

A woman with long dark hair in a ponytail, wearing a white t-shirt and sunglasses, is smiling and paddling a yellow kayak on a calm lake. The background shows a dense line of green trees under a clear blue sky. The title 'CHOOSING HEALTH' is overlaid on the top half of the image. 'CHOOSING' is in a light blue, semi-transparent font, while 'HEALTH' is in a solid, bright blue font. A black paddle is visible, crossing the text.

CHOOSING HEALTH

THIRD EDITION

APRIL LYNCH
BARRY ELMORE
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CHOOSING HEALTH'S STUDENT ADVISORY BOARD

96 Student Story Contributors **1750** Student Class Testers! **175** Student Advisory Board Members

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BEHAVIOR CHANGE CONTRACT

My behavior change: _____

1. Three important short-term benefits I've discovered from my research about my behavior change are:

1. _____
2. _____
3. _____

2. My SMART goal for this behavior change is:

3. Keeping my current stage of behavior change in mind, these short-term goals and rewards will make my SMART goal more attainable:

Short-term goal	Target date	Reward
_____	_____	_____
Short-term goal	Target date	Reward
_____	_____	_____
Short-term goal	Target date	Reward
_____	_____	_____

4. Barriers I anticipate to making this behavior change are:

1. _____
2. _____
3. _____

The strategies I will use to overcome these barriers are:

1. _____
2. _____
3. _____

5. Resources I will use to help me change this behavior include:

- a friend, partner, or relative: _____
a school-based resource: _____
a health-care resource: _____
a community-based resource: _____
a book or reputable website: _____

6. When I achieve the long-term behavior change described above, my reward will be:

Reward _____ Target date _____

7. I intend to make the behavior change described above. I will use the strategies and rewards above to achieve the goals that will contribute to a healthy behavior change.

Signed: _____

When it comes to health,
what will your students choose?



Helping Students Understand That Their Actions

CHAPTER 2 STUDY PLAN

CHAPTER SUMMARY

LO 2.1

- Psychological health encompasses both mental and emotional health. Its six facets are self-acceptance, positive relations with others, autonomy, environmental mastery, a sense of purpose in life, and ongoing personal growth.
- Maslow's hierarchy of needs models the theory that people experience ever-higher levels of psychological health as they meet ever-higher levels of needs. Those with high emotional intelligence can process information of an emotional nature and use it to guide their thoughts, actions, and reactions.
- Optimism is the psychological tendency to have a positive interpretation of life's events.

LO 2.2

- Psychological health is influenced by complex genetic factors interacting with aspects of environment.
- Childhood abuse or neglect can prompt the development of maladaptive coping patterns that are carried through adulthood. Current level of social support can also strongly influence response to psychological challenges.
- Religion and spirituality can contribute to psychological health. Spiritual well-being is said to rest on three pillars: a strong personal value system, connectedness and community in relationships, and a meaningful purpose in life.

LO 2.3

- Common psychological challenges include shyness, loneliness, and anger.

LO 2.4

- Mental disorders are common and can cause long-term disruptions in thoughts and feelings that reduce an individual's ability to function in daily life.
- The United States has the highest rate of mental disorders in the world. About 25% of U.S. college students report being treated for or diagnosed with some type of mental disorder; the actual prevalence may be much higher.
- The chemical imbalance theory of mental illness arose in the 1950s; however, the American Psychiatric Association acknowledges that the causes of mental disorders are complex or unknown.

LO 2.5

- Depressive disorders and bipolar disorder are mood disorders. Depression is considered one of the most treatable mental disorders.
- A variety of forms of psychotherapy are successful in treating depression. Regular exercise can help. Antidepressant medications are often effective; however, they can prompt serious side effects.
- Bipolar disorder is characterized by periods of mania followed by periods of depression.

MasteringHealth™

Build your knowledge—and health!—in the Study Area of MasteringHealth™ with a variety of study tools.

LO 2.6

- The most common mental disorders among college students are anxiety disorders, such as generalized anxiety disorder, panic disorder, and social anxiety disorder.
- Psychotherapy and antidepressant medications are common treatments.

LO 2.7

- Other mental disorders common in young adults are obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), attention disorders, such as ADHD, and schizophrenia.

LO 2.8

- Non-suicidal self-injury is the act of cutting, burning, bruising, or otherwise injuring yourself in an effort to cope with negative, intrusive thoughts or feelings of dissociation.
- Suicide is the second most common cause of death in young adults. If a friend makes a statement indicating suicidal thoughts, offer to call a crisis hotline together, accompany your friend to your campus health services or a counseling center, or head to the nearest emergency room.

LO 2.9

- Common options in psychotherapy include cognitive-behavioral therapy (CBT), behavior therapy, psychodynamic therapy, positive psychotherapy, and acceptance and commitment therapy. Some therapists use a combined approach.

LO 2.10

- Self-care can be a good place to start if you are experiencing psychological distress. Self-care includes eating well, getting the right amount of sleep, exercising, setting realistic goals, and taking steps to build your self-esteem.
- A desire to isolate yourself is a common symptom of psychological distress; reaching out is an important coping strategy.
- Meditation can help increase relaxation and positive feelings.
- To help a friend with psychological distress or a diagnosed mental disorder, listen objectively and compassionately. Don't try to fix things for your friend but do offer your presence and support.
- There are many ways to promote psychological well-being on campus, from joining an organization such as Active Minds to volunteering to become a peer counselor.

NEW! Study Plan Tied to Learning

Outcomes Numbered learning outcomes now introduce every chapter and are associated with every section heading, giving students a roadmap for their reading. Each chapter concludes with a Study Plan, which summarizes key points of the chapter and provides review questions to check understanding, all tied to the chapter's learning outcomes. A Study Plan item covering all learning outcomes in the chapter is assignable in MasteringHealth.

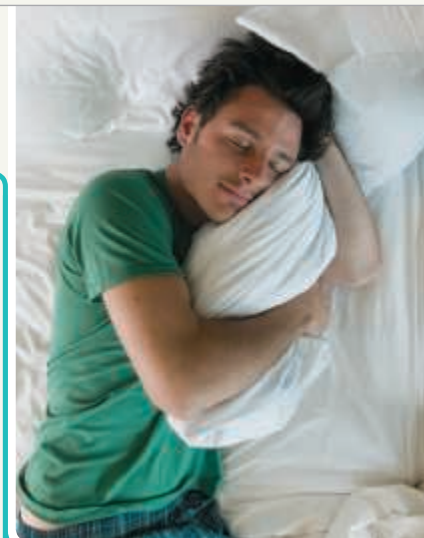
UPDATED! Chapter on Sleep, Your Body, and Your Mind Previously available as an electronic chapter, the topic of sleep has been thoroughly updated and expanded and now follows the Stress Management chapter. The extensively revised chapter covers everything from how sleep affects health to how to get your best night's sleep and includes the most up-to-date research on sleep.

4

► More than half of American adults say they experience a sleep problem almost every night.¹

► About 15% of American adults say they sleep fewer than 6 hours on weeknights.¹

► Americans aged 19–29 have the latest bedtime of any age group: on average, two minutes before midnight.¹



SLEEP, YOUR BODY, AND YOUR MIND

and Behavior Matter

UPDATED! Choose This, Not That boxes highlight good vs. bad choices students make about common health issues. Each box promotes the healthy choice and explains why the poor choice is problematic. New Choose This, Not That boxes include "Sleep: Ample Sleep vs. Sleep Deprived" and "Your Body: Fit and Active vs. Unfit and Sedentary."

Live better—get some rest! To get rid of those dark circles under your eyes:

CHOOSE THIS.

You think more clearly, you have a better memory, and you don't get sick as often.

You find it easier to control your weight.

You are less likely to experience accidents and injuries.

You enjoy better long-term health, including reduced risks of serious diseases such as diabetes or heart disease.

You're in a better mood; sufficient sleep helps you weather challenges and have more energy for fun and laughter.

NOT THAT.

You get sick frequently.

You feel irritable, depressed, anxious, and frustrated.

You can't wake up without an alarm.

You are making mistakes and finding it hard to concentrate.

You drift off while driving.

Sleep deprivation impairs memory, meaning that the hours spent staying up late studying are often wasted when you can't remember what you stayed up to review.

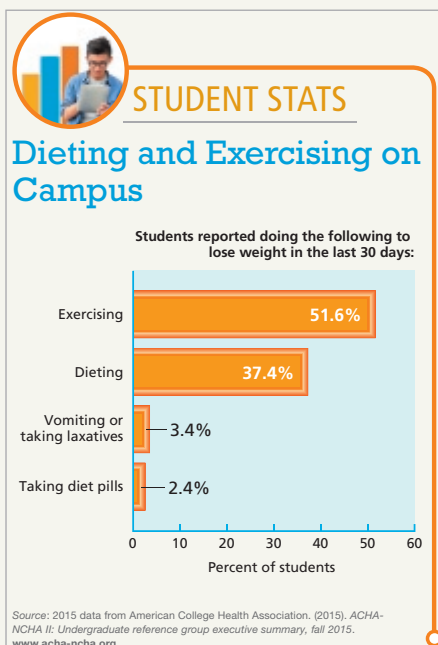
You need caffeine throughout the day to keep going.

What Life Look Likes With Ample Sleep:
Ample sleep not only makes for a great morning, but improved long-term health. When you are well rested, you remember more, enjoy better moods, find it easier to maintain a healthy weight, and reduce your risk of infectious and chronic disease.

You, Sleep Deprived:
Sleep deprivation may seem like the only path to better grades, but it's actually counterproductive. A chronic lack of sleep makes it harder to study effectively, impairs memory, dampens your mood, and leaves you more vulnerable to getting sick.

Source: WebMD, (2011, December 27). 9 surprising reasons to get more sleep. www.webmd.com.

Source: American Academy of Sleep Medicine. (2013, January 1). Seven signs you need sleep. www.sleepeducation.org.



UPDATED! Student Stats What do students across the nation think about pertinent health topics? Do they think differently than your students do? Student Stats throughout the book present up-to-date national statistics and research on key health topics that apply to today's college population.

HALLMARK! Choosing to Change Worksheets help students target a behavior they want to change, determine the stage of behavior change based on the transtheoretical model of behavior change, think through the steps necessary to make positive change, and put themselves on a path to success.

Choosing to Change Worksheet

To complete this worksheet online, visit [MasteringHealth™](#)

You have acquired extensive information from this chapter about stressors and how to manage them. You had the opportunity to make observations about whether your perceptions of negative events in your life may be contributing to making you feel distressed by completing the **Negative Event Scale for University Students Self-Assessment** on page 63.

Directions: Fill in your stage of change in step 1 and complete the remaining steps with your stage of change in mind.

Step 1: Assess your stage of behavior change. Please check one of the following statements that best describes your readiness to adopt stress management techniques to better cope with stress.

I do not intend to adopt stress management techniques in the next six months. (Precontemplation)

I might adopt stress management techniques in the next six months. (Contemplation)

I am prepared to adopt stress management techniques in the next month. (Preparation)

I have been adopting stress management techniques for less than six months. (Action)

I have been adopting stress management techniques for more than six months. (Maintenance)

Step 2: Recognize chronic stress. It is important to identify the warning signs of chronic stress to assess whether your health may be at risk. The following table lists some of the common warning signs and symptoms of stress overload. Check whether you have experienced any of these within the past month.

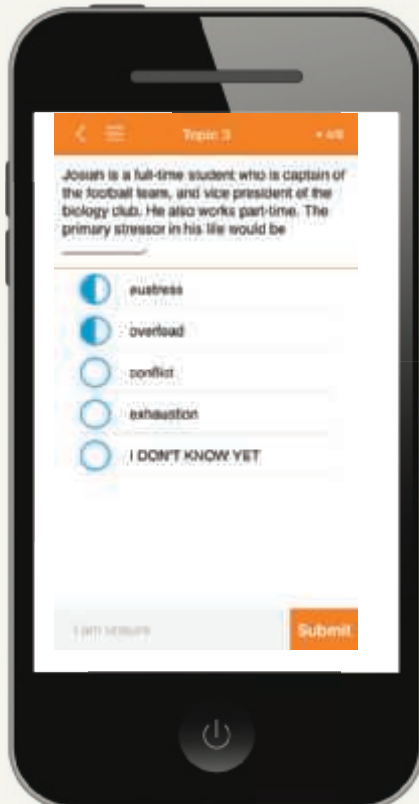
Recognizing Warning Signs and Symptoms of Stress Overload	Emotional		Physical		Behavioral	
	Yes	No	Yes	No	Yes	No
Anxiety			Stooped posture		Overreacting to problems or difficult situations	
Sleep disruption			Sweaty palms		Increased use of alcohol, tobacco, or other drugs	
Anger and agitation			Chronic fatigue		Unusually impulsive behavior	
Trouble concentrating			Weight loss or weight gain		Feeling "burned out" on school or work	
Unproductive worry			Migraine or tension headaches		Withdrawing from relationships or contact with others	
Frequent mood swings			Neck aches		Frequent bouts of crying	
Depression			Digestive problems			
			Asthma attacks			
			Physical symptoms that your doctor can't attribute to another condition			
			Feelings of anxiety or panic			

The more signs and symptoms you notice, the closer you may be to allostatic overload or excessive stress. Be mindful that the signs and symptoms of stress can also be caused by other psychological and physiological medical problems. If you're experiencing any of the warning signs of stress overload, it's important to see a health-care professional for a full evaluation.

Continuous Learning Before, During, and After Class

BEFORE CLASS

Mobile Media and Reading Assignments Ensure Students Come to Class Prepared



NEW! Dynamic Study Modules help students study effectively by continuously assessing student performance and providing practice in areas where students struggle the most. Each Dynamic Study Module, accessed by computer, smartphone, or tablet, promotes fast learning and long-term retention.

NEW! Interactive eText 2.0 gives students access to the text whenever they can access the internet. eText features include:

- Now available on smartphones and tablets.
- Seamlessly integrated videos and other rich media.
- Accessible (screen-reader ready).
- Configurable reading settings, including resizable type and night-reading mode.
- Instructor and student note-taking, highlighting, bookmarking, and search.
- Now available for offline use via the Pearson eText 2.0 app.



Pre-Lecture Reading Questions are easy to customize and assign

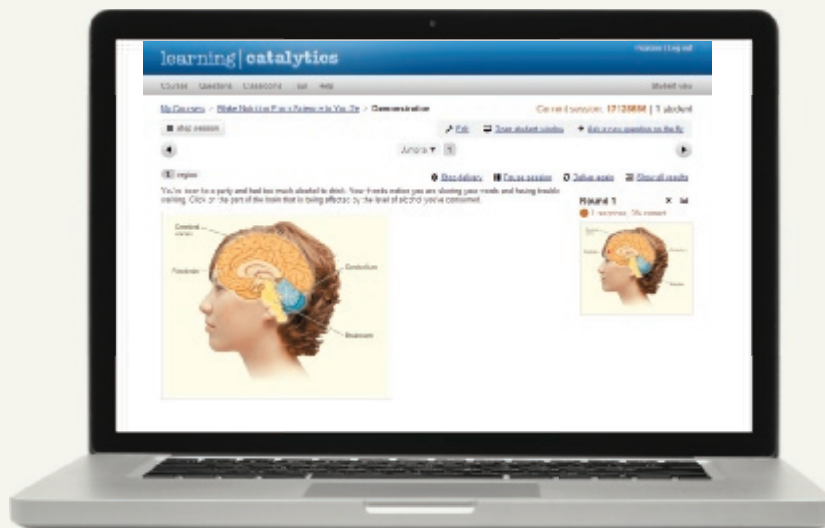
Reading Questions ensure that students complete the assigned reading before class and stay on track with reading assignments. Reading Questions are 100% mobile ready and can be completed by students on mobile devices.

with MasteringHealth™

DURING CLASS

Engage Students with Learning Catalytics

Learning Catalytics, a “bring your own device” student engagement, assessment, and classroom intelligence system, allows students to use their smartphone, tablet, or laptop to respond to questions in class.



AFTER CLASS

MasteringHealth Delivers Automatically Graded Health and Fitness Activities

NEW! Interactive Behavior Change Activities—Which Path Would You Take? Students explore various health choices through an engaging, interactive, low-stakes, and anonymous experience. These activities show students the possible consequences of various choices they make today on their future health. These activities are assignable in MasteringHealth with follow-up questions.

As a student, you have many financial responsibilities. You have to pay for food, rent, textbooks, clothes, your cell phone, and other bills. Sometimes there isn't enough to go around. It's the beginning of the semester, and you have to pay for rent and books. You're stressed. What should you do?

Pay the rent and do without the books. There is no middle ground here, and I need a roof over my head. Rent it is.

Consider my options. I can take on a roommate and buy the more cost-effective 4-book or go the books from the reserve shelf in the library. Making the choice to scale back would cut my rent and book costs in half.

Consider "downshifting" or taking a step back. Perhaps, there are some unnecessary expenses you can cut out of your life. Doing so could help with your finances and your stress level.

continue

Continuous Learning Before, During, and After Class

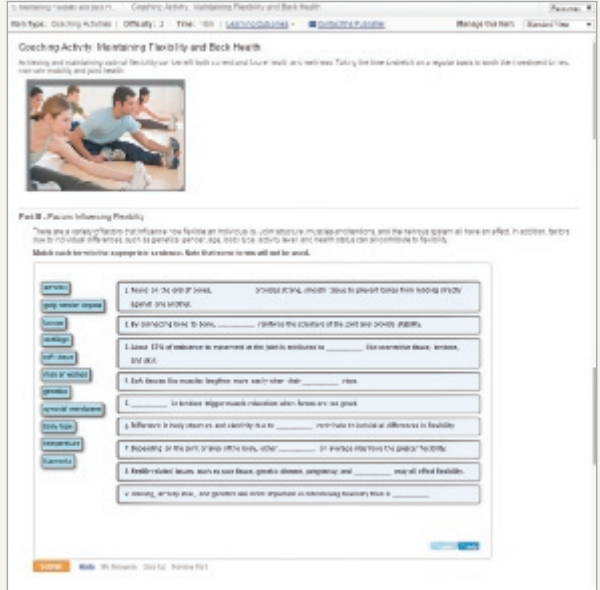
AFTER CLASS

Easy to Assign, Customize, Media-Rich, and Automatically Graded Assignments

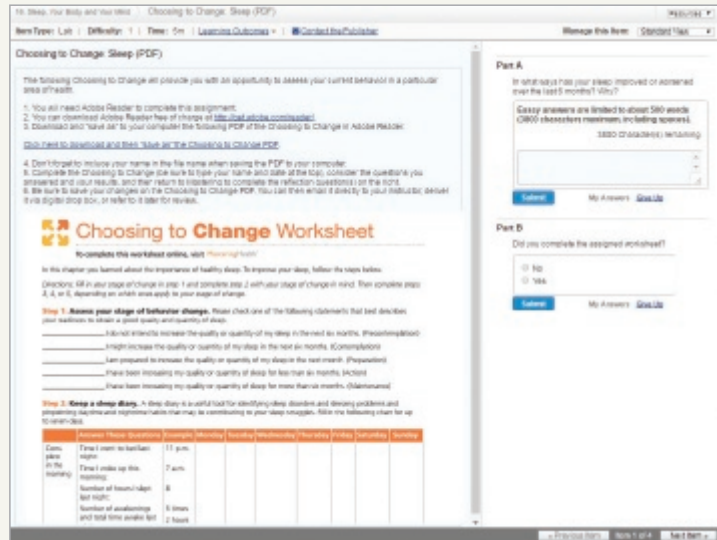


NEW! Study Plans tie all end-of-chapter material to specific numbered Learning Outcomes and MasteringHealth assets. Assignable study plan items contain at least one multiple choice question per Learning Outcome and wrong-answer feedback.

NEW! Coaching Activities guide students through key health and fitness concepts with interactive mini-lessons that provide hints and feedback.



UPDATED! Choosing to Change Worksheets are available as assignable labs within MasteringHealth.

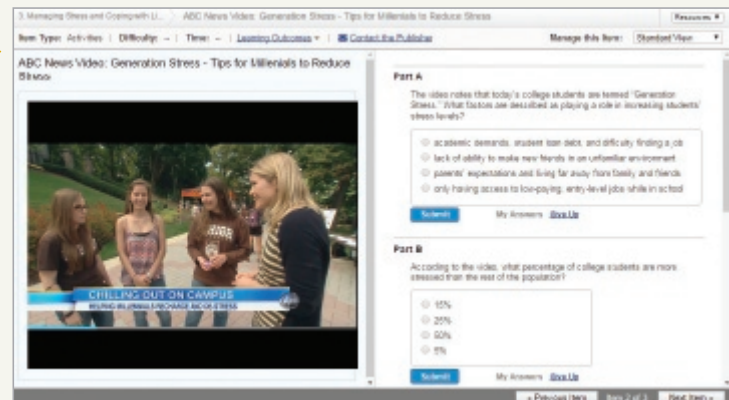


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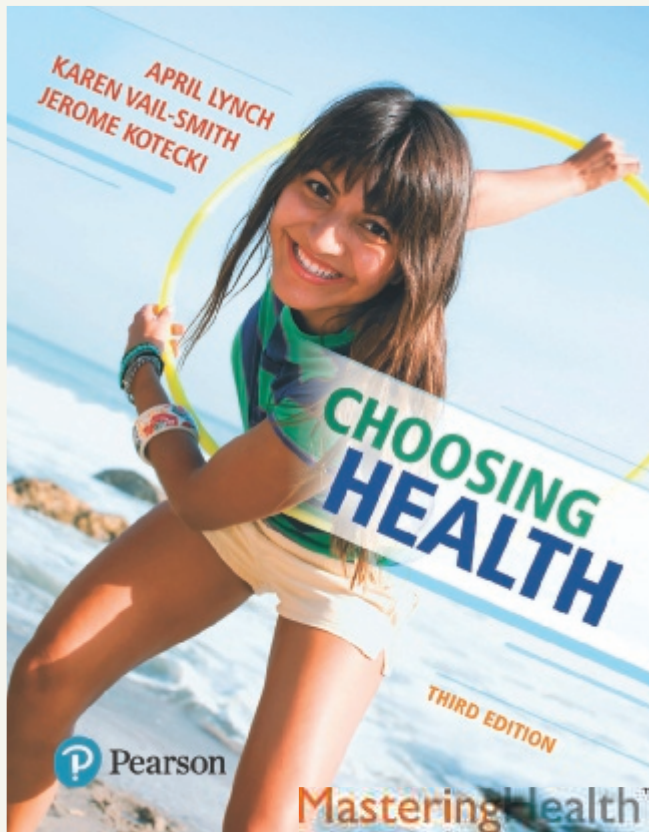
Behavior Change Videos are concise whiteboard-style videos that help students with the steps of behavior change, covering topics such as setting SMART goals, identifying and overcoming barriers to change, planning realistic timelines, and more. Additional videos review key fitness concepts such as determining target heart rate range for exercise. All videos include assessment activities and are assignable in **MasteringHealth™**

NEW! ABC News Videos bring health to life and spark discussion with up-to-date hot topics from 2012–2015. Activities tied to the videos include multiple choice questions that provide wrong-answer feedback to redirect students to the correct answer.



UPDATED! NutriTools Coaching Activities in the nutrition chapter allow students to combine and experiment with different food options and learn firsthand how to build healthier meals.

Resources for YOU, the Instructor



MasteringHealth provides you with everything you need to prep for your course and deliver a dynamic lecture, in one convenient place. Resources include:

MEDIA ASSETS FOR EACH CHAPTER

- ABC News Lecture Launcher videos
- Behavior Change videos
- PowerPoint Lecture Outlines
- PowerPoint clicker questions and Jeopardy-style quiz show questions
- Files for all illustrations and tables and selected photos from the text

TEST BANK

- Test Bank in Microsoft Word, PDF, and RTF formats
- Computerized Test Bank, which includes all the questions in a format that allows you to easily and intuitively build exams and quizzes.

TEACHING RESOURCES

- Instructor Resource and Support Manual in Microsoft Word and PDF formats
- Teaching with Student Learning Outcomes
- Teaching with Web 2.0
- Learning Catalytics: Getting Started
- Getting Started with MasteringHealth

STUDENT SUPPLEMENTS

- Take Charge of Your Health Worksheets
- Behavior Change Log and Wellness Journal
- Eat Right! Healthy Eating in College and Beyond
- Live Right! Beating Stress in College and Beyond
- Food Composition Table

Measuring Student Learning Outcomes? All of the MasteringHealth assignable content is tagged to book content and to Bloom's Taxonomy. You also have the ability to add your own learning outcomes, helping you track student performance against your learning outcomes. You can view class performance against the specified learning outcomes and share those results quickly and easily by exporting to a spreadsheet.

CHOOSING HEALTH

THIRD EDITION

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“ This book is dedicated to my husband, Colin, daughter, Ava, and son, Van. In the ever-changing love and laughter project that is our family, I’m inspired to reach for better choices, every single day.”

—April Lynch

“ I dedicate this book to my loving family, William, Alex, Mary-Brett, and Zan. I thank my colleagues, who always provide support and good counsel, and my students, who teach me every day.”

—Karen
Vail-Smith

“ This book is dedicated to my friends and family for their continued support and love. They allowed me the time and energy to focus my passion and write this book.”

—Jerome Kotecki

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April Lynch is an award-winning author and journalist who specializes in health, the medical and biological sciences, and human genetics. During her tenure with the *San Jose Mercury News*, the leading newspaper of Silicon Valley, she served as the science and health editor, focusing the paper's coverage on personal health and scientific developments in the field of disease prevention. She has also worked as a writer and editor for the *San Francisco Chronicle*. April has written numerous articles on personal health, medical and scientific advances, consumer issues such as health insurance, and the ways that scientific breakthroughs are redefining our understanding of health. She has been a frequent contributor to leading university textbooks covering applied biology, nutrition, and environmental health and science. Along with *Choosing Health*, April has co-authored *Health: Making Choices for Life*, an innovative personal health textbook for instructors who desire a more detailed, in-depth book for students majoring in health-related subjects. Together with a leading genetic counselor, April is also the co-author of *The Genome Book*, a hands-on guide to using genetic information in personal health decisions. Her work has won numerous awards from organizations such as the Society of Professional Journalists, the California Newspaper Publishers Association, and the Associated Press. Her current interests include a focus on how people receive and interact with health information online as well as how complex scientific and medical information is best shared compellingly and effectively in digital media. She lives in the San Francisco Bay Area with her husband and children.



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ABOUT THE CONTRIBUTOR

Laura Bonazzoli

Laura Bonazzoli has been writing and editing in the health sciences for over 20 years. Her early work in human anatomy and physiology, chemistry, and other core sciences laid the foundation for writing projects in nursing, pathology, nutrition, complementary and alternative medicine, and personal health. Her commitment as a writer is to help her readers appreciate the power of small choices to improve their health and the health of their communities. In her free time, Laura and her daughter enjoy exploring the gardens, byways, and beaches of mid-coast Maine.

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Access these chapters online through [MasteringHealth™](#)

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PREFACE

When it comes to your health, what will you choose? You might think that question pertains to something in your future, such as who your next doctor should be or how you can avoid illness down the road.

But the truth is you have already answered that question several times today, in ways both large and small. Did you get enough sleep last night? What will you have for lunch? Will you really hit the gym this afternoon or just think about it? Are you waiting until the last minute to begin that paper due next week, or are you planning ahead so that you don't get overwhelmed?

In an era filled with medical innovations and high-tech health care, it's easy to overlook the fact that much of your health still rests in your hands. We all have to live with some factors we can't immediately control, such as our genetics and the physical environment that surrounds us. But beyond these fixed elements, your decisions and lifestyle habits count for a lot. This book is called *Choosing Health* to underscore that your actions and behavior *matter*. You can consciously make decisions now that greatly reduce your chances of developing health problems later. The health you choose is an essential part of creating the life you want, both on campus now and in the years ahead.

Key Features of This Text

We wrote this book to help you make the best possible health choices, using the most recent and scientifically accurate information available. Other textbooks provide plenty of health information but offer little guidance for actively improving your health. *Choosing Health*, third edition, makes health information more relevant to you, with unique features such as these:

- **New! MasteringHealth with eText 2.0** This product features all of the resources of MasteringHealth in addition to the new Pearson eText 2.0. Now available on smart phones and tablets and ADA accessible, Pearson eText 2.0 comprises the full text, including videos and other rich media. Students can configure reading settings, including resizable type and night-reading mode; take notes; and highlight, bookmark, and search the text.
 - A Robust MasteringHealth course: Find new ABC news videos and updated Nutritools activities and associated coaching activities, Tough Topics Coaching activities, Which Path Would You Take? decision-making activities, and auto-graded self-assessments, reading quizzes, and more!
 - Increased mobile offerings with Interactive eText 2.0:
 - Embedded interactive self-assessment worksheets that students can anonymously fill out and receive feedback on
 - Embedded media such as ABC News videos, Student Story videos, nutrition animations, behavior change videos, and Which Path Would You Take? decision-making activities
- **New! Chapter 4: Sleep, Your Body, and Your Mind** covers the most up-to-date research on sleep, its effects on health, and how to get your best night's rest. Previously available as an electronic chapter, the topic of sleep has been thoroughly updated and expanded and now follows the Stress Management chapter.
 - Also available as electronic chapters are Chapter 16: Your Environment, Your Health and Chapter 17: Aging Well.
- **New, clear learning path and study plan:** The third edition includes achievable learning outcomes that are linked to chapter sections and end-of-chapter material to create a clear learning path and study plan. Learning outcomes are called out after each main section and listed (by number) next to the relevant chapter summary and Test Your Knowledge and new critical thinking questions in the end-of-chapter study plan. Study plan items in MasteringHealth allow instructors to assign one assessment item that covers all key learning outcomes in a chapter.
- **New end-of-section review questions:** Each main section in a chapter ends with review questions that help students confirm that they have achieved an understanding of the learning outcome for that section.
- **Updated Choose This, Not That** boxes highlight good and poor choices students make about common health issues. Each box promotes the healthy choice and explains why the poor choice is problematic. New Choose This, Not That boxes include "Sleep: Ample Sleep vs. Sleep Deprived" and "Your Body: Fit and Active vs. Unfit and Sedentary."
- **Updated Media and ...** boxes discuss how today's media—everything from TV commercials to phone apps—affect our actions and feelings concerning a variety of health topics.
- **Updated Choosing to Change Worksheets** (also available online through MasteringHealth™) in every chapter help you target a behavior you want to change, determine your stage of behavior change based on the transtheoretical model of behavior change, think through the steps necessary to make a positive change, and put yourself on a path to success.

- **Updated Change Yourself, Change Your World** sections at the end of each chapter show you how to implement the health information you've just learned. Each section offers advice on personal choices, and in some cases, suggestions on helping friends, family, or your community.
- **Updated "What Do You Think?" questions** prompt you to think deeply and appear throughout each chapter.
- **Student Stories** appear throughout the text. QR codes next to select Student Stories in the text link directly to that student's video. These stories reveal how students have dealt with health challenges and may inspire you to make changes in your own life.
- **Updated and additional Student Stats** throughout the book show you how health issues affect the college student population. Colorful graphs display statistics compiled by national surveys of college students.
- **Health Online** links throughout the book guide you to relevant health-related quizzes, tools, websites, videos, and podcasts. These links can also be found on MasteringHealth™, where they will be updated as needed.
- **Self-Assessments**, also available online through MasteringHealth™ and in interactive form in eText 2.0, enable you to evaluate your current health behaviors and identify areas you may wish to work on.
- **A thoroughly updated book design** makes the book fun to read and easier to navigate.
- **The lively, engaging writing** is informative, scientifically reliable, and authoritative.
- **Practical Strategies** boxes provide concrete tips you can use to develop and maintain healthful behaviors.
- **Consumer Corner** boxes examine consumer-related issues such as using over-the-counter medications safely, choosing athletic shoes, and deciding whether to purchase organic produce.
- **Diversity & Health** boxes highlight how health issues can affect certain populations disproportionately, depending on sex, racial/ethnic background, socioeconomic class, and other factors.
- **Myth or Fact?** boxes provide scientific evidence supporting or refuting common health-related claims.
- **Updated and additional Special Feature** boxes highlight hot topics in health, including subjects like how procrastination sabotages your future, the importance of getting enough calcium in your diet, the benefits of strengthening your core, the Zika virus, reducing your risk for chronic disease, and your rights under Title IX.

New in the Third Edition

The entire text has been reviewed and updated for the most current research, data, and statistics. In addition, the organization of many chapters has been updated to promote readability and clarity. The presence of Choose This, Not That features, Change Yourself, Change Your World sections, and Choosing to Change Worksheets enhance an already robust behavior change emphasis throughout the text. The

expanded What Do You Think? questions encourage students to use their higher thinking skills. Above and beyond these improvements, each chapter has undergone specific changes.

Chapter 1:

- Introduced several pairs of key terms related to health, such as incidence and prevalence, morbidity and mortality, and causes and risk factors.
- Updated Figure 1.2, on dimensions of health, to make it more readable.
- Expanded information on emerging infectious diseases, such as the Zika virus.
- Added overview of genetics and discussion of determinants of health, including Figure 1.4 on genes, DNA, and chromosomes.
- Expanded information on the influence of economic inequality on life expectancy.

Chapter 2:

- Added information about the effects of bullying on psychological health.
- Updated stats on the number of college students experiencing mental health issues.
- Included recent discoveries about the causes of depression.
- Revised and updated information about the treatment of ADHD.
- Expanded section of non-suicidal self-injury.
- Reorganized sections to comply with designations in DSM-5.

Chapter 3:

- Reorganized and clarified the discussion of the physiology of the stress response, including the neural and hormonal phases.
- Increased the discussion of the health benefits of moderate stress and added a brief discussion of the concept of underload.
- Expanded the discussion of stress and body weight.
- Added a discussion of stress and headaches.
- Discussed the ambiguity surrounding the associations between stress and academic performance.
- Expanded the discussion of stress and age.
- Changed the discussion "Common Causes of Stress" to "What Are College Students' Common Stressors?" focusing the discussion on college students.
- Included new section called "Resources for Managing Stress," which identifies social support, campus support, and medical options, and integrates some of the material formerly under "Campus Advocacy."
- Added a Special Feature, called Procrastination: Sabotaging Your Future Self, on procrastination as a source of stress.

Chapter 4:

- Moved the sleep chapter from online into the printed book to follow the stress chapter and heavily revised and expanded coverage of sleep topics.
- Updated the scientific information that covers the stages and cycles of sleep, in both the related text and graphics.
- Created a new Choose This, Not That feature on the benefits of ample sleep.
- Updated the scientific and medical information on the topic of sleep apnea.
- Created a new Practical Strategies feature on effective approaches to napping that don't disrupt night-time sleep.
- Expanded information and statistics on the sleep-disrupting properties of electronic devices.

Chapter 5:

- Changed terminology for the type of carbohydrates recommended to consume from complex to fiber-rich carbohydrates.
- Changed lean proteins discussion to a Practical Strategies box, Go Lean with Protein.
- Significantly altered the discussion of the role of calcium supplements in bone health.
- Updated the discussion of the concerns about sugary drinks to include the information that calories as fluid don't trigger the sensation of satiety in the brain.
- Reorganized for clarity the discussion of functional foods, including foods rich in phytochemicals, some of which act as antioxidants, and probiotics and prebiotics.
- Discussed recent state and federal actions against the makers of fraudulent and dangerous dietary supplements.
- Updated the discussion of the new FDA Nutrition Facts panel.
- Updated the discussion of the Dietary Guidelines for Americans to the 2015–2020 Guidelines.
- Removed separate discussion called "How Do Nutrition Guidelines Vary for Different Groups?"
- In addition to celiac disease, mentioned non-celiac gluten sensitivity.
- Integrated discussion of genetically modified foods in the Consumer Corner called Organic, Non-GMO, Local, Fair Trade: What to Choose?
- Mentioned how to support developing an on-campus food bank.

Chapter 6:

- Added a new table and information on the Metabolic Equivalent of Task (METs) scale.
- Added a new chart and information on the Rated Perceived Exertion (RPE) scale.
- Updated the "Self-Assessment" feature to include the Karvonen equation.

- Added information on the idea of "diminishing returns" in fitness.
- Added information on additional types of stretching exercises.
- Expanded information on safe weight-lifting techniques.
- Expanded and updated information on performance-enhancing drugs.

Chapter 7:

- Included updated statistics and information on the global obesity crises and alarming trends in weight gain among American children.
- Added discussion of the effects of social media on body image.
- Removed the Diversity & Health box about the thrifty gene theory of weight loss.
- Added updated statistics on the financial burden of obesity.
- Revised the section on the role genes play in promoting obesity.
- Expanded the section on prescription weight loss medications to include two new drugs.
- Added sections on two additional disordered eating problems: anorexia athletic and orthorexia nervosa.

Chapter 8:

- Updated scientific and medical information about addiction in general, both in the main text and in a new Choose This, Not That feature on the effects of drugs on the brain.
- Expanded a section on behavioral addictions.
- Significantly expanded and updated the topic of opioid abuse, addictions, overdose, including both prescription opioids and heroin.
- Significantly expanded and updated the topic of marijuana, including legalization and medical use.
- New information on the topic of drugged driving.

Chapter 9:

- Updated statistics on alcohol and tobacco use on campus.
- Included a new section evaluating health benefit claims of alcohol use.
- Included discussion explaining why scientists believe that alcohol use leads to an increase risk of certain cancers.
- Updated alcohol use and drunk driving statistics.
- Included most recent findings and statistics on the health effects of tobacco use.
- Updated information and statistics about smoking on campus and why some students smoke.
- Revised section on electronic cigarettes to include latest information on risks and regulation.
- Added a section on hookahs.

Chapter 10:

- Updated demographic data and statistics throughout the chapter.
- Extensive updates to the information on the state of same-sex marriage legalization.
- Updated the Special Feature about social media, communication, and cyberbullies to include newer forms of social media, such as Instagram.
- Updated the “Student Stats” feature to provide a detailed demographic look at the numbers of students who are married or who are parents.
- Updated the single parenthood section.

Chapter 11:

- Added updated ACOG guidelines for pelvic and pap exams.
- Added updated PMDD diagnostic criteria from DSM-5.
- Updated sexual behavior statistics.
- Revised section on sexting to include practical information about avoiding negative consequences.
- Added extensive revision of gender identity section.
- Revised IUD and emergency contraception sections to include information on currently available products.

Chapter 12:

- Updated and focused the Special Feature box entirely on Zika virus to provide in-depth information on this growing public health concern, including a new U.S. vector map.
- Merged and streamlined information on reducing risk of contracting infections by moving information on hand sanitizer use to the Practical Strategies box.
- Updated and merged information on MRSA as a topic within the overall discussion of bacterial infections.
- Extensive updates to the information on HIV/AIDs and the ongoing global campaign against the virus.

Chapter 13:

- Improved Figure 13.1 on the mechanisms of diabetes.
- Added a Student Stats figure on college students’ participation in key health behaviors linked to chronic disease.
- Eliminated the Diversity & Health box on gender differences in heart disease, while still discussing the key points in the narrative.
- Included a more comprehensive discussion of the role of proto-oncogenes and tumor-suppressor genes in cancer.
- Altered the Self-Assessment on cancer risk to reflect new understanding of the more limited role of specific nutrients and foods in cancer risk.
- Removed the feature boxes on testicular self-exam and breast self-exam as these self-exams are no longer recommended by the American Cancer Society or the U.S. Preventive Services Task Force.

- Covered the steps students can take to reduce their risks for type 2 diabetes, cardiovascular disease, and cancer in a Special Feature called Reducing Your Risk for Chronic Disease. This replaces narrative paragraphs and the former Practical Strategies called Healthy Food Choices.

Chapter 14:

- Extensive updates to information on the Affordable Care Act, including health insurance options after graduation.
- Updated information on handling prescription medications properly, especially in the context of prescription opioid abuse and overdose.
- Expanded key information on interacting with the medical system, including an expanded section on when to seek professional medical care and a new section on patient rights.
- Moved information about vaccinations into the infectious disease chapter.
- Updated all health screenings information and reorganized the table on screenings to make the information easier to use.
- Updated all information about CAM use among college students, as well as information about evaluating CAM practitioners and treatments.

Chapter 15:

- Revised Practical Strategies box to include preventing tech injuries from using mobile devices.
- Added a Special Feature on students’ rights and protections under Title IX and also added updated information in the text.
- Included extensive updates to all injury and crime statistics.
- Updated figure on types of distracted driving
- Included new information on opioids as the leading cause of drug overdose deaths.
- Removed the feature on purchasing bicycle helmets.
- Removed section on injuries from backpack use.

Chapter 16:

- Included a discussion of the effects of China’s one-child policy.
- Completely reorganized and rewrote the third main section of the chapter, Air Pollution and Climate Change, to update research into evidence, long-lived greenhouse gases, etc., and to eliminate former redundancies.
- Revised graph showing the association between increased global surface temperature and increased atmospheric CO₂ levels between 1880 and 2015.
- Included a discussion of the landmark Paris Agreement on climate change.
- Entirely rewrote the Myth or Fact feature box on electric vehicles.

- Deleted the table on air pollutants because it repeated information already in the narrative.
- Completely reorganized and rewrote the discussion of types of water pollutants, including the discussion of arsenic in rice, lead in Flint, Michigan, and other communities, dioxins, and agricultural chemicals.
- Entirely rewrote the Diversity & Health feature box on working for environmental justice.
- Included a brief discussion of the hazards associated with phthalates in plastic products and personal care items, and of perfluorinated compounds (PFCs) used in food packaging and other materials.
- Deleted the table on pollutants at home because a significant portion of it repeated information already in the narrative.
- Entirely rewrote the Myth or Fact feature box on the potential link between use of cell phones and brain cancer.

Chapter 17:

- Added statistical information on centenarians.
- Replaced discussion of “eight Americas,” which was becoming outdated, with new information on troubling disparities in life expectancy.
- Modestly expanded information on:
 - Andropause and the risks and benefits of testosterone therapy
 - Benefits of exercise in moderating age-related changes, including cognitive decline
 - Risks of smoking in brain changes affecting cognition
 - Benefits of mental exercises such as engaging in hobbies or learning a new language
 - Opposition to and advocacy of physician aid in dying
 - The grief experience
- Completely rewrote the Media and Aging box on brain fitness games.
- Added a new discussion on the contributions of meaning, purpose, and connection to longevity.
- Replaced Tufts University MyPlate for Older Adults with a plate based on the ChooseMyPlate.gov recommendations.

Student Supplements

The student supplements for this textbook include:

- **MasteringHealth™ (www.masteringhealthandnutrition.com)** is the most effective and widely used online homework, tutorial, and assessment system for the sciences. It delivers self-paced tutorials that focus on course objectives, provides individualized coaching, and responds to your progress. Through MasteringHealth™, access:
 - Health Coaching Activities that guide you through key health and fitness concepts with interactive mini-lessons that provide hints and feedback.

- NutriTools Build-a-Meal Activities, which allow you to combine and experiment with different food options and learn firsthand how to build healthier meals.
- Dynamic Study Modules that enable you to study effectively on your own in an adaptive format. You receive an initial set of questions with a unique answer format asking you to indicate your confidence level. Once completed, reviews include explanations using materials taken directly from the text. These modules can be accessed on smart phones, tablets, and computers.
- eText 2.0 is a mobile friendly and ADA accessible version of the textbook included at no additional cost in MasteringHealth. eText 2.0, accessible via computers, smart phones, and tablets, comes complete with embedded ABC News videos, Student Story videos, and interactive self-assessment worksheets and includes instructor and student note taking, highlighting, bookmarking, and search functions.

MasteringHealth™ also contains a complete set of student videos; health-related ABC News videos; online behavior change tools; Choosing to Change Worksheets and Self-Assessments; practice tests and additional self-assessments; links to updated websites, videos, and podcasts; and a rich suite of additional study tools, including MP3 audio files, mobile tips you can access on your smart phone, audio case studies, an online glossary, and flashcards.

- **Mobile Tips!** Now you can access health tips covering everything from stress management to fitness wherever you go, via your smart phone. A set of four different tip “cards” per chapter are available. Access them by navigating to <http://chmobile.pearsoncmg.com> on any mobile device. Or go straight to each chapter’s cards by scanning the QR code provided at the end of the chapter.
- **A YouTube channel (www.youtube.com/ch00singhealth)** features selected student videos as well as videos from around the web.
- **The Behavior Change Log Book and Wellness Journal** is a booklet you can use to track your daily exercise and nutritional intake and create a long-term nutrition and fitness prescription plan.
- **A Digital 5-Step Pedometer** measures steps, distance (miles), activity time, and calories.
- **MyDietAnalysis (www.pearsonhighered.com/mydietanalysis)** is an online tool powered by ESHA Research, Inc., that features a database of nearly 20,000 foods and multiple reports. It allows you to track your diet and physical activity, receive analyses of what nutrients you may be lacking, and generate and submit reports electronically.
- **Eat Right! Healthy Eating in College and Beyond** is a guidebook that provides practical tips, shopper’s guides, and recipes so that you can start putting healthy principles into action. Topics include healthy eating in the cafeteria, dorm room, and fast food restaurants; eating on a budget; weight-management tips; vegetarian alternatives; and guidelines on alcohol and health.

- **Live Right! Beating Stress in College and Beyond** is a guidebook that provides useful strategies for coping with a variety of life's challenges, during college and beyond. Topics include sleep, managing finances, time management, coping with academic pressure, relationships, and being a smart consumer.
- **Take Charge of Your Health! Worksheets** is a collection of 50 self-assessment exercises that you can fill out to assess your health and wellness. Worksheets are available as a gummed pad and can be packaged at no additional charge with the main text.

Instructor Supplements

This textbook comes with a comprehensive set of supplemental resources to assist instructors with classroom preparation and presentation.

- **MasteringHealth™ (www.masteringhealthandnutrition.com)** helps instructors maximize class time with easy-to-assign, customizable, and automatically graded assessments that motivate students to learn outside of the class and arrive prepared for lecture. Through MasteringHealth™, access:
 - Publisher-provided problems with easy-to-edit questions and answers. It is also easy to import your own questions or quickly add images or links to further enhance the student experience.
 - Learning Outcomes that are tied to Bloom's Taxonomy and are designed to let Mastering do the work in tracking student performance against your learning outcomes. Mastering offers a data-supported measure to quantify students' learning gains and to share those results quickly and easily.
 - Learning Catalytics that let you use a wide variety of question types to engage students and understand what they do or don't know.

MasteringHealth™ also has a new Calendar View displaying upcoming assignments and due dates and allows instructors to easily schedule assignments.

- **The Teaching Toolkit Online Resources** replaces the former printed Teaching Toolbox and DVD set and provides everything you need to prep for your course and deliver a dynamic lecture. These resources are downloadable from the Instructor Resources section in MasteringHealth as well as from Pearson's Instructor Resource Center. The Teaching Toolkit Resources include more than 50 *ABC News* Lecture Launcher videos, PowerPoint Lecture Outlines, PowerPoint clicker questions and *Jeopardy*-style quiz show questions, files for all illustrations and tables and selected photos from the text, the Test Bank in Word and PDF formats, the Computerized Test Bank, the Instructor's Resource Support Manual, Introduction to MasteringHealth™, Introductory video for Learning Catalytics, *Great Ideas! Active Ways to Teach Health and Wellness*, *Teaching with Student Learning Outcomes*, *Teaching with Web 2.0*, *Take Charge of Your Health! Worksheets*, *Behavior Change Log Book and Wellness Journal*, *Eat Right! Healthy Eating in College and Beyond*, and *Live Right! Beating Stress in College and Beyond*.

We are a team of health educators and communicators whose work reflects our deeply held belief that discussions of health are always a dialogue in progress. We hope this book will help you make changes toward better health. We also hope you'll let us know how those changes are going, and how we can make *Choosing Health* even more useful. Go to MasteringHealth™ and share your stories with us!

April Lynch
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Authoring a textbook can feel like a solitary job during countless hours alone, researching topics or drafting chapters. But in reality, we as authors were supported not only by each other but by an amazing team of editors, publishing professionals, content contributors, supplement authors, and reviewers.

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The creation of the instructor and student supplements for *Choosing Health*, third edition, could not have been completed without the excellent work of our supplement authors. The Test Bank was created by Lisa Tunks. The PowerPoint Lecture Outlines and *Jeopardy*-style quiz shows were written by Sloane Burke-Winkelman and Autumn Hamilton, respectively. Nicole George-O'Brien authored the Instructor Resource and Support Manual. Many thanks to all of them.

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And, finally, we'd like to thank all the reviewers who spent their time reading and commenting on our chapters—we listened to each and every one of your comments and are extremely grateful for your feedback. A full list of reviewers begins on the next page.

From April Lynch

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From Karen Vail-Smith

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From Jerome Kotecki

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faculty contribution when it comes to the scholarship of translational health research that links the latest health science discoveries to effective behavioral interventions that enhance health and well-being. Knowledge and best practice in health are constantly changing and new research and experience broaden our understanding. I appreciate the support of Dr. Mitchell Whaley, dean of the College of Health, my colleagues in the Department of Nutrition and Health Science, and Dr. Terry King, interim president of Ball State University. Finally, I wish to extend my gratitude to my mentors. Thank you to Dr. James Stewart, my undergraduate advisor, for having faith in my abilities and encouraging me to stretch myself academically; and to Dr. Budd Stalnaker, Dr. John Seffrin, Dr. Mohammad Torabi, and Dr. Morgan Pigg, my graduate advisors, for your expertise and high standards and for guiding me on a path of enlightenment during my years at Indiana University and beyond.

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HEALTH IN THE 21ST CENTURY

1

► **The current life expectancy at birth in the United States is 78.8 years.ⁱ**

.....

► **Heart disease and cancer are responsible for nearly half of all deaths in the United States.ⁱ**

.....

► **Poor nutrition, inadequate physical activity, obesity, tobacco use, and alcohol abuse are the factors most strongly linked to premature death.ⁱⁱ**

.....

LEARNING OUTCOMES

- LO 1.1** Discuss the evolution of our current understanding of health.
- LO 1.2** Identify and describe seven dimensions of health.
- LO 1.3** Discuss health challenges across America and around the world.
- LO 1.4** Classify determinants of health into six broad groups, identifying the group that is most strongly within an individual's control.
- LO 1.5** Explain how predisposing, enabling, and reinforcing factors can promote or hinder behavior change.
- LO 1.6** Compare three models of behavior change.
- LO 1.7** List seven steps for achieving successful behavior change and two strategies for preventing relapse.

Health matters.

disease An alteration in body structure or biochemistry that is significant enough to cause the body's regulatory mechanisms to fail. Symptoms may or may not be present.

illness A subjective state in which a person feels unwell. Disease may or may not be present.

signs Objective, often visible or measurable, indications that disease or injury is present.

symptoms Subjective experiences such as pain or fatigue that indicate disease or injury is present.

health More than merely the absence of disease, a state of well-being that encompasses physical, social, psychological, and other dimensions and is a resource for everyday life.

Have you ever noticed that, when you're ill, stressed, or sleep deprived, you're more likely to doubt yourself, argue with your roommate, and feel overwhelmed by even simple tasks? But when you're bursting with strength and stamina, even daunting challenges—like hiking a grueling trail or solving a calculus proof—can seem like fun.

Intuitively, you know health matters. But do your choices each day—what to eat, how much to sleep, whether to exercise, smoke, or abuse alcohol—really make health a priority? A theme of this text is that these *lifestyle choices* can have a profound influence on your health. Over many years, the cumulative effects of lifestyle choices can greatly increase or decrease your risk for disease and early death. If health matters, then your choices matter, too.

This text provides the facts you need to begin evaluating your current

lifestyle choices. But information is just a first step. Each chapter concludes by identifying a variety of practical strategies to improve your own health, as well as ways to get involved in improving the health of your community. With this support, you can start choosing health for yourself and your world.

What Is Health?

LO 1.1 Discuss the evolution of our current understanding of health.

If health matters, then it's worth taking a moment to explore what the term means.

Health Versus Disease

For many centuries, the term *health* was generally understood to mean the absence of disease. Disease itself was recognized, fundamentally, as an imbalance, whether in temperature (hot versus cold), elements (fire, air, earth, and water), or *humors* (body fluids referred to as black and yellow bile, phlegm, and blood). As science and technology advanced in the 19th and 20th centuries, our understanding of the nature of this imbalance shifted. Physicians came to recognize that, in a state of health, the body has a variety of regulatory mechanisms that enable it to maintain stable internal conditions. The healthy body continually maintains this internal stability, even as external factors—environmental temperature, food and water intake, and so forth—change. **Disease** therefore came to be understood as an alteration in body structure or biochemistry that is significant enough to cause the body's regulatory mechanisms to fail. This failure is often temporary—as when we experience congestion for several days before throwing off a cold. But in many cases, the body is unlikely to be able to return to a balanced state without medical care.

With this understanding, you can probably appreciate that the traditional definition of health as “the absence of disease” is problematic. People can and do experience **illness**, a subjective state in which a person feels unwell, whether or not true disease is present. Should we describe such a person as healthy? Conversely, people can experience themselves as entirely well despite having a serious disease. For example, certain types of cancer can go unrecognized until they are in a very advanced stage because they produce no obvious **signs**—objective clues such as dramatic weight loss—or **symptoms**—subjective feelings such as pain or fatigue. Moreover, some people who have a diagnosed disease live highly productive lives and do not perceive themselves as unwell. Are they healthy?

In 1948, the newly formed World Health Organization (WHO)—the global health unit of the United Nations—published a radical new definition of **health** as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.”¹ This holistic view was praised for acknowledging that, in a healthy person, many different dimensions of life work together harmoniously. However, the WHO definition's insistence upon “complete” physical well-being led to charges that it excluded people who are positive, fulfilled, and even vibrant

despite having a disability or disease. This concern led to the introduction of a broader concept of health we now know as wellness.

Health Versus Wellness

Although the term *wellness* can be traced back to the 17th century, its first modern use was by Halbert L. Dunn, M.D., in a 1959 article in the *American Journal of Public Health*. Influenced by the WHO definition of health, Dunn argued that health-care providers should stop focusing so narrowly on disease and begin studying the factors that support good health. He proposed thinking about disease and health as a “graduated scale” with death at one extremity and “peak wellness” at the other. He defined “peak wellness” as “performance at full potential in accordance with an individual’s age and makeup.”²

acute Characteristic of an illness or injury that comes on suddenly, progresses and resolves rapidly, and may or may not require medical treatment.

chronic Characteristic of a disease that typically comes on slowly, progresses gradually, and tends to persist despite medical treatment.

wellness An active process through which people become aware of, and make choices toward, a more successful existence.

Dunn’s work directly influenced that of John W. Travis, M.D., who founded the first “wellness center” in the United States in 1975. Travis developed a model of wellness he called the *illness–wellness continuum*, which has two extremes: premature death at one end and high-level wellness on the other (Figure 1.1). At any given moment, most of us fall somewhere in between these extremes, shifting between states of feeling sick, “neutral,” and vibrantly healthy. Your general direction on the continuum (either toward high-level wellness or

toward premature death) matters more than your place on it at any given time. You may have an **acute** condition—an illness or injury that comes on suddenly and is usually brief, such as a cold or a sprained ankle—but if you are taking care of yourself and have a positive attitude, your general direction will be toward greater wellness. Moreover, people who have a **chronic** disease—a disease that tends to persist despite medical treatment—can experience high-level wellness, if they feel they are learning, growing, and contributing creatively to their world.

Today, the National Wellness Institute defines **wellness** as “an active process through which people become aware of, and make choices toward, a more successful existence.”³ People who have a high level of wellness make decisions that promote health in multiple areas of their lives.

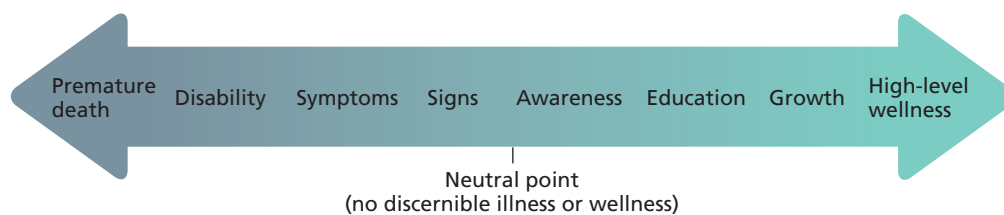


FIGURE 1.1 The Illness–Wellness Continuum. Your general direction on the continuum matters more than your specific point on it at any given time. Source: Adapted from “Illness–Wellness Continuum” from *Wellness Workbook: How to Achieve Enduring Health and Vitality*, 3rd edition, by John W. Travis, MD, and Regina Sara Ryan. Copyright © 1981, 1988, 2004 by John W. Travis. Adapted and reprinted with permission.

LO 1.1 QUICK CHECK ✓

Over the past century, both in the United States and elsewhere around the world, our understanding of health has

- narrowed from a focus on imbalances to a focus on the presence or absence of disease.
- broadened from a focus on alterations in body structure or biochemistry to a focus on the subjective experience of illness.
- broadened to incorporate not only the absence of disease or infirmity but also the ability to make life-enhancing choices.
- not changed significantly.

Dimensions of Health

LO 1.2 Identify and describe seven dimensions of health.

Recall that the WHO definition of health identifies three dimensions—physical, mental, and social—all of which are working harmoniously. Though some public health experts accept these three dimensions as adequate, others have identified more or different dimensions appropriate for the populations they serve. In this text, we acknowledge the following seven dimensions of health: physical, intellectual, psychological, spiritual, social, environmental, and occupational (Figure 1.2, next page).

Physical health focuses on the body: how well it functions and how well you care for it. Optimal physical health includes being physically active; eating nutritiously; getting enough sleep; making responsible decisions about sex, drinking, and drugs; and taking steps to avoid injuries and infectious diseases.

Intellectual health is marked by a willingness to take on new intellectual challenges, an openness to new ideas and skills, a capacity to think critically, and a sense of humor and curiosity. People who have a high level of intellectual health not only recognize problems quickly but also seek and create solutions.

Psychological health is a broad category encompassing autonomy, self-acceptance, and the ability to respond appropriately to the environment. It also includes the ability to maintain nurturing relationships and to pursue meaningful goals. Finally, people who are psychologically healthy sense that they are continually growing as individuals.

Spiritual health is influenced by your beliefs and values and the ways in which you express them—for instance, in humanitarian activities, religious practices, or efforts on behalf of nature and the environment. Spiritual health contributes to a sense of place and purpose in life and can be a source of support when you face challenges.

Social health describes the quality of your interactions and relationships with others. Good social health is characterized



FIGURE 1.2 Dimensions of Health. More than just the absence of disease, health encompasses multiple dimensions of life.

by satisfying relationships, an ability to fulfill social roles—whether as a family member, friend, or community member—and an ability to provide support to others and receive it in return.

Environmental health describes the quality of your home, work, school, and social environments—as well as the health of our planet. Air quality, availability of clean water and nutritious food, crime rates, weather, pollution, and exposure to chemicals are just a few of the variables that factor into environmental health.

Occupational health describes the quality of your relationship to your work. Rather than a paying job, your “work” may consist of your studies, an athletic endeavor, or an artistic pursuit—whatever you consider your primary occupation. Challenges to occupational health include stress, lack of fulfillment in the work, poor relationships with colleagues, inadequate compensation, and sudden unemployment.

LO 1.2 QUICK CHECK ✓

The seven dimensions of health include

- financial health.
- intellectual health.
- artistic health.
- heredity.

Current Health Challenges

LO 1.3 Discuss health challenges across America and around the world.

In the past century, dramatic technological advances have enabled people worldwide to enjoy longer, healthier lives.

Advances in public health, such as municipal water purification, sanitation, and food service inspection, have decreased the **prevalence** (the percentage of the population affected) of infectious disease. At the same time, new diagnostic techniques such as MRI scans and genetic testing, as well as vaccines, medications, and new types of surgery have helped us to find and treat disease earlier and more successfully. Despite such progress, many health challenges remain.

prevalence The proportion of a total population found to have a disease or other condition.

life expectancy The average number of years a person may expect to live.

mortality Clinical term for death, typically the number of deaths in a certain population due to a certain cause.

Health Across America

By one very basic measure of health—how long the average person born in the United States can expect to live—we are in far better shape than our predecessors. The current **life expectancy** at birth in the United States is a record 78.8 years—more than 15 years longer than it was in 1940.⁴ The causes of **mortality** (the term used in public health for deaths within a population) have also changed dramatically over the years. In 1900, the leading causes of mortality were infectious diseases such as pneumonia, influenza, and tuberculosis.⁵ Today, the leading causes are chronic diseases (see **Table 1.1**).

» Want to know your life expectancy? Try an online longevity calculator like the one at www.northwesternmutual.com.

TABLE 1.1 Top Five Causes of Death in the United States

Cause of Death	
All ages	<ol style="list-style-type: none"> Heart disease Cancer Chronic lower respiratory disease Accidents/unintentional injuries Stroke
15–24 years old	<ol style="list-style-type: none"> Accidents/unintentional injuries Suicide Assault/homicide Cancer Heart disease

Source: Data from *Deaths: Final Data for 2013*, by J. Xu, S. L. Murphy, K. D. Kochanek, & B.A. Bastian, 2016, *National Vital Statistics Reports*, 64(2), pp. 38–42.

America’s Health Challenges

In 2013, just two chronic diseases—heart disease and cancer—were responsible for almost half of all deaths



Unintentional injuries, including motor vehicle accidents, are the leading cause of death among people aged 15–24 in the United States.

(46.5%) in the United States.⁴ Moreover, our chronic disease **morbidity**—the rate of chronic disease within our population—is about 50%.⁶ These statistics are all the more shocking when you realize that chronic diseases are among the most preventable of all health problems in the United States.⁶ That’s why one of the world’s oldest and largest public health agencies—the U.S. Centers for Disease Control and Prevention (CDC)—is sponsoring a national initiative to reduce our rate of chronic disease. As part of this initiative, the CDC has identified four common behaviors that are responsible for most of the suffering and early death related to chronic diseases (**Figure 1.3**):⁶

- Lack of physical activity
- Poor nutrition
- Tobacco use
- Drinking too much alcohol

Some of these behaviors can act as direct **causes** of disease. For example, tobacco use is known to cause lung cancer. Others act as **risk factors**; that is, factors that increase the chance that the person will develop a disease. Lack of physical activity, for example, increases an individual’s risk for cardiovascular disease.

Are Americans changing their behaviors to reduce their risk for disease? Consider these trends among U.S. adults:

- Fewer than half (49%) meet the 2008 *Physical Activity Guidelines*.⁷
- More than one-third of all adults (34.9%) are obese.⁸
- 20.5% of males and 15.3% of females smoke.⁹
- One in six admits to binge drinking four or more times a month.¹⁰

As these statistics suggest, it’s time for Americans to make healthful lifestyle choices a priority.

Organizations That Promote America’s Health

The U.S. Department of Health and Human Services (HHS) is the U.S. government’s principal agency for enhancing and protecting the health of all Americans.¹¹ Its primary division is the U.S. Public Health Service (PHS), which is directed by

the Office of the Surgeon General. The PHS includes a dozen operating divisions that work together to promote and protect the health of Americans. Among these are the CDC and the following:¹¹

- The *Food and Drug Administration (FDA)* is responsible for assuring the safety, efficacy, and security of medications, medical devices, the food supply, cosmetics, and products that emit radiation.
- The *National Institutes of Health (NIH)* is the primary center for medical research in the United States.
- The *Substance Abuse and Mental Health Services Administration* is an agency whose mission is to reduce the impact of substance abuse and mental illness on America’s communities.

morbidity Clinical term for disease, specifically the level of disease within a population.

cause In health, a factor such as a genetic defect or virus that is directly responsible for a certain resulting condition.

risk factor A factor such as advanced age or alcohol abuse that increases the likelihood that an individual will experience a certain disease or injury.

Healthy People initiative A federal initiative to facilitate broad, positive health changes in large segments of the U.S. population every 10 years.

health promotion Information, programs, and services provided to help populations improve their health.

disease prevention Activities such as vaccinations and cancer screenings to help prevent disease.

The Healthy People Initiative

In 1979, HHS launched the **Healthy People initiative** with a report of the surgeon general on health promotion and disease prevention efforts in the United States. **Health promotion** includes information, programs, and services such as employee fitness centers that help populations improve their health. **Disease prevention** includes activities such as vaccinations



FIGURE 1.3 Four Keys to Good Health. These four behaviors can significantly reduce your risk of chronic disease and early death.



DIVERSITY & HEALTH

Health Disparities Among Different Racial and Ethnic Groups

Whether the causes are socioeconomic, biological, cultural, or still not well understood, health disparities exist among different racial and ethnic populations in the United States. For example, Asian Americans, overall, have lower rates of most chronic diseases, such as heart disease. Their risk for fatal injuries (from homicides, suicides, and motor vehicle accidents) also tends to be lower. Native Americans also experience lower-than-average rates of some common chronic diseases, but they share with Caucasian Americans more than double the rates of motor vehicle fatalities and suicides seen in other racial/ethnic groups. They also have the highest rate of diabetes. Hispanic Americans have average rates of chronic disease and lower risks for injury deaths.¹

The racial/ethnic group with consistently high rates of chronic disease is African Americans. For example:¹

- **Obesity.** Just over half (51%) of African American women are obese, a rate 20% higher than for Caucasian women. Obesity in African American girls is 9% higher than in Caucasian girls.
- **Hypertension (high blood pressure).** African Americans have the highest prevalence of hypertension, 41% compared to 27%–29% for Hispanic and Caucasian Americans.
- **Heart attacks and strokes.** African Americans are at much higher risk of death from a heart attack or stroke. Their death rate from these causes is 20% higher than for Caucasian

Americans, nearly 75% higher than for Hispanic Americans, and more than 200% higher than for Asian Americans.

- **Diabetes.** Although Native American adults have the highest rates of diabetes (approximately 14%), more than 11% of African and Hispanic American adults also have been diagnosed with diabetes, as compared to 6.8% of Caucasian and 7.9% of Asian Americans.

In addition, although African Americans have lower rates of motor vehicle fatalities and suicides, the homicide rate among African Americans is more than double that of Native Americans, triple that of Hispanic Americans, and seven times that of Caucasian or Asian Americans.¹

as compared to about 6% of affluent Americans. Similarly, hypertension affects 33% of poor Americans and 28% of affluent Americans. Do you think there could be a link between income disparities, racial and ethnic disparities, and health disparities? Why or why not?

2. Despite the fact that African American women are less likely to develop breast cancer than Caucasian women, they are more likely to die from it.² Why might this be?
3. Health disparities are complex problems with multiple contributing factors. What could you do as an individual—independently or on campus or in your community—to contribute to reducing health disparities?

References: 1. “CDC Health Disparities and Inequalities Report—United States, 2013,” by the Centers for Disease Control and Prevention, November 22, 2013, *Morbidity and Mortality Weekly Report*, vol. 62 (Supplement) No. 3. Available at www.cdc.gov/mmwr. 2. “Cancer Facts & Figures, 2016,” by the American Cancer Society, Atlanta, 2016, retrieved from www.cancer.org.

What Do You Think?

1. Nearly 11% of the poorest Americans have been diagnosed with diabetes,



and cancer screenings to help prevent disease. In 1980, HHS published Healthy People 1990, a set of 10-year objectives for building a society in which all people live long, healthy lives. Every decade since, HHS has updated Healthy People to include both new objectives and a report of the progress made over the previous decade. The most recent effort, Healthy People 2020, was released in December 2010.¹²

health disparities Gaps in the rate and burden of disease and the access to and quality of health care among various population groups.

gender Social, cultural, or psychological traits associated with identification as either male or female.

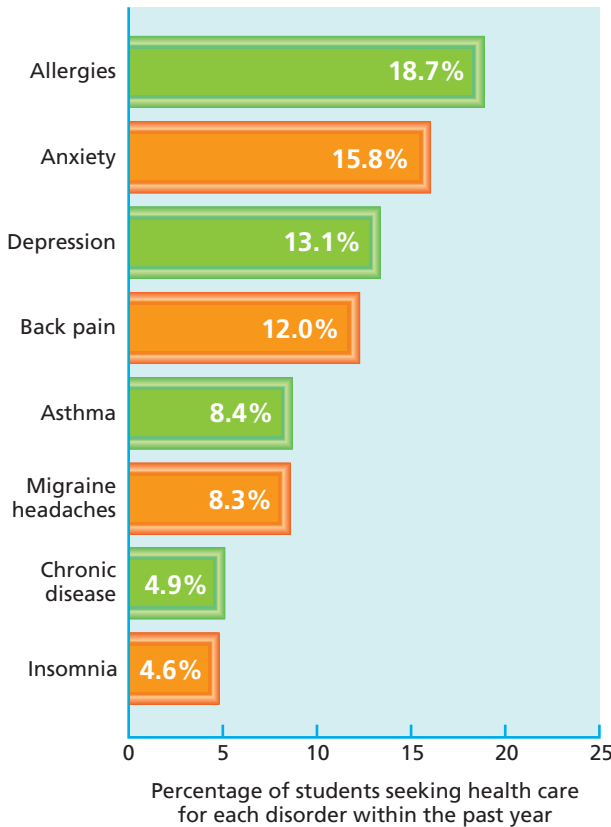
One of the primary goals of the Healthy People initiative is to

achieve *health equity*—the attainment of the highest level of health for all people—and to eliminate **health disparities**—differences in the rate and burden of disease and the access to and quality of health care among various population groups. These include groups based on race or ethnicity, disability, **gender** (social, cultural, or psychological traits associated with male or female identity), sexual orientation, socioeconomic status, and other characteristics historically linked to discrimination or exclusion.¹² The **Diversity & Health** box identifies key health disparities specific to race and ethnicity, and we’ll examine the role of poverty and other disparities as we continue in this chapter.



STUDENT STATS

Common Health Problems Reported by College Students



Data from American College Health Association National College Health Assessment (ACHA-NCHA II) Reference Group Executive Summary, Spring 2015, by the American College Health Association, 2015, retrieved from www.acha-ncha.org.

»» For more information on Healthy People 2020, visit www.healthypeople.gov.

Health on America’s Campuses

Centers of higher learning, as microcosms of our larger society, have come to recognize that promoting students’ health helps the institution meet its goal of providing the best education possible. Stress, sleep deprivation, poor nutrition, depression, anxiety, alcohol and tobacco use, and sexually transmitted infections are just a few of the health issues that can affect academic performance and achievement.

Campus Health Challenges

Each year, the American College Health Association (ACHA) conducts national surveys of college students’ health concerns. In the spring 2015 survey, 86.5% of college students described their health as good, very good, or excellent. Still,

“The behaviors that increase the risk of developing chronic diseases—including unhealthy eating habits and a lack of physical activity—are common among college students.”

students routinely visit their health care provider for treatment of acute conditions such as injuries and infections, and a surprising number for treatment of persistent health problems, as shown in the **Student Stats** box.¹³

Among Americans aged 15–24, the leading causes of death are accidents, suicide, and homicide (see Table 1.1). These sudden, traumatic deaths lead mortality in this age group because young people don’t experience the high rates of chronic diseases (such as heart disease and cancer) that increase mortality among the adult population as a whole. However, the behaviors that increase the risk of developing chronic diseases—including unhealthy eating habits and a lack of physical activity—are common among college students. Although 60% of students report being at a healthy weight, nearly 5% are underweight, 22.5% are overweight, and 12.5% are obese.¹³ Furthermore, although 46% of college students meet national recommendations for physical activity (moderate exercise for at least 30 minutes at least 5 days per week or vigorous exercise for at least 20 minutes at least 3 days per week), over half do not.¹³

Interestingly, research has shown that students tend to vastly overestimate how many of their peers are regularly using alcohol, tobacco, or other drugs.¹³ For example, students believed that over 75% of their peers had smoked cigarettes and over 80% had used marijuana within the past 30 days. In reality, only 11% had smoked and 17% had used marijuana. The lesson here: When it comes to substance use, it’s simply not true that “everyone is doing it.”

The Healthy Campus Initiative

In conjunction with the Healthy People initiative, the ACHA has developed an initiative called **Healthy Campus** for use in student settings. Colleges and universities participating in this program can choose to focus on achieving health goals most relevant to them, such as:

- Reducing rates of anxiety and depression
- Decreasing substance abuse
- Increasing on-campus opportunities for physical activity
- Improving sexual health among students

Healthy Campus An offshoot of the Healthy People initiative specifically geared toward college students.

»» More information on Healthy Campus 2020 is available at www.acha.org.

Health Around the World

In spring 2014, the WHO reported a limited outbreak of the potentially fatal Ebola virus disease in the West African

nation of Guinea. The disease soon spread to bordering nations, and before the end of the year, patients had been diagnosed worldwide, including in both Europe and North America. Similarly, in early 2016, the WHO reported a surge in severe birth defects attributed to the Zika virus, declaring it a public health emergency of international concern. Zika was discovered decades ago in Uganda and slowly spread—primarily via the bite of an infected mosquito or the semen of an infected man—throughout Africa, Asia, and more recently, to South America and, via travelers, to the United States. These outbreaks are a grim reminder that, in our increasingly mobile and connected world, limiting the spread of infectious disease is an urgent concern.

Other significant global infectious disease threats are cholera, which is transmitted via contaminated water; malaria, which is transmitted by mosquitoes; and influenza, which is transmitted person to person. Although the rate of new infections from the human immunodeficiency virus (HIV), which causes AIDS, dropped by 38% between 2001 and 2014, the United Nations Programme on HIV/AIDS reports that 35 million people are living with HIV, and fewer than 40% of these are receiving the recommended antiretroviral therapy. Over 70% of infected people (25 million) live in sub-Saharan Africa.¹⁴

Some infections are now resisting conventional treatment with antimicrobial drugs. For example, the bacteria that cause tuberculosis have become increasingly resistant to conventional antibiotics. As a result, infections with extensively drug-resistant TB (XDR-TB) are on the rise worldwide.¹⁵ Although these infections can be cured, the cure rate is lower than with other forms of TB.¹⁵

»» For more information on infectious diseases around the world, visit the World Health Organization website at www.who.int.

Undernourishment is still a concern in developing nations: In 2015, 795 million people in the world remained chronically undernourished. Nearly 98% of these hungry people live in the developing world.¹⁶ Deficiency of certain vitamins and minerals causes a variety of diseases, such as night blindness, which develops when vitamin A is deficient, and a form of



HIV/AIDS continues to be a serious concern worldwide, especially in sub-Saharan Africa.

intellectual disability called cretinism, which is due to iodine deficiency. Malnutrition also increases an individual's susceptibility to infection, as well as the risk that infection will result in death.

To address global health concerns, a number of privately funded health organizations have joined with international agencies such as the WHO to support immunizations, mosquito nets, water filters, vitamin drops, and the addition of iodine to salt. These efforts are improving global health.

A third global health concern is the rising rates of chronic diseases—including heart disease, diabetes, and certain types of cancer—related to obesity. Two trends contribute to the rising prevalence of “globesity”: A greater percentage of the world's population now has access to low-cost, processed foods high in added sugars and calories and, at the same time, more people have access to motorized transportation, labor-saving devices, and sedentary forms of entertainment. These trends have contributed to an alarming statistic: The WHO estimates that worldwide obesity has more than doubled since 1980, and 600 million people are now obese.¹⁷

LO 1.3 QUICK CHECK ✓

Heart disease and diabetes

- are diseases of affluence, prevalent only in developed nations.
- prompt more than 20% of college students to visit their health care provider at least once each year.
- have decreased in prevalence worldwide because of advances in sanitation, food inspection, and vaccination.
- are increasing in prevalence worldwide along with increased rates of obesity.

Determinants of Health

LO 1.4 Classify determinants of health into six broad groups, identifying the group that is most strongly within an individual's control.

The WHO, the HHS, and other public health organizations recognize that individuals are not solely responsible for the state of their health. They acknowledge that health is influenced by a range of personal, social, economic, and environmental factors collectively referred to as **determinants of health**. Any steps taken to improve health—both for individuals and for populations—are likely to be more successful when they target multiple determinants of health.¹⁸

determinants of health The range of personal, social, economic, and environmental factors that influence health status.

»» To watch a video explaining and providing examples of how determinants influence an individual's health, go to www.healthypeople.gov and type in the search bar “determinants of health.”

Determinants of health fall into six broad categories, all of which overlap to a greater or lesser extent. Let's take a closer look.

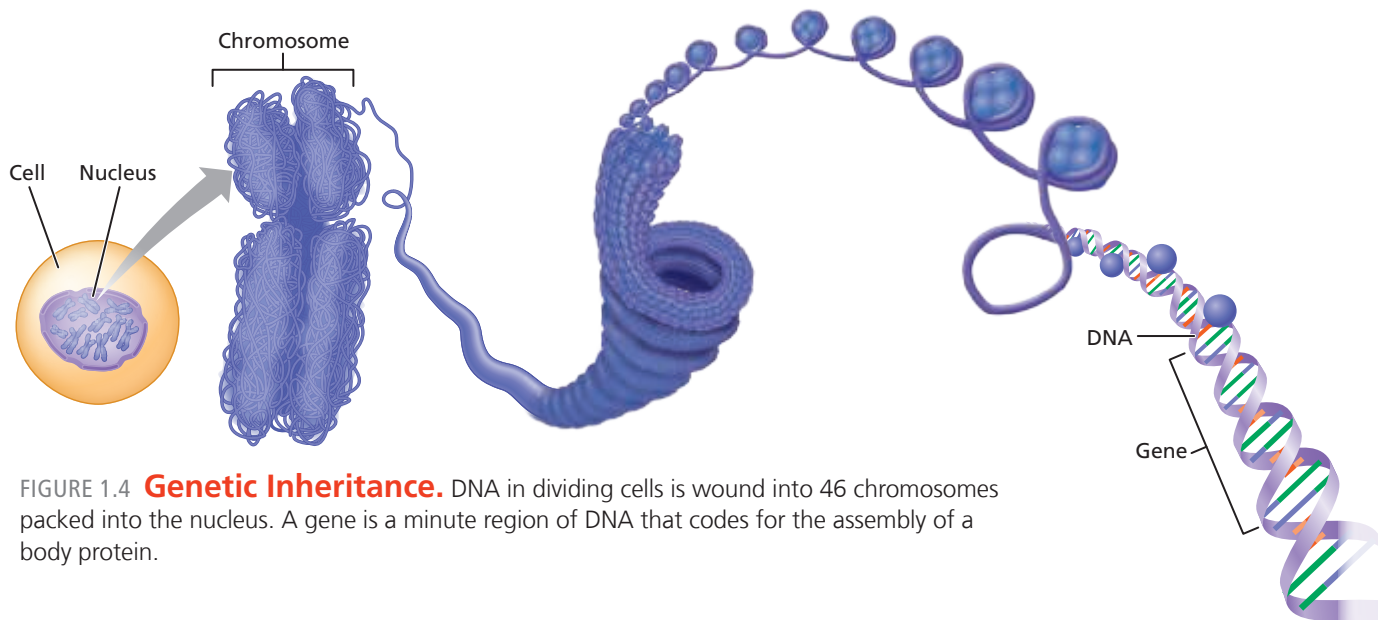


FIGURE 1.4 **Genetic Inheritance.** DNA in dividing cells is wound into 46 chromosomes packed into the nucleus. A gene is a minute region of DNA that codes for the assembly of a body protein.

Biology and Genetics

Biological and genetic determinants influence your health but are beyond your control. Because one of the most significant of these determinants is the DNA—the genetic material—you inherited from your parents, it’s worth taking a moment to review some key concepts in genetics:

- Most of your body cells have a nucleus stuffed with a compound called **DNA (deoxyribonucleic acid)** that resembles a twisted ladder known as a double helix (**Figure 1.4**).
- Some segments of DNA carry the instructions—or code—your cells use to assemble the proteins that build body tissues and participate in body functions. A protein-coding segment of DNA is called a **gene**.
- When cells are dividing, their DNA forms tight bundles called **chromosomes**. Your **genome** is your entire collection of genes on your 46 chromosomes (23 pairs). You inherited one set of 23 chromosomes from each of your parents. Although all human beings share mostly the same DNA, everyone’s genome contains a few unique differences, or *genetic variants*. Your variants make you distinct in many ways, including in some aspects of your health.

The 23rd chromosome you inherited from your father at conception determined your **sex**—that is, the anatomical and physiological features that differentiate males from females. These biological differences between men and women strongly influence health. Women tend to live about four years longer than men, for example, but have higher rates of arthritis and osteoporosis (low bone density). Men have a higher prevalence of heart disease and diabetes.¹⁹

Other biological and genetic determinants include the following:

- **Age.** Incomplete growth and development make children more susceptible to certain health problems, such as infectious diseases. At the other end of the age spectrum, the physical and cognitive effects of aging increase an older adult’s vulnerability to poor health.¹⁸

- **Race/ethnicity.** Certain population groups have a higher risk for certain diseases than the general population. (See the **Diversity & Health box** on page 6.) Knowing about these differences can prompt you to make better lifestyle choices and can prompt your physician to provide more targeted care. For example, because African Americans have higher rates of hypertension (high blood pressure), informed doctors may encourage more frequent blood pressure screenings for their African American patients at an earlier age.
- **Health history.** Some conditions that you experienced in the past may still be influencing your health today. For instance, some sexually transmitted infections can reduce your fertility many years later. Past injuries can also continue to affect health.
- **Family history.** You—and your children—are at increased risk for developing some of the same diseases that members of your family have experienced. This is true not only for recognized genetic diseases but also for many chronic diseases such as hypertension and diabetes, and even for some psychological disorders such as depression. It’s important to know your family health history so that you and your health-care provider can take steps to reduce any risks.

DNA (deoxyribonucleic acid) A compound in the nucleus of living cells that transfers genetic information.

gene A segment of DNA that codes for the assembly of a protein.

chromosome In humans, one of 46 bundles of DNA carrying genes that determine heredity.

genome The genetic material of a living organism.

sex Biological characteristics of males and females based on their genetic inheritance.

➤➤ Create and print out your own family health history tree by using the interactive tool *My Family Health Portrait* from the U.S. Surgeon General, at <https://familyhistory.hhs.gov>.

Individual Behaviors

Although you can’t select different genes or turn back the clock on aging, you can control your lifestyle choices. The