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# PART 1

# Prevention and Community Health



# CHAPTER 2

## Preventive Health Care through the Life Span

### LEARNING OBJECTIVES

By the end of this chapter, students will be able to:

- Define and describe the role of health navigation professional in the healthcare system
- Differentiate among the different levels of preventive care
- Explain the difference between observable and calculated risks

### CHAPTER OVERVIEW

This chapter begins by introducing the concept of health navigation professionals and their role in the complex healthcare system. Building on this knowledge, the discussion moves into a description of levels of prevention, including primary, secondary, and tertiary care across the life span. Finally, the chapter explores the concepts of risk, risk assessment, and evidence-based recommendations.

### HEALTH NAVIGATION PROFESSIONALS

The profession of health navigation began in 1990, when Dr. Harold Freeman developed the first patient navigation program in Harlem, New York, to reduce health disparities related to cancer diagnosis and treatment among poor and uninsured individuals.<sup>1</sup> Dr. Freeman identified healthcare barriers facing the community as financial (e.g.,

no health insurance, low income); communication and information (e.g., English as a second language, low literacy skills); healthcare system issues (e.g., missed appointments, lost results); and fear, distrust, and emotional barriers.<sup>1</sup> See **Box 2.1**.

Since 1990, several government-funded programs have been developed to study the effect and value of health navigation. During this period, several attempts were made to develop a patient's bill of rights. A patient's bill of rights was considered by the US Congress in 2001 as a list of guarantees for those receiving medical care, including having their medical decisions made by a doctor; seeing a medical specialist; going to the closest emergency room; and receiving information, fair treatment, and autonomy over medical decisions. In 2001, the bill (Bill S.1052) was passed by the Senate in a vote of 59–36; it was then amended by the House of Representatives and returned to the Senate, where it ultimately failed to pass.

In 2005, President George W. Bush signed the Patient Navigator and Chronic Disease Prevention Act, which provided additional funding for research on the effectiveness of health navigation professionals. The evidence shows that patient navigation can increase participation in cancer screening;<sup>2</sup> can reduce the time from abnormal finding to point of cancer diagnosis;<sup>2,3</sup> and the modest cost of health navigation offsets the

**BOX 2.1** Role of the Health Navigation Professionals

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As the newest career in the field of public health, health navigation professionals play an important role in assisting individuals and their caregivers through a complex healthcare maze. Health navigation professionals may be employed by a hospital, a community clinic, a private practice group of healthcare providers, or work as self-employed consultants. Regardless of the place of employment, health navigation professionals assist individuals to enhance their quality of life by increasing the understanding of their medical condition, including medications, lab tests, and treatment procedures. Although health navigation professionals do not provide direct services, they assist with the coordination of care, such as arranging home health, medical appointments, and transportation; they also answer questions related to filing health insurance forms and paying health bills. Most importantly, health navigation professionals serve as the communication liaison between healthcare providers and individuals and their caregivers.

savings due to the high cost of advanced cancer treatment.<sup>1</sup> In 2012, the American College of Surgeons required that cancer programs have a patient navigation process for all patients. Most recently, patient navigation was included in the Affordable Care Act as well as the intention to fund patient navigation professionals under Medicaid.<sup>1</sup> It is noted that the term “patient navigation” has evolved into the broader and more inclusive term of “health navigation professional.” Throughout this text, the inclusive term of “health navigation professional” is used. See **Box 2.2**.

The health navigation profession has been defined by the Patient Advocate Certification Board (PACB), which has written ethical standards, including the following topics: the role of an advocate, transparency and honesty disclosure, protection of confidentiality and privacy, fostering autonomy, provision of competent services, avoidance of impropriety and conflict of interest,

avoidance of discriminatory practices, and continuing education and professional development.<sup>4</sup> This organization has incorporated and plans to develop a certification exam in the future.<sup>5</sup> Take the time to explore the PACB website (<http://pacboard.org>).

With this historical information in mind, let’s explore two examples of how health navigation professionals improve lives in various situations. A navigator is defined as an individual who provides directions for others. Whether the navigator is steering a boat, assisting a customer in a grocery store, or guiding an individual through the healthcare system, each situation requires specific knowledge and skill to perform their assigned duties. Without a skillful navigator, the individuals are likely to get lost. The case studies in **Box 2.3** illustrate a few of the many possible roles for health navigator professionals, including community clinics, disease-specific organizations (e.g., American Cancer Society, American Heart

## BOX 2.2 Principles of Health Navigation Professionals

1. Promote a timely movement of an individual through the complex healthcare system.
2. Eliminate barriers to timely care in all phases of the healthcare system.
3. Work to integrate all aspects of the healthcare system.
4. Define the navigator's scope of work from other healthcare providers.
5. Deliver navigation services at a cost-effective price that is comparable with skill and training.
6. Determine the most appropriate level of skill required for navigation.
7. Define the points at which navigation begins and ends.
8. Connect segmented healthcare systems for continuum of care.
9. Coordinate who is responsible for overseeing all phases of navigation through the healthcare system.

Data from: Freeman H.P. (2013). The history, principles, and future of patient navigation: Commentary. *Seminars in Oncology Nursing*, 29(2), 72–75.<sup>1</sup>

Association, March of Dimes, National Kidney Foundation), and hospitals and other residential facilities (e.g., assisted-living facilities, rehabilitation centers, memory care centers).

As a health navigation professional, you will be assisting individuals searching for resources, information, and answers to their specific questions. The first steps of the investigative process

## BOX 2.3 Examples of Health Navigation Professional Roles

Case Study One: Memorial Hospital employs eight health navigation professionals to assist patients and family members with questions prior to discharge. Each day, the health navigation professional receives a list of patients who are scheduled for discharge within 1 or 2 days. Each patient is visited and given the opportunity to ask any questions related to their upcoming discharge. The health navigation professional writes down the questions; investigates the answers, resources, or services; writes a summary note in the patient medical record to alert the rest of the healthcare team regarding the questions; and goes back to the patient with updates on the progress. The role of the health navigation professional is not to offer health or medical advice or information, but rather to offer guidance and assistance.

Case Study Two: The county health department primary care clinic employs six health navigation professionals to serve the needs of their patients and family members. During each clinic, two health navigation professionals are stationed at a desk in the waiting room to assist patients with intake information such as forms, health insurance, co-payments, and language barriers. Two navigators are stationed in the clinic exam room hallway. This allows the healthcare providers to have a health navigation professional step into the exam room as needed to hear the patient's questions regarding the follow-up appointments, medication changes, treatment schedules, and health education questions. After the patient exits the exam room, the health navigation professional invites the individual to step into a nearby private cubicle to discuss, explain, and answer their questions and the questions that their family or friend may have. The last two health navigation professionals are stationed at the check-in desk to assist patients with scheduling convenient times for follow-up appointments, treatments, lab work, and answering questions such as directions, bus routes to the treatment clinic, and ways to get discounts on prescription medications. Each day, the health navigation professionals rotate to stay current on all aspects of the clinic services.

Case Study Three: ABC Company employs about 800 individuals in a variety of job levels ranging from factory workers to administrators. Due to the large number of young workers with limited experience, ABC Company decided that the young workers would benefit from the services of a health navigation professional to assist the personnel office because the young workers have many questions about their benefits, including health insurance options. The health navigation professional is available 3 days per week to answer questions related to health insurance, such as definitions of terms (e.g., co-payment, deductibles, out-of-pocket expenses, and reimbursement), flexible spending, PPO versus HMO, and many more. On the other 2 days, the health navigation professional provides compliance training, lunch health topic seminars, and various other duties.

are similar. When individuals have a question, they use the available tools (e.g., signage, websites, phone calls, insurance policies) to attempt to solve the problem. If the tools do not solve the problem, the individual asks questions (e.g., phone operator, store clerk, neighbor, friends, family members, or complete strangers) to resolve the problem. The same is true in health care. If individuals have a simple medical concern or symptom, they may ask a friend or family member for an opinion. As individuals gain opinions, they begin to explore other information sources (e.g., websites, books, pamphlets) to increase their knowledge. If the symptoms persist or worsen, they seek health care. At this point, the services of a health navigation professional become useful.

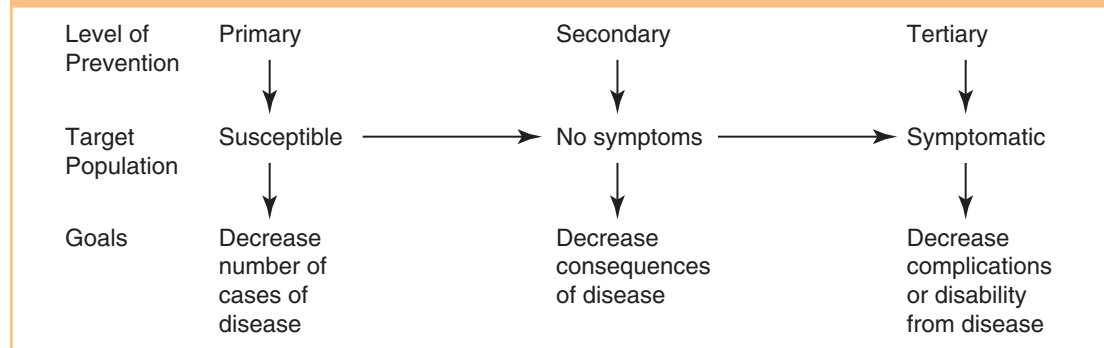
Upon entry into the healthcare system, the individual receives care but may also leave with additional questions regarding the treatment plan and follow-up appointments. For complex health conditions, if these escalating questions become more and more confusing, the individual may lack understanding to the point of frustration and withdraw from further testing or treatment. This action begins a downward cycle of disease progression. When a health navigation professional is employed to intervene at the first appointment, the medical condition is less likely to escalate into a serious condition due to lack of adequate communication. Health navigation professionals provide the opportunity for individuals to receive understandable medical information, ask multiple questions on all aspects of the medical condition, and

assist with navigating the healthcare system with a partner—the health navigation professional. This process reduces the barriers to receive treatment, decreases the fear, and improves communication for better outcomes. Research has shown that health navigation services contribute to beneficial outcomes across the cancer care continuum.<sup>6</sup>

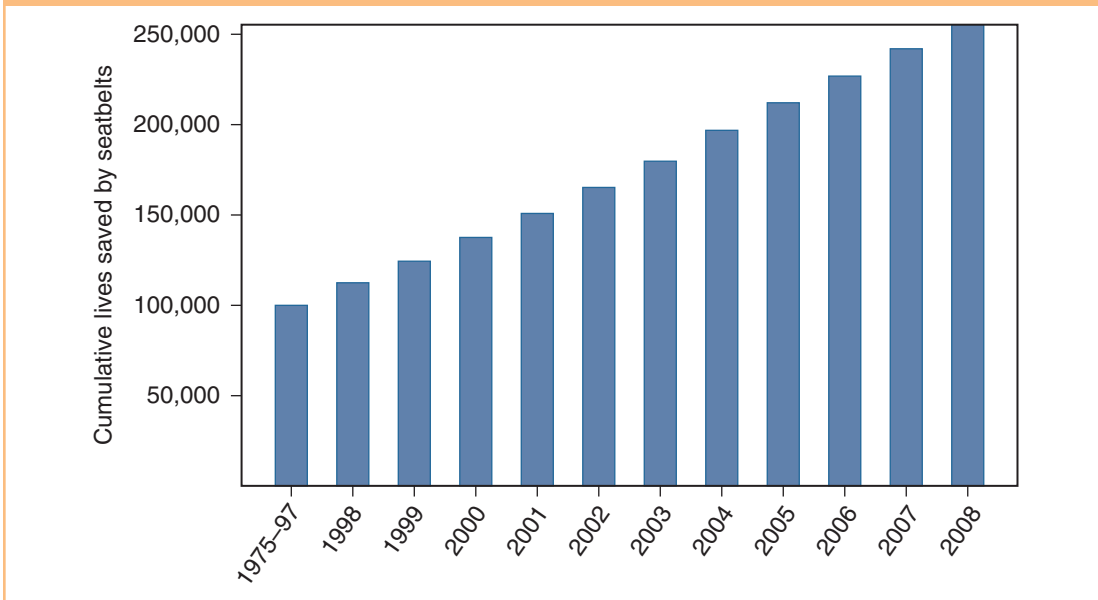
## LEVELS OF PREVENTIVE CARE

The goal of preventive care is to avoid an illness from ever happening. When an illness does occur, the goal becomes to prevent those circumstances from getting worse. In the following discussion, the topics of primary, secondary, and tertiary prevention are introduced. The activities performed at each stage are attempts to keep the illness or injury from becoming more severe. For example, if individuals do not rest and treat their flu symptoms, the virus will increase in severity until a hospitalization may be required. As you will learn in this section, the activity at each level of prevention is performed to prevent progression to a higher level of severity. Primary prevention is deterrence of illness or disease before it occurs. Secondary prevention relates to screening for risk factors and early intervention or treatment of the disease. Finally, tertiary prevention centers on treatment to control severe symptoms and prevent further complications of disease and rehabilitation. In summary, the easiest way to remember the three levels of prevention are prevention, treatment, and rehabilitation.<sup>7</sup> See **Figure 2.1** and **Figure 2.2**.

**FIGURE 2.1** Summary of Primary, Secondary and Tertiary Prevention<sup>8</sup>



Modified from: The University of Ottawa (2014). Society, the Individual, and Medicine. Categories of Intervention. Available at: [http://www.med.uottawa.ca/sim/data/Prevention\\_e.htm](http://www.med.uottawa.ca/sim/data/Prevention_e.htm). Last updated on December 11, 2014.

**FIGURE 2.2** Cumulative Lives Saved by Seatbelts<sup>9</sup>

From: <http://www.cdc.gov/motorvehiclesafety/seatbeltbrief/>.

Now let's delve into a more detailed description of the three levels of prevention. When possible, it is easier to prevent illness from occurring than to treat the illness. It is also easier to treat the illness than to provide rehabilitation from advanced morbidity. Ideally, the entire healthcare system would benefit by focusing more attention on prevention. However, the responsibility is not solely on the healthcare system to keep individuals healthy. Prior to becoming patients, individuals must take personal responsibility for making positive lifestyle and behavior choices if they wish to maintain optimal health to the best of their ability. Throughout the healthcare system, all team members, including health navigation professionals, find opportunities to work in all levels of preventive care and with all types of individuals, as illustrated in the next section.

### Primary Prevention

The simplest way to remember primary prevention is to visualize a river.

At the base of the river, many healthcare providers are pulling sick and injured individuals



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from the river and treating them one at a time. As more and more individuals come down the river in need of treatment, the healthcare providers get overwhelmed with so many sick and injured individuals. Soon, a few individuals walk upstream to determine why so many individuals are falling into the river. These people are public health professionals who study primary prevention. Their goal is to protect healthy individuals and communities from acquiring a disease or

experiencing an injury. For example, one of the many roles of a health navigation professional is to increase awareness about a health issue or behavioral change that is necessary to lower the risk of acquiring a disease. In addition, the health navigation professional may work to prevent an acquired medical condition from escalating into a more serious condition.

For example, in the 1960s, many individuals smoked cigarettes. Numerous health education campaigns focused on educating the general public about the hazards of smoking. Over the next 50 years, public health professionals changed policies

and regulations to lower the health risks related to cigarette smoke, including secondhand smoke and indoor clean air regulations. They also taught various ways to stop smoking by using nicotine gum, nicotine patches, hypnosis, meditation techniques, and prescription medications. Another example is the use of seatbelts. It took decades of education, automotive engineering, and legislative action to improve vehicle safety. In general, primary prevention includes a wide range of activities or interventions that reduce health risks. See **Table 2.1** for an example of the effects of public health policies and regulations on health issues. See **Box 2.4**.

**TABLE 2.1** Application of Primary, Secondary and Tertiary Prevention

Disease	Intervention level	Primary	Secondary	Tertiary
Heart disease	Individual	Education on healthy lifestyles: nutrition, exercise, weight management and smoking cessation	Blood tests to determine risk of heart disease including cholesterol and triglyceride levels	Follow-up exams to identify severity of heart disease: physical examination and blood tests
	Population	Public service announcement related to prevention of heart disease: nutrition, exercise, weight management and smoking cessation	Organized heart healthy screening programs	Implementation of health care services to improve access to quality care
Infectious diseases: hepatitis C	Individual	Counseling on safe drug use to prevent hepatitis C virus (HCV) transmission; counseling on safer sex	Screening for HCV infection of patients with a history of injection drug use	HCV therapy to cure infection and prevent transmission
	Population	HCV prevention includes safer sex practices, programs to discourage needle sharing among intravenous drug users, etc.	Establish a universal testing system for HCV in high risk groups	(Similar to primary prevention): ensuring close control of high risk sites such as tattoo parlors that have been associated with outbreaks
Type II Diabetes	Individual	Education about appropriate diet and exercise	Free or low-cost diabetes screening	Referral to specialized endocrinology clinics
	Population	Build positive healthy lifestyle environment (walking and biking paths, clean air quality control)	Neighborhood recreation centers to promote healthy lifestyle for families	One-stop clinics for comprehensive care services

Data from The Association of Faculties of Medicine of Canada (2015). AFMC Primer on Population Health. Chapter 4: Basic Concepts in Prevention, Surveillance, and Public Health. Accessed on January 1, 2015.



## BOX 2.4 Primary Prevention

### What Is Primary Prevention?

Access to ongoing health care, wellness programs, immunizations, mental health services, and dental and eye examinations

Availability of long-term knowledge, support, and skills needed to make positive behavioral changes

Incorporation of positive environmental changes that promote health and wellness in communities (e.g., sidewalks, bike paths, playgrounds, community gardens, and improved outdoor air quality)

### What Is Not Primary Prevention?

One-time health fairs with limited follow-up for healthcare services

Health classes filled with knowledge but not linked to skills and support

Changes are linked to high-income neighborhoods rather than improving the quality of the entire community

Primary prevention lowers health risk by changing behaviors, products, or the environment. When risk reduction is built into a product design, consumer behavior is altered with minimal behavior change from the individual. For example, because all new cars are equipped with side airbags, consumers gain additional driving safety without altering their driving habits. This type of protection is easily remembered by thinking about the Three E's.

### Education

Health education increases awareness about health and wellness. For example, public service announcements and billboards increase awareness about healthy eating, regular exercise, sunscreen protection, breast feeding, oral health care, and smoking cessation. Community classes are offered on a variety of health and wellness topics. Healthcare providers advise individuals to seek regular wellness exams, participate in screening tests, and receive recommended immunizations. Product warning labels educate about pesticide and hazardous chemical exposure as well as safety precautions when operating equipment.

Keep in mind that knowledge does not equate to behavior change. For instance, if an individual attends a weight reduction seminar or

joins a weight loss program, this does not necessarily suggest the individual will lose weight. Behavior change is a complex process that occurs over time and involves numerous steps. For example, individuals can describe the health benefits associated with regular exercise, but that knowledge is not necessarily linked to their personal behavior. When healthcare providers advise individuals to lose weight to lower their cardiac health risks, it does not automatically render lifestyle changes in diet and exercise. Many other factors, such as age, gender, health risks, culture, faith-based beliefs, socioeconomic, education, workplace, and living conditions influence how, when, and why individuals may or may not choose to change their health behaviors. Behavior change is never as simple as teaching an individual about the advantages of healthy behaviors and expecting a sustainable change. Remember this concept by thinking about your own health. How many times have you tried and failed to lose the same 10 pounds? How many times have you tried and failed to exercise 3 times per week over the course of 6 months? It is no different for individuals who are in need of changing their behavior to improve their health. The important message is to keep trying until the behavior change becomes a daily lifestyle routine instead of a daily task.

## Engineering

The design of products and equipment is instrumental in improving safety and reducing injury, disability, and death. For example, automobile safety has improved greatly over the last 40 years due to the engineering design of seatbelts, airbags, bumper construction, type of tires, dashboard back-up monitors, steering wheel controls, adjustable head rests, padded dashboards, and child car seats. Engineers have also redesigned workplace environments to reduce repetitive motions that wear out joints and cause back injuries. The redesign of toys and sports equipment has shown a reduction of injuries in children as well as in professional sports. Finally, our homes are safer due to the engineering of bathroom safety bars, child safety gates, stove burner knobs placed along the back of the stove instead of the front, smoke alarms, and safety caps on household cleaning products and medication bottles. Without the involvement of engineering, the educational component is not effective. If the safer product is not available, there is no point in increasing awareness about the need to reduce potential injuries.

## Enforcement

National, state, and local regulations and laws change to enforce adherence to new safety policies for the good of individuals or entire communities. Some such regulations are controversial. Mandatory motorcycle helmet use is an example. Some individuals feel that this law should be mandatory, while others feel that such a law is an infringement on personal rights. Other new laws, such as “no texting while driving,” have more support among the general driving population and are based on new technology. In addition, there are numerous federal agencies created for the primary purpose of safety regulation. The Occupational Safety and Health Association (OSHA) oversees all aspects of employee and workplace safety regulations. The Food and Drug Administration (FDA) regulates and inspects food and drug safety from product development to consumer consumption. The Environmental Protection Agency (EPA) inspects

and regulates all environment hazards and safety measures inside and outside.

## SECONDARY PREVENTION

Secondary prevention can occur after the disease or injury occurs, but before an individual may be aware that anything is wrong. The goal of secondary prevention is discovering and treating a disease or injury. The intervention used for secondary prevention is to stop or slow the progress of illness in the earliest stages of the disease or to limit a long-term disability in the case of an injury.<sup>10</sup>

Secondary prevention also includes medical tests and screening procedures to detect and treat pre-clinical pathological changes. For example, a colonoscopy is a screening procedure to detect colon cancer and is often the first step in early intervention procedures that are cost-effective and life-saving before waiting until symptoms appear. Another example of secondary prevention is a routine fasting blood test for individuals over the age of 40 to detect Type 2 diabetes at an early stage.

For some diseases, such as skin cancer, there is a clear distinction between primary and secondary prevention. For example, sunscreen is used to avoid skin cancer from ever developing. Sunscreen and regular skin cancer screening is recommended for individuals with known skin cancer risk factors (for example, being very pale). However, the lines between primary and secondary intervention are less clear in musculoskeletal disorders, such as back pain. Because back injuries are difficult to prevent, the major focus for primary prevention of back pain is through using correct body alignment when lifting heavy objects. After a back injury occurs, secondary prevention focuses on muscle strengthening exercises to prevent further injury and pain.<sup>10</sup> See **Box 2.5** to practice your skills.

## TERTIARY PREVENTION

Tertiary prevention is directed at individuals with noticeable symptoms of the disease or injury. The goal is to prevent further damage or injury,

**BOX 2.5** Practice Skills

Answer the following questions about primary and secondary prevention.

Mr. Smith is a former smoker who was diagnosed with hypertension and chronic obstructive pulmonary disease (COPD). His healthcare provider gave him a prescription for an inhaler to improve his breathing function. A primary prevention need for Mr. Smith is:

- Having the health navigation professional review the side effects of his medications
- Scheduling a spirometer (breathing function test) measurement
- Receiving an annual influenza immunization

Mrs. Williams is an obese 65-year-old woman with diabetes. She works full-time as an administrative assistant in an elementary school. A secondary prevention for Mrs. Williams is:

- Obtaining a routine mammogram
- Receiving an annual influenza immunization
- Attending a diabetic cooking class

Answers: C—Receiving an influenza immunization is primary prevention  
A—Obtaining a routine mammogram is secondary prevention

reduce pain, slow the progression of the disease or injury, prevent the disease or injury from causing further complications, and rehabilitate as much as possible to improve quality of life. A health navigation professional may assist with navigation services, communication, understanding, and resources at any point along the continuum of level of preventive care. For example, when an individual experiences a myocardial infarction (heart attack), tertiary prevention provides immediate acute clinical treatment to reduce the risk of additional heart muscle damage. After the individual is stable, then rehabilitation begins to alter the individual's lifestyle to improve bodily function, longevity, and quality of life. Rehabilitation may include weight loss and improved nutrition, smoking cessation, muscle strengthening exercise, aerobic activity, and the initiation of other positive health behaviors. Overall, the key of tertiary prevention is to improve the quality of life.<sup>10</sup>

Tertiary care also includes stopping or delaying the progression of an established disease or learning to control the pending consequences. Here are two examples. First, if an individual is diagnosed with an autoimmune disease such as



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rheumatoid arthritis, it is important to achieve and maintain a healthy weight. Excess weight strains muscles, joints, and ligaments and reduces mobility and quality of life. Generally, tertiary care is focused on minimizing the consequences of the disease or injury.<sup>8</sup> Second, an individual with long-term Type 2 diabetes may have decreased blood flow to a lower extremity, such as a toe or foot. When blood flow is decreased, vascular and tissue damage occurs. Amputation is needed when the damaged tissue is severe. After the individual recovers from the surgical amputation, rehabilitation focuses on balance, mobility, and quality of life using a prosthetic lower extremity.

Tertiary prevention treatment involves supporting individuals in their current health status, improving their quality of life, and reducing any further deterioration caused by their noncommunicable disease or injury status. See **Box 2.6**.

## RISKS AND RISK ASSESSMENT

Now that you understand the three levels of prevention, we will now explore the concept of risk assessment. In other words, how likely is it that an individual will acquire a specific disease in the future? The simple definition of risk is a situation involving exposure to danger. There are two types of risks: observable and calculated.

### BOX 2.6 Practice Skills

	Individual	Family and Friends	Community	Society
Health Condition: Type 2 Diabetes Caused by Obesity	Individualized education about connection between obesity and chronic health conditions	Learn how to support positive dietary changes to achieve a healthy weight among family and friends	Public service announcements to inform citizens about negative health consequences of obesity	Promote healthy weight by building walking and biking paths in the community
	Quarterly hemoglobin A1C blood tests to determine blood glucose levels over time	Seek health care to request baseline to determine risk of developing diabetes in the future	Organize a health fair to encourage individuals to get screened for diabetes with a fasting glucose blood test	Improve access to quality, low-cost health care in the community
	Referral to an endocrinology healthcare provider to regulate insulin dosage	Encourage family members to attend healthcare appointments to learn how to offer support to individual with diabetes	Form partnerships with community healthcare providers to offer diabetic supplies to low-income individuals for free or reduced cost at local health department clinics	Solicit legislative action to improve healthcare coverage for all individuals

Health Condition Selected:

Health Condition Selected:

**Observable risk** is verifiable. For instance, the meteorologist reports that there is a 70 percent chance of rain tomorrow. Because rain causes slippery roads, you are increasing your chances of getting into a vehicle crash if you drive while it is raining. This activity would expose you to an observable risk. Each individual chooses the risks that he or she is willing or not willing to accept. Risks may include driving without a seatbelt, riding a bike without wearing a helmet, driving and texting, skydiving, drinking alcohol and driving, and many more risky behaviors. In terms of health risk assessment, there are numerous observable risks. Here are a few examples of reducing the risk of acquiring a disease: (a) frequently washing your hands; (b) maintaining an ideal weight; (c) obtaining an annual flu vaccine; (d) exercising daily; (e) obtaining recommended age-appropriate preventive screening tests; (f) eating healthy foods; and (g) incorporating other positive health choices into your lifestyle.

As a health navigation professional, it is useful to understand the probability of observable health risks. Here are three different examples explaining the concept of observable risks in making decisions about healthcare treatment options:

1. Based on years of observable research outcomes, the surgeon tells Mary that there is a 50 percent observable risk that the surgery *will not* improve her medical condition. In other words, there is a 50 percent observable risk that the surgery *will* improve her medical condition. Should Mary have the surgical procedure?
2. Based on years of observable research outcomes, the surgeon tells Harold that he has a 30 percent chance of living and a 70 percent chance of dying (observable risk) in the next 6 months unless he has the recommended surgery. Should Harold have the surgical procedure?
3. Based on years of observable research outcomes, Barbara is told by her oncologist (cancer specialist physician) that, for her type of cancer, the only chemotherapy treatment available offers her an

observable risk of a 60 percent chance of living (40% chance of not living) another 5 years. Should she receive the chemotherapy treatment? See **Box 2.7**.

Second, calculated risks are not observed, but, as the term implies, they are calculated with a mathematical formula. For example, you have a calculated risk of getting hit with a piece of space debris falling from a spacecraft. Even though this event has never happened, there is a calculated risk that it might happen at some point in the future, even though the event is highly unlikely. Another example is discussed on news broadcasts when a state lottery is approaching an excessive dollar amount. The news reporter states that individuals have a greater chance of getting struck by lightning than winning the multimillion-dollar lottery. The “chance” that the reporter is describing is a calculated risk. Yes, individuals do get struck by lightning and individuals do win multimillion-dollar lotteries; however, the calculated risk of either event actually happening is extremely low, given the millions of lottery tickets sold for one prizewinner.

Now, let us think about calculated risks from a health standpoint. For example, parents are caring for their child with the flu. If the parents *are not* frequently washing their hands, they are greatly increasing their calculated risk of acquiring the flu virus. Because each individual's immune system is different, it is impossible to observe (predict) with absolute certainty how each individual reacts to exposure of a specific virus, bacteria, or medical condition; therefore, it is a calculated risk. For example, Susan is given the opportunity to participate in a clinical research trial using a new chemotherapy drug. Her risks are calculated (not observed) because only a few individuals have ever received this chemotherapy drug for her type of cancer. Susan would prefer to hear from her physician that there is a 90 percent **calculated risk** cure rate rather than learning that there is only a 10 percent calculated risk cure rate.

In addition, the calculated risks of acquiring most diseases are not based on a single risk factor. In other words, a list of possible risk factors

**BOX 2.7** Asking Health Risk Questions

As a health navigation professional, you may be asked to accompany individuals to their healthcare appointments. Generally, when individuals learn of a serious health condition, they need to make important decisions. Often, individuals are unable to formulate useful questions to ask on the spot. Possible sample questions that the health navigation professional might ask the healthcare provider for Mary, Harold, and Barbara follow. Because they need more information to make their decisions, you are asked to write two more sample questions that would also be useful to ask.

Mary:

Sample Question One: Are there other nonsurgical procedures, such as physical therapy, that might decrease the symptoms, because the surgery may or may not be successful?

Sample Question Two:

Sample Question Three:

Harold:

Sample Question One: If Harold does not have the recommended surgery immediately, when the medical condition becomes more serious over time, will the surgery remain an option?

Sample Question Two:

Sample Question Three:

Barbara:

Sample question: How fast does this type of cancer progress if Barbara chooses to delay starting the chemotherapy treatment for a few months?

Sample Question Two:

Sample Question Three:

increases the chances of acquiring a disease. For example, if an individual smokes two packs of cigarettes each day for 40 years and lives in a city with a high level of industrial air pollution, the risk of developing lung cancer is higher than

for an individual who never smoked. For most diseases, there are multiple risk factors. Even though an individual may have every risk factor, there is no absolute certainty that the individual will develop the disease. On the other hand, an

## BOX 2.8 Risk Factors for Developing Multiple Sclerosis (MS)

Variable	Risk Factor
Age	Most common between ages 15 and 60, but can occur at any age
Gender	Women are about twice as likely as men
Family History	Higher risk if a parent or sibling has had MS
Race/Ethnicity	White individuals are at highest risk of developing MS
Climate	MS is more common in cooler climates, such as southern Canada, northern United States, New Zealand, southeastern Australia, and Europe

Data from the Mayo Clinic (2014). Multiple Sclerosis: Risk Factors. Available at: <http://www.mayoclinic.org/diseases-conditions/multiple-sclerosis/basics/risk-factors/con-20026689>. Accessed on December 18, 2014. Last Updated on July 10, 2014.<sup>11</sup>

individual may have no risk factors and still develop the disease. See **Box 2.8**.

### Controllable and Non-Controllable Health Risks

Now that you have a basic understanding of risks and risk assessments, we will explore health risks that are controllable and non-controllable. First, we investigate a few controllable health risks. Smoking cigarettes is controllable. An individual has a choice whether to smoke or not. If and when the individual wishes to stop smoking, there are many options (nicotine gum, patches, prescription medications, support groups, health education websites) available to assist with smoking cessation. Bike helmet use is another controllable risk. Individuals choose whether or not to wear a bike helmet when riding their bike. Not all examples are as easy to label as controllable risk.

Excessive weight gain is an example. The cause of obesity is complex and involves physical, social, medical, emotional, economic, and environmental issues. See **Table 2.2**.

The risk of heart disease is minimized by lifestyle choices that are controllable. Because cardiovascular disease has controllable and non-controllable factors, the discussion begins with the controllable side. As previously stated, there are multiple risk factors that increase or decrease an individual's risk of developing cardiovascular disease. It is important to know the key factors that are controllable to lower the risk of heart disease. See **Table 2.3**.

Now, we will explore health risks that are not controllable, such as genetic risks. Individuals do not have control over their genetic risks. However, if individuals have a strong family history of cardiovascular disease, they can modify their

**TABLE 2.2 Causes or Consequences of Obesity**

Variable	Causes or Consequences
Physical	Lack of physical activity; injury; decreased mobility
Social	Social stigma; isolation
Medical	Body systems: cardiovascular, endocrine, kidney, muscular-skeleton
Emotional	Depression; unforeseen life circumstances
Economic	Unemployment; discrimination
Environmental	Need for sturdy furniture, ramps, and slanted curbs for scooters and wheelchairs

**TABLE 2.3** Controllable Risk Factors to Reduce Cardiovascular Disease

Controllable Risk Factors	Link to Cardiovascular Disease
Smoking	Smoking increases damage to cardiovascular system
Blood Pressure	Keeping blood pressure within normal limits (WNL) with or without prescription medications protects cardiovascular system
Cholesterol Level	Control cholesterol levels with diet or prescription medications
Overweight or Obesity	Weight management reduces risk of Type 2 diabetes
Physical Activity	Daily physical activity reduces risk of cardiovascular disease

controllable risks by improving nutritional intake; not smoking; and maintaining quality exercise and weight management to offset genetic risks that are not controllable. Keep in mind that not all genetic factors can be modified with positive lifestyle behaviors. For instance, an individual who is predisposed to breast cancer as determined by the BRAC1 genetic test may not be able to increase healthy lifestyle behaviors to reduce the overall risk of developing breast cancer. Another example would include specific diseases, such as sickle cell disease or hemophilic disease. Such diseases are linked to genetic factors with limited response to lifestyle modifications. However, unhealthy lifestyles behaviors can often exacerbate the non-controllable risk factors.

Other less controllable or non-controllable risk factors include environmental, occupational, and socioeconomic factors. Environmental factors involve long- and short-term exposure to poor water, indoor air, and outdoor air. If a community is downwind from a manufacturing factory that emits toxic fumes, then the entire population suffers from long-term exposure to toxins. On the other hand, workers at the World Trade Center following the September 11, 2001, terrorist attacks were exposed to countless toxins, chemicals, and poisons for a short time having long-term effects. In times of war, military personnel may be exposed to toxins for a short period of time with long-term negative health conditions. Occupational exposure encompasses

short- and long-term exposure, including chemical spills, asbestos, toxic fumes, etc. Healthcare workers may unexpectedly be exposed to diseases such as hepatitis without their knowledge.

Socioeconomic factors are less controllable, but also greatly impact health risks. If individuals have limited education and thus limited income, their ability to access quality health care is less controllable due to the lack of health insurance. If individuals with limited income reside in a geographical location with fewer healthcare facilities, they have little or no control over their options. Finally, individuals with fewer social support networks have greater health risks due to lack of socialization. For example, if an elderly person lives alone and no one visits daily, the elderly person is at-risk of experiencing a health crisis without care.

Let us take a slight detour to explore the term “victim-blaming.” **Victim-blaming** is defined as blaming an individual for his or her circumstances without taking into account the surrounding contexts. For example, a victim-blaming comment about someone who did not graduate high school would be, “Well, it is her fault that she did not complete high school. She should have studied more.” However, there is no way to know the reasons why an individual did not finish school. In this example, maybe the main breadwinner for the family became chronically sick and could not work, and this individual needed to quit high school to find a job to help pay household expenses. Other examples of victim-blaming may target obesity,



## BOX 2.9 Examples of Victim-blaming Accusations

### Accusation

That individual is obese because he simply eats too much food.

Those people should go get a job instead of begging for money on the street corner.

Anyone can graduate from high school if they try and study a little.

I do not know why my neighbor stays in that relationship.

That individual would feel better if he would take his medication instead of skipping doses.

Individuals should stop using the hospital emergency department as an urgent care clinic.

### Reality

Obesity involves many variables besides caloric intake, including physical mobility, depression, grief, stress, abuse, unemployment, medications, and other health challenges.

Homelessness is complex problem. Homeless individuals do not have any way to bathe and obtain clean clothes that would be acceptable to seeking employment.

A high school diploma is difficult to achieve. If the student is homeless, has an undiagnosed learning disability, or has limited access to food, academic achievement becomes difficult or unobtainable.

Intimate partner violence is more complex than merely telling the abused individual to pack up and leave the situation. The individual may be financially dependent or lack the emotional strength to leave the situation.

The individual may not have enough money to buy the correct amount of medication, so he or she takes the medication every few days to reduce rather than eliminate the symptoms. The individual may not understand the need to take the medication regularly.

Many individuals do not have health insurance or money to pay for an appointment at an urgent care clinic, so they go the emergency department to access the healthcare system.

domestic violence, homelessness, unemployment, criminal action, mental illness, lack of health care, and the list goes on. Take a few minutes to think of other social topics leading to victim-blaming comments and discrimination. See **Box 2.9**.

Now that you are familiar with the concept of victim-blaming, you have a better understanding of the complexity of the many factors that influence an individual's health. In fact, many health conditions begin prior to conception and include factors that are not associated with genetics. For instance, the status of the mother's health, nutritional status, stress, poverty, and lack of access to prenatal care affect the health of the fetus. The negative factors that influence the health of the fetus continue to have a negative influence into childhood. For example, one study reports that children from low-income communities develop academic skills more slowly than children from higher education and income communities.<sup>12</sup> Another study revealed that academic skills are

related to the child's home environment. For instance, if a child lives in a household where the adults have low educational achievement and high chronic stress, these factors negatively affect a child's ability to learn prior to attending school.<sup>13</sup> Inadequate elementary education early in life also increases dropout rates later and thus perpetuates the cycle of poverty in communities, while improving early intervention programs reduces some risk factors for low-income children.<sup>12</sup> In today's society, individuals jump into victim-blaming judgments that lead to false accusations and assumptions.

### Risk Assessments

Now let us investigate some **risk assessment** tools. Keep in mind that risk assessment tools or calculators are often compiled from data sources taken from across the entire population. A risk assessment should never be interpreted as a definitive outcome. For example, if the risk assessment tool

suggested that an individual is at low risk for developing a specific type of cancer, it is exactly that: a suggestion. It does not mean that the individual with the same risk factors will never develop a specific type of cancer. It merely means that after reviewing the data collected from the entire population, individuals with the same risk factors did or did not later develop a specific type of cancer. Risk assessment tools are never used to make a medical diagnosis at any time.

Among the most famous long-term and multigenerational studies is the Framingham Heart Study (FHS). FHS began in 1948, when individuals in Framingham, Massachusetts, were followed over a very long period of time. Researchers began publishing research articles from the population data in 1951; since that time, thousands of articles have been published. The primary purpose of FHS is to research the genetic and environmental factors that influence the development of cardiovascular disease. FHS is among the most important public health studies in U.S. history.<sup>15</sup> If you wish to determine your personal risk of heart disease, go to the National Institute of Health website (<http://cvdrisk.nhlbi.nih.gov/calculator.asp>).

### Evidence-Based Recommendations

**Evidence-based recommendation** is a concept used in health care to illustrate that the latest

and most recommended procedure or treatment is used for a specific health condition. Over the past several decades, treatment recommendations have changed due to changing recommendations from the latest scientific findings. For example, in the past, cancer treatment began with surgery and then was followed by radiation and/or chemotherapy. This sequence is not always the case today. For some cancers, one of the latest treatment suggestions includes an approach called *intra-operative radiation therapy (IORT)*. With IORT, a dose of radiation is delivered directly to the affected tissues inside the body during the surgical procedure. For other cancers, intensity modulated radiation therapy (IMRT) is used to deliver a precise 3-dimensional dose of radiation directly to the tumor and surrounding tissue.<sup>16</sup> Another study shows that giving chemotherapy and radiation therapy before surgery helps to reduce the risk of the cancer reoccurrence in 5 years.<sup>17</sup> Finally, even in the realm of behavioral medicine, many evidence-based changes have shown the danger of smoking and secondhand smoke, while other research continues to provide mixed results, such as for drinking coffee and consuming eggs.<sup>18–21</sup> In summary, it is always important to verify the most current evidence-based recommendation available when researching any lifestyle behavior or health condition. See **Box 2.10**.

### BOX 2.10 Student Activity: Fact or Fiction

As a health navigation professional, you may be asked questions about various health topics. For this activity, select three health topics. Using a variety of websites, find information from two websites supporting your selected topic and two websites refuting your selected topic. Because research is always adding to medical knowledge, there are no absolute correct or incorrect answers. The purpose of this activity is not to find the correct answer, but rather to illustrate how and why individuals get confused with health information.

Here are a few examples of possible health topics:

Is drinking coffee helpful or harmful?

Is it better to eat butter or margarine?

How far do you have to walk to lose weight?

Does consuming 81 mg of aspirin each day reduce risk of heart disease?

What is the duration of aerobic exercise needed to achieve health benefits?

# Summary

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In this chapter, the concept of health navigation professionals and their role in the complex healthcare system was introduced. Building on this knowledge, the discussion defined and described the levels of prevention, including primary, secondary, and tertiary care across the life span. Finally, the chapter explores the concept of risks, including observable and calculated risks as well as controllable and non-controllable health risks and evidenced-based recommendations.

## Case Study

With an understanding of the concepts presented in the chapter, you are able to apply your knowledge to the following case study and then answer the questions.

Ralph, age 72, was diagnosed with moderate hypertension and mild coronary artery disease (CAD) about 5 years ago due to some blockage in two of the arteries supplying blood to his heart. His physician prescribed two types of medication: one for the hypertension and one for CAD. Ralph is overweight, recently stopped smoking, and has pain in his left knee from an old football injury in college. Ralph remains employed as a math professor at a small liberal arts college in the Midwest. His wife, Marilyn, died from breast cancer about 9 months ago. Ralph took a 6-month leave of absence to care for Marilyn prior to her death. Hospice offered home health services to assist Ralph with Marilyn's daily care needs. Since going back to work, Ralph finds that he is depressed and struggles to find joy. He misses Marilyn and worries that no one will take care of him if he gets sick because they never had children. Ralph used to walk every morning before going to work,

but it snowed last week. Ralph stopped walking, because he is afraid of falling. Recently, he noticed that he has a nagging cough, but no other upper respiratory cold or flu symptoms. Before the breast cancer, Marilyn was the nursing director at a small ambulatory care clinic. Because Ralph had a flexible schedule, he did most of the cooking and enjoyed trying new recipes. Lately, he has no desire to cook and does not enjoy eating alone. When he looked at his mail last week, he noticed a postcard advertising a health navigation service. He saved the card and thought this service might be useful for him, even though he had never heard of a health navigation professional. Because Marilyn was a nurse, he always let her take care of their medical needs. He decided that he probably needed to get a physical exam. While he was caring for Marilyn, he neglected his own health needs, which is common among family members who serve as primary caregivers for their loved ones. Ralph decided to call the phone number on the postcard and learn more about the health navigation service. In addition, he scheduled an appointment for a complete physical with his internal medicine physician. He had been going to this physician for years, but he really did not know how to talk to Dr. Schwartz. After all, Marilyn usually asked all of the questions and talked in medical terms that Ralph did not care to understand.

## Questions

1. Describe one example for each of the levels of prevention that pertain to Ralph's case study.
2. Using the risk assessment tool provided in the chapter, discuss an estimate of Ralph's

current risk for developing a serious cardiac condition in the future.

3. As a health navigation professional, describe how you would define your role to Ralph when he calls your office.
4. List four questions that you could ask Dr. Schwartz if you were invited to accompany Ralph to his medical appointment.

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