put policies and legislation in place to combat this threat, and to educate people about the tremendous health risk posed by these substances.

A Rapidly Emerging Threat

- Synthetic cannabinoids laced on plant material were first reported in the U.S. in December 2008, when a shipment of “Spice” was seized and analyzed by U.S. Customs and Border Protection (CBP) in Dayton, Ohio.
- There is an increasingly expanding array of synthetic drugs available. 51 new synthetic cannabinoids were identified in 2012, compared to just two in 2009. Furthermore, 31 new synthetic cathinones were identified in 2012, compared to only four in 2009. In addition, 76 other synthetic compounds were identified in 2012, bringing the total number of new synthetic substances identified in 2012 to 158.

Risk to the Public Health

- The contents and effects of synthetic cannabinoids and cathinones are unpredictable due to a constantly changing variety of chemicals used in manufacturing processes devoid of quality controls and government regulatory oversight.
- Health warnings have been issued by numerous public health authorities and poison control centers describing the adverse health effects associated with the use of synthetic drugs.
- The effects of synthetic cannabinoids include severe agitation and anxiety, nausea, vomiting, tachycardia (fast, racing heartbeat), elevated blood pressure, tremors and seizures, hallucinations, dilated pupils, and suicidal and other harmful thoughts and/or actions.
- Similar to the adverse effects of cocaine, LSD, and methamphetamine, synthetic cathinone use is associated with increased heart rate and blood pressure, chest pain, extreme paranoia, hallucinations, delusions, and violent behavior, which causes users to harm themselves or others.

Sources and Continuing Availability

- According to CBP, many synthetic cannabinoid and cathinone products originate overseas. Law enforcement personnel have also encountered the manufacture of synthetic drugs in the U.S., including in residential neighborhoods.
- Synthetic drugs are often sold at small retail outlets and are readily available via the Internet. The chemical compositions of synthetic drugs are frequently altered in an attempt to avoid government bans.

Government Efforts to Ban Synthetic Drug Products

- Congress has taken steps to ban many of these substances at the Federal level, and the Administration has supported such efforts.

- The Synthetic Drug Abuse Prevention Act is part of the FDA Safety and Innovation Act of 2012, signed into law by President Obama. The law permanently places 26 types of synthetic cannabinoids and cathinones into Schedule I of the Controlled Substances Act (CSA). It also doubled the maximum period of time that the Drug Enforcement Administration (DEA) can administratively schedule substances under its emergency scheduling authority, from 18 to 36 months.
- The Controlled Substance Analogue Enforcement Act of 1986 allows many synthetic drugs to be treated as controlled substances if they are proven to be chemically and/or pharmacologically similar to a Schedule I or Schedule II controlled substance.
- In 2011, DEA exercised its emergency scheduling authority to control five types of synthetic cannabinoids, and three of the synthetic substances used to manufacture synthetic cathinones. In 2012, all but one of these substances were permanently designated as Schedule I substances under the Synthetic Drug Abuse Prevention Act, and the remaining substance was permanently placed into Schedule I by DEA regulation.
- On April 12, 2013, DEA used its emergency scheduling authority to schedule three more types of synthetic cannabinoids, temporarily designating them as Schedule I substances.
- At least 43 states have taken action to control one or more synthetic cannabinoids. Prior to 2010, synthetic cannabinoids were not controlled by any State or at the Federal level. In addition, at least 44 states have taken action to control one or more synthetic cathinones.

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CHAPTER OVERVIEW

7: Nutrition

7.1: Nutrition Basics
7.2: Dietary Guidelines for Americans
7.3: Disease Risk and Nutrition
7.4: Nutrition Facts Label
7.5: Organic Foods

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7.1: Nutrition Basics

Food provides the energy and nutrients you need to be healthy. Nutrients include:

- protein
- carbohydrates
- fats
- vitamins
- minerals
- water

Protein

Protein is in every cell in the body. Our bodies need protein from the foods we eat to build and maintain bones, muscles and skin. We get proteins in our diet from meat, dairy products, nuts, and certain grains and beans. Proteins from meat and other animal products are complete proteins. This means they supply all of the amino acids the body can't make on its own. Most plant proteins are incomplete. You should eat different types of plant proteins every day to get all of the amino acids your body needs.

It is important to get enough dietary protein. You need to eat protein every day, because your body doesn't store it the way it stores fats or carbohydrates. How much you need depends on your age, sex, health, and level of physical activity. Most Americans eat enough protein in their diet.

Carbohydrates

Carbohydrates are one of the main types of nutrients. They are the most important source of energy for your body. Your digestive system changes carbohydrates into glucose (blood sugar). Your body uses this sugar for energy for your cells, tissues and organs. It stores any extra sugar in your liver and muscles for when it is needed.

Carbohydrates are called simple or complex, depending on their chemical structure. Simple carbohydrates include sugars found naturally in foods such as fruits, vegetables, milk, and milk products. They also include sugars added during food processing and refining. Complex carbohydrates include whole grain breads and cereals, starchy vegetables and legumes. Many of the complex carbohydrates are good sources of fiber.

Fiber is commonly classified as soluble, which dissolves in water, or insoluble, which doesn't dissolve.

- **Soluble fiber.** This type of fiber dissolves in water to form a gel-like material. It can help lower blood cholesterol and glucose levels. Soluble fiber is found in oats, barley, nuts, seeds, beans, lentils, peas, and some fruits and vegetables.
- **Insoluble fiber.** This type of fiber promotes the movement of material through your digestive system and adds bulk to the stool, so it can be of benefit to those who struggle with constipation or irregular stools. Insoluble fiber is found in foods such as wheat bran, vegetables, and whole grains.

For a healthy diet, limit the amount of added sugar that you eat and choose whole grains over refined grains.

Fats

We need a certain amount of fat in our diets to stay healthy. Fats provide needed energy in the form of calories. Fats help our bodies absorb important vitamins—called fat-soluble vitamins—including vitamins A, D and E. Fats also make foods more flavorful and help us feel full. Fats are especially important for infants and toddlers, because dietary fat contributes to proper growth and development.

Problems arise, though, if we eat too much fat. Dietary fats have more than twice as many calories per gram as either proteins or carbohydrates like sugar and starch. Excess calories, of course, can pack on the pounds and raise your risk for diabetes, cancer and other conditions.

Foods can contain a mixture of different fats. **Unsaturated fats** are considered "good" fats. They're sometimes listed as "monounsaturated" and "polyunsaturated" fat on Nutrition Facts labels. These can promote health if eaten in the right amounts. They are generally liquid at room temperature, and are known as oils. You'll find healthful unsaturated fats in fish, nuts and most vegetable oils, including canola, corn, olive and safflower oils.

The so-called "bad" fats are **saturated fats** and **trans fats.** They tend to be solid at room temperature. Solid fats include butter, meat fats, stick margarine, shortening, and coconut and palm oils. They're often found in chocolates, baked goods, and deep-fried and processed foods.

Vitamins

Vitamins are substances that your body needs to grow and develop normally. There are 13 vitamins your body needs. They are:

- Vitamin A
- B vitamins (thiamine, riboflavin, niacin, pantothenic acid, biotin, vitamin B-6, vitamin B-12 and folate)
- Vitamin C
- Vitamin D
- Vitamin E
- Vitamin K

Vitamins are classified as either fat soluble (vitamins A, D, E and K) or water soluble (vitamins B and C). This difference between the two groups is very important as it determines how each vitamin acts within the body.

You can usually get all your vitamins from the foods you eat. Your body can also make vitamins D and K. People who eat a vegetarian diet may need to take a vitamin B12 supplement.

Each vitamin has specific jobs. If you have low levels of certain vitamins, you may get health problems. For example, if you don't get enough vitamin C, you could become anemic. Some vitamins may help prevent medical problems. Vitamin A prevents night blindness.

The best way to get enough vitamins is to eat a balanced diet with a variety of foods. In some cases, you may need to take vitamin supplements. It's a good idea to ask your health care provider first. High doses of some vitamins can cause problems.

Minerals

Minerals are important for your body to stay healthy. Your body uses minerals for many different jobs, including building bones, making hormones and regulating your heartbeat.

There are two kinds of minerals: macrominerals and trace minerals. Macrominerals are minerals your body needs in larger amounts. They include calcium, phosphorus, magnesium, sodium, potassium, chloride and sulfur. Your body needs just small amounts of trace minerals. These include iron, manganese, copper, iodine, zinc, cobalt, fluoride and selenium.

Water

Water is your body's principal chemical component and makes up about 60 percent of your body weight. Every system in your body depends on water. For example, water flushes toxins out of vital organs, carries nutrients to your cells, and provides a moist environment for ear, nose and throat tissues.

Lack of water can lead to dehydration, a condition that occurs when you don't have enough water in your body to carry out normal functions. Even mild dehydration can drain your energy and make you tired.

Every day you lose water through your breath, perspiration, urine and bowel movements. For your body to function properly, you must replenish its water supply by consuming beverages and foods that contain water.

Choose Nutrient-dense Foods

To eat well, it's best to choose a mix of nutrient-dense foods every day. Nutrient-dense foods are foods that have a lot of nutrients but relatively few calories. Look for foods that contain vitamins, minerals, complex carbohydrates, lean protein, and healthy fats.

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7.2: Dietary Guidelines for Americans

Every 5 years since 1980, a new edition of the *Dietary Guidelines for Americans* has been published. Its goal is to make recommendations about the components of a healthy and nutritionally adequate diet to help promote health and prevent chronic disease for current and future generations. Although many of its recommendations have remained relatively consistent over time, the *Dietary Guidelines* has evolved as scientific knowledge has grown. These advancements have provided a greater understanding of, and focus on, the importance of healthy eating patterns as a whole, and how foods and beverages act synergistically to affect health. Therefore, healthy eating patterns is a focus of the *2015-2020 Dietary Guidelines*.

Key Recommendations: Components of Healthy Eating Patterns

The *Dietary Guidelines*' Key Recommendations for healthy eating patterns should be applied in their entirety, given the interconnected relationship that each dietary component can have with others.

Key Recommendations

Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.

A healthy eating pattern includes:

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
- Oils (such as olive and canola oil)

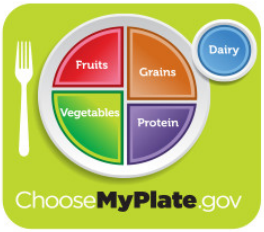
A healthy eating pattern limits:

- Saturated fats and *trans* fats, added sugars, and sodium

Key Recommendations that are quantitative are provided for several components of the diet that should be limited. These components are of particular public health concern in the United States, and the specified limits can help individuals achieve healthy eating patterns within calorie limits:

- Consume less than 10 percent of calories per day from added sugars
- Consume less than 10 percent of calories per day from saturated fats
- Consume less than 2,300 milligrams (mg) per day of sodium
- If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of

MyPlate, MyWins



Find your healthy eating style

and maintain it for a lifetime. This means:

Everything you eat and drink over time matters.

The right mix can help you be healthier now and in the future.

Start with small changes

to make healthier choices you can enjoy.

Visit Choose**MyPlate**.gov for more tips, tools, and information.

Compare MyPlate to the Harvard Healthy Eating Plate.

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7.3: Disease Risk and Nutrition

Nutrition and Health Are Closely Related

Over the past century, essential nutrient deficiencies have dramatically decreased, many infectious diseases have been conquered, and the majority of the U.S. population can now anticipate a long and productive life. However, as infectious disease rates have dropped, the rates of noncommunicable diseases—specifically, chronic diet-related diseases—have risen, due in part to changes in lifestyle behaviors.

A history of poor eating and physical activity patterns have a cumulative effect and have contributed to significant nutrition- and physical activity-related health challenges that now face the U.S. population. **About half of all American adults—117 million individuals—have one or more preventable chronic diseases, many of which are related to poor quality eating patterns and physical inactivity. These include cardiovascular disease, high blood pressure, type 2 diabetes, some cancers, and poor bone health**.

More than two-thirds of adults and nearly one-third of children and youth are overweight or obese. These high rates of overweight and obesity and chronic disease have persisted for more than two decades and come not only with increased health risks, but also at high cost. In 2008, the medical costs associated with obesity were estimated to be $147 billion. In 2012, the total estimated cost of diagnosed diabetes was $245 billion, including $176 billion in direct medical costs and $69 billion in decreased productivity.

Type 2 Diabetes

Diabetes is a disease in which blood glucose levels are above normal. Most of the food we eat is turned into glucose, or sugar, for our bodies to use for energy. The pancreas, an organ that lies near the stomach, makes a hormone called insulin to help glucose get into the cells of our bodies. When you have diabetes, your body either doesn't make enough insulin or can't use its own insulin as well as it should. This causes sugar to build up in your blood.

Diabetes can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations.

A YouTube element has been excluded from this version of the text. You can view it online here: http://pb.libretexts.org/dpahl/?p=162

What is prediabetes?

Prediabetes is when the amount of glucose in your blood is above normal yet not high enough to be called diabetes. With prediabetes, your chances of getting type 2 diabetes, heart disease, and stroke are higher. With some weight loss and moderate physical activity, you can delay or prevent type 2 diabetes. You can even return to normal glucose levels, possibly without taking any medicines.

Drawing of a stoplight with the words Caution: Take steps to prevent type 2 diabetes now.

What are the signs and symptoms of diabetes?

The signs and symptoms of diabetes are:

- being very thirsty
- urinating often
- feeling very hungry
- feeling very tired
- losing weight without trying
- sores that heal slowly
- dry, itchy skin
- feelings of pins and needles in your feet
- losing feeling in your feet
- blurry eyesight

Some people with diabetes don't have any of these signs or symptoms. The only way to know if you have diabetes is to have your doctor do a blood test.

Access a Snapshot of Diabetes in the United States.

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7.4: Nutrition Facts Label

Changes to the Nutrition Facts Label

On May 20, 2016, the FDA announced the new Nutrition Facts label for packaged foods to reflect new scientific information, including the link between diet and chronic diseases such as obesity and heart disease. The new label will make it easier for consumers to make better informed food choices. FDA published the final rules in the Federal Register on May 27, 2016.

Highlights of the Final Nutrition Facts Label

1. Features a Refreshed Design

- The “iconic” look of the label remains, but we are making important updates to ensure consumers have access to the information they need to make informed decisions about the foods they eat. These changes include increasing the type size for “Calories,” “servings per container,” and the “Serving size” declaration, and bolding the number of calories and the “Serving size” declaration to highlight this information.
- Manufacturers must declare the actual amount, in addition to percent Daily Value of vitamin D, calcium, iron and potassium. They can voluntarily declare the gram amount for other vitamins and minerals.
- The footnote is changing to better explain what percent Daily Value means. It will read: “*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.”

2. Reflects Updated Information about Nutrition Science

Nutrition Facts Label - What

- “Added sugars,” in grams and as percent Daily Value, will be included on the label. Scientific data shows that it is difficult to meet nutrient needs while staying within calorie limits if you consume more than 10 percent of your total daily calories from added sugar, and this is consistent with the 2015-2020 Dietary Guidelines for Americans.
- The list of nutrients that are required or permitted to be declared is being updated. Vitamin D and potassium will be required on the label. Calcium and iron will continue to be required. Vitamins A and C will no longer be required but can be included on a voluntary basis.
- While continuing to require “Total Fat,” “Saturated Fat,” and “*Trans Fat*” on the label, “Calories from Fat” is being removed because research shows the type of fat is more important than the amount.
- Daily values for nutrients like sodium, dietary fiber and vitamin D are being updated based on newer scientific evidence from the Institute of Medicine and other reports such as the 2015 Dietary Guidelines Advisory Committee Report, which was used in developing the 2015-2020 Dietary Guidelines for Americans. Daily values are reference amounts of nutrients to consume or not to exceed and are used to calculate the percent Daily Value (% DV) that manufacturers include on the label. The %DV helps consumers understand the nutrition information in the context of a total daily diet.

3. Updates Serving Sizes and Labeling Requirements for Certain Package Sizes

Serving size changes

- By law, serving sizes must be based on amounts of foods and beverages that people are actually eating, not what they should be eating. How much people eat and drink has changed since the previous serving size requirements were published in 1993. For example, the reference amount used to set a serving of ice cream was previously ½ cup but is changing to â…” cup. The reference amount used to set a serving of soda is changing from 8 ounces to 12 ounces.
- Package size affects what people eat. So for packages that are between one and two servings, such as a 20 ounce soda or a 15-ounce can of soup, the calories and other nutrients will be required to be labeled as one serving because people typically consume it in one sitting.
- For certain products that are larger than a single serving but that could be consumed in one sitting or multiple sittings, manufacturers will have to provide “dual column” labels to indicate the amount of calories and nutrients on both a “per serving” and “per package”/“per unit” basis. Examples would be a 24-ounce bottle of soda or a pint of ice cream. With dual-column labels available, people will be able to easily understand how many calories and nutrients they are getting if they eat or drink the entire package/unit at one time.

Compliance Date

Manufacturers will need to use the new label by July 26, 2018. However, manufacturers with less than $10 million in annual food sales will have an additional year to comply.

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7.5: Organic Foods

Organic 101: What the USDA Organic Label Means

Amidst nutrition facts, ingredients lists, and dietary claims on food packages, “organic” might appear as one more piece of information to decipher when shopping for foods. So understanding what “organic” really means can help shoppers make informed choices during their next visit to the store or farmers’ market.

USDA certified organic foods are grown and processed according to federal guidelines addressing, among many factors, soil quality, animal raising practices, pest and weed control, and use of additives. Organic producers rely on natural substances and physical, mechanical, or biologically based farming methods to the fullest extent possible.

Produce can be called organic if it’s certified to have grown on soil that had no prohibited substances applied for three years prior to harvest. Prohibited substances include most synthetic fertilizers and pesticides. In instances when a grower has to use a synthetic substance to achieve a specific purpose, the substance must first be approved according to criteria that examine its effects on human health and the environment (see other considerations in “Organic 101: Allowed and Prohibited Substances”).

As for organic meat, regulations require that animals are raised in living conditions accommodating their natural behaviors (like the ability to graze on pasture), fed 100% organic feed and forage, and not administered antibiotics or hormones.

When it comes to processed, multi-ingredient foods, the USDA organic standards specify additional considerations. Regulations prohibit organically processed foods from containing artificial preservatives, colors, or flavors and require that their ingredients are organic, with some minor exceptions. For example, processed organic foods may contain some approved non-agricultural ingredients, like enzymes in yogurt, pectin in fruit jams, or baking soda in baked goods.

When packaged products indicate they are “made with organic [specific ingredient or food group],” this means they contain at least 70% organically produced ingredients. The remaining non-organic ingredients are produced without using prohibited practices (genetic engineering, for example) but can include substances that would not otherwise be allowed in 100% organic products. “Made with organic” products will not bear the USDA organic seal, but, as with all other organic products, must still identify the USDA-accredited certifier. You can look for the identity of the certifier on a packaged product for verification that the organic product meets USDA’s organic standards.

As with all organic foods, none of it is grown or handled using genetically modified organisms, which the organic standards expressly prohibit.

Becoming familiar with the USDA organic label and understanding its claims empower consumers to make informed decisions about the food they purchase. While there are many marketing claims that add value to foods, consumers can be assured that USDA organic products are verified organic at all steps between the farm and the store.

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CHAPTER OVERVIEW

8: Mental and Emotional Health

8.1: Mental Health Overview
8.2: Psychological Constructs
8.3: Anxiety Disorders
8.4: Depression
8.5: Suicide Prevention
8.6: Eating Disorders

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8.1: Mental Health Overview

What Is Mental Health?

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Over the course of your life, if you experience mental health problems, your thinking, mood, and behavior could be affected. Many factors contribute to mental health problems, including:

- Biological factors, such as genes or brain chemistry
- Life experiences, such as trauma or abuse
- Family history of mental health problems

Mental health problems are common but help is available. People with mental health problems can get better and many recover completely.

Early Warning Signs

Not sure if you or someone you know is living with mental health problems? Experiencing one or more of the following feelings or behaviors can be an early warning sign of a problem:

- Eating or sleeping too much or too little
- Pulling away from people and usual activities
- Having low or no energy
- Feeling numb or like nothing matters
- Having unexplained aches and pains
- Feeling helpless or hopeless
- Smoking, drinking, or using drugs more than usual
- Feeling unusually confused, forgetful, on edge, angry, upset, worried, or scared
- Yelling or fighting with family and friends
- Experiencing severe mood swings that cause problems in relationships
- Having persistent thoughts and memories you can’t get out of your head
- Hearing voices or believing things that are not true
- Thinking of harming yourself or others
- Inability to perform daily tasks like taking care of your kids or getting to work or school

Learn more about specific mental health problems and where to find help.

Mental Health and Wellness

Positive mental health allows people to:

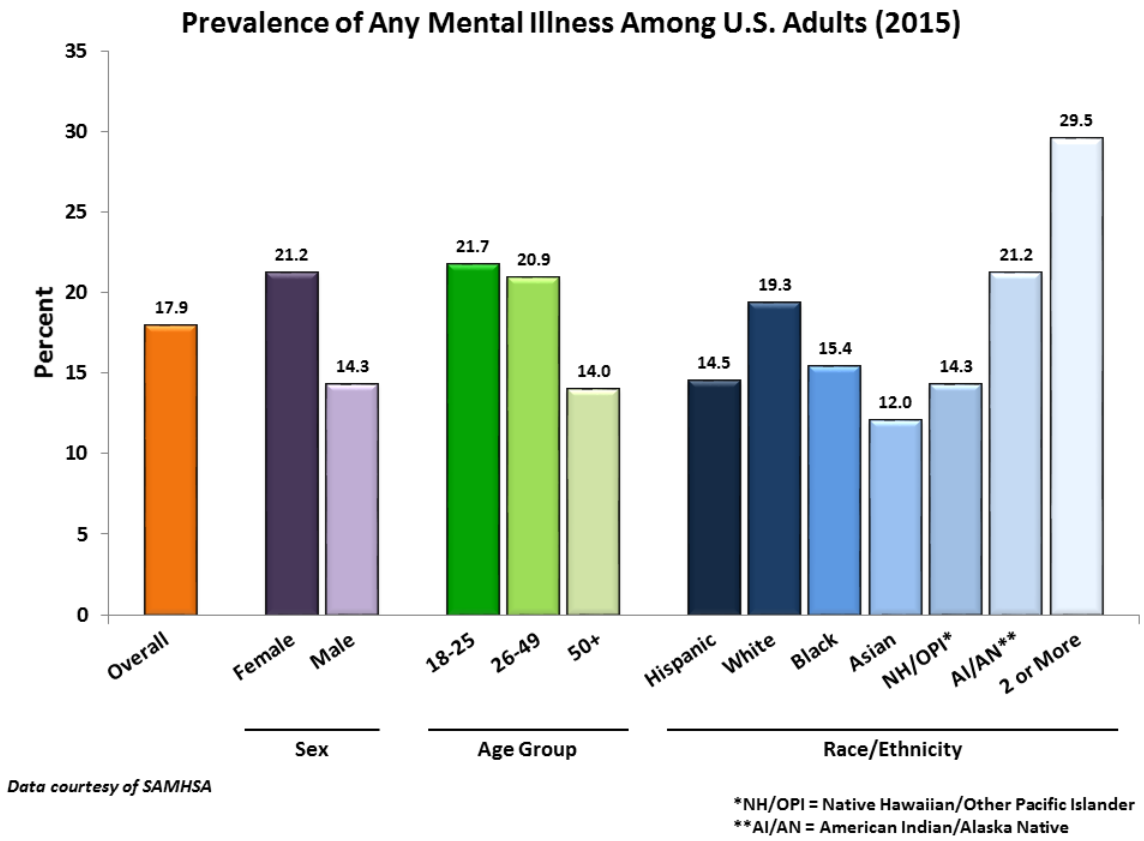
- Realize their full potential
- Cope with the stresses of life
- Work productively
- Make meaningful contributions to their communities

Ways to maintain positive mental health include:

- Getting professional help if you need it
- Connecting with others
- Staying positive
- Getting physically active
- Helping others
- Getting enough sleep

- Developing coping skills

Mental illnesses are common in the United States. In 2014, there were an estimated 43.6 million adults aged 18 or older in the United States with any mental illness (AMI) in the past year. This number represented 18.1% of all U.S. adults.



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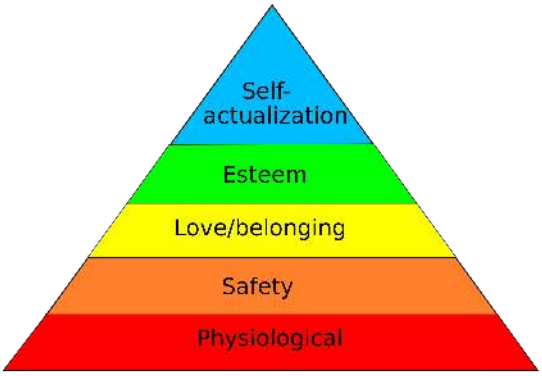
8.2: Psychological Constructs

Maslow's Hierarchy of Needs

- Maslow's hierarchy of needs is often portrayed in the shape of a pyramid, with the greatest and most fundamental levels of needs at the bottom, and the need for self-actualization at the top.
- The order of needs as categorized by Maslow are physiological; safety; love and belonging; esteem; and self-actualization.
- Maslow acknowledged that many different levels of motivation are likely to be present in a human all at once. His focus in discussing the hierarchy was to identify the basic types of motivation and the order that they generally progress as lower needs are reasonably well met.



Physiological Needs

Physiological needs are generally obvious because they are required for survival. If requirements are not met, the body cannot continue to function. Air, water, food, clothing, and shelter are the basic physiological needs.

Safety Needs

Once physical needs are satisfied, individual safety takes precedence. Safety and Security needs include:

- Personal and family safety
- Financial security
- Health and well-being

Love/belonging Needs

After physiological and safety needs are fulfilled, the third layer of human needs are interpersonal. This involves feelings of belongingness. Deficiencies in interpersonal needs, due to neglect, shunning, ostracism, etc., can impact an individual's ability to form and maintain emotionally significant relationships in general, such as:

- Friendship
- Intimacy
- Family

Humans need to feel a sense of belonging and acceptance, whether it comes from larger community affiliations or simply a few close friends. Without these connections, many people become susceptible to loneliness, social anxiety, and clinical depression. This need for belonging can sometimes overcome physiological and security needs. For example, an anorexic may ignore the need to eat and the security of health for a feeling of control and belonging.

Esteem

Esteem represents the normal human desire to be accepted and valued by others. People need to engage themselves to gain recognition and have an activity or activities that give the person a sense of contribution, to feel self-valued, be it in a profession or hobby. Imbalances at this level can result in low self-esteem or an inferiority complex. Many people with low self-esteem will not be able to improve their view of themselves simply by receiving fame, respect, and glory externally, but must first accept themselves internally. Psychological imbalances, such as depression, can prevent one from obtaining self-esteem on both levels.

Self-actualization

This level of need refers to what a person's full potential is and the realization of that potential. Maslow describes this level as the desire to accomplish everything that one can, to become the most that one can be. Individuals may perceive or focus on this need very specifically. For example, one individual may have the strong desire to become an ideal parent. In another, the desire may be expressed athletically. For others, it may be expressed in paintings, pictures, or inventions. Maslow believed that to acquire this level of need, the person must adequately achieve the previous needs.

Freud's Defense Mechanisms

Defense mechanisms are psychological mechanisms aimed at reducing anxiety. They were first discussed by Sigmund Freud as part of his psychoanalytic theory and further developed by his daughter, Anna Freud. Often **unconscious**, defense mechanisms are used to protect an individual from psychological pain or anxiety.

While such mechanisms may seem to be helpful in the short term, they can easily become a substitute for addressing the underlying cause and lead to additional problems. The solution, therefore, is to address the underlying causes of the pain these mechanisms are used to alleviate.

Here are a few examples:

Defense Mechanism	Description	Example
Repression	Unknowingly placing an unpleasant memory or thought in the unconscious	Not remembering a traumatic event such as being sexually abused as a child
Regression	Reverting back to an immature behavior from an earlier stage of development	Throwing temper tantrums as an adult when you don't get your way
Displacement	Redirecting feelings or actions from the intended source to a safer, substitute target	Taking your anger towards your boss out on family members by yelling at them in place of your boss
Sublimation	Replacing socially unacceptable impulses with socially acceptable behavior	Channeling aggressiveness into playing football
Reaction Formation	Overacting in the opposite way to one's true feelings	Being overly protective of an unwanted child
Projection	Attributing one's own unacceptable feelings and thoughts to others and not yourself	Accusing your boy/girlfriend of cheating on you because you have thought about cheating on him/her
Rationalization	Justifying actions, thoughts, or unwanted outcomes with excuses or faulty logic	Blaming the teaching style of a professor for why you failed an exam

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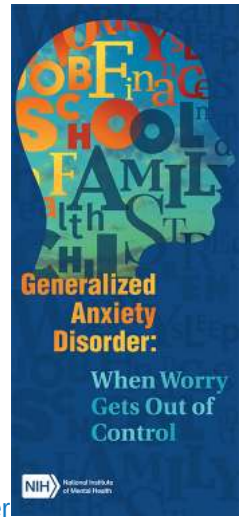
8.3: Anxiety Disorders

Occasional anxiety is a normal part of life. You might feel anxious when faced with a problem at work, before taking a test, or making an important decision. But anxiety disorders involve more than temporary worry or fear. For a person with an anxiety disorder, the anxiety does not go away and can get worse over time. The feelings can interfere with daily activities such as job performance, school work, and relationships. There are several different types of anxiety disorders. Examples include generalized anxiety disorder, panic disorder, and social anxiety disorder.

Signs and Symptoms



Generalized Anxiety Disorder

People with generalized anxiety disorder (GAD) display excessive anxiety or worry about everyday problems that lingers for months—even when there is little or no reason to worry about them. People with GAD find it difficult to control their anxiety and stay focused on daily tasks.

Generalized anxiety disorder symptoms include:

- Restlessness or feeling wound-up or on edge
- Being easily fatigued
- Difficulty concentrating or having their minds go blank
- Irritability
- Muscle tension
- Difficulty controlling the worry
- Sleep problems (difficulty falling or staying asleep or restless, unsatisfying sleep)

Excessive worry or anxiety about everyday issues that lasts for **6 months or more** may indicate generalized anxiety disorder.

Panic Disorder

People with panic disorder have recurrent unexpected panic attacks, which are sudden periods of intense fear that may include palpitations, pounding heart, or accelerated heart rate; sweating; trembling or shaking; sensations of shortness of breath, smothering, or choking; and feeling of impending doom.

Panic disorder symptoms include:

- Sudden and repeated attacks of intense fear
- Feelings of being out of control during a panic attack
- Intense worries about when the next attack will happen
- Fear or avoidance of places where panic attacks have occurred in the past

Social Anxiety Disorder

People with social anxiety disorder (sometimes called “social phobia”) have a marked fear of social or performance situations in which they expect to feel embarrassed, judged, rejected, or fearful of offending others.

Social anxiety disorder symptoms include:

- Feeling highly anxious about being with other people and having a hard time talking to them
- Feeling very self-conscious in front of other people and worried about feeling humiliated, embarrassed, or rejected, or fearful of offending others
- Being very afraid that other people will judge them
- Worrying for days or weeks before an event where other people will be
- Staying away from places where there are other people
- Having a hard time making friends and keeping friends
- Blushing, sweating, or trembling around other people
- Feeling nauseous or sick to your stomach when other people are around

Evaluation for an anxiety disorder often begins with a visit to a primary care provider. Some physical health conditions, such as an overactive thyroid or low blood sugar, as well as taking certain medications, can imitate or worsen an anxiety disorder. A thorough mental health evaluation is also helpful, because anxiety disorders often co-exist with other related conditions, such as depression or obsessive-compulsive disorder.

Risk Factors

Researchers are finding that genetic and environmental factors, frequently in interaction with one another, are risk factors for anxiety disorders. Specific factors include:

- Shyness, or behavioral inhibition, in childhood
- Being female
- Having few economic resources
- Being divorced or widowed
- Exposure to stressful life events in childhood and adulthood
- Anxiety disorders in close biological relatives
- Parental history of mental disorders
- Elevated afternoon cortisol levels in the saliva (specifically for social anxiety disorder)

Treatments and Therapies

Anxiety disorders are generally treated with psychotherapy, medication, or both.

Psychotherapy

Psychotherapy or “talk therapy” can help people with anxiety disorders. To be effective, psychotherapy must be directed at the person’s specific anxieties and tailored to his or her needs. A typical “side effect” of psychotherapy is temporary discomfort involved with thinking about confronting feared situations.

Cognitive Behavioral Therapy (CBT)

CBT is a type of psychotherapy that can help people with anxiety disorders. It teaches a person different ways of thinking, behaving, and reacting to anxiety-producing and fearful situations. CBT can also help people learn and practice social skills, which is vital for treating social anxiety disorder.

Two specific stand-alone components of CBT used to treat social anxiety disorder are **cognitive therapy** and **exposure therapy**. Cognitive therapy focuses on identifying, challenging, and then neutralizing unhelpful thoughts underlying anxiety disorders.

Exposure therapy focuses on confronting the fears underlying an anxiety disorder in order to help people engage in activities they have been avoiding. Exposure therapy is used along with relaxation exercises and/or imagery. One study, called a meta-analysis because it pulls together all of the previous studies and calculates the statistical magnitude of the combined effects, found that cognitive therapy was superior to exposure therapy for treating social anxiety disorder.

CBT may be conducted individually or with a group of people who have similar problems. Group therapy is particularly effective for social anxiety disorder. Often “homework” is assigned for participants to complete between sessions.

Stress-Management Techniques

Stress management techniques and meditation can help people with anxiety disorders calm themselves and may enhance the effects of therapy. While there is evidence that aerobic exercise has a calming effect, the quality of the studies is not strong enough to support its use as treatment. Since caffeine, certain illicit drugs, and even some over-the-counter cold medications can aggravate the symptoms of anxiety disorders, avoiding them should be considered. Check with your physician or pharmacist before taking any additional medications.

The family can be important in the recovery of a person with an anxiety disorder. Ideally, the family should be supportive but not help perpetuate their loved one’s symptoms. Talking with a trusted friend or member of the clergy can also provide support, but it is not necessarily a sufficient alternative to care from an expert clinician.

Medication

Medication does not cure anxiety disorders but often relieves symptoms. Medication can only be prescribed by a medical doctor (such as a psychiatrist or a primary care provider), but a few states allow psychologists to prescribe psychiatric medications.

Medications are sometimes used as the initial treatment of an anxiety disorder, or are used only if there is insufficient response to a course of psychotherapy. In research studies, it is common for patients treated with a combination of psychotherapy and medication to have better outcomes than those treated with only one or the other.

The most common classes of medications used to combat anxiety disorders are antidepressants, anti-anxiety drugs, and beta-blockers (visit Mental Health Medications). Be aware that some medications are effective only if they are taken regularly and that symptoms may recur if the medication is stopped.

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8.4: Depression

Depression (**major depressive disorder** or clinical depression) is a common but serious mood disorder. It causes severe symptoms that affect how you feel, think, and handle daily activities, such as sleeping, eating, or working. To be diagnosed with depression, the **symptoms must be present for at least two weeks**. Some forms of depression are slightly different, or they may develop under unique circumstances, such as:

- **Persistent depressive disorder** (also called dysthymia) is a depressed mood that **lasts for at least two years.** A person diagnosed with persistent depressive disorder may have episodes of major depression along with periods of less severe symptoms, but symptoms must last for two years to be considered persistent depressive disorder.
- **Perinatal depression** is much more serious than the "baby blues" (relatively mild depressive and anxiety symptoms that typically clear within two weeks after delivery) that many women experience after giving birth. Women with perinatal depression experience full-blown major depression during pregnancy or after delivery (postpartum depression). The feelings of extreme sadness, anxiety, and exhaustion that accompany perinatal depression may make it difficult for these new mothers to complete daily care activities for themselves and/or for their babies.
- **Psychotic depression** occurs when a person has severe depression plus some form of psychosis, such as having disturbing false fixed beliefs (delusions) or hearing or seeing upsetting things that others cannot hear or see (hallucinations). The psychotic symptoms typically have a depressive "theme," such as delusions of guilt, poverty, or illness.
- **Seasonal affective disorder** is characterized by the onset of depression during the winter months, when there is less natural sunlight. This depression generally lifts during spring and summer. Winter depression, typically accompanied by social withdrawal, increased sleep, and weight gain, predictably returns every year in seasonal affective disorder.
- **Bipolar disorder** is different from depression, but it is included in this list is because someone with bipolar disorder experiences episodes of extremely low moods that meet the criteria for major depression (called "bipolar depression"). But a person with bipolar disorder also experiences extreme high – euphoric or irritable – moods called "mania" or a less severe form called "hypomania."

Signs and Symptoms

If you have been experiencing some of the following signs and symptoms most of the day, nearly every day, for at least two weeks, you may be suffering from depression:

- Persistent sad, anxious, or "empty" mood
- Feelings of hopelessness, or pessimism
- Irritability
- Feelings of guilt, worthlessness, or helplessness
- Loss of interest or pleasure in hobbies and activities
- Decreased energy or fatigue
- Moving or talking more slowly
- Feeling restless or having trouble sitting still
- Difficulty concentrating, remembering, or making decisions
- Difficulty sleeping, early-morning awakening, or oversleeping
- Appetite and/or weight changes
- Thoughts of death or suicide, or suicide attempts
- Aches or pains, headaches, cramps, or digestive problems without a clear physical cause and/or that do not ease even with treatment

Not everyone who is depressed experiences every symptom. Some people experience only a few symptoms while others may experience many. Several persistent symptoms in addition to low mood are required for a diagnosis of major depression, but people with only a few – but distressing – symptoms may benefit from treatment of their "subsyndromal" depression. The severity and frequency of symptoms and how long they last will vary depending on the individual and his or her particular illness. Symptoms may also vary depending on the stage of the illness.

Risk Factors

Depression is one of the most common mental disorders in the U.S. Current research suggests that depression is caused by a combination of genetic, biological, environmental, and psychological factors.

Depression can happen at any age, but often begins in adulthood. Depression is now recognized as occurring in children and adolescents, although it sometimes presents with more prominent irritability than low mood. Many chronic mood and anxiety disorders in adults begin as high levels of anxiety in children.

Depression, especially in midlife or older adults, can co-occur with other serious medical illnesses, such as diabetes, cancer, heart disease, and Parkinson's disease. These conditions are often worse when depression is present. Sometimes medications taken for these physical illnesses may cause side effects that contribute to depression. A doctor experienced in treating these complicated illnesses can help work out the best treatment strategy.

Risk factors include:

- Personal or family history of depression
- Major life changes, trauma, or stress
- Certain physical illnesses and medications

Treatment and Therapies

Depression, even the most severe cases, can be treated. The earlier that treatment can begin, the more effective it is. Depression is usually treated with medications, psychotherapy, or a combination of the two. If these treatments do not reduce symptoms, electroconvulsive therapy (ECT) and other brain stimulation therapies may be options to explore.

Quick Tip: No two people are affected the same way by depression and there is no "one-size-fits-all" for treatment. It may take some trial and error to find the treatment that works best for you.

Please Note: In some cases, children, teenagers, and young adults under 25 may experience an increase in suicidal thoughts or behavior when taking antidepressants, especially in the first few weeks after starting or when the dose is changed. This warning (referred to as a **Black Box warning**) from the U.S. Food and Drug Administration (FDA) also says that patients of all ages taking antidepressants should be watched closely, especially during the first few weeks of treatment.

Beyond Treatment: Things You Can Do

Here are other tips that may help you or a loved one during treatment for depression:

- Try to be active and exercise.
- Set realistic goals for yourself.
- Try to spend time with other people and confide in a trusted friend or relative.
- Try not to isolate yourself, and let others help you.
- Expect your mood to improve gradually, not immediately.
- Postpone important decisions, such as getting married or divorced, or changing jobs until you feel better. Discuss decisions with others who know you well and have a more objective view of your situation.
- Continue to educate yourself about depression.

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8.5: Suicide Prevention

If You Know Someone in Crisis

Call the toll-free National Suicide Prevention Lifeline at **1-800-273-TALK (8255),** 24 hours a day, 7 days a week. The service is available to everyone. The deaf and hard of hearing can contact the Lifeline via TTY at 1-800-799-4889. All calls are confidential.

Introduction

Suicide is a major public health concern. Over 40,000 people die by suicide each year in the United States. Suicide is complicated and tragic but it is often preventable. Knowing the warning signs for suicide and how to get help can help save lives.

Signs and Symptoms

The behaviors listed below may be signs that someone is thinking about suicide:

- Talking about wanting to die or wanting to kill themselves
- Talking about feeling empty, hopeless, or having no reason to live
- Making a plan or looking for a way to kill themselves, such as searching online, stockpiling pills, or buying a gun
- Talking about great guilt or shame
- Talking about feeling trapped or feeling that there are no solutions
- Feeling unbearable pain (emotional pain or physical pain)
- Talking about being a burden to others
- Using alcohol or drugs more often
- Acting anxious or agitated
- Withdrawing from family and friends
- Changing eating and/or sleeping habits
- Showing rage or talking about seeking revenge
- Taking great risks that could lead to death, such as driving extremely fast
- Talking or thinking about death often
- Displaying extreme mood swings, suddenly changing from very sad to very calm or happy
- Giving away important possessions
- Saying goodbye to friends and family
- Putting affairs in order, making a will

Risk Factors

Suicide does not discriminate. People of all genders, ages, and ethnicities can be at risk. Suicidal behavior is complex and there is no single cause. In fact, many different factors contribute to someone making a suicide attempt. But people most at risk tend to share certain characteristics. The main risk factors for suicide are:

- Depression, other mental disorders, or substance abuse disorder
- Certain medical conditions
- Chronic pain
- A prior suicide attempt
- Family history of a mental disorder or substance abuse
- Family history of suicide
- Family violence, including physical or sexual abuse
- Having guns or other firearms in the home
- Having recently been released from prison or jail
- Being exposed to others' suicidal behavior, such as that of family members, peers, or celebrities

Many people have some of these risk factors but do not attempt suicide. It is important to note that suicide is not a normal response to stress. **Suicidal thoughts or actions are a sign of extreme distress, not a harmless bid for attention, and should not be ignored.**

Do gender and age affect suicide risk?

Men are more likely to die by suicide than women, but women are more likely to *attempt* suicide. Men are more likely to use deadlier methods, such as firearms or suffocation. Women are more likely than men to attempt suicide by poisoning. The most recent figures released by the CDC show that the highest rate of suicide deaths among women is found between ages 45 and 64, while the highest rate for men occurs at ages 75+. Children and young adults also are at risk for suicide. Suicide is the second leading cause of death for young people ages 15 to 34.

What about different racial/ethnic groups?

The CDC reports that among racial and ethnic groups, American Indians and Alaska Natives tend to have the highest rate of suicides, followed by non-Hispanic Whites. African Americans tend to have the lowest suicide rate, while Hispanics tend to have the second lowest rate.

5 Action Steps for Helping Someone in Emotional Pain

1. **Ask:** “Are you thinking about killing yourself?” It’s not an easy question but studies show that asking at-risk individuals if they are suicidal does not increase suicides or suicidal thoughts.
2. **Keep them safe:** Reducing a suicidal person’s access to highly lethal items or places is an important part of suicide prevention. While this is not always easy, asking if the at-risk person has a plan and removing or disabling the lethal means can make a difference.
3. **Be there:** Listen carefully and learn what the individual is thinking and feeling. Findings suggest acknowledging and talking about suicide may in fact reduce rather than increase suicidal thoughts.
4. **Help them connect:** Save the National Suicide Prevention Lifeline’s number in your phone so it’s there when you need it: 1-800-8255 (TALK). You can also help make a connection with a trusted individual like a family member, friend, spiritual advisor, or mental health professional.
5. **Stay Connected:** Staying in touch after a crisis or after being discharged from care can make a difference. Studies have shown the number of suicide deaths goes down when someone follows up with the at-risk person.

Treatments and Therapies

Research has shown that there are multiple risk factors for suicide and that these factors may vary with age, gender, physical and mental well-being, and with individual experiences. Treatments and therapies for people with suicidal thoughts or actions will vary as well. NIMH has focused research on strategies that have worked well for mental health conditions related to suicide such as depression and anxiety.

Psychotherapies

Multiple types of psychosocial interventions have been found to be beneficial for individuals who have attempted suicide. These types of interventions may prevent someone from making another attempt. Psychotherapy, or “talk therapy,” is one type of psychosocial intervention and can effectively reduce suicide risk.

One type of psychotherapy is called cognitive behavioral therapy (CBT). CBT can help people learn new ways of dealing with stressful experiences through training. CBT helps individuals recognize their own thought patterns and consider alternative actions when thoughts of suicide arise.

Another type of psychotherapy, called dialectical behavior therapy (DBT), has been shown to reduce the rate of suicide among people with borderline personality disorder, a serious mental illness characterized by unstable moods, relationships, self-image, and behavior. A therapist trained in DBT helps a person recognize when his or her feelings or actions are disruptive or unhealthy, and teaches the skills needed to deal better with upsetting situations.

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8.6: Eating Disorders

What are eating disorders?

The eating disorders anorexia nervosa, bulimia nervosa, and binge-eating disorder, and their variants, all feature serious disturbances in eating behavior and weight regulation. They are associated with a wide range of adverse psychological, physical, and social consequences. A person with an eating disorder may start out just eating smaller or larger amounts of food, but at some point, their urge to eat less or more spirals out of control. Severe distress or concern about body weight or shape, or extreme efforts to manage weight or food intake, also may characterize an eating disorder.

Eating disorders are real, treatable medical illnesses. They frequently coexist with other illnesses such as depression, substance abuse, or anxiety disorders. Other symptoms can become life-threatening if a person does not receive treatment, which is reflected by anorexia being associated with the highest mortality rate of any psychiatric disorder.

Eating disorders affect both genders, although rates among women and girls are 2½ times greater than among men and boys. Eating disorders frequently appear during the teen years or young adulthood but also may develop during childhood or later in life.

What are the different types of eating disorders?

Anorexia nervosa

Many people with anorexia nervosa see themselves as overweight, even when they are clearly underweight. Eating, food, and weight control become obsessions. People with anorexia nervosa typically weigh themselves repeatedly, portion food carefully, and eat very small quantities of only certain foods. Some people with anorexia nervosa also may engage in binge eating followed by extreme dieting, excessive exercise, self-induced vomiting, or misuse of laxatives, diuretics, or enemas.

Symptoms of anorexia nervosa include:

- Extremely low body weight
- Severe food restriction
- Relentless pursuit of thinness and unwillingness to maintain a normal or healthy weight
- Intense fear of gaining weight
- Distorted body image and self-esteem that is heavily influenced by perceptions of body weight and shape, or a denial of the seriousness of low body weight
- Lack of menstruation among girls and women.

Some who have anorexia nervosa recover with treatment after only one episode. Others get well but have relapses. Still others have a more chronic, or long-lasting, form of anorexia nervosa, in which their health declines as they battle the illness.

Other symptoms and medical complications may develop over time, including:

- Thinning of the bones (osteopenia or osteoporosis)
- Brittle hair and nails
- Dry and yellowish skin
- Growth of fine hair all over the body (lanugo)
- Mild anemia, muscle wasting, and weakness
- Severe constipation
- Low blood pressure, or slowed breathing and pulse
- Damage to the structure and function of the heart
- Brain damage
- Multi-organ failure
- Drop in internal body temperature, causing a person to feel cold all the time
- Lethargy, sluggishness, or feeling tired all the time
- Infertility.

Bulimia nervosa

People with bulimia nervosa have recurrent and frequent episodes of eating unusually large amounts of food and feel a lack of control over these episodes. This binge eating is followed by behavior that compensates for the overeating such as forced vomiting, excessive use of laxatives or diuretics, fasting, excessive exercise, or a combination of these behaviors.

Unlike anorexia nervosa, people with bulimia nervosa usually maintain what is considered a healthy or normal weight, while some are slightly overweight. But like people with anorexia nervosa, they often fear gaining weight, want desperately to lose weight, and are intensely unhappy with their body size and shape. Usually, bulimic behavior is done secretly because it is often accompanied by feelings of disgust or shame. The binge eating and purging cycle can happen anywhere from several times a week to many times a day.

Other symptoms include:

- Chronically inflamed and sore throat
- Swollen salivary glands in the neck and jaw area
- Worn tooth enamel, and increasingly sensitive and decaying teeth as a result of exposure to stomach acid
- Acid reflux disorder and other gastrointestinal problems
- Intestinal distress and irritation from laxative abuse
- Severe dehydration from purging of fluids
- Electrolyte imbalance—too low or too high levels of sodium, calcium, potassium, and other minerals that can lead to a heart attack or stroke.

Binge-eating disorder

People with binge-eating disorder lose control over their eating. Unlike bulimia nervosa, periods of binge eating are not followed by compensatory behaviors like purging, excessive exercise, or fasting. As a result, people with binge-eating disorder often are overweight or obese. People with binge-eating disorder who are obese are at higher risk for developing cardiovascular disease and high blood pressure. They also experience guilt, shame, and distress about their binge eating, which can lead to more binge eating.

How are eating disorders treated?

Typical treatment goals include restoring adequate nutrition, bringing weight to a healthy level, reducing excessive exercise, and stopping binging and purging behaviors. Specific forms of psychotherapy, or talk therapy—including a family-based therapy called the Maudsley approach and cognitive behavioral approaches—have been shown to be useful for treating specific eating disorders. Evidence also suggests that antidepressant medications approved by the U.S. Food and Drug Administration may help for bulimia nervosa and also may be effective for treating co-occurring anxiety or depression for other eating disorders.

Treatment plans often are tailored to individual needs and may include one or more of the following:

- Individual, group, or family psychotherapy
- Medical care and monitoring
- Nutritional counseling
- Medications (for example, antidepressants).

Some patients also may need to be hospitalized to treat problems caused by malnutrition or to ensure they eat enough if they are very underweight. Complete recovery is possible.

For information about additional mental health topics, go to the National Institute of Mental Health.

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9: HR and Health and Safety

Learning Objectives

- Discuss human resource management's role in supporting workplace health and safety

Given their responsibility for people, culture, and associated policies and procedures, human resource management plays a critical role in supporting workplace health and safety. The points made in OSHA's Be Safe + Sound Management Leadership Guide are particularly relevant to HR management, and include:

- Making worker safety and health a core organizational value
- Eliminating hazards, protecting workers, and continuously improving workplace safety and health
- Providing sufficient resources to implement and maintain the safety and health program
- Visibly demonstrate and communicate their safety and health commitment to workers and others.

For example, HR management has a responsibility to ensure that the organization is in compliance with OSH Act requirements and that supervisors and managers understand that it is their duty to ensure that the workplace is free from recognized hazards that are causing or likely to cause death or serious physical harm. Management training and evaluation should ensure that managers understand employee rights, including, for example, the right to safety training in a language that the employee understands.

This duty of care also extends to workplace violence, which includes "any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site"[1] As discussed previously, workplace violence ranges from threats and verbal abuse to homicide. SHRM research indicates that approximately 33% of American employees and almost 20% of HR professionals either don't know are unsure of what to do if they witness or are involved in a workplace violence incident.[2] Research also found that while the majority of HR professionals reported having developed workplace violence training, one third didn't provide training to employees. Additionally, while almost all HR professionals reported having a process for identifying employees with a history of violence, over 50% were unsure of whether they have a workplace violence prevention program. As SHRM-SCP, SHRM president and CEO Johnny C. Taylor, Jr. stated: "Companies and HR should and must do more to make employees feel safe at work," adding that "If you make the investment in security and preparation, your employees will feel safer and respect you for valuing their safety."

PRactice Question

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OSHA Resources

OSHA recognizes that its regulatory and enforcement efforts alone are inadequate to achieve the compliance of over 10 million employers. That's where outreach activities come in. Specifically, OSHA's consulting, training and outreach efforts are designed to shift the safety curve, prompting organizations to adopt Safety and Health Programs that build a culture of and commitment to safety, as illustrated in Figure 1.

Figure 1. Shifting the Safety Curve

To that end, OSHA offers are range of consulting services, training and supporting resources, including the following:

- An OSHA Compliance Quick Start Tool
- On-Site Consultation—Free and confidential occupational safety and health services for small- and medium-sized businesses.
- A broad range of safety and health tools, publications and guides for specific OSHA standards, programs (e.g., SHP) and safety and health topics (e.g., Workplace Violence)
- OSHA's Safe and Sound page—everything you need to develop and implement a safety and health program
- Recognition ("Cooperative") programs
- A range of data and statistics and informational resources, including its QuickTakes bi-weekly e-newsletter

Note that the OSHA website is available in both English and Spanish.

? Practice Question

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1. "With Workplace Violence on the Rise, 1 out of 7 People Don't Feel Safe at Work.(opens in new window)" Society for Human Resource Management. March 19, 2019. Accessed August 20, 2019. ↵

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10: Introduction to Risk Management

What you'll learn to do: Discuss human resource management risk management

The International Organization for Standardization (ISO) defines risk as the "effect of uncertainty on objectives."[1] In the introduction to its risk management standard—ISO 31000—the organization notes that "risks affecting organizations can have consequences in terms of economic performance and professional reputation, as well as environmental, safety and societal outcomes. Therefore, managing risk effectively helps organizations to perform well in an environment full of uncertainty."[2] In this section, we'll identify risks associated with human resources activities and how to manage them.

1. "ISO 31000 2018 Plain English Definitions." Praxiom Research Group Limited. Accessed August 20, 2019. ↵
2. "ISO 31000 Risk Management." ISO.org. Accessed August 20, 2019. ↵

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11: Risks in Human Resources

Learning Objectives

- Identify the risks associated with human resource activities

Almost everything that can go wrong in a business has a human capital component.

—David Creelman, Creelman Research[1]

The Center for Safety and Health Sustainability notes the "An organization's human capital includes the skills, knowledge and abilities that workers bring to their work as well as how they use them. . . . Effective management of an organization's human capital underpins corporate performance and sustainability."[2] Human capital risks include dangers to personnel and risks arising from loss of or inappropriate use of those skills, knowledge and abilities, including unauthorized use or distribution of confidential or proprietary information.

Risk mitigation consulting firm Lowers & Associates identifies the five critical human capital risk areas:[3]

1. **Complacency.** For perspective, the Risk Management Society states that "complacency comes from a place where 'I don't know' and 'I don't care' run rampant."
2. **Turnover**
   - Companies pay between 25% to 250% of an employee's annual salary to replace that employee
   - Direct and indirect costs including temporary staffing, training, lost productivity, reduced morale and loss of clients and know-how
3. **Occupational fraud.** Costs businesses 5–7% of annual revenue, including management costs and damages to brand, employee morale, external business relationships, regulator relationships and stock value
4. **Catastrophic workplace events**
   - Injuries and illnesses, fatalities and homicides
   - Potentially significant damage to people, brands and profits
   - The annual cost of workplace violence for employers is estimated to be roughly $121 billion[4]
5. **Negligent hiring or retention.** Perspective point: employers lose 75–80% of negligent hiring claims

Practice Question

https://assessments.lumenlearning.co...essments/18230

To elaborate on the fourth point, with increased socio- and geo-political tension and instability, there has been an increase in business risk, including risk to people. According to OSHA, "acts of violence and other injuries [are] the third-leading cause of fatal occupational injuries in the United States."[5] Bureau of Labor Statistics data indicates that 458 of the fatal workplace injuries that occurred in the United States in 2017 were cases of intentional injury by another person. A March 2019 Society of Human Resource Management (SHRM) press release reported that one out of 7 people don't feel safe at work, "[demonstrating the] need for more workplace violence education, prevention and training."[6] Underscoring both the sentiment and recommendations, SHRM's 2019 study of workplace violence found that almost half of HR professionals indicated their organization had experienced a workplace violence incident and over half of those who reported workplace violence indicated their organization had experienced an incident in the last year.

1. Lower & Associates. "5 Critical Areas of Human Capital Risk." The Risk Management Blog. August 8, 2013. Accessed August 20, 2019. ↵
2. "The Human Capital Project." Center for Safety & Health Sustainability. Accessed August 20, 2019. ↵
3. Lower & Associates. "5 Critical Areas of Human Capital Risk." The Risk Management Blog. ↵
4. Johnson, Denise. "Risk Management: Employers Benefit from Mitigating Workplace Violence." Insurance Journal. April 17, 2017. Accessed August 20, 2019. ↵
5. "Workplace Violence." Occupational Safety and Health Administration, United States Department of Labor. Accessed August 20, 2019. ↵
6. "With Workplace Violence on the Rise, 1 out of 7 People Don't Feel Safe at Work." Society for Human Resource Management. March 19, 2019. Accessed August 20, 2019. ↵

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12: Managing Risk in Human Resources

Learning Objectives

- Describe the process of managing Human Resources–related risks

Managing HR-related risks involves addressing the five critical areas mentioned above, including workplace violence and risk of international travel. The points that Lowers & Associates recommends for addressing turnover are applicable to all five risk areas and represent basic block-and-tackle elements of HR management, including:

- Use pre-employment screening
- Establish fair benefits and compensation and review relative to market annually
- Pay attention to employees' needs
- Increase employee engagement
- Create a positive work environment
- Create clear, challenging career paths

Specific recommendations to address:

- Occupational fraud
  - Establish and enforce a code of conduct
  - Develop a fraud prevention strategy
  - Implement prevention and detection processes, including risk assessment and internal audits; evaluate fraud controls on a regular basis
  - Conduct fraud awareness training and provide a means of reporting fraud online
  - Screen suppliers and third party providers
- Workplace violence
  - Understand risk factors and develop and implement training and prevention programs. OSHA states that "in most workplaces where risk factors can be identified, the risk of assault can be prevented or minimized if employers take appropriate precautions."[1]
  - OSHA also emphasizes that establishing a zero-tolerance policy toward workplace violence—applicable to all who come in contact with employees or alternative workers—is one of the best protections.
  - For related resources, including risk assessment, training and prevention, refer to OSHA's Workplace Violence page.

Perspective Point

Lowers & Associates notes that although the probability of catastrophic workplace events is low, the potential damage to people, brands and profits justifies risk mitigation.

Although geo-political risks have always been a part of conducting business internationally, trade tensions have recently escalated into economic warfare, increasing the stakes in both financial and human terms. The attempt in 2019 to extradite and prosecute

Chinese technology firm Huawei's CFO Meng Wanzhou has resulted in retaliatory arrests and harassment of American business executives and Canadians in China.

In an article for Risk Management magazine associate editor Adam Jacobson notes that "companies have a legal obligation, known as a 'duty of care,' to prepare employees and address potential risks they may face while traveling."[2] Pre-trip preparation and planning is key, including evaluating the risks, setting up tracking systems, establishing communication processes and identifying sources of support in the event of crisis. Jacobsen notes that there are also a range of insurance options that can mitigate some of the risk of travel.

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1. "Workplace Violence." Occupational Safety and Health Administration, United States Department of Labor. Accessed August 20, 2019. ↵
2. Jacobson, Adam. "Preparing Employees for Travel Risks." Risk Management. Accessed August 20, 2019. ↵

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13: Chronic Diseases

Learning Objectives

- Discuss the roles of nutrition and lifestyle choices in the prevention and management of chronic disease.

Chronic Diseases

Chronic diseases are ongoing, life-threatening, and life-altering health challenges. They are the leading cause of death worldwide. Chronic conditions are increasing in frequency. They cause significant physical and emotional suffering and are an impediment to economic growth and vitality. It is important, now more than ever, to understand the different risk factors for chronic disease and to learn how to prevent their development.

The Risk Factors of Chronic Disease

A **risk factor** is a signal that your chances for acquiring a chronic disease may be increased. You might liken a risk factor to the flags that lifeguards sometimes set up at beaches. When you see these flags, you know immediately that swimming within the marked areas could be hazardous, and that if you choose to swim within these parameters anyway, you are doing so at your own risk. But, if you heed the warnings, you are taking the necessary step to protect your safety and health. Similarly, risk factors are warning signs that coincide with the development and progression of disease. However, risk factors are not a 100-percent guarantee that a person will develop a chronic disease, only that the conditions are right. For example, if a person gets sick with the flu, we can say with certainty that the illness was caused by a virus. However, we cannot say that a sedentary lifestyle caused the onset of cardiovascular disease in a patient, because a risk factor indicates a correlation, not a causation.

Chronic disease usually develops alongside a combination of the following risk factors: genetics, another health factor such as obesity or hypertension, dietary and lifestyle choices, and environmental problems. Risk factors such as genetics and age cannot be changed. However, some risk factors can be altered to promote health and wellness (such as diet). For example, a person who continuously eats a diet high in sugars, saturated fats, and red meat is at risk for developing Type 2 diabetes, cardiovascular disease, or several other conditions. Making more healthy dietary choices can greatly reduce that risk. Being a woman over age sixty-five is a risk factor for developing osteoporosis, but that cannot be changed. Also, people without a genetic predisposition for a particular chronic illness can still develop it. Not having a genetic predisposition for a chronic disease is not a guarantee of immunity.

Identifying Your Risk Factors

To estimate your own risk factors for developing certain chronic diseases, search through your family's medical history. What diseases do you note showing up among close blood relatives? This may be of concern to you. At your next physical, pay attention to your blood tests and ask the doctor if any results are out of the normal range. It is also helpful to note your vital signs, particularly your blood pressure and resting heart rate. In addition, you may wish to keep a food & mood diary to make a note of the dietary choices that you make on a regular basis and be aware of what your eating patterns are. As a general rule, it is important to look for risk factors that you can modify.to promote your health. For example, if you discover that your grandmother, aunt, and uncle all suffered from high blood pressure, then you may decide to avoid a high sodium diet. Identifying your risk factors can arm you with the information you need to help ward off disease.

Cardiovascular Disease

Throughout the remainder of this section, we will examine some of the more prevalent chronic diseases, their risk factors, and the choices that can help to discourage their development or progression. Let's begin with cardiovascular disease. According to the Centers for Disease Control and Prevention (CDC), heart disease is the leading cause of death in the United States (1).

The disease generally starts with atherosclerosis, or a hardening of the arteries, a chronic condition so common that most people show signs of it by the time they turn thirty. Arteries start to narrow and harden when fats accumulate along their inner walls and form plaques. A plaque is made of fat, cholesterol, calcium, and other substances found in blood.

Figure 13.2: Illustration comparing a normal blood vessel and partially blocked vessel due to atherosclerotic plaque build-up. Plaque formation along arterial walls impedes blood flow and can create a thrombus, or stationary blood clot. from BruceBlaus (via Wikipedia). Access a video of the process.

Plaque formation causes arteries to narrow and harden, which elevates blood pressure because the vessels can't expand effectively to accommodate blood pulses. Higher blood pressure strains the heart and causes more damage. Arterial walls can become so weakened due to high blood pressure that they balloon and form what is known as an aneurysm. If the aneurysm bursts, it becomes a life-threatening event. The plaques themselves can also rupture due to a spike in blood pressure or a tremor along an arterial wall, and the body responds to this perceived injury by forming blood clots. These clots are serious health threats, whether they are stationary (a thrombus) or moving (an embolus). A stable clot can slowly kill off surrounding tissue, or grow so big that it blocks blood circulation and causes thrombosis. When a moving clot becomes stuck in an artery too small for its passage, it cuts off blood flow and causes cell death. This is referred to as an embolism. Blood clots in heart and brain arteries can cause heart attacks or strokes.

Table 13.1: The Risk Factors for Cardiovascular Disease

Unmodifiable Risk Factors	Modifiable Risk Factors
• **Age.** Risk increases for men at forty-five, and for women at fifty-five. • **Sex.** Men have a higher risk than women, though the risk for women steeply rises after menopause. • **Family history.** The more family members who have heart disease, the greater the risk.	• **Cigarette smoking.** Nicotine constricts blood vessels, and carbon monoxide damages their inner lining, which increases the risk of atherosclerosis. • **Excess body fat.** This worsens other risk factors. • **Diabetes.** This condition is associated with an increased risk of heart disease. Both types have certain risk factors in common, including obesity and high blood pressure. • **Physical activity.** Lack of exercise is associated with heart disease, too much exercise is associated with relative energy deficiency, and osteopenia. • **Cholesterol levels.** High levels of blood cholesterol can increase the risk. A high level of low-density lipoprotein (LDL), or the "bad" cholesterol, is a common contributing factor. However, a low level of high-density lipoprotein (HDL), or "good" cholesterol, can also promote atherosclerosis.

Steps to Reducing the Risk of Cardiovascular Disease

Diet and nutrition can play a significant role in reducing the risk of cardiovascular disease. It is helpful to lower sodium intake, increase consumption of dietary fiber, and limit consumption of saturated fat, which promotes plaque formation. In addition, it is important to replace refined starches and added sugar, which can boost triglycerides, with whole grains, fruits, and vegetables. Eating foods rich in omega-3 fatty acids, especially fish, using alcohol in moderation, and opting for low or no-fat dairy products can all help reduce your cardiovascular disease risk. Emphasizing vegetable-based sources of protein, such as beans and legumes, can be beneficial, as well as consuming more soy products. It is also important to maintain a healthy weight, manage cholesterol levels, and avoid smoking or chewing tobacco.

Hypertension

Chronic high blood pressure, also known as hypertension, is a significant health hazard affecting one out of three adults in the United States(2). This chronic condition is a major cause of heart attacks and strokes, yet it has no symptoms until blood pressure reaches very high levels, which is why it is known as “the silent killer.” The only way to find out if you have high blood pressure is to get an accurate reading of your resting blood pressure rate, which is best done by a medical professional and should be monitored regularly.

High blood pressure is such an important factor in cardiovascular disease, that keeping it within a healthy range is vitally important. Blood pressure readings consist of two numbers. The top number measures **systolic** pressure (when the heart contracts) and the bottom number measures **diastolic** pressure (when the heart is at rest). The key blood pressure numbers to keep in mind are:

- **Ideal.** below 120 over 80
- **Pre-hypertension.** 120-129 over 80
- **Hypertension.** Stage 1: 130 - 139 or 80-89, Stage 2: over 140 or over 90

Table 13.2: The Risk Factors for Hypertension

Unmodifiable Risk Factors	Modifiable Risk Factors
• **Age.** After fifty-five, the risk of developing high blood pressure is 90 percent. • **Race.** African-Americans are more likely to develop hypertension, manifest it at a younger age, and have higher blood pressure readings. • **Family history.** There is a strong genetic component to high blood pressure, and an individual’s risk goes up along with the number of family members who have hypertension.	• **Excess body fat.** Roughly 60 percent of people with hypertension are obese. • **Sodium consumption.** The more salt in a person’s diet, the more likely they are to have high blood pressure. • **Alcohol.** Drinking more than two drinks per day for men and one drink for women increases the likelihood of hypertension. • **Diet.** In addition to salt and alcohol consumption, other dietary factors increase chances of developing hypertension. • **Sleep**. Not getting enough sleep on a regular basis is linked to an increased risk of heart disease, high blood pressure, and stroke.(3)

Steps to Reducing the Risk of High Blood Pressure

Although it is not possible to change one’s age or genetics, there are actions that people can take to decrease their risk of hypertension. Techniques to reduce blood pressure include becoming physically active, maintaining a healthy weight, reducing sodium intake below 2,400 milligrams per day (or below 1,500 milligrams if you are in a high-risk group or already have been diagnosed with hypertension), using alcohol moderately, and following the DASH diet. Additionally, vitamin C, calcium, and potassium have all been shown to promote healthy blood pressure. It is also vital to monitor your blood pressure levels on a regular basis. Prompt intervention when readings rise above the ideal level (120 over 80) can save lives, which is why everyone should know the status of their blood pressure.

Cancer

More than one hundred diseases are classified as different forms of cancer, all of them characterized by the uncontrolled growth of abnormal cells. Cancer is triggered by mutations in a cell’s genetic material. The cause of these changes may be inherited, or it may result from exposure to carcinogens, which are agents that can cause cancer. Carcinogens include chemicals, viruses, certain medical treatments such as radiation, pollution, or other substances and exposures that are known or suspected to cause cancer(4). The National Institutes of Health has classified fifty-four different compounds as known cancer-causing agents in humans (5).

Under normal conditions, a healthy cell will either repair any damage that has been done or self destruct so that no future cells will be affected. Cells become cancerous when their DNA is damaged, but they do not self-destruct or stop reproducing as normal cells would. As these abnormal cells continue their rapid growth, in most cancers they coalesce in a mass called a tumor. Cancer cells can overwhelm healthy cells and interfere with the healthy functioning of the body. They can also invade other organs and spread throughout the body in a process known as metastasis. Scientists and the medical community are giving considerable attention to the early stages of cancer, from the moment a healthy cell is exposed to a carcinogen to the point where cells with damaged DNA

are replicating out of control. Intervention at any of these early stages could prove to be quite beneficial because it is thought that most cancers are the result of lifestyle choices and environmental exposure.

The risk factors for different cancers can vary. For example, exposure to ultraviolet radiation from the sun and from tanning beds is a risk factor for skin cancer, while exposure to asbestos is a risk factor for mesothelioma cancer. Table 13.3 shows some common risk factors for a number of different types of cancer.

Table 13.3: The Risk Factors for Cancer

Unmodifiable Risk Factors	Modifiable Risk Factors
• **Age.** Most cancers occur in people over the age of sixty-five. However, people of all ages, including children, can get cancer. • **Family history.** Certain types of cancer have a genetic link. However, environmental factors may also play a part.	• **Tobacco.** Smoking or chewing tobacco greatly increases the risk for certain cancers, including cancer of the lungs, bladder, cervix, kidneys, mouth, and pancreas. • **Alcohol.** Drinking alcohol is linked to cancers of the mouth, throat, esophagus, and breast, as well as to cancers of the neck and head. • **Excess body fat.** Linked to cancers of the colon, uterus, pancreas, esophagus, kidney, and breast. • **Cooking techniques.** Grilling, smoking, and preparing meat at high temperatures forms carcinogens. • **Red meat.** The risk of colon cancer seems to increase with the consumption of red meat and processed meat. • **Cured meats.** According to a recent study, there is a mild risk of pancreatic cancer with the consumption of cured meats, such as sausage, pepperoni, bacon, ham, smoked turkey, salami, and hot dogs. • **Physical inactivity.** Linked to colon, breast, and other cancers. • **Exposure to chemicals.** People who have jobs that expose them to chemicals on a regular basis, such as construction workers and painters, have an increased risk of cancer. • **Viruses or bacteria.** Certain viruses or bacteria may increase the risk of developing cancer. For example, human papillomaviruses, which are sexually transmitted, are the primary cause of cervical cancer.

Steps to Reducing the Risk of Cancer

According to the American Cancer Society, half of all American men and one-third of American women will be diagnosed with some form of cancer in their lifetime (6). Although cancer is one of the leading causes of death worldwide, ongoing research and innovations in treatment have improved the outlook for cancer patients to the point where millions now survive or live with cancer, making it a chronic disease.

The American Institute for Cancer Research (AICR) has published guidelines for preventing cancer and staying healthy. They include several dietary and lifestyle choices, such as participating in physical activity for thirty minutes per day or more, and maintaining a healthy weight. In addition, AICR recommends consuming a plant-based diet (7). Several epidemiological studies have found a link between eating plenty of fruits and vegetables and a low incidence of certain cancers. Fruits and vegetables containing a wide variety of nutrients and phytochemicals may either prevent or reduce oxidative damage to cell structures. Cruciferous vegetables, such as cauliflower, broccoli, and Brussels sprouts, may also reduce the risk of certain cancers, such as endometrial, esophageal, and others. Also, studies have shown that the more fiber you have in your diet, the lower your risk of colon cancer.

Supplementation may also be helpful to a limited degree. Vitamin D and antioxidants have been linked to lowering the risk of some cancers (however taking an iron supplement may promote others); but, obtaining vital nutrients from **food first** is the best way to help prevent or manage cancer. In addition, regular and vigorous exercise can lower the risk of breast and colon cancers, among

others. Also, wear sunblock, stay in the shade, and avoid the midday sun to protect yourself from skin cancer, which is one of the most common kinds of cancer (8).

Diabetes

The World Health Organization reports that more than 346 million people around the world have diabetes and they predict that deaths due to the consequences of diabetes will double from 2005 to 2030 (9). **Diabetes mellitus** is a metabolic disorder that results when the pancreas does not produce enough insulin to meet its needs or the body does not effectively utilize the insulin that it does produce. Insulin is the hormone that regulates blood glucose levels. The most common complication is hyperglycemia (elevated blood sugar), which gradually leads to damage in many of the body's systems, most notably the eyes, kidneys, nerves, and heart and blood vessels.

There are three kinds of diabetes: Type 1, Type 2, and gestational. Formerly known as juvenile or childhood-onset diabetes, Type 1 diabetes is an autoimmune condition in which the pancreas does not produce insulin. Type 1 diabetes is not preventable, and its cause is unknown. Symptoms include excessive urination, thirst, persistent hunger, weight loss, vision problems, and fatigue.

Formerly known as adult-onset diabetes, Type 2 diabetes results when the pancreas produces enough insulin initially, but the body is unable to use the hormone properly (insulin resistance). Until recently, this disease was only found in adults. However, it is now found among children, too. More than 90 percent of diabetics have Type 2 (10). Major contributing factors to the development of Type 2 diabetes include excessive body weight and physical inactivity. The symptoms for Type 2 diabetes are similar to Type 1, but are much less noticeable. As a result, Type 2 diabetes may remain undiagnosed for several years after the onset, generally after complications have already manifested.

About 3 to 8 percent of pregnant women develop gestational diabetes during the latter stages of pregnancy. This condition is caused by a shortage of insulin or by pregnancy hormones. Gestational diabetes has symptoms similar to Type 2 diabetes, and some women may not experience any symptoms at all. In general, gestational diabetes fades away after the birth of the baby. However, women who have had gestational diabetes are at a greater risk of developing Type 2 diabetes within five to ten years. Also, infants born of mothers who suffer from this condition are at an increased risk of developing Type 2 diabetes as they grow older (11).

Table 13.4: The Risk Factors for Diabetes

Unmodifiable Risk Factors	Modifiable Risk Factors
• **Age.** Risk increases after age forty-five • **Medical history.** Diabetes during a previous pregnancy or recently giving birth to an infant who weighs more than 9 pounds. • **Family history.** A history of diabetes among one or more close relatives. • **Race and ethnicity.** Individuals from specific ethnic groups may have an increased risk for developing diabetes, including African Americans, Hispanic Americans, Asian Americans, and Native Americans. • **Viruses.** Exposure to: Epstein-Barr, Coxsackie, mumps, or cytomegalo viruses may trigger Type 1 diabetes.	• **Cigarette smoking.** Nicotine constricts blood vessels, and carbon monoxide damages their inner lining, which increases the risk of Type 2 diabetes. • **Excess body fat.** Excess body fat, especially around the waist, is a major contributing factor to Type 2 diabetes. • **Physical inactivity.** Lack of exercise is strongly associated with diabetes. • **High blood pressure.** Greater than or equal to 140/90 mmHg. • **Cholesterol levels.** HDL cholesterol under 35 mg/dL. • **Blood sugar.** Impaired glucose tolerance. • **Blood fats.** Elevated triglycerides (250 mg/dL or more).

Steps to Reducing the Risk of Diabetes

Unfortunately, Type 1 diabetes is almost impossible to prevent, although some clinical research suggests that breastfeeding an infant for at least three months may decrease the child's risk of developing this condition. However, people who are at risk for Type 2 or gestational diabetes can take steps to avoid the disease. For example, it is crucial to achieve and maintain a healthy body through regular physical activity. If you are at risk, strive for at least thirty minutes of moderate to intense exercise at least three times per week. Proper nutrition is also vital, and it is important to restrict sugary snacks, beverages, and desserts, and to limit the intake of trans fats and saturated fats. In addition, those who are at risk should consume whole grains, legumes, fruits, and vegetables, along with two servings of non-fried fish per week.

For people over age forty-five, it is important to have a glucose test every three years. Regular testing should begin at a younger age, and be performed frequently if you have any risk factors for developing Type 2 diabetes. In order to assess your health status, the following is recommended:

- Early diagnosis through blood testing
- Blood pressure measurement
- Blood lipid measurement

Food: The Best Medicine

Poor dietary choices and a sedentary lifestyle account for about 300–600 thousand deaths every year according to the US Department of Health and Human Services. That number is thirteen times higher than the deaths due to gun violence (12). The typical North American diet is too high in saturated fat, sodium, and sugar, and too low in fiber in the form of whole fruits, vegetables, and whole grains to keep people healthy. With so many threats to optimal health, it is vital to address those factors that are under your control, namely dietary and lifestyle choices. A diet that supplies your body with the needed energy and nutrients daily will result in efficient body functioning and in protection from disease. Making sound nutritional choices can also provide support for individuals undergoing treatment for short-term or chronic conditions. Finding a balance between nutritional needs with concerns about drug interactions can hasten recovery, improve quality of life, and minimize the side effects from treatment protocols.

Key Takeaways

Chronic diseases such as cardiovascular disease, high blood pressure, cancer, and diabetes are major public health threats and major causes of mortality. Knowing the modifiable risk factors (such as diet, level of physical activity, and cigarette smoking) for certain diseases can help you to adapt your lifestyle to protect them. By following a healthy diet, becoming active, and making other sound lifestyle choices, individuals can reduce their risk of developing chronic diseases, or better manage their condition to prevent further complications.

Discussion Starter

1. Assess your risk for developing one of the four chronic diseases discussed in this section. Which risk factors can be modified? Which risk factors can't be modified? What can you do to lessen the chance that you will develop the disease?

References

1. Centers for Disease Control and Prevention. "Leading Causes of Death." Last updated September 6, 2011. http://www.cdc.gov/nchs/fastats/lcod.htm.

2. Centers for Disease Control and Prevention. "High Blood Pressure Facts." Last updated March 21, 2011. http://www.cdc.gov/bloodpressure/facts.htm.

3. National Heart, Lung, and Blood Institute. Sleep Deprivation and Deficiency. (2019). https://www.nhlbi.nih.gov/health-topics/sleep-deprivation-and-deficiencyexternal icon. Accessed October 7, 2019.

4. American Cancer Society. "Known and Probable Human Carcinogens." Last medical review June 29, 2011. http://www.cancer.org/Cancer/CancerC...n-and-probable -human-carcinogens.

5. Brett Israel, "How Many Cancers Are Caused by the Environment?" *Scientific American*, 21 May 2010. www.scientificamerican.com/ar...fm?id=how-many -cancers-are-caused-by-the-environment.

6. American Cancer Society. "What Is Cancer?" Last medical review March 19, 2010. http://www.cancer.org/Cancer/CancerB...what-is-cancer.

7. American Institute for Cancer Research. "Guidelines for Cancer Prevention." No. E93-GL. © November 2007. http://preventcancer.aicr.org/site/D...pdf?docID=3561.

8. Mayo Clinic. "Cancer Prevention: 7 Steps to Reduce Your Risk." September 21, 2010. Accessed December 21, 2011. www.mayoclinic.com/health/cancer -prevention/CA00024.

9. World Health Organization. “Diabetes.” *Fact Sheet*, no. 312. August 2011. http://www.who.int/mediacentre/factsheets/fs312/en/.

10. National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health. “Diabetes Overview.” *NIH Publication No. 09–3873* (November 2008). diabetes.niddk.nih.gov/dm/pubs/overview/.

11. National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health. “Diabetes Overview.” *NIH Publication No. 09–3873* (November 2008). diabetes.niddk.nih.gov/dm/pubs/overview/.

12. Nutrition Policy, Center for Science in the Public Interest. “Why Good Nutrition Is Important.” Accessed December 21, 2011. http://www.cspinet.org/nutritionpoli...on_policy.html.

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14: Creating Culture Change

Learning Objectives

1. Explain why culture change may be necessary.
2. Understand the process of culture change.

How Do Cultures Change?

Culture is part of a company's DNA and is resistant to change efforts. Unfortunately, many organizations may not even realize that their current culture constitutes a barrier against organizational productivity and performance. Changing company culture may be the key to the company turnaround when there is a mismatch between an organization's values and the demands of its environment.

Certain conditions may help with culture change. For example, if an organization is *experiencing failure* in the short run or is under threat of bankruptcy or an imminent loss of market share, it would be easier to convince managers and employees that culture change is necessary. A company can use such downturns to generate employee commitment to the change effort. However, if the organization has been successful in the past, and if employees do not perceive an urgency necessitating culture change, the change effort will be more challenging. Sometimes the external environment may force an organization to undergo culture change. *Mergers and acquisitions* are another example of an event that changes a company's culture. In fact, the ability of the two merging companies to harmonize their corporate cultures is often what makes or breaks a merger effort. When Ben & Jerry's was acquired by Unilever, Ben & Jerry's had to change parts of its culture while attempting to retain some of its unique aspects. Corporate social responsibility, creativity, and fun remained as parts of the culture. In fact, when Unilever appointed a veteran French executive as the CEO of Ben & Jerry's in 2000, he was greeted by an Eiffel tower made out of ice cream pints, Edith Piaf songs, and employees wearing berets and dark glasses. At the same time, the company had to become more performance oriented in response to the acquisition. All employees had to keep an eye on the bottom line. For this purpose, they took an accounting and finance course for which they had to operate a lemonade stand (Kiger, 2005). Achieving culture change is challenging, and many companies ultimately fail in this mission. Research and case studies of companies that successfully changed their culture indicate that the following six steps increase the chances of success (Schein, 1990).

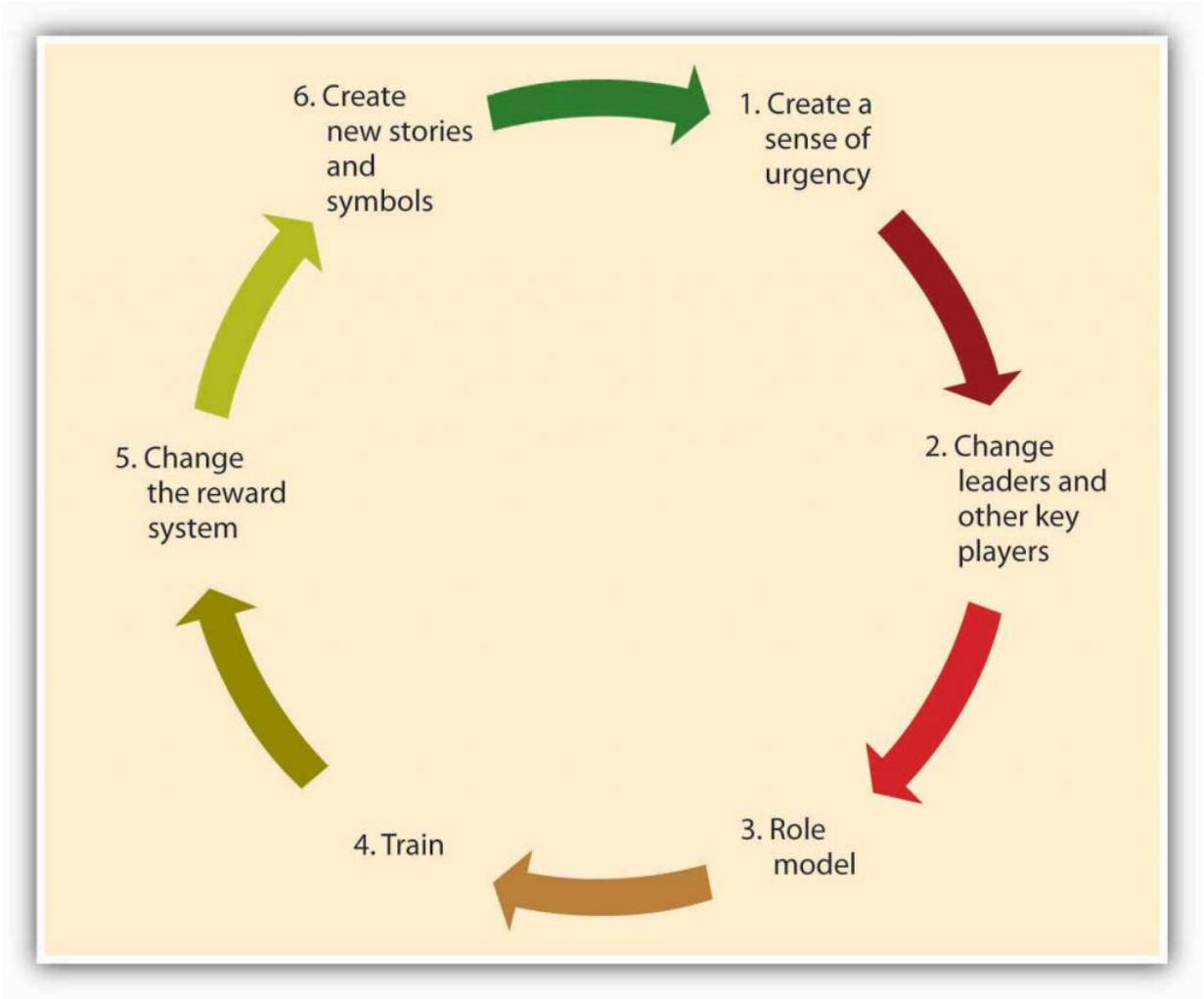

Figure 14.12: Six Steps to Culture Change

Creating a Sense of Urgency

In order for the change effort to be successful, it is important to communicate the need for change to employees. One way of doing this is to create a sense of urgency on the part of employees and explain to them why changing the fundamental way in which business is done is so important. In successful culture change efforts, leaders communicate with employees and present a case for culture change as the essential element that will lead the company to eventual success. As an example, consider the situation at IBM Corporation in 1993 when Lou Gerstner was brought in as CEO and chairman. After decades of dominating the market for mainframe computers, IBM was rapidly losing market share to competitors, and its efforts to sell personal computers—the original "PC"—were seriously undercut by cheaper "clones." In the public's estimation, the name IBM had become associated with obsolescence. Gerstner recalls that the crisis IBM was facing became his ally in changing the organization's culture. Instead of spreading optimism about the company's future, he used the crisis at every opportunity to get buy-in from employees (Gerstner, 2002).

Changing Leaders and Other Key Players

A leader's vision is an important factor that influences how things are done in an organization. Thus, culture change often follows changes at the highest levels of the organization. Moreover, in order to implement the change effort quickly and efficiently, a company may find it helpful to remove managers and other powerful employees who are acting as a barrier to change. Because of political reasons, self interest, or habits, managers may create powerful resistance to change efforts. In such cases, replacing these positions with employees and managers giving visible support to the change effort may increase the likelihood that the change effort succeeds. For example, when Robert Iger replaced Michael Eisner as CEO of the Walt Disney Company, one of the first

things he did was to abolish the central planning unit, which was staffed by people close to ex-CEO Eisner. This department was viewed as a barrier to creativity at Disney, and its removal from the company was helpful in ensuring the innovativeness of the company culture (McGregor et al., 2007).

Role Modeling

Role modeling is the process by which employees modify their own beliefs and behaviors to reflect those of the leader (Kark & Dijk, 2007). CEOs can model the behaviors that are expected of employees to change the culture. The ultimate goal is that these behaviors will trickle down to lower level employees. For example, when Robert Iger took over Disney, in order to show his commitment to innovation, he personally became involved in the process of game creation, attended summits of developers, and gave feedback to programmers about the games. Thus, he modeled his engagement in the idea creation process. In contrast, modeling of inappropriate behavior from the top will lead to the same behavior trickling down to lower levels. A recent example of this type of role modeling is the scandal involving Hewlett-Packard Development Company LP board members. In 2006, when board members were suspected of leaking confidential company information to the press, the company's top-level executives hired a team of security experts to find the source of the leak. The investigators sought the phone records of board members, linking them to journalists. For this purpose, they posed as board members and called phone companies to obtain the itemized home phone records of board members and journalists. When the investigators' methods came to light, HP's chairman and four other top executives faced criminal and civil charges. When such behavior is modeled at top levels, it is likely to have an adverse impact on the company culture (Barron, 2007).

Training

Well-crafted training programs may be instrumental in bringing about culture change by teaching employees the new norms and behavioral styles. For example, after the space shuttle Columbia disintegrated upon reentry from a February 2003 mission, NASA decided to change its culture to become more safety sensitive and minimize decision-making errors leading to unsafe behaviors. The change effort included training programs in team processes and cognitive bias awareness. Similarly, when auto repairer Midas International Corporation felt the need to change its culture to be more committed to customers, they developed a training program making employees familiar with customer emotions and helping form better connections with them. Customer reports have been overwhelmingly positive in stores that underwent this training (BST to guide culture change effort at NASA, 2004).

Changing the Reward System

The criteria with which employees are rewarded and punished have a powerful role in determining the cultural values in existence. Switching from a commission-based incentive structure to a straight salary system may be instrumental in bringing about customer focus among sales employees. Moreover, by rewarding employees who embrace the company's new values and even promoting these employees, organizations can make sure that changes in culture have a lasting impact. If a company wants to develop a team-oriented culture where employees collaborate with each other, methods such as using individual-based incentives may backfire. Instead, distributing bonuses to intact teams might be more successful in bringing about culture change.

Creating New Symbols and Stories

Finally, the success of the culture change effort may be increased by developing new rituals, symbols, and stories. Continental Airlines Inc. is a company that successfully changed its culture to be less bureaucratic and more team oriented in the 1990s. One of the first things management did to show employees that they really meant to abolish many of the detailed procedures the company had and create a culture of empowerment was to burn the heavy 800-page company policy manual in their parking lot. The new manual was only 80 pages. This action symbolized the upcoming changes in the culture and served as a powerful story that circulated among employees. Another early action was the redecorating of waiting areas and repainting of all their planes, again symbolizing the new order of things (Higgins & McAllester, 2004). By replacing the old symbols and stories, the new symbols and stories will help enable the culture change and ensure that the new values are communicated.

Key Takeaways

Organizations need to change their culture to respond to changing conditions in the environment, to remain competitive, and to avoid complacency or stagnation. Culture change often begins by the creation of a sense of urgency. Next, a change of leaders and

other key players may enact change and serve as effective role models of new behavior. Training can also be targeted toward fostering these new behaviors. Reward systems are changed within the organization. Finally, the organization creates new stories and symbols.

Exercises

1. Can new employees change a company's culture? If so, how?
2. Are there conditions under which change is not possible? If so, what would such conditions be?
3. Have you ever observed a change process at an organization you were involved with? If so, what worked well and what didn't?
4. What recommendations would you have for someone considering a major change of culture within their own organization?

References

Barron, J. (2007, January). The HP Way: Fostering an ethical culture in the wake of scandal. *Business Credit*, *109*, 8–10.

BST to guide culture change effort at NASA. (June, 2004). *Professional Safety*, *49*, 16; J. B. (June, 2001). The Midas touch. *Training*, *38*, 26.

Gerstner, L. V. (2002). *Who says elephants can't dance*? New York: Harper-Collins.

Higgins, J., & McAllester, C. (2004). If you want strategic change, don't forget to change your cultural artifacts. *Journal of Change Management*, *4*, 63–73.

Kark, R., & Van Dijk, D. (2007). Motivation to lead, motivation to follow: The role of the self-regulatory focus in leadership processes. *Academy of Management Review*, *32*, 500–528.

Kiger, P. J. (2005, April). Corporate crunch. *Workforce Management*, *84*, 32–38.

McGregor, J., McConnon, A., Weintraub, A., Holmes, S., & Grover, R. (2007, May 14). The 25 most innovative companies. *Business Week*, *4034*, 52–60.

Schein, E. H. (1990). Organizational culture. *American Psychologist*, *45*, 109–119.

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