Community Nutrition in Action

An Entrepreneurial Approach

Seventh Edition

Marie A. Boyle

Dietary Reference Intakes (DRIs)

The Dietary Reference Intakes (DRIs) include two sets of values that serve as goals for nutrient intake—Recommended Dietary Allowances (RDAs) and Adequate Intakes (AIs). The RDA reflects the average daily amount of a nutrient considered adequate to meet the needs of most healthy people. If there is insufficient evidence to determine an RDA, an AI is set. The DRIs also include a set of values called Tolerable Upper Intake Levels (ULs). The UL represents the maximum amount of a nutrient that appears safe for most healthy people to consume on a regular basis. Turn the page for a listing of the ULs for selected vitamins and minerals.

Estimated Energy Requirements (EERs), Recommended Dietary Allowances (RDAs), and Adequate Intakes (AIs) for Water, Energy, and the Macronutrients

Life-Stage Group	Reference BMI (kg/m²)	Reference height, cm (in)	Reference weight, kg (lb)	Water[a] AI (L/day)	Energy EER[b] (kcal/day)	Carbohydrate RDA (g/day)	Total fiber AI (g/day)	Total fat AI (g/day)	Linoleic acid AI (g/day)	Linolenic acid[c] AI (g/day)	Protein RDA (g/day)[d]	Protein RDA (g/kg/day)	
Males													
0–6 mo	—	62 (24)	6 (13)	0.7[e]	570	60	—	31	4.4	0.5	9.1	1.52	
7–12 mo	—	71 (28)	9 (20)	0.8[f]	743	95	—	30	4.6	0.5	11	1.2	
1–3 y[g]	—	86 (34)	12 (27)	1.3	1046	130	19	—	7	0.7	13	1.05	
4–8 y[g]	15.3	115 (45)	20 (44)	1.7	1742	130	25	—	10	0.9	19	0.95	
9–13 y	17.2	144 (57)	36 (79)	2.4	2279	130	31	—	12	1.2	34	0.95	
14–18 y	20.5	174 (68)	61 (134)	3.3	3152	130	38	—	16	1.6	52	0.85	
19–30 y	22.5	177 (70)	70 (154)	3.7	3067[h]	130	38	—	17	1.6	56	0.8	
31–50 y	22.5[i]	177 (70)[i]	70 (154)[i]	3.7	3067[h]	130	38	—	17	1.6	56	0.8	
≥ 51 y	22.5[i]	177 (70)[i]	70 (154)[i]	3.7	3067[h]	130	30	—	14	1.6	56	0.8	
Females													
0–6 mo	—	62 (24)	6 (13)	0.7[e]	520	60	—	31	4.4	0.5	9.1	1.52	
7–12 mo	—	71 (28)	9 (20)	0.8[f]	676	95	—	30	4.6	0.5	11	1.2	
1–3 y[g]	—	86 (34)	12 (27)	1.3	992	130	19	—	7	0.7	13	1.05	
4–8 y[g]	15.3	115 (45)	20 (44)	1.7	1642	130	25	—	10	0.9	19	0.95	
9–13 y	17.4	144 (57)	37 (81)	2.1	2071	130	26	—	10	1.0	34	0.95	
14–18 y	20.4	163 (64)	54 (119)	2.3	2368	130	26	—	11	1.1	46	0.85	
19–30 y	21.5	163 (64)	57 (126)	2.7	2403[j]	130	25	—	12	1.1	46	0.8	
31–50 y	21.5[i]	163 (64)[i]	57 (126)[i]	2.7	2403[j]	130	25	—	12	1.1	46	0.8	
≥ 51 y	21.5[i]	163 (64)[i]	57 (126)[i]	2.7	2403[j]	130	21	—	11	1.1	46	0.8	
Pregnancy													
1st trimester				3.0	+0	175	28	—	13	1.4	71	1.1	
2nd trimester				3.0	+340	175	28	—	13	1.4	71	1.1	
3rd trimester				3.0	+452	175	28	—	13	1.4	71	1.1	
Lactation													
1st six months postpartum				3.8	+330	210	29	—	13	1.3	71	1.3	
2nd six months postpartum				3.8	+400	210	29	—	13	1.3	71	1.3	

Note: For all nutrients, values for infants are AIs. Dashes indicate that values have not been determined.

[a] The water AI includes drinking water, water in beverages, and water in foods; in general, drinking water and other beverages contribute about 70 to 80%, and foods, the remainder. Conversion factors: 1 L = 33.8 fluid oz; 1 L = 1.06 qt; 1 cup = 8 fluid oz.

[b] The Estimated Energy Requirement (EER) represents the average dietary energy intake that will maintain neutral energy balance in a healthy person of a given sex, age, weight, height, and physical activity level. The values listed are based on an "active" person at the reference height and weight and at the midpoint ages for each group until age 19. Go to *www.choosemyplate.gov* for tools to determine Estimated Energy Requirements.

[c] The linolenic acid referred to in this table and text is the omega-3 fatty acid known as alpha-linolenic acid.

[d] The values listed are based on reference body weights.

[e] Assumed to be from human milk.

[f] Assumed to be from human milk and complementary foods and beverages. This includes approximately 0.6 L (~3 cups) as total fluid including formula, juices, and drinking water.

[g] For energy, the age groups for young children are 1–2 years and 3–8 years.

[h] For males, subtract 10 kilocalories per day for each year of age above 19.

[i] Because weight need not change as adults age if activity is maintained, reference weights for adults 19 through 30 are applied to all adult age groups.

[j] For females, subtract 7 kilocalories per day for each year of age above 19.

Source: Adapted from the *Dietary Reference Intakes* series, National Academies Press. Copyright 1997, 1998, 2000, 2001, 2002, 2004, 2005, 2011 by the National Academy of Sciences.

Recommended Dietary Allowances (RDAs) and Adequate Intakes (AIs) for Vitamins

Life-Stage Group	Thiamin RDA (mg/day)	Riboflavin RDA (mg/day)	Niacin RDA (mg/day)[a]	Biotin AI (μg/day)	Pantothenic acid AI (mg/day)	Vitamin B_6 RDA (mg/day)	Folate RDA (μg/day)[b]	Vitamin B_{12} RDA (μg/day)	Choline AI (mg/day)	Vitamin C RDA (mg/day)	Vitamin A RDA (μg/day)[c]	Vitamin D RDA (μg/day)[d]	Vitamin E RDA (mg/day)[e]	Vitamin K AI (μg/day)
Infants														
0–6 mo	0.2	0.3	2	5	1.7	0.1	65	0.4	125	40	400	10	4	2.0
7–12 mo	0.3	0.4	4	6	1.8	0.3	80	0.5	150	50	500	10	5	2.5
Children														
1–3 y	0.5	0.5	6	8	2	0.5	150	0.9	200	15	300	15	6	30
4–8 y	0.6	0.6	8	12	3	0.6	200	1.2	250	25	400	15	7	55
Males														
9–13 y	0.9	0.9	12	20	4	1.0	300	1.8	375	45	600	15	11	60
14–18 y	1.2	1.3	16	25	5	1.3	400	2.4	550	75	900	15	15	75
19–30 y	1.2	1.3	16	30	5	1.3	400	2.4	550	90	900	15	15	120
31–50 y	1.2	1.3	16	30	5	1.3	400	2.4	550	90	900	15	15	120
51–70 y	1.2	1.3	16	30	5	1.7	400	2.4	550	90	900	15	15	120
> 70 y	1.2	1.3	16	30	5	1.7	400	2.4	550	90	900	20	15	120
Females														
9–13 y	0.9	0.9	12	20	4	1.0	300	1.8	375	45	600	15	11	60
14–18 y	1.0	1.0	14	25	5	1.2	400	2.4	400	65	700	15	15	75
19–30 y	1.1	1.1	14	30	5	1.3	400	2.4	425	75	700	15	15	90
31–50 y	1.1	1.1	14	30	5	1.3	400	2.4	425	75	700	15	15	90
51–70 y	1.1	1.1	14	30	5	1.5	400	2.4	425	75	700	15	15	90
> 70 y	1.1	1.1	14	30	5	1.5	400	2.4	425	75	700	20	15	90
Pregnancy														
14–18 y	1.4	1.4	18	30	6	1.9	600	2.6	450	80	750	15	15	75
19–30 y	1.4	1.4	18	30	6	1.9	600	2.6	450	85	770	15	15	90
31–50 y	1.4	1.4	18	30	6	1.9	600	2.6	450	85	770	15	15	90
Lactation														
14–18 y	1.4	1.6	17	35	7	2.0	500	2.8	550	115	1200	15	19	75
19–30 y	1.4	1.6	17	35	7	2.0	500	2.8	550	120	1300	15	19	90
31–50 y	1.4	1.6	17	35	7	2.0	500	2.8	550	120	1300	15	19	90

Note: For all nutrients, values for infants are AIs.

[a] Niacin recommendations are expressed as niacin equivalents (NE), except for recommendations for infants younger than six months, which are expressed as preformed niacin.

[b] Folate recommendations are expressed as dietary folate equivalents (DFE).

[c] Vitamin A recommendations are expressed as retinol activity equivalents (RAE).

[d] Vitamin D recommendations are expressed as cholecalciferol.

[e] Vitamin E recommendations are expressed as α-tocopherol.

Recommended Dietary Allowances (RDAs) and Adequate Intakes (AIs) for Minerals

Life-Stage Group	Sodium AI (mg/day)	Chloride AI (mg/day)	Potassium AI (mg/day)	Calcium RDA (mg/day)	Phosphorus RDA (mg/day)	Magnesium RDA (mg/day)	Iron RDA (mg/day)	Zinc RDA (mg/day)	Iodine RDA (μg/day)	Selenium RDA (μg/day)	Copper RDA (μg/day)	Manganese AI (mg/day)	Fluoride AI (mg/day)	Chromium AI (μg/day)	Molybdenum RDA (μg/day)
Infants															
0–6 mo	120	180	400	200	100	30	0.27	2	110	15	200	0.003	0.01	0.2	2
7–12 mo	370	570	700	260	275	75	11	3	130	20	220	0.6	0.5	5.5	3
Children															
1–3 y	1000	1500	3000	700	460	80	7	3	90	20	340	1.2	0.7	11	17
4–8 y	1200	1900	3800	1000	500	130	10	5	90	30	440	1.5	1	15	22
Males															
9–13 y	1500	2300	4500	1300	1250	240	8	8	120	40	700	1.9	2	25	34
14–18 y	1500	2300	4700	1300	1250	410	11	11	150	55	890	2.2	3	35	43
19–30 y	1500	2300	4700	1000	700	400	8	11	150	55	900	2.3	4	35	45
31–50 y	1500	2300	4700	1000	700	420	8	11	150	55	900	2.3	4	35	45
51–70 y	1300	2000	4700	1000	700	420	8	11	150	55	900	2.3	4	30	45
> 70 y	1200	1800	4700	1200	700	420	8	11	150	55	900	2.3	4	30	45
Females															
9–13 y	1500	2300	4500	1300	1250	240	8	8	120	40	700	1.6	2	21	34
14–18 y	1500	2300	4700	1300	1250	360	15	9	150	55	890	1.6	3	24	43
19–30 y	1500	2300	4700	1000	700	310	18	8	150	55	900	1.8	3	25	45
31–50 y	1500	2300	4700	1000	700	320	18	8	150	55	900	1.8	3	25	45
51–70 y	1300	2000	4700	1200	700	320	8	8	150	55	900	1.8	3	20	45
> 70 y	1200	1800	4700	1200	700	320	8	8	150	55	900	1.8	3	20	45
Pregnancy															
14–18 y	1500	2300	4700	1300	1250	400	27	12	220	60	1000	2.0	3	29	50
19–30 y	1500	2300	4700	1000	700	350	27	11	220	60	1000	2.0	3	30	50
31–50 y	1500	2300	4700	1000	700	360	27	11	220	60	1000	2.0	3	30	50
Lactation															
14–18 y	1500	2300	5100	1300	1250	360	10	13	290	70	1300	2.6	3	44	50
19–30 y	1500	2300	5100	1000	700	310	9	12	290	70	1300	2.6	3	45	50
31–50 y	1500	2300	5100	1000	700	320	9	12	290	70	1300	2.6	3	45	50

Tolerable Upper Intake Levels (ULs) for Vitamins

Life-Stage Group	Niacin (mg/day)[a]	Vitamin B_6 (mg/day)	Folate (μg/day)[a]	Choline (mg/day)	Vitamin C (mg/day)	Vitamin A (μg/day)[b]	Vitamin D (μg/day)	Vitamin E (mg/day)[c]
Infants								
0–6 mo	—	—	—	—	—	600	25	—
7–12 mo	—	—	—	—	—	600	38	—
Children								
1–3 y	10	30	300	1000	400	600	63	200
4–8 y	15	40	400	1000	650	900	75	300
Adolescents								
9–13 y	20	60	600	2000	1200	1700	100	600
14–18 y	30	80	800	3000	1800	2800	100	800
Adults								
19–70 y	35	100	1000	3500	2000	3000	100	1000
> 70 y	35	100	1000	3500	2000	3000	100	1000
Pregnancy								
14–18 y	30	80	800	3000	1800	2800	100	800
19–50 y	35	100	1000	3500	2000	3000	100	1000
Lactation								
14–18 y	30	80	800	3000	1800	2800	100	800
19–50 y	35	100	1000	3500	2000	3000	100	1000

[a] The ULs for niacin and folate apply to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

[b] The UL for vitamin A applies to the preformed vitamin only.

[c] The UL for vitamin E applies to any form of supplemental α-tocopherol, fortified foods, or a combination of the two.

Tolerable Upper Intake Levels (ULs) for Minerals

Life-Stage Group	Sodium (mg/day)	Chloride (mg/day)	Calcium (mg/day)	Phosphorus (mg/day)	Magnesium (mg/day)[d]	Iron (mg/day)	Zinc (mg/day)	Iodine (μg/day)	Selenium (μg/day)	Copper (μg/day)	Manganese (mg/day)	Fluoride (mg/day)	Molybdenum (μg/day)	Boron (mg/day)	Nickel (mg/day)
Infants															
0–6 mo	—[e]	—[e]	1000	—	—	40	4	—	45	—	—	0.7	—	—	—
7–12 mo	—[e]	—[e]	1500	—	—	40	5	—	60	—	—	0.9	—	—	—
Children															
1–3 y	1500	2300	2500	3000	65	40	7	200	90	1000	2	1.3	300	3	0.2
4–8 y	1900	2900	2500	3000	110	40	12	300	150	3000	3	2.2	600	6	0.3
Adolescents															
9–13 y	2200	3400	3000	4000	350	40	23	600	280	5000	6	10	1100	11	0.6
14–18 y	2300	3600	3000	4000	350	45	34	900	400	8000	9	10	1700	17	1.0
Adults															
19–70 y	2300	3600	2500[f]	4000	350	45	40	1100	400	10,000	11	10	2000	20	1.0
> 70 y	2300	3600	2000	3000	350	45	40	1100	400	10,000	11	10	2000	20	1.0
Pregnancy															
14–18 y	2300	3600	3000	3500	350	45	34	900	400	8000	9	10	1700	17	1.0
19–50 y	2300	3600	2500	3500	350	45	40	1100	400	10,000	11	10	2000	20	1.0
Lactation															
14–18 y	2300	3600	3000	4000	350	45	34	900	400	8000	9	10	1700	17	1.0
19–50 y	2300	3600	2500	4000	350	45	40	1100	400	10,000	11	10	2000	20	1.0

[d] The UL for magnesium applies to synthetic forms obtained from supplements or drugs only.

[e] Source of intake should be from human milk (or formula) and food only.

[f] The UL for calcium for 19–50 y is 2500 mg/day; the UL for calcium is reduced to 2000 mg/day for 51–70 y.

Note: An upper limit was not established for vitamins and minerals not listed and for those age groups listed with a dash (—) because of a lack of data, not because these nutrients are safe to consume at any level of intake. All nutrients can have adverse effects when intakes are excessive.

SEVENTH **edition**

Community Nutrition in Action

AN ENTREPRENEURIAL APPROACH

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College of Saint Elizabeth

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Dedication

In memory of Jesse, Dylan, Kate, and McCauley—my twinkling stars in the night sky. And to Maggie, Rex, Elvis, and Tess—may there always be time for footprints in the sand.

—Marie A. Boyle

About the Author

MARIE A. BOYLE, PhD, RD, received her BA in psychology from the University of Southern Maine and her MS and PhD in nutrition from Florida State University. She is author of the basic nutrition textbook *Personal Nutrition*. Dr. Boyle serves as Chair of the Foods and Nutrition Program and Director of the Graduate Program in Nutrition at the College of Saint Elizabeth in Morristown, New Jersey. Her other professional activities include serving as an author and reviewer for the Academy of Nutrition and Dietetics and the Society for Nutrition Education and Behavior. Dr. Boyle coauthored the current position paper of the Academy of Nutrition and Dietetics, titled *Nutrition Security in Developing Nations: Sustainable Food, Water and Health*, and serves as editor-in-chief of the *Journal of Hunger and Environmental Nutrition* by Taylor & Francis. She is a member of the Academy of Nutrition and Dietetics, the American Public Health Association, and the Society for Nutrition Education and Behavior.

Contents in Brief

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Section *Three*

Community Nutritionists in Action: Planning Nutrition Interventions 595

Preface

To succeed in community nutrition today, you must be committed to lifelong learning: every day brings new research findings, new legislation, new ideas about health promotion, and new technologies, all of which affect the ways in which community nutritionists gather information, solve problems, and reach vulnerable populations. You will probably be an entrepreneur—one who uses innovation and creativity to guide individuals and communities to optimal nutrition and good health. You will work well as a member of teams to lobby policymakers, gather information about your community, and design nutrition programs and services. You will be skilled in assessing the activities of "the competition"—the myriad messages about foods, dietary supplements, and research findings that appear in the media.

We spoke, in the first edition of this book, about a sea change—a shift toward globalization of the workforce and communications, reflected in the growth of the Internet—a virtual tsunami in communications, and a shift from clinical dietetics to community-based practice. In the last two decades, the public health arena in the United States has documented the possibilities of health care reform, the rise of complementary and alternative medicine, and the sequencing of all of the human genes—together known as the human genome.

Food insecurity has not significantly changed in the last 20 years, while obesity, diabetes, and other chronic diseases, including heart disease, are increasingly prevalent in both developed and developing countries. Our society acknowledges that current modes of food production have contributed to some of the adverse environmental changes that we see. The concept of sustainable food systems is gaining mainstream attention—with numerous groups encouraging consumers to increase their awareness of sustainability issues and how these apply to food systems and the health of communities. The growing connectedness of the human race—through increasing use of mobile devices and social media—promises to create new opportunities for community nutritionists to enhance the nutrition and health of all peoples.

Since the last edition was published, our society has developed wellness policies for its schools; proposed new policies and legislation to prevent obesity and overweight in school, workplace, and community environments; rallied behind the various *Let's Move!* initiatives to address the epidemic of childhood obesity; embraced social marketing and evidence-based guidelines for practice; and gathered evidence and data to improve public health practice and policies—in an effort to achieve the nation's health objectives by the year 2020.

This new seventh edition includes new features and some reorganization:

- The epidemiology chapter (Chapter 2) has been moved up to follow the introductory community nutrition discussion so that the incidence, distribution, and control of disease in a population may be examined before trying to understand and achieve behavior change (Chapter 3). The chapter also precedes the program planning chapter (Chapter 5) to showcase the role of research in developing an evidence base on which to build policy and programming.
- Chapter 3 "Understanding and Achieving Behavior Change" describes several evidence-based theories and strategies to consider when designing a nutrition intervention program targeting lifestyle change related to eating patterns and physical activity and includes practical applications of motivational interviewing, the transtheoretical model (stages of change), health belief model, theory of planned behavior, social-cognitive theory, and cognitive-behavioral theory. The chapter is now positioned before the program planning chapter to provide students with a theoretical base for planning program activities.
- The material on community needs assessment is now presented in one chapter (Chapter 4) so that this important topic is as clear and concise as possible. A new case study "Planning a Needs Assessment Focused on School Children" helps guide students through a sample needs assessment scenario. A new Appendix D provides a sample community needs assessment assignment, as well as an example of a completed assignment.
- The text's program planning chapter (Chapter 5) follows the chapter on community needs assessment in order to facilitate students' projects in program planning earlier in the semester. The program planning chapter includes more examples to help students write objectives for the program planning process, and new tools used in program

evaluation. In the case study following Chapter 5, students practice their program planning skills for designing and implementing a worksite wellness program.
- The text further illustrates the importance of demonstrating meaningful outcomes for nutrition services by including a Professional Focus following Chapter 5 that introduces the nutrition care process (NCP) to enable community nutrition professionals to compete successfully in a rapidly changing environment. Examples of applying the nutrition care process for heart disease in different community practice settings are given. Two case studies also incorporate the NCP to give students practice in writing a nutrition diagnosis as a problem, etiology, signs, and symptoms (PES) statement.

New and expanded topics include:

- Coverage of the nation's new guidelines for healthy meals and snacks in schools.
- Expanded inclusion of medical nutrition therapy as a benefit to certain Medicare recipients; new legislative priorities and the current strategic plan of the Academy of Nutrition and Dietetics.
- Complete coverage of the *2015–2020 Dietary Guidelines for Americans*, which emphasize healthy eating patterns and other recommendations to improve the nutrition and health status of Americans.
- A detailed discussion of the *Healthy People 2020* initiative and its emphasis on health disparities and the social and physical determinants of health.
- The social–ecological model, which illustrates how diverse factors converge to influence food and physical activity choices. The Centers for Disease Control and Prevention's "Social Ecological Model: A Framework for Prevention" is introduced in Chapter 1, connected to the *2015–2020 Dietary Guidelines for Americans* in Chapter 7, and applied to child obesity in Chapter 8.
- Expanded coverage of cultural competence and health disparities with specific examples of health disparities.
- Coverage of health and media literacy and informatics; a Programs in Action feature "The Food Literacy Partners Program" focuses on food and nutrition information to help individuals make appropriate eating decisions.
- The most recent recommendations for obesity prevention as found in the IOM report, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*; new coverage of proposed policies and legislation to prevent obesity and overweight in the school, workplace, and community environments; a Programs in Action feature "The Farm to Work Initiative: An Innovative Approach to Obesity Prevention" describes a worksite wellness program that was created to change the worksite environment in order to make opting for fruits and vegetables an easy choice for employees.
- The Programs in Action feature "Whole School, Whole Community, Whole Child Programs" describes a model that views the school in a multidimensional and systems-level fashion, in which all components at the school level work together to maintain consistent, healthful messages, including the surrounding community and environment.
- Nutrition-related environmental concerns and sustainability issues such as how our food and agricultural system impacts our food choices, nutrition, and environment.
- Program planning tools including community nutrition mapping tools and the Logic Model; the Logic Model is included to provide a framework for planning, implementing, managing, and evaluating community nutrition programs.
- Breastfeeding promotion efforts by WIC, including efforts to improve exclusive breastfeeding rates; UNICEF's Programming for Infant and Young Child Feeding, including interventions for improved breastfeeding and complementary feeding.
- Since connecting program objectives with appropriate activities is an important program planning skill, new tips for linking objectives with program activities for achieving the objectives are included; several chapters place new emphasis on the three levels of intervention—building awareness, changing lifestyles, or creating a supportive environment—when linking objectives and activities. In a new case study: "Developing a Nutrition Education Plan for Older Adults at Congregate Feeding Sites," students use literature and formative evaluation data to develop topics and objectives for nutrition lessons, and include strategies that address each of the three levels of intervention.
- In the case study following Chapter 17, students incorporate social media and social marketing tools in developing a marketing plan for a weight-loss program.
- Appendix A now includes both the WHO Child Growth Standards to monitor growth for infants and children from birth to two years of age in the U.S. and the CDC growth charts for use with children age two years and older in the U.S.

Several terms surface repeatedly in this text: *change, innovation, creativity, evidence-based, community, policymaking, networking,* and *entrepreneurship*. These watchwords herald the unprecedented challenges that lie ahead of us in this decade. Community nutritionists who succeed in this challenging environment are flexible, innovative, and versatile. They are *focused* on recognizing opportunities for improving people's nutrition status and health and on helping society meet its obligation to alleviate food insecurity and malnutrition. It is an exciting time for community nutritionists. It is a time for learning new skills and moving into new areas of practice. It is a time of great opportunity and incredible need.

The Seventh Edition

In this seventh edition, we continue to discuss the important issues in community nutrition practice and to present the core information needed by students who are interested in solving nutrition and health problems. The book is organized into three sections. Section One shows the community nutritionist in action within the community. Chapter 1 describes the activities and responsibilities of the community nutritionist and introduces the principles of entrepreneurship and the three arenas of community nutrition practice: people, policy, and programs. Chapter 2 reviews the basic principles of epidemiology. Chapter 3 introduces several behavior change theories and discusses what research tells us about how to influence behavior. Chapter 4 gives a step-by-step analysis of the community needs assessment process and describes the types and sources of data collected about the community, as well as the questions you'll ask in obtaining information about your target population, including diet assessment methods. Chapter 5 describes the program planning process, covering everything from the factors that trigger program planning, to tools such as the Logic Model to guide the planning process, to the types of evaluations undertaken to improve program design and delivery. Chapter 6 makes it perfectly clear that if you're a community nutritionist, you're involved in policymaking. Chapter 7 focuses on the nuts and bolts of national nutrition policy, including national nutrition monitoring and dietary recommendations. Chapter 8 discusses the epidemic of obesity, examining some societal and environmental determinants of the epidemic, current public health policies, and proposed policies and legislation to prevent obesity and overweight. Chapter 9 discusses today's health care system, health care reform, and the challenge of eliminating health disparities and providing quality health care to all citizens, and the necessity of outcomes assessment in nutrition services.

Section Two describes current federal and non-governmental programs designed to meet the food and nutritional needs of vulnerable populations. Chapter 10 examines some of the issues surrounding poverty and food insecurity in the domestic arena, considers how these contribute to nutritional risk and malnutrition, and outlines the major domestic food and nutrition assistance programs designed to help with achieving food security. Chapter 11 focuses on programs for pregnant and lactating women and for infants. Chapter 12 describes programs for children and adolescents. Chapter 13 covers a host of programs for adults, including older adults. Chapter 14 examines the issue of global food insecurity.

Section Three focuses on the tools used by community nutritionists to address nutritional and health problems in their communities. Chapter 15 addresses the need for cultural competence and explains strategies for providing culturally competent nutrition services. Chapter 16 gets to the heart of any program: the nutrition messages used in community interventions. Chapter 17 introduces the principles of marketing, including social marketing, an important endeavor in community nutrition practice. You are more likely to get good results if your program is marketed successfully! Chapter 18 addresses such important management issues as how to control costs and manage people. Finally, Chapter 19 closes the text with a discussion of grantsmanship—everything you need to know about finding and managing funding for community programs and interventions.

Many of the unique features of the previous editions have been retained:

- **Professional Focus.** This feature is designed to help you develop personal and professional skills and attitudes that will boost your effectiveness and confidence in community settings. The topics range from utilizing the Academy of Nutrition and Dietetic's nutrition care process in community settings, goal setting, and time management to public speaking, working with the media, using social media, and leadership.
- **Programs in Action.** This feature—found in most chapters—highlights award-winning, innovative, grassroots nutrition programs. It offers a unique perspective on the practice of community nutrition. Our hope is that the insights you gain from these initiatives will inspire you to get involved in learning about your community and its health and nutritional problems and to design similar programs to address the needs you uncover. The feature highlights such programs as Eat Healthy: Your Kids Are Watching, a program designed to remind parents that they serve as role models for their children; the Farm to Work Initiative, an innovative approach to obesity prevention; the Food Literacy Partners Program, a "learn-and-serve" program that provides nutrition education to volunteers in exchange for community nutrition education service; and Food on the Run, a program to empower teens to make healthful decisions about their nutrition and physical activity patterns. This feature discusses each program's goals, objectives, and rationale; the practical aspects of its implementation; and its effectiveness in serving the needs of its intended audience.
- **Case Studies.** The book's case studies make use of a transdisciplinary, developmental problem-solving model as a learning framework to enhance students' critical thinking skills.* They are designed to help students develop competence in applying their knowledge and skills to contemporary nutrition issues with real-life uncertainties—such issues as might

* See C. L. Lynch, S. K. Wolcott, and G. E. Huber, *Steps for Better Thinking: A Developmental Problem Solving Process*, May 31, 2002; available at *www.WolcottLynch.com*.

be found in the workplace. Each case emphasizes the need to evaluate the information presented, identify and describe uncertainties in the case, locate and distinguish between relevant and irrelevant information, identify assumptions, prioritize alternatives, make decisions, and communicate and evaluate conclusions. Many of the case questions are open-ended.

- **Entrepreneur in Action.** This feature—found in every chapter—focuses on professionals actively engaged in community nutrition. Each story is highlighted in brief in the text with instructions on how students can access the full articles online at *www.cengagebrain.com*.
- **Chapter Summaries.** Each chapter presents the major points in a concise, section-by-section bulleted list. The design enables students to easily identify content that requires further review and locate where the information is located in the chapter.
- **Internet Resources.** Each chapter ends with a list of relevant Internet addresses. You'll use these websites to obtain data about your community and to scout for ideas and educational materials. Moreover, you can link with the Internet addresses presented in this book through the publisher's website at *www.cengagebrain.com*.

In the seventh edition, the following feature has been added:

- **NEW! Think Like a Community Nutritionist.** This feature—found in most chapters—provides questions and activities to help you think analytically and critically about the chapter topics, giving you the opportunity to step into the role of a community nutritionist to further explore scenarios that you may encounter in the field.

Finally, we hope that the people, policies, and programs presented in this text inspire you to consider a rewarding career path in community nutrition. We want you to think of yourself as a planner, manager, change agent, thinker, and leader—in short, a nutrition entrepreneur—who has the energy and creativity to open up new vistas for improving the public's health through good nutrition.

Instructor and Student Resources

Please consult your local Cengage Learning sales representative for more information on the key resources that accompany this text, or visit the book's website at *www.cengagebrain.com*.

- **Instructor Companion Site.** Everything you need for your course in one place! This collection of book-specific lecture and class tools is available online via *www.cengage.com/login*. Access and download PowerPoint® presentations, images, the instructor's manual, videos, and more.
- **Cengage Learning Testing Powered by Cognero.** This flexible online system allows the instructor to author, edit, and manage test bank content from multiple Cengage Learning solutions; create multiple test versions in an instant; and deliver tests from an LMS, a classroom, or wherever the instructor wants.
- **Diet & Wellness Plus.** Diet & Wellness Plus helps you understand how nutrition relates to your personal health goals. Track your diet and activity, generate reports, and analyze the nutritional value of the food you eat. Diet & Wellness Plus includes over 75,000 foods as well as custom food and recipe features. The new Behavior Change Planner helps you identify risks in your life and guides you through the key steps to make positive changes.
- **MindTap.** A new approach to highly personalized online learning. Beyond an eBook, homework solution, digital supplement, or premium website, MindTap is a digital learning platform that works alongside your campus LMS to deliver course curriculum across the range of electronic devices in your life. MindTap is built on an "app" model, allowing enhanced digital collaboration and delivery of engaging content across a spectrum of Cengage and non-Cengage resources.
- **Global Nutrition Watch.** Bring currency to the classroom with Global Nutrition Watch from Cengage Learning! This student-friendly website provides convenient access to thousands of trusted sources, including academic journals, newspapers, videos, and podcasts, for students to use for research projects or classroom discussion. Global Nutrition Watch is updated daily to offer the most current news about topics related to nutrition. Available standalone, or as activities within MindTap.
- **Community Needs Assessment Workbook.** This workbook, available online via MindTap, helps nutrition and allied health students to apply text concepts by guiding them step-by-step through the process of organizing and conducting a community nutrition needs assessment. The workbook provides exercises for each stage of the assessment outlined in the text, reference information, and three fully developed sample assessments.

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SECTION **one**

Community Nutritionists in Action: **Working in the Community**

On Saturday morning, Irene H. opens her kitchen cabinet and takes down six small bottles. She lines them up on the countertop and works their caps off. The process takes a few minutes because her fingers are stiff from arthritis. Let's see, there's cod liver oil, chondroitin sulfate, and glucosamine for arthritis; ginkgo biloba and St. John's wort to relieve anxiety and depression; and DHEA to restore youthful vigor. Irene knows her doctor would be surprised—maybe shocked—to learn that she takes these supplements regularly. She knows, too, that her doctor would not approve of her consultations with a naturopath whose office is just a couple of miles from her home.

At 48, Irene figures she is doing all she can to manage the pain from her arthritis and the depression that has afflicted her since her divorce. The supplements and naturopathic counseling are expensive, but she stretches the income from her job as a checkout clerk at a paint supply store to pay for them. After washing down the pills with orange juice, she pops two frozen waffles in the toaster and pours another cup of coffee. She figures she shouldn't eat the waffles—she was diagnosed with type 2 diabetes just three months ago—but she wants them. After breakfast, she'll enjoy a cigarette with her coffee and then call her oldest daughter. Maybe they can drive out to the mall.

Irene is a typical consumer in many respects. She has chronic health problems for which she has sought traditional medical advice and treatment. Like one in three U.S. adults, she has also sought help from an alternative practitioner. She smokes cigarettes, she is overweight, and about the only exercise she gets is browsing the sale stalls out at the mall. She could do more to improve her health, but she isn't motivated to change her diet or quit smoking. She's looking for the quick fix.

Irene and the thousands of other consumers like her are a challenge for the community nutritionist. To help Irene make changes in her lifestyle—changes that will reduce her demands on the health care system and improve her physical well-being—the community nutritionist must be familiar with a broad spectrum of clinical and epidemiologic research, understand the health care system, and draw on the principles of public health and health promotion. The community nutritionist must know where Irene and people like her live and work, what they eat, and what their attitudes and values are. The community nutritionist must know about the community itself and how it delivers health services to people like Irene. And the community nutritionist must know how to influence policymakers. Perhaps now is the time to call for tighter regulation of dietary supplements and greater government support for health promotion and disease prevention programs.

This section describes the work that community nutritionists do in their communities. It outlines the principles of public health, health promotion, and policymaking and reviews the current health care environment. You will learn strategies to influence—and eventually change—the behavior of a target population. The incorporation of behavior change theories in program planning is critical to the nutrition care process because the theories suggest the questions that community nutritionists should ask to understand why consumers do what they do. This section also outlines some of the tools you might use to assess the nutrition status of a target population and describes how to conduct a needs assessment in your community. You'll learn how to lay out a plan for designing a program or intervention and how to write program goals and objectives.

This section describes how to use the results of a community needs assessment by reviewing several important questions: *Who* has a nutritional problem that is not being met? *How* did this problem develop? *What* programs and services exist to alleviate this problem? *Why* do existing services fail to help the people who experience this problem? The answers to these and other questions help community nutritionists understand the many factors that influence the health and nutrition status of a particular group.

The section also focuses on entrepreneurship—the discipline founded on creativity and innovation—and how entrepreneurial principles can be used to reach Irene and other people in the community with health and nutritional problems. The material in this section sets the stage and lays the groundwork for understanding what community nutritionists do: focus on people, policies, and programs.

CHAPTER 1

Opportunities in Community Nutrition

LEARNING **OBJECTIVES**

After you have read and studied this chapter, you will be able to:

- Describe the three arenas of community nutrition practice.
- Explain how community nutrition practice fits into the larger realm of public health.
- Describe the three types of prevention efforts and identify an example of each.
- List three major health objectives for the nation and explain why each is important.
- Outline the educational requirements, practice settings, and roles and responsibilities of community and public health nutritionists.
- Discuss the role of entrepreneurship in the practice of community nutrition.

CHAPTER **OUTLINE**

Something to think about. . .

"Education and health are the two great keys. We must use all public sector institutions, flawed though they may be, to close the gap between rich and poor. We must work with the political sector to convincingly paint the breadth and depth of the problem and the size of the opportunity as well. . . . Above all, we must not abandon the hope of progress."

—SIR GUSTAV NOSSAL,
writing on health and the biotechnology revolution in Public Health Reports, *March/April 1998*

For a complete list of references, please access the MindTap Reader within your MindTap course.

Introduction

Community nutritionists face many challenges in the practice of their science and art. There is the challenge of improving the nutrition status of different kinds of people with different education and income levels and different health and nutritional needs: teenagers with anorexia nervosa, pregnant women living in public housing, the homeless, new immigrants from Southeast Asia, older adult women alone at home, middle-class adults with high blood cholesterol, professional athletes, and children with disabilities. There is the challenge of forming partnerships with colleagues, business leaders, and the public to advocate for change. There is the challenge of influencing lawmakers and other key citizens to enact laws, regulations, and policies that protect and improve the public's health. There is the challenge of studying the scientific literature for new angles on how to help people make good food choices for good health. And there is the challenge of mastering new technologies to help meet the needs of clients and communities.

In addition to these challenges, certain social and economic trends also present challenges for community nutritionists. Immigrants from Mexico, Asia, Africa, and the Caribbean, many of whom have poor English skills, have streamed into North America in recent years, searching for jobs and improved living conditions.[1] The North American population is aging rapidly as "baby boomers" mature and life expectancy increases.[2] Financial pressures and increased global competition have forced governments, businesses, and organizations to be creative in the face of scarce resources. Indeed, according to one survey of employers undertaken by the Academy of Nutrition and Dietetics, the single greatest challenge for the food and nutrition practitioner today is "the need to do more and better with less."[3] Community nutritionists in all practice settings face rising costs, changing consumer expectations about health care services, increased competition in the market, and greater cultural diversity among their clients. They are pressured by downsizing, mergers, cross-training, and managed health care.

Community nutritionists who succeed in this changing environment are flexible, innovative, and versatile. They are *focused* on recognizing opportunities for improving people's nutrition status and health and on helping society meet its obligation to alleviate hunger and malnutrition. It is an exciting time for community nutritionists. It is a time for learning new skills and moving into new areas of practice. It is a time of great opportunity and incredible need.

The Concept of Community

"There is no complete agreement as to the nature of community," wrote G. A. Hillery, Jr.[4] Such diverse locales as isolated rural hamlets, mountain villages, prairie towns, state capitals, industrial cities, suburbs or ring cities, resort towns, and major metropolitan areas can all be lumped into a single category called "community."[5] The concept of community is not always circumscribed by a city limits sign or zoning laws. Sometimes the term describes people who share certain interests, beliefs, or values, even though they live in diverse geographical locations; examples include the academic community, the gay community, and the immigrant community. For our purposes in this book, a **community** is a grouping of people who reside in a specific locality and who interact and connect through a definite social structure to fulfill a wide range of daily needs. By this definition, a community has four components: people, a location in space (which can include the realm of cyberspace), social interaction, and shared values.

Community A group of people who are located in a particular space (including cyberspace), have shared values, and interact within a social system.

Communities can be viewed on different scales: global, national, regional, and local. Each of these can be further segmented into specialized communities or groups, such as those individuals who speak Spanish, those who own smartphones, and those who observe Hanukkah. In the health arena, communities tend to be segmented around particular wellness, disease, or risk factors—for example, adults who exercise regularly, children infected with HIV, black men with high blood pressure, and people with a peanut allergy.

Opportunities in Community Nutrition

Founded on the sciences of epidemiology, food, nutrition, and human behavior, **community nutrition** is a discipline that strives to improve the health, nutrition, and well-being of individuals and groups within communities. Its practitioners develop policies and programs that help people improve their eating patterns and health. Indeed, these three arenas—people, policy, and programs—are the focus of community nutrition. As an example, low-income pregnant women benefit from nutritious foods, nutrition counseling, and breastfeeding support provided by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), which is supported by federal policy that authorizes a specific amount of funds each year for the program.

Community nutrition A discipline that strives to prevent disease and to improve the health, nutrition, and well-being of individuals and groups within communities.

People

Individuals who benefit from community nutrition programs and services range from young single mothers on public assistance to senior business executives, from immigrants with poor English skills to college graduates, from pregnant teenagers with iron-deficiency anemia to grandfathers with Alzheimer's disease. They are found in worksites, schools, community centers, health clinics, churches, apartment buildings—virtually any community setting. Through community nutrition programs and services, these individuals and their families have access to food in times of need or learn skills that improve their eating patterns. It is the community nutritionist who identifies a group of people with an unmet nutritional need; gathers information about the group's socioeconomic background, ethnicity, religion, geographical location, and cultural food patterns; and then develops a program or service tailored to the needs of this group.

Policy

Policy is a key component of community nutrition practice. **Policy** is a course of action chosen by public authorities to address a given problem.[6] Policy is what governments and organizations intend to accomplish through their laws, regulations, and programs.

Policy A course of action chosen by public authorities to address a given problem.

How does policy apply to the practice of community nutrition? Consider a situation in which a group of community nutritionists address food waste in their community. The impetus for their action came from learning the results of a U.S. Department of Agriculture study that found that one-fourth of all food produced in the United States is wasted[7] and from reading about a successful food assistance program called *gleaning*. Gleaning began as a project to deliver an abundance of apples from communities with apple orchards to food banks in neighboring states where apples were scarce.[8] The community nutritionists wanted to try gleaning on a small scale, using farmers' markets in their community. Unfortunately, there was no city bylaw that allowed surplus foods from farmers' markets to be made available to local food banks and soup kitchens. After gaining the support of the farmers' markets, food banks, and soup kitchens, the community nutritionists lobbied the city council to enact a bylaw to allow such transactions. The city council members voted to pass a bylaw to support gleaning projects. In other words, the city council altered its *policy* about recovering and recycling surplus foods.

Community nutritionists are involved in policy when they write letters to their state legislators, lobby Congress to secure expanded Medicare coverage for medical nutrition therapy, advise their municipal governments about food banks and soup kitchens, and

use the results of research to influence policymakers. Many aspects of the community nutritionist's job involve policy issues.

Programs Programs are the instruments used by community nutritionists to seek behavior changes that improve nutrition status and health. They are wide-ranging and varied. They may target small groups of people—children with developmental disabilities in Nevada schools or teenagers living in a Brooklyn residential home—or they may target large groups, such as all adults with high blood cholesterol concentrations. Programs may be as widespread as the U.S. federal Supplemental Nutrition Assistance Program (SNAP; formerly called the Food Stamp Program), or as local as a diabetes prevention program for Mohawk people living in the Akwesasne community in northern New York State. They may be tailored to address the specific health and nutritional needs of people with obesity or osteoporosis, or they may be aimed at the general population. Two examples of population-based programs are "ParticipACTION," a Canadian program designed to get people moving and fit for health; and "Fruits & Veggies—More Matters," a program of the Centers for Disease Control and Prevention and its partners aimed at making people more aware of how eating fruits and vegetables can improve their health and may reduce their cancer risk. Regardless of the setting or target audience, community nutrition programs have one desired outcome: behavior change.

Public Health and Community Interventions

Community nutritionists promote good nutrition as one avenue for achieving good health. They develop programs to help people improve their eating habits, and they seek environmental changes (in the form of policy) to support good health habits. But community nutritionists do not work in a vacuum. They work closely with other practitioners, particularly those in public health, to help consumers achieve and maintain behavior change.

Public health Focuses on protecting and promoting people's health through the actions of society.

Public health can be defined as an effort organized by society to protect, promote, and restore the people's health through the application of science, practical skills, and collective actions. "Public health is what we, as a society, do collectively to assure the conditions in which people can be healthy," wrote the authors of a report for the Institute of Medicine.[9] In the nineteenth century, the scope of public health was generally restricted to matters of general sanitation, including building municipal sewer systems, purifying the water supply, and controlling food adulteration. Major public health efforts focused on controlling infectious diseases such as tuberculosis, smallpox, yellow fever, cholera, and typhoid. In 1900, the leading causes of death and disability in the United States were pneumonia, tuberculosis, and diarrhea/enteritis. The morbidity and mortality linked with these disease outbreaks shaped public health practice for many years. Such runaway epidemics, which sometimes killed thousands of people in a single outbreak, are uncommon today because of large-scale public efforts to improve water quality, control the spread of communicable diseases, and enhance personal hygiene and the sanitation of the environment.

The leading causes of morbidity and mortality in the United States today are chronic diseases such as heart disease, cancer, and chronic lung disease (**Figure 1-1**). Cardiovascular disease (mainly heart disease and stroke) causes about 29% of all deaths, killing 740,000 U.S. adults and 17.5 million people worldwide every year.[10] Cancer kills almost 585,000 people each year in the United States and about 8.2 million people worldwide.[11] Other serious chronic diseases that reduce the quality of life, disable, or kill include arthritis, diabetes mellitus, osteoporosis, and Alzheimer's disease.[12]

Infectious diseases remain a problem, however. An estimated 35 million people are living with HIV/AIDS worldwide, with approximately 1.1 million cases in the United States and about 35,000 new HIV infections occurring in the United States every year.[13] HIV/AIDS is among the top ten causes of death for people ages 25–44.[14]

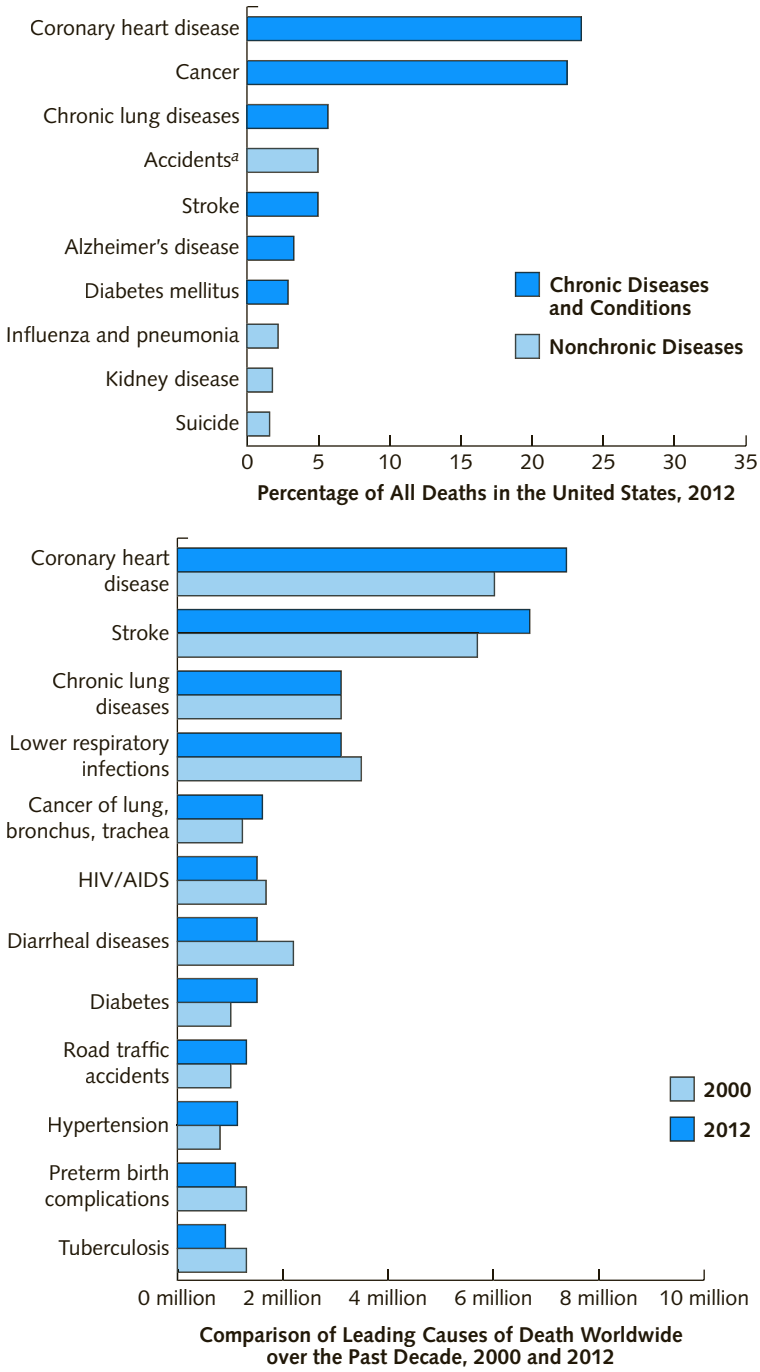

FIGURE 1-1 Leading Causes of Death, United States and Worldwide

Many of the major chronic disease killers—such as heart disease, some types of cancer, stroke, and diabetes—are influenced by a number of factors, including a person's genetic makeup, eating habits, and physical activity, and other lifestyle habits.

[a] The leading cause of death for persons ages 15–24 is motor vehicle and other accidents, followed by homicide, suicide, cancer, and heart disease. About half of all accident fatalities are alcohol-related.

Sources: Centers for Disease Control and Prevention, *National Vital Statistics Report, 2012*; available at *www.cdc.gov/nchs*; World Health Organization, *The Top Ten Causes of Death*, Fact Sheet No. 310 (Geneva, Switzerland: World Health Organization, May 2014).

Another infectious disease is tuberculosis, whose incidence has been declining in the general U.S. population since the resurgence of TB cases peaked in 1992. An estimated 13 million people are infected with TB bacteria, with the potential to develop active TB disease in the future. About 10% of these infected individuals will develop TB at some point in their lives.[15] The AIDS epidemic is partly responsible for the reemerging outbreaks of tuberculosis, although there are other causes, such as increases in homelessness and immigration from other countries where tuberculosis is widespread.[16]

The leading causes of death in Canada mirror those of the U.S. population in many respects.[17] The top-ranking cause of death among Canadian men and women is cancer followed by cardiovascular disease.

Many of the major killers—such as heart disease, some types of cancer, chronic lung disease, stroke, and diabetes—are influenced by a number of factors, including a person's genetic makeup, eating and physical activity habits, exposure to tobacco, and other lifestyle practices. Five of the 15 leading causes of death in the United States—heart disease, cancer, stroke, diabetes, and hypertension—have been linked to diet. Another three are associated with excessive alcohol consumption: accidents, suicide, and liver disease.[18] Because obesity and a sedentary lifestyle are linked with chronic diseases, such as diabetes, heart disease, and certain cancers, it can be projected that increased rates of obesity will lead to increased deaths each year, not to mention hospitalizations, disability, time lost from jobs, and poor quality of life for many Americans.[19]

In contrast to high-income countries, where more than two-thirds of the population live beyond the age of 70 and predominantly die of chronic diseases, less than a quarter of all people in low-income countries reach the age of 70. People in low-income countries predominantly die of infectious diseases: lung infections, diarrheal diseases, HIV/AIDS, tuberculosis, and malaria—and over a third of all deaths are among children under the age of 14.[20] Chronic diseases cause increasing numbers of deaths worldwide as well. Chronic diseases were responsible for 68% (38 million) of all deaths globally in 2012, up from 60% (31 million) in 2000.[21] The four main types of chronic diseases worldwide are cardiovascular diseases (heart attacks and stroke), cancers, chronic lung diseases, and diabetes (see Figure 1-1).[22]

These changes in disease patterns over the last few decades have spawned changes in public health actions. Because the goals of public health reflect the values and beliefs of society and existing knowledge about disease and health, public health initiatives change as society's perception of health needs changes. In order to ensure the health of the public in the twenty-first century, public health initiatives have shifted from financing basic population-based measures, such as immunization, to efforts focused on achieving universal health services, responding rapidly to new infectious diseases such as Ebola, and responding to new threats from antibiotic-resistant germs or **bioterrorism**.

Bioterrorism The intentional release of disease-causing toxins, microorganisms, or other substances.

Recognizing the need for increased emphasis on preventive health measures, new efforts are underway to foster better collaboration between public health agencies and other organizations involved in protecting and promoting the public's health.[23] Under the leadership of the World Health Organization (WHO), more than 190 countries have agreed upon global mechanisms to reduce the avoidable chronic disease burden.[24] This plan aims to reduce the number of premature deaths from chronic diseases by 25% by 2025 through nine voluntary global targets (**Table 1-1**). The nine targets address factors such as tobacco and alcohol use, unhealthy diet, and physical inactivity that increase people's risk of developing chronic diseases.[25]

TABLE 1-1 Nine Voluntary Global Targets for Prevention and Control of Chronic Diseases to be Attained by 2025

1. A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
2. At least 10% relative reduction in the harmful use of alcohol
3. A 10% relative reduction in prevalence of insufficient physical activity
4. A 30% relative reduction in mean population intake of salt/sodium
5. A 30% relative reduction in prevalence of current tobacco use
6. A 25% relative reduction in the prevalence of high blood pressure
7. Halt the rise in diabetes and obesity
8. At least 50% of eligible people receive drug therapy and counseling to prevent heart attacks and strokes
9. An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major chronic diseases in both public and private facilities

Source: Adapted from WHO, Global Status Report on Noncommunicable Diseases, 2014.

AP Images/Chris Pizzello

A cooking demonstration is an intervention that promotes awareness of the importance of healthful eating and teaches heart-healthy cooking skills. In this example, a chef gives a cooking demonstration to students during an event for The Teaching Garden—a program that uses gardens to teach children about healthy eating.

The Concept of Health

Most of us equate health with "feeling good," a concept we understand intuitively but cannot define exactly. The term *health* is a derivative of the old English word for "hale," which means whole, hearty, sound of mind and body.[26] Health can be viewed as the absence of disease and pain, or it can be pictured as a continuum along which the total living experience can be placed, with the presence of disease, impairment, or disability at one end of the spectrum and freedom from disease or injury at the other. These extremes in the health continuum are shown in **Figure 1-2**.[27]

Health is properly defined from an ecological viewpoint—that is, one that focuses on **ecology**, or the interaction of humans among themselves and with their environment. In this sense, **health** is a state characterized by "anatomic integrity; ability to perform

Ecology The interrelations between individuals and their environments.

Health According to the World Health Organization, a state of complete physical, mental, and social well-being, not merely the absence of disease.

Population by stages of disease continuum

Well population	At risk	Established disease	Controlled chronic disease
Primary Prevention	**Secondary Prevention/ Early Detection**	**Disease Management and Tertiary Prevention**	
• Promote healthy behaviors and environments across the lifespan • Create supportive environments	• Screening • Periodic health examinations • Early intervention • Control risk factors–lifestyle and medication	• Treatment and acute care • Complications management • Self-management	• Continuing care • Maintenance • Rehabilitation • Self-management
Health Promotion	**Health Promotion**	**Health Promotion**	**Health Promotion**

Prevent disease incidence | **Prevent progression to established disease** | **Reduce complications or disability**

FIGURE 1-2 The Health Continuum and Types of Prevention to Promote Health and Prevent Disease

Source: Adapted from National Public Health Partnership, *Preventing Chronic Disease: A Strategic Framework Background Paper* (National Public Health Partnership: Melbourne, Australia), 2001, 6.