

Unit  
**2**

# Career Knowledge and Skills for Health Science

- Chapter 3** Health Science Career Preparation
- Chapter 4** Careers Skills in Health Informatics Services
- Chapter 5** Careers Skills in Therapeutic Services
- Chapter 6** Careers Skills in Diagnostic Services
- Chapter 7** Careers Skills in Support Services
- Chapter 8** Careers Skills in Biotechnology Research and Development
- Chapter 9** Health Maintenance for Health Professionals and Patients
- Chapter 10** Preparing for Healthcare Employment



# Healthcare Insider

## *Nathan Drendel, M.S., R.D., L.D., ProMedica's Wellness Dietitian*

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When people hear I'm a dietitian, they always think I'm in the hospital telling people what to eat. In reality, I have such an amazingly unique job that it's hard to explain. Being a Wellness Dietitian means I get to test recipes and try to improve them, but also film cooking and educational videos and provide educational lectures. I'm able to counsel individuals to help them achieve their nutritional and wellness goals. My workdays are never the same, which is just another perk of my job. Being in the role of a "proactive dietitian" rather than a "reactive dietitian" means I get to help people prevent nutritional issues before they progress to serious health issues.



*Courtesy of ProMedica*

### **Discussion Activity**

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Nathan is excited to have a unique job. He films videos, gives lectures, and counsels patients. It is the variety in his job that makes it interesting for him. Discuss the following questions:

1. What will make your future career interesting?
2. Do you prefer to have a fixed schedule and know what your workday will bring, or does facing something new each day appeal to you?

Chapter  
**3**

# Health Science Career Preparation

**Lesson 3.1** Study Skills for Health Science Students

**Lesson 3.2** Career Pathways and Employment Opportunities

**Lesson 3.3** Career Selection and Preparation



To become a physician is no small task. It requires eight years of postsecondary education and then four or more years of residency before you can practice on your own. While this can seem like many years, the outcome of being a physician is very rewarding. While many health science students dream of being a specialist, such as a cardiologist or neurosurgeon, one of the most important and overlooked physicians is the family physician. Family physicians provide care for all ages. They provide everyday healthcare and prevention. They may also manage their patients' overall health by coordinating with various specialists. There is a growing shortage of family physicians, so the American Academy of Family Physicians has teamed up with HOSA—Future Health Professionals to create a *Family Medicine Physician* event. This event aims to increase the number of new medical students going into family medicine.

Go to the HOSA website to learn more about the HOSA *Family Medicine Physician* event. Find out the purpose of the event, what is involved in the event, and what knowledge is demonstrated in the event.

As you prepare for HOSA competitive events, be sure to check the website and talk with your HOSA advisor for the most up-to-date guidelines and procedures. Once you have learned about the *Family Medicine Physician* event, answer the following questions:

1. How might participating in this event benefit you personally and your future career? Explain.
2. Are you interested in participating in this event? Why or why not?



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## Connect with Your Reading

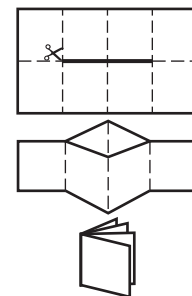
The costs of preparing for a career vary widely. As you investigate healthcare careers, you will consider the amount of education and training required for each career, but you should also consider the cost of education and training. So, what is the cost? For each item shown, give your best estimate or “guesstimate” of the cost. Compare your estimates with your classmates and revise your numbers if needed to make your best estimates.

Education and Training Costs	
Education/Training	Your Cost Estimate
Tuition and fees for one year of community/technical college	Write in your estimate.
Tuition and fees for one year at an in-state public university	Write in your estimate.
Tuition and fees for one year at a private university	Write in your estimate.
Room and board cost for one year of college	Write in your estimate.
Cost of the licensing exam for a registered nurse	Write in your estimate.

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## Map Your Reading

Create an eight-page foldable book using a single sheet of plain paper. Use the image provided or search for video directions online. Number each page, including the front and back covers. Write the chapter number and title on the cover of your book. Open your book and write the lesson title across the top of pages 2 and 3. Then write the headings for this lesson on these two pages. Read the lesson and summarize the main point from each heading using your own words. Flip the page and continue with the next lesson title in the same manner to the end of the chapter.



Chapter opener image: fizkes/Shutterstock.com

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# Study Skills for Health Science Students



## ESSENTIAL QUESTION

*What strategies can you use to study and remember health science content?*

## Learning Outcomes

After studying this lesson, you will be able to

- 3.1-1** explain strategies for improving reading comprehension.
- 3.1-2** describe how to use note-taking to organize and review information.
- 3.1-3** apply study strategies to learn and remember academic information.

## Professional Vocabulary

### Essential Terms

**learning style** an individual's preferred way of gaining or processing new information

**mnemonic device** a learning tool that helps students memorize information

### Important Terms

auditory learners

kinesthetic learners

outline notes

Cornell style notes

mind maps

visual learners

## Introduction

When studying health science, you may feel overwhelmed by the amount of reading required and the large amount of information you must learn. You can avoid this feeling by using specific strategies to improve your learning. These strategies will help you comprehend or understand the material and remember it. You will identify your learning style and practice a variety of study methods to better remember the information you are learning. Just as your body sorts the materials coming in and decides how to use them, your brain needs to sort information to digest everything you will learn in your health science courses.

## 3.1-1 Reading Strategies

Reading for information is different from reading for enjoyment. You must learn and recall important concepts and details. Use these steps to make your reading more meaningful.

## Survey

Begin by surveying the reading material. What is its source, and why are you reading it? Skim the chapter title, headings, and subtitles. What is the main topic? How is the text organized? How much time will you need to read and understand this information? Are there natural divisions so you can break the reading into manageable segments?

## Preview

Next, preview the introduction and summary sections for a shortened version of what you will be reading. What do you already know about this topic? What do you expect to read about in each of the sections? What questions do you have? How will the figures and vocabulary terms be important to understanding this topic? Your preview will help you organize your thoughts before you read and take notes (Figure 3.1).

## Identify Main Ideas

After your preview, set your brain up to look for information as you read. Turn the title of each section of material into a question. As you read, look for information to help you answer that question. This process sets a purpose for your reading. It helps you find the main ideas. For example, this section is titled *Reading Strategies*. You might ask yourself, “What skills will help me read more efficiently?” The details that answer this question are what you should highlight or include in your notes. Ask yourself who, what, when, where, why, or how for each heading before you begin to read. Once you have set the purpose by developing a question, you are ready to begin reading the text content. Pay special attention to the topics that appear in both the text and your teacher’s lecture. Listen for the ideas your teacher emphasizes or spends the most time on in class. Note what they write on the board or hand out in class. These are the main ideas to highlight or write in your notes.

## Highlight Important Information as You Read

It will be helpful to mark your text as you read (Figure 3.2). Write in the margins of the book (if allowed) or use sticky notes that can be removed. Ebooks generally have a note-taking feature that allows you to virtually mark up the text. Write down the question you created as you set your purpose for reading. Check the pictures and figures for more information that explains the topic. As you read, allow yourself to ask more questions about the material and look for connections to things you already know. Make short notes of these questions and connections. Highlight or bookmark text passages that you find helpful or important.

Your highlighting will be more effective if you use a contrasting color to mark the main idea and key terms. Use a different-colored highlighter or underlining for supporting details. If you stay focused on the most important points, less than one-third of your page should be marked up when you are done.



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**Figure 3.1** Surveying and previewing the material you are about to read can help you prepare to take notes on the reading.



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**Figure 3.2** If it is allowed, highlighting important terms in your text can help you better remember them. Use sticky notes if you are not supposed to write in your text.



## Note-Taking Styles

Following are some note-taking styles you can use.

- **Outline notes.** Notes taken in an outline format are easy if you use the headings from the chapter. However, you may end up with a list of details you do not understand if you are not reading the information as you outline. Stop after reading each section and restate the main idea aloud before adding it to your notes.
- **Cornell style notes.** The two-column, or *Cornell*, style is good for merging notes from more than one source and reviewing information. In this style, you list the main ideas and supporting details from the lecture or text on the right side of a page and use the left side to note prior knowledge, additional information from the lecture, remaining questions, or memory cues. Leave a blank line between topics.
- **Mind maps.** Mind maps, or *web notes*, use color, symbols, arrows, size, and other visual connections to show how ideas are related. They do not use many words. If a visual image for your mind map does not exist, create one! Your mind map should group information into manageable chunks and relate the categories of information to each other. This style of note-taking helps organize information so you can make meaningful connections.

## Using Your Notes

No matter what style of note-taking you use, your brain needs review time to process and absorb the new information. If you took notes during a lecture, go back to your text and compare the information. If you took notes from your text, notice how the teacher's lecture and activities organize and connect the same ideas in a new way. It may be helpful to guess potential test questions from the main headings of your text, then attempt to answer the questions from memory and check against your notes. Put the information into your own words or explain it to someone else. This will help you sort through it and build your own understanding. Add notes about connections you see between this topic and other classes, your personal life, the news, and other reading material. New information is easier to remember when you make it personal.

Review your notes in small chunks on a regular basis. A few short review sessions are better for learning than one long cram session. Walking into a test (or doing a medical procedure) when you are tired and your brain is overloaded will not lead to long-term memory or success. Review notes or practice with flash cards or a smartphone app for a few minutes several times a day—on the bus, waiting in line, or during commercials. The more times you reread the information, the more easily you will recall it later. Put the information in your own words and repeat it aloud before you put the notes away. These short practice sessions will build both understanding and memory.

Digesting your reading in this manner is the most efficient way to absorb new information. Stopping to process information in small segments prevents your mind from straying or becoming overwhelmed. Previewing and questioning will help you pay attention to the most important information. Taking notes in your own words will help you actively process the information. Summarizing and reviewing that information will make sure it remains in your memory. Try these techniques as you read the remainder of this chapter.



### 3.1-3 Learning and Assessment of New Information

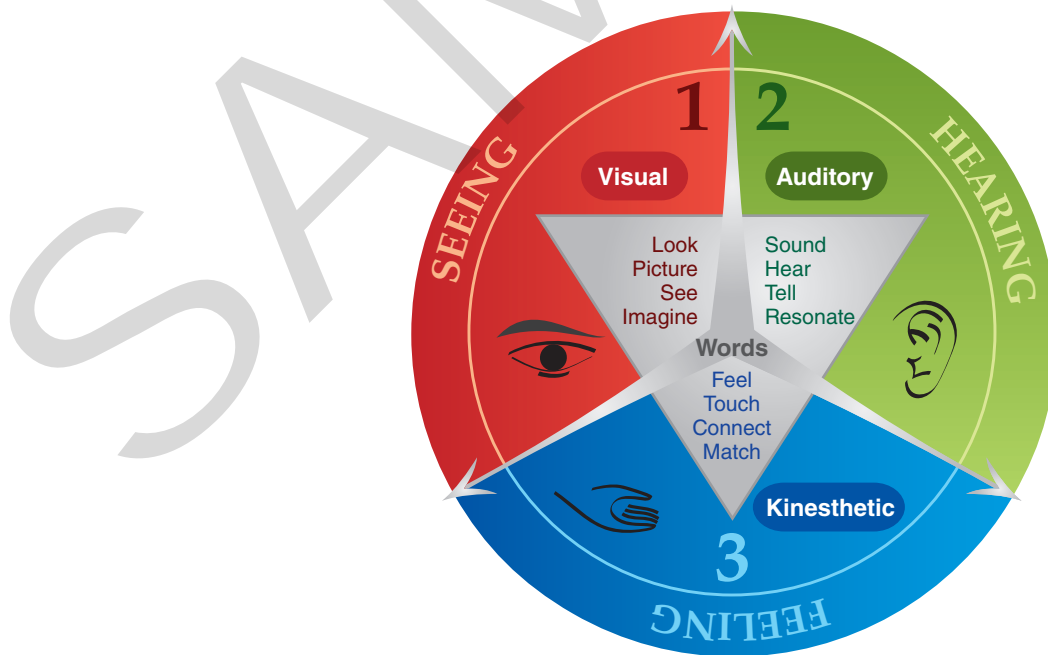
There is a lot of information to remember when you are learning health science content. Paying attention to the way you learn can help you better understand this new information.

## Adapting to Your Learning Style

Your **learning style** guides the way you take in, store, and recall information. Recognizing and understanding your own learning style helps you use the study method that is best for you.

The way you prefer to take in information determines your learning style. **Visual learners** prefer pictures and have a good understanding of direction, spacing, and location. A visual-linguistic learner likes to see written words through reading and writing tasks. A visual-spatial learner may have a hard time with written activities but does better with charts, demonstrations, and videos. **Auditory learners** use sounds, rhythm, and music to store and recall information. They usually remember spoken words the best. **Kinesthetic learners** use their body, hands, and sense of touch to learn. Movement and touch help them pay attention (**Figure 3.4**).

Do you recognize your preferred learning style from these descriptions? Check your school's online guidance program and look for a learning style assessment to give you more information about your preferences. Although you will naturally use your preferred method of learning most often, you can practice using and building the skills for all these styles. The more tools you have for learning and recalling information, the better off you are.



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**Figure 3.4** Learning style identifies the ways you prefer to take in information. *Do you recognize your preferred learning style from these descriptions?*

Some classes do not appeal to all types of learners. What should you do when your learning style does not match the instructor's teaching style? You can make some changes to tailor information to your learning style:

- **Map a lecture.** If it is hard for you to pay attention to a lecture, try taking outline notes or creating a mind map of the information (**Figure 3.5**). Use symbols and pictures to represent the details. Visual learners benefit from seeing the words or pictures in this method, while kinesthetic learners benefit from the hands-on activity of doing the writing.
- **Request an outline.** If you get lost in the details of a lecture, ask for a brief outline before the lecture begins. If you are an auditory learner, you might record the lecture to review with your notes after class.
- **Find a picture or a video.** When wordy descriptions do not create a mental image for you, ask for a picture. Try searching for related video or image files on the internet as part of your review.
- **Create a model or diagram.** Building a model or drawing diagrams helps kinesthetic learners understand or remember new ideas.
- **Ask yourself questions.** Auditory learners can ask questions out loud to clarify or confirm their ideas.
- **Use a study group.** Form a study group as a fun support system. The practice of recalling and explaining new information to others is a great way to build your own memory and understanding.

Take the time to adapt your study habits to reflect your learning style. You may be surprised by the results. As you read this chapter, look for ways to connect with the content through your preferred style.

## Studying New Vocabulary

It is nearly impossible to memorize all the medical terms you will hear in class or the workplace, but learning some common word parts will make it easier to understand the spoken and written terms used in patient care. It will also help you figure out the general meanings of body structures, diseases, and procedures.

People use a variety of methods to study and remember new terms. One common technique is to make and use flash cards. The time spent creating and reviewing the cards is what makes this technique work, so develop games or a schedule to use them often.

Some people play with the way a word looks to remember its meaning. For example, *parallel* means *equal*, and the *ll* in the middle of the word looks like a sideways equal sign. When studying a term, try drawing or reshaping the letters creatively.

Another technique is to look for familiar words that share the same word part, such as *orthodontists* who straighten teeth and *orthopedists* who straighten bones. You can use this strategy with everyday English words too.



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**Figure 3.5** Creating visual notes such as an outline or a mental map can help visual learners better recall information presented in class. *What are some study tips for auditory or kinesthetic learners?*

Some students like to investigate the origins of a new word. For example, *hypochondriac* [*hypo* = below, *chondr* = cartilage, *ac* = pertaining to] literally means “pertaining to the area below the cartilage.” However, in medical usage, it means “below the ribs” because some ribs are attached by cartilage. The term *hypochondriac* may also describe people who always think they are ill. Interestingly, many people hold the area under the ribs when complaining they do not feel well.

This text breaks medical terms down into their Latin and Greek origins to help you understand their meanings. You will study these word parts in the anatomy chapters. In addition, use the other techniques described in this lesson to expand your medical vocabulary.

## Using Mnemonic Devices

**Mnemonic** (nih-MAH-nihk) **devices** often seem silly, but they create powerful connections in our memories. Different areas of the brain store sounds, colors, smells, tastes, touch, and emotions. Vividly connecting information with many senses makes it easier to recall the information later. Use these suggestions for creating your own mnemonic devices:

- Make up acronyms to remember the parts of a concept or procedure. For example, the acronym *SOMBER* can remind you of the symptoms of depression: *Sadness, Overwhelmed, Memory issues, Behavioral changes, Eating changes, and Restlessness*.
- Use the spelling sequence of a word to remember the order of items in a list. For instance, *SOAP* describes the steps for recording narrative progress notes: *Survey/Subjective, Observation/Objective, Assessment, and Planning*.
- Use rhythm and rhyming to recall information. For example, “*i* before *e* except after *c*” reminds you of a basic spelling rule. You can also create lyrics from information and set them to a familiar tune or make up one of your own.
- Play the sound of the word you are learning off the sound of a word you already know. For instance, the word part *later*, which means *side*, sounds like *ladder*. To remember this term, you can imagine climbing up the side of a ladder.



Courtesy of Bandha Yoga Publications

**Figure 3.6** You can exaggerate important aspects of a term or image to better remember it. *Which term in this chapter could you memorize by creating an exaggerated visual representation?*

- Use vivid or unusual images to recall new terms. Try imagining a deck of playing cards for the term *cardi*. This means “heart,” so you might see yourself holding a handful of pulsing, bloody hearts during your card game. The more vivid and unusual the image, the better.
- Exaggerate the size of important parts of an image. For example, a motor homunculus (hoh-MUHN-kyuh-luhs) [*homin* = human, *ule* = small, *us* = structure] is an exaggerated drawing used to help you recall how much area in the brain is required for muscle control of the different parts of the body (**Figure 3.6**). The motor homunculus has a very large tongue, lips, eyes, and hands to show that these parts use a larger area of the brain for motor control than the legs or nose. You can create an exaggerated image like the homunculus for whichever term you are trying to learn.

- Create a short scene with dramatic voices and actions for the information you are trying to remember, then practice acting it out. You will remember that the “brachial region” is on your arm if you hold your arm and say in a childish voice, “I breaky my arm!”
- Use humor, especially if it is shocking. This can make things very hard to forget. For example, you might think of the interesting contrast between *cleave*, which means “to cut or split apart,” and *cleavage*, which is created by pressing the breasts together.

The more strongly you can picture what you are trying to learn and associate it with something you already know, the more easily you will recall it later. Make your learning more memorable by using all of your senses as you study.

## Preparing for Tests

Focus on test-taking skills to change the way you study and improve your test scores. When you get a test back, keep a log of the errors you have made. Study your incorrect answers to find your most common errors. Then practice your test-taking skills. Ask your teacher for a practice test or use your notes to create test questions.

In addition to relearning the concepts you missed, look for problems with your test-taking skills. Watch for these common errors:

- misreading the question
- focusing on the wrong information in the question
- failing to study the correct information

Most tests have several multiple-choice questions. The answers contain distractors that try to take your attention away from the correct answer. Try to answer a multiple-choice question in your head before looking at the answer options. However, read the entire question and all the choices before marking your answer. Use the process of elimination to narrow your options. Begin by looking for the answer that is least correct. It will often be the opposite of the correct response. Next, look for the answer that sounds correct, but does not actually answer the question being asked. Finally, look for the answer that is partially correct, but is either incorrect for this situation or not true in every situation. The remaining answer should be the correct response (**Figure 3.7**).

1. Which statement gives the best description of learning styles?
  - A. Learning styles teach everyone the same methods for acquiring information.
  - B. Many teachers use learning-style theory to design classroom activities.
  - C. Learning styles can be grouped according to the way you prefer to take in information.
  - D. Auditory learners always use their sense of hearing to take in and recall information.

*Goodheart-Willcox Publisher*

**Figure 3.7** Use the process of elimination to select the correct multiple-choice answer. *Can you identify the least correct and partially correct answers, as well as the one that does not answer the question?*

When you take a test, start by previewing the entire test to decide how much time to spend on each section. Make notes about formulas or information you will need to use. Start with the easiest or most familiar questions. Then work on the more difficult questions. Use all of the test time your teacher allows, rechecking difficult questions after you have completed the test.

If you have chosen the right career path, you should enjoy the content of most of your classes. That does not mean your classes will all be easy, but the effort you put into them will be worthwhile. Use your reading and note-taking strategies, learning style study methods, mnemonic memory devices, and test-taking skills to help you through the challenging times.

## Lesson 3.1 Review



Complete the *Map Your Reading* graphic organizer for the section you just read.

- When reading, you should (3.1-1)
  - diagram the material, then organize the introduction and summary sections
  - survey the material, then preview the introduction and summary sections
  - organize the material, then survey the introduction and summary sections
  - preview the material, then diagram the introduction and summary sections
- Before you take notes, identify the main idea by (3.1-2)
  - turning the title of each section into a question
  - guessing what you think the idea is
  - highlighting key terms and their definitions
  - None of these.
- Taking notes using \_\_\_\_\_ helps you understand and remember the information. (3.1-2)
  - text language
  - your own words
  - words you do not know
  - other people's words
- Identifying your \_\_\_\_\_ helps you understand how you take in, process, and store new information. (3.1-3)
  - reading style
  - learning style
  - reacting style
  - mind style
- \_\_\_\_\_ devices can help students remember and organize new information. (3.1-3)
  - Mechanical
  - Pneumonic
  - Mnemonic
  - Abbreviation
- Vividly connecting information with unusual \_\_\_\_\_ makes it easier to recall information later. (3.1-3)
  - images
  - people
  - objects
  - ideas

## Lesson 3.2

# Career Pathways and Employment Opportunities

### Learning Outcomes

After studying this lesson, you will be able to

- 3.2-1 analyze the five pathways found in the health science career cluster.
- 3.2-2 describe a credentialed healthcare worker.
- 3.2-3 illustrate the career ladder approach to education.

### Professional Vocabulary

#### Essential Terms

**accreditation** official recognition from a professional association that an educational program meets minimum educational standards for an occupation

**career clusters** groups of similar occupations and industries that share a core set of basic knowledge and skills for all workers

**career ladder** a sequence of job positions progressing from entry-level to higher levels of responsibility and authority based on education, experience, and performance

**career pathways** smaller groups of specialized occupations within a career cluster that require more specific sets of knowledge, skills, and training

**credentials** documents proving a person's qualifications for a particular occupation

#### Important Terms

Biotechnology  
Research and  
Development  
Diagnostic Services

Health Informatics  
Services  
postsecondary  
education

Support Services  
Therapeutic Services

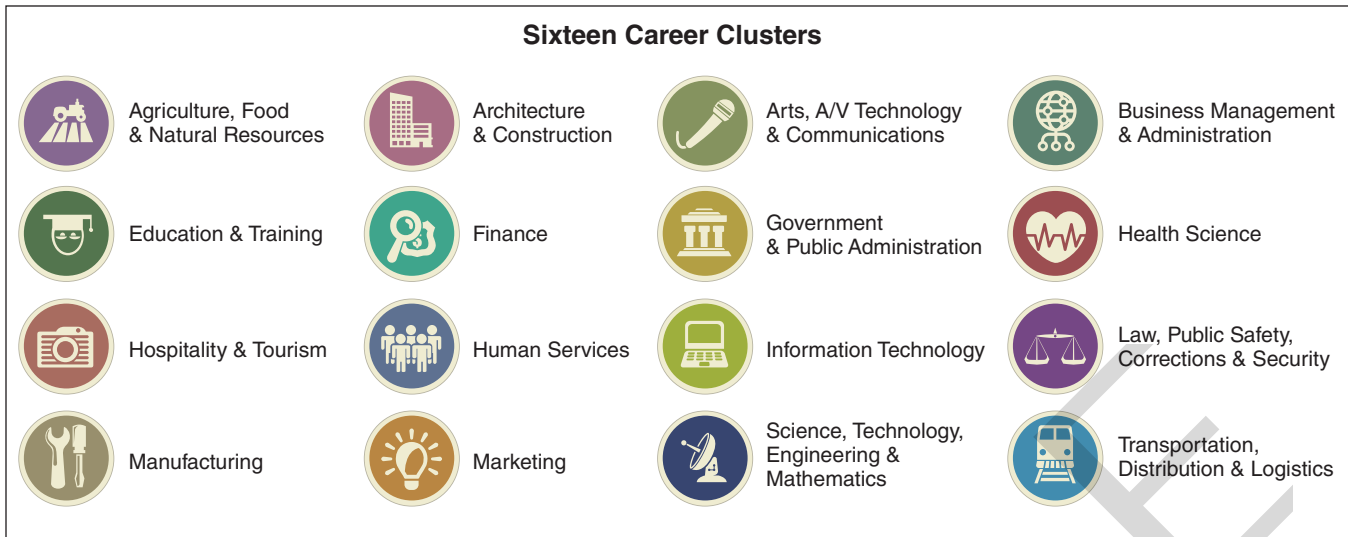
### Introduction

How will you find your future career in healthcare? While the path to your career is not always a direct route, your journey begins by learning about as many opportunities as you possibly can. National organizations that focus on career and technical education have developed a system for organizing all of the identified jobs and careers that exist today. The result is 16 groups called **career clusters** (Figure 3.8). You will begin your search by looking at these clusters and learning general information about the education, training, and credentials used for healthcare careers.



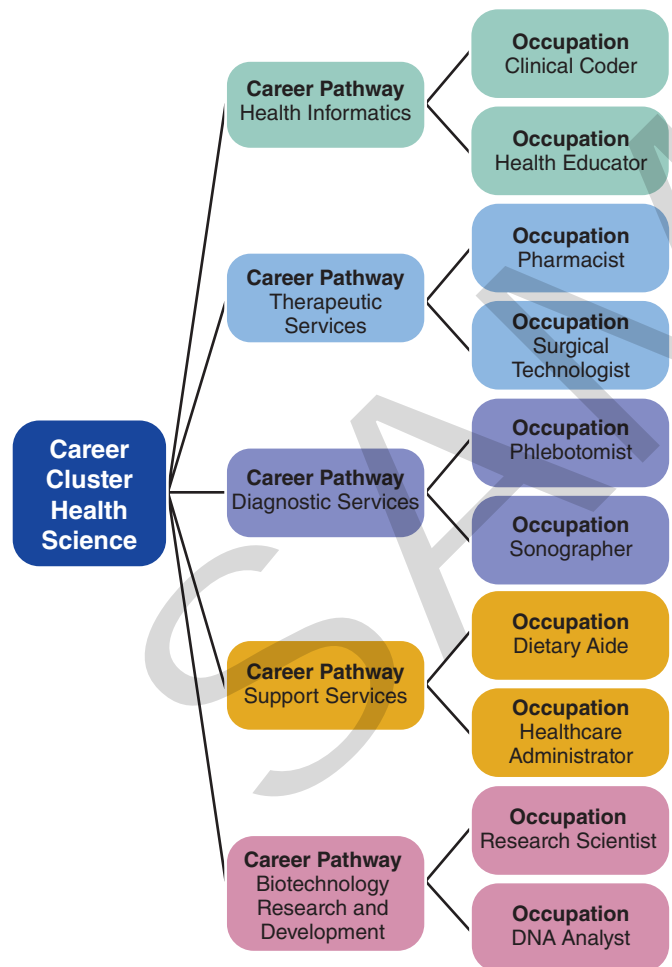
### ESSENTIAL QUESTION

*What career pathways and employment opportunities are available in health science?*



*Icons: Lisses/Shutterstock.com*

**Figure 3.8** All occupations in the US workforce are addressed within these 16 career clusters. This text will discuss many possible careers within the health science cluster. *How many occupations can you name that are part of the health science career cluster?*



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**Figure 3.9** This flowchart shows different healthcare occupations organized by cluster and pathway.

## 3.2-1 Career Clusters and Pathways

Each career cluster contains a specific group of occupations and industries based on the similar knowledge and skills they require. High schools and colleges use the clusters to develop courses that will prepare students for career success. You will use the career clusters to discover your personal interests and preferences. The clusters can help you choose an occupational area that will lead you toward a satisfying career.

Within each career cluster, you will find individual pathways (Figure 3.9). A **career pathway** includes a smaller set of specialized occupations. Each career cluster has a core set of basic knowledge and skills used by all workers in that cluster. Each pathway contains a more specific set of knowledge, skills, and training that will build on the cluster's core knowledge.

### Understanding Health Science Career Pathways

To understand the wide variety of available healthcare careers, you will want to explore the entire health science cluster.

The health science career cluster includes five distinct career pathways:

- **Health Informatics Services**—occupations focused on documenting patient care, as well as managing healthcare data and information.
- **Therapeutic** (thair-uh-PYU-tihk) **Services**—occupations that change the health status of a patient over time. These careers provide direct care for people.
- **Diagnostic Services**—occupations that create a picture of a patient’s health status at a single point in time. These careers provide diagnostic imaging and testing.
- **Support Services**—occupations that create a therapeutic environment for providing patient care. These careers support healthcare and wellness.
- **Biotechnology Research and Development**—occupations involved in bioscience research and the development of treatments and devices that improve human health.

More than 300 different occupations are spread out over these five pathways. Sometimes the tasks of a particular occupation fall into more than one pathway. Consider the physician who both diagnoses (diagnostic pathway) and treats (therapeutic pathway) an illness.

As you study health science careers and learn core health science content, consider how workers across the five health science career pathways use the information (**Figure 3.10**).

## Employment Opportunities

The Bureau of Labor Statistics (BLS) is a national agency that tracks statistical data about occupations and industries in the United States. The BLS predicts that healthcare occupations will grow 16 percent from 2020 to 2030, adding about 2.6 million new jobs. In fact, healthcare and social assistance occupations are projected to add more jobs than any other occupational group. Home health aides and personal care attendants will have more job openings from growth than any other occupation.

Two factors that affect healthcare costs—an aging population and longer life expectancy—also drive the growth in healthcare employment. As the baby boomer generation ages, this large segment of the population will need additional healthcare services. The result is an increased need for healthcare workers.

Due to improved nutrition and healthcare, life expectancy for people in the United States has increased dramatically in the past century. People born in 1900 could expect to live an average of 49 years. People born just a hundred years later, in 2000, can expect to live an average of 77 years, and a person born in 2020 can expect to live 78.9 years. Longer lives mean a longer time to maintain health. Again, the result is an increased need for healthcare workers.

## Career Education and Training

Jobs in healthcare require different levels of education and training. Some entry-level workers receive on-the-job training, but most jobs require education beyond a high school diploma. Education past high school is called **postsecondary education**. Community colleges, vocational or technical colleges, public and private universities, institutes of technology, and career colleges deliver this education.



Examples of Healthcare Occupations by Pathway				
Career Pathway	Sample Career Specialties			
<b>Therapeutic Services</b>	Acupuncturist Art/Music/Dance Therapist(s) Athletic Trainer Audiologist Certified Nursing Assistant Chiropractor Dental Hygienist Dental Lab Technician Dentist	Dialysis Technician Dietitian/Nutritionist Dosimetrist Home Health Aide Licensed Practical Nurse Massage Therapist Medical Assistant Nurse Practitioner Occupational Therapist	Occupational Therapy Assistant Ophthalmic Technician Orthotist/Prosthetist Paramedic Pharmacist Pharmacy Technician Physical Therapist Physical Therapy Assistant Physician (MD/DO)	Physician Assistant Psychologist Psychiatrist Radiation Therapist Registered Nurse Respiratory Therapist Social Worker Speech Language Pathologist Surgical Technologist Veterinarian
<b>Diagnostic Services</b>	Audiologist Blood Bank Technician Cardiovascular Technologist Clinical Laboratory Technician Computed Tomography (CT) Technologist Cytogenetic Technologist Cytotechnologists	Diagnostic Medical Sonographer Electrocardiographic (ECG) Technician Neurodiagnostic Technologist Exercise Physiologist Genetic Counselor Histotechnician Histotechnologist Magnetic Resonance (MR) Technologist	Mammographer Medical Technologist/ Clinical Laboratory Scientist Nuclear Medicine Technologist Nurse Practitioner Nutritionist/Dietitian Occupational Therapist Ophthalmic Technician/ Technologist	Ophthalmic Dispensing Optician Optometrist Phlebotomist Physical Therapist Polysomnographic Technologist Positron Emission Tomography (PET) Technologist Radiologic Technician Respiratory Therapist
<b>Health Informatics</b>	Admitting Clerk Applied Researcher Cancer Registrar Certified Compliance Technician Clinical Account Manager Clinical Coder Clinical Data Miner Clinical Data Manager Clinical Data Specialist Data Quality Manager	Decision Support Analyst Epidemiologist Ethicist Health Educator Health Information Administrator Health Information Technician Healthcare Administrator Healthcare Finance Professional	Information Security Officer Managed Care Contract Analyst Medical Assistant Medical Illustrator Medical Librarian Medical Records Technician Patient Account Manager Patient Account Technician	Patient Advocate Patient Information Coordinator Quality Data Analyst Reimbursement Specialist Risk Manager Transcriptionist Unit Coordinator Utilization Review Manager
<b>Support Services</b>	Behavioral Disorder Counselor Biomedical/Clinical Engineer Biomedical/Clinical Technician Clinical Simulator Technician	Central Service Manager Central Service Technician Community Health Worker Dietary Manager Dietary Aide	Environmental Services Facilities Manager Healthcare Administrator Healthcare Economist Maintenance Engineer Industrial Hygienist Interpreter	Materials Manager Patient Navigator Telehealth Presenter Transport Technician Substance Abuse Counselor
<b>Biotechnology Research and Development</b>	Biochemist Bioinformatics Associate Bioinformatics Scientist Biomedical Chemist Biomedical/Clinical Engineer Biostatistician Cell Biologist Clinical Pharmacologist	Clinical Trials Monitor Clinical Trials Research Coordinator Geneticist Laboratory Assistant Laboratory Technician Medical Editor/Writer Microbiologist	Molecular Biologist Pharmaceutical/Clinical Project Manager Medical Sales Representative Pharmaceutical Scientist Pharmacologist Product Safety Associate/Scientist	Process Development Associate/Scientist Processing Technician Quality Control Technician Regulatory Affairs Specialist Research Assistant Research Scientist Toxicologist

Courtesy of NCHSE

**Figure 3.10** Each health science career pathway contains many different career specialties.

When you enter a postsecondary training program, you will earn college credit for the courses you complete (**Figure 3.11**). A class that meets for three hours each week usually earns you three credits. While that sounds easy compared to high school, college programs expect students to complete about two hours of homework for every hour of class time. So, a full-time student taking 15 credits is expected to attend 15 hours of class time and complete 30 hours of homework, for a total of 45 hours per week. Clearly, knowing how to read efficiently and study independently is important for college success.

When choosing your college program, look for one that is accredited. **Accreditation** means the program has been approved by an agency that makes sure the program has quality standards and truly prepares its students for employment.



*kieferpix/iStock/Thinkstock*

**Figure 3.11** College students are expected to complete many hours of independent study.



## Healthcare Professions: The Importance of Accreditation

Liam learned about the importance of accredited programs the hard way. He happily enrolled in the new nursing program at a local career college when he learned there was no waiting list. While the school cost more than the local technical college, Liam figured finishing faster would make the higher cost worthwhile.



*Billion Photos/Shutterstock.com*

Everything went well until graduation, when Liam learned the school had applied for accreditation, but had not yet been approved by the accrediting agency. This meant that Liam and his fellow graduates were not eligible to take the national certification test and could not legally work as registered nurses.

Fortunately, this story has a happy ending. The school did receive accreditation within a few months. Liam passed the certification test and now works at a local hospital. Nevertheless, he had many anxious moments during those months after graduation. He wondered if he would ever be able to work as a registered nurse. Be sure to check that your chosen school or training program is accredited.

Postsecondary programs award different types of degrees based on the number of credits earned. The occupation you choose will determine the type of degree you need. For example, an occupational therapy assistant needs an associate's degree, but an occupational therapist must have a master's degree. Different schools offer different degrees. **Figure 3.12** shows the types of degrees healthcare workers can earn. **Figure 3.13** shows three medical professions and the level of education needed for each.

Postsecondary Program Degrees		
Length of Program	Degree Awarded	Educational Institution
Four or more additional years	Doctor of Philosophy (PhD)	University/graduate school
Two or more additional years	Master's degree (MS or MA)	University/graduate school
Four-year academic program	Bachelor's degree (BS or BA)	University/undergraduate school
Two-year technical program	Associate's degree	Community or technical college
One-year technical program	Diploma	Community or technical college
Less than one-year technical program	Certificate	Community or technical college
On-the-job training	None	None


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**Figure 3.12** Postsecondary degrees vary in the lengths of programs, degrees awarded, and educational institutions offering them.



**Medical Doctor—MD**  
Training Needed

- Completion of a bachelor's degree followed by four years of medical school
- Completion of three or more years of residency after medical school



**Dentist—DDS or DMD**  
Training Needed

- Completion of a bachelor's degree followed by four years of dental school
- Completion of an additional two to four years for a specialty



**Pharmacist—PharmD**  
Training Needed

- Completion of an associate's degree or more commonly a bachelor's degree
- Completion of four years of pharmacy school

Top to bottom: Minerva Studio/Shutterstock.com, bikeriderlondon/Shutterstock.com, DmitryKalinovsky/Shutterstock.com

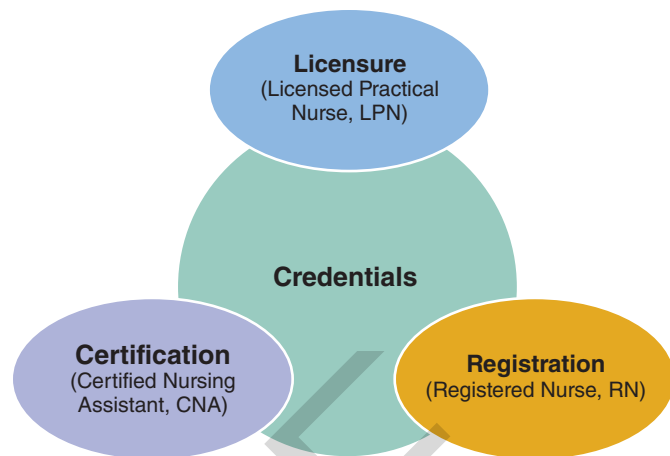
**Figure 3.13** Medical doctors, dentists, and pharmacists all require different levels of training.

## 3.2-2 Job Titles and Credentials

Healthcare organizations want to hire credentialed workers. This means that, in addition to earning a degree, workers need to pass a special test that further proves they are skilled in performing the duties of a specific healthcare occupation. After passing such a test, workers have the credentials to perform the job for which they have been trained.

The terms *certification*, *licensure*, and *registration* all refer to a healthcare worker's **credentials**. While these terms have slightly different meanings, they all tell a future employer that a worker is qualified (**Figure 3.14**). Certification is awarded after a person has completed a course of study. Licensure is given after people pass a licensure exam that proves they meet the qualifications for a particular occupation. Registration refers to the official record of individuals who have passed an examination and are qualified to perform the tasks of a specific occupation.

The titles of healthcare jobs can often tell you the level of education and training required (**Figure 3.15**). Entry-level titles such as *aide* or *assistant* indicate occupations that require fewer years of training and education. Advanced titles such as *technologist* or *therapist* indicate the need for several years of training and education. As you determine how many years of training and education you want to pursue, you may want to compare the duties of an aide, technician, and therapist within an occupation such as physical therapy or medical lab careers.



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**Figure 3.14** These are the different types of credentials available and examples of healthcare occupations that require credentials. *Why are credentials important?*

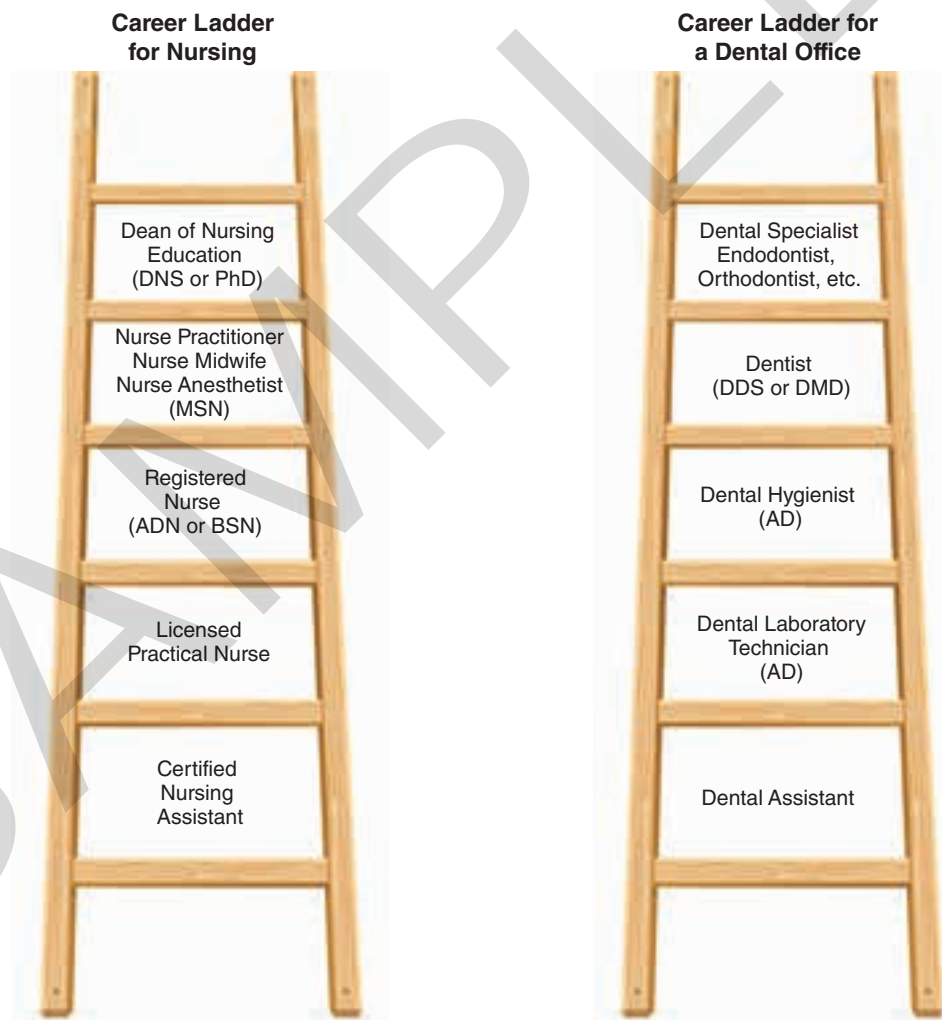
Education and Training Requirements			
Job Title	Education and Training	Examples	Exceptions
Technologist or therapist	Bachelor's degree; often master's degree	Occupational therapist, medical lab technologist	Respiratory therapist, surgical technologist (both can be associate's-degree programs)
Technician	Associate's degree	Dental lab technician, biomedical technician	Pharmacy technician, healthcare technician (both require one year or less of education and training)
Aide or assistant	Diploma or certificate program requiring one year or less of education and training	Medical assistant, dental assistant, therapy aide	Occupational therapy assistant, physical therapy assistant (both are associate's-degree programs)

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**Figure 3.15** A job title can tell you what level of education and training is needed for that job.

### 3.2-3 Career Ladders

Due to the rising cost of college, students are looking for ways to make postsecondary education more affordable. Many choose to use a **career ladder** approach to their education (Figure 3.16). A career ladder represents the progression of jobs within a specific occupation or particular work setting. The bottom of the ladder is the entry-level position that requires the least amount of training. As you move up the ladder, the job titles indicate increased education and training, as well as increased responsibility. Most jobs within the same occupation “piggyback” on each other. However, some jobs within the same work setting may have completely different education and training requirements.



Ladder: M.Stasy/Shutterstock.com

**Figure 3.16** Entry-level jobs appear at the bottom of the career ladder. As you “climb the ladder,” additional education and training are required. Jobs within the same occupation “piggyback” on each other. For example, you need to have an RN license before training to become a nurse anesthetist. However, jobs within the same work setting may have completely different education and training requirements. For example, you do not have to train as a dental hygienist before studying to become a dentist.



## Healthcare Professions: Using the Career Ladder

Lamar used a career ladder approach to his education by taking health science classes in high school. While he wanted to become an X-ray technician, he took a nursing assistant course so he could get an entry-level job in healthcare. After high school, Lamar enrolled in the local community college and lived at home to save money. He continued to work at a local nursing home and learned that he enjoyed the tasks involved in the nursing profession.



MBI/iStock/Thinkstock

The next year, Lamar transferred to the state university in a nearby city and continued to live at home. He found a nursing assistant job in a hospital close to his new school and continued to work while studying for his bachelor's degree in nursing. Lamar's employer helped pay some of the tuition costs of his classes. Employers often support the education of employees who are seeking advanced degrees or certification. Since they want to maintain a skilled workforce, employers may repay student loans or reimburse tuition for employees.

After completing his bachelor's degree in nursing, Lamar passed the national examination for nurses and became a registered nurse. The hospital was happy to hire him because they already knew he was an energetic and compassionate worker with strong communication skills for interacting with patients. Taking an entry-level position while studying and working his way up the career ladder was a good strategy for Lamar.

### Lesson 3.2 Review



Complete the *Map Your Reading* graphic organizer for the section you just read.

- The smaller groups of occupations within a career cluster are called (3.2-1)
  - techniques
  - skills
  - pathways
  - mini-clusters
- Make sure to attend an \_\_\_\_\_ educational program, so that you will be eligible to work in your chosen healthcare career. (3.2-1)
  - associated
  - adjudicated
  - accredited
  - applied
- Most healthcare jobs require further \_\_\_\_\_ after you finish high school. (3.2-2)
  - postsecondary education
  - university education
  - technical college education
  - four-year education
- In addition to completing a specialized training program, healthcare workers often need to obtain \_\_\_\_\_, which are documents proving a worker is qualified for a specific occupation. (3.2-2)
  - registration
  - recognition
  - credentials
  - certification
- As individuals gain experience or complete additional education, they can move up the \_\_\_\_\_ in their occupation. (3.2-3)
  - scale
  - wall
  - chain
  - ladder

# Career Selection and Preparation



## ESSENTIAL QUESTION

*What activities will support your selection and preparation for a career in health science?*

## Learning Outcomes

After studying this lesson, you will be able to

- 3.3-1** explain the purpose for the National Health Science Standards.
- 3.3-2** describe the role of career assessments in choosing a healthcare career path.
- 3.3-3** summarize the purpose for and elements of a quality career portfolio.

## Professional Vocabulary

### Essential Terms

**career portfolio** a written record of career planning and preparation

**HOSA—Future Health Professionals** a career and technical student organization for future health professionals

**National Health Science Standards** statements developed by the National Consortium for Health Science Education that describe the knowledge and skills workers need to succeed in healthcare careers

**résumé** a short, one-page document that contains your accomplishments and experiences and explains how these relate to a job in which you are interested

### Important Terms

career and technical student organizations (CTSOs)

career assessments

## Introduction

How do you begin to prepare for one of the 300 different healthcare occupations? High school health science courses introduce the core knowledge and skills you need for a healthcare career. Career assessments will help to narrow your career choices. Developing a career portfolio prepares you for entering the job market, and participating in a career and technical student organization builds your professional job skills.

## 3.3-1 National Health Science Standards

The National Consortium for Health Science Education (NCHSE) took on the overwhelming task of organizing the knowledge and skills that healthcare workers need. This group developed the **National Health Science Standards**.

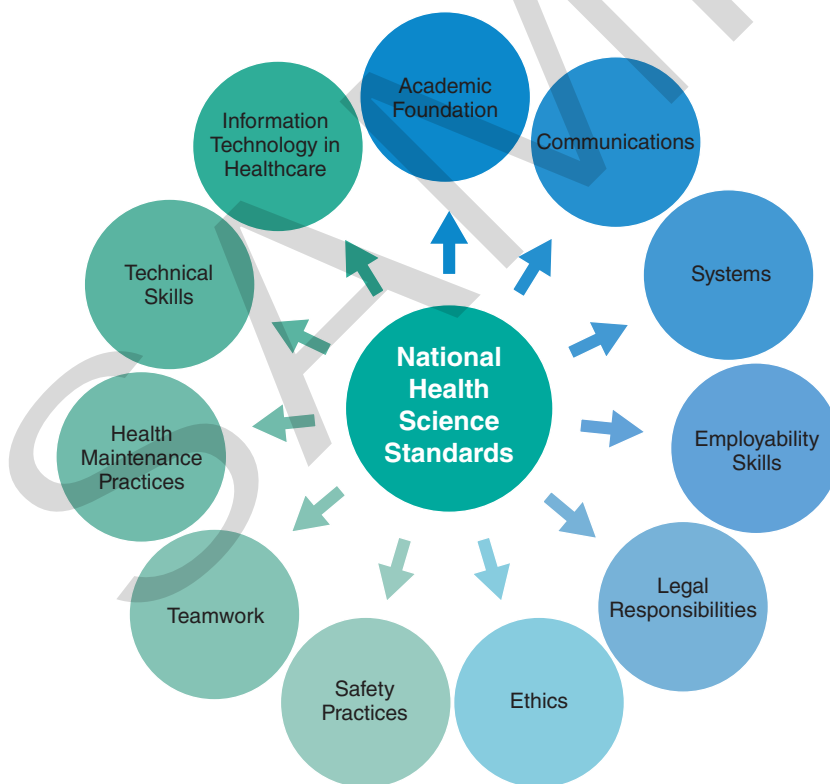
In this text, you will study these 11 standards. They provide the essential knowledge common across health professions to prepare students for college and future health careers.

The standards teach students how to contribute to the delivery of safe and effective healthcare (**Figure 3.17**). They represent the core set of skills most workers need to succeed in healthcare careers. More than 1,000 healthcare employers, as well as college and high school health science teachers, contributed to the development of the standards.

This text guides you through the content of each foundation standard. Reading about the experiences of workers in the five health science career pathways will enhance your understanding. By noting the differences among the pathways and the experiences of workers within each pathway, you will be able to refine your career search and learn the core skills you will need for a successful healthcare career.

### 3.3-2 Selecting a Career

The first step in finding a satisfying and rewarding career is to learn about your job preferences. Once you know your preferences, you can analyze career opportunities and find those that fit you personally. Friends, teachers, counselors, and family members may give you career advice with the best intentions, but it will only be good advice if the suggested occupation matches your personality and work preferences.



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**Figure 3.17** Studying these content standards develops core skills for healthcare workers.



## Identifying Your Interests and Strengths

Taking a career cluster survey will identify your top occupational interest areas. Sometimes students with a strong interest in health science are surprised when the health science cluster is not their top choice in the survey results. Career interests often come from life experiences, which are powerful motivators. It is important to examine many careers. When you look at the daily tasks of your chosen career, you may find they do not fit your personal preferences or strengths.



### Healthcare Professions: Career Choice

When Angie was in elementary school, her beloved grandmother became ill with cancer. Through many months of treatment, Angie observed several different nurses who provided care for her grandmother. She was impressed and moved by their compassionate care. As a result of this experience, she decided to become a nurse. As a high school student, she took every available health science class. The science and math courses were not her favorites, but she worked hard to learn the skills needed for a nursing career. When it came time to take a nursing assistant course, Angie found the clinical practice agonizing. Her stomach clenched each time she thought about going back to work with the patients. One night she broke down in tears in the employee lounge. It was time to reconsider her choice.

Angie still had a strong desire to help people, but found she did not enjoy the close physical care aspects of the nursing profession. She thought about the classes she enjoyed in school and remembered how much she liked the business projects in her marketing class. Her health science teacher reminded her that she did an excellent job leading the HOSA—Future Health Professionals service-learning project. The teacher also identified some of Angie's natural strengths, including recruiting and training fellow student volunteers, developing and delivering a healthcare presentation to 300 students, and designing and producing hands-on activities for students. Angie also had a positive attitude and could always get fellow students excited about HOSA activities.

Though her life experiences had motivated Angie to become a nurse, she soon realized her personal strengths did not fit that chosen career. Eventually, Angie decided she was better suited to a career in marketing than one in nursing. When she finishes her degree, she hopes to do marketing or public relations work for a healthcare organization.



*Mangostar/Shutterstock.com*

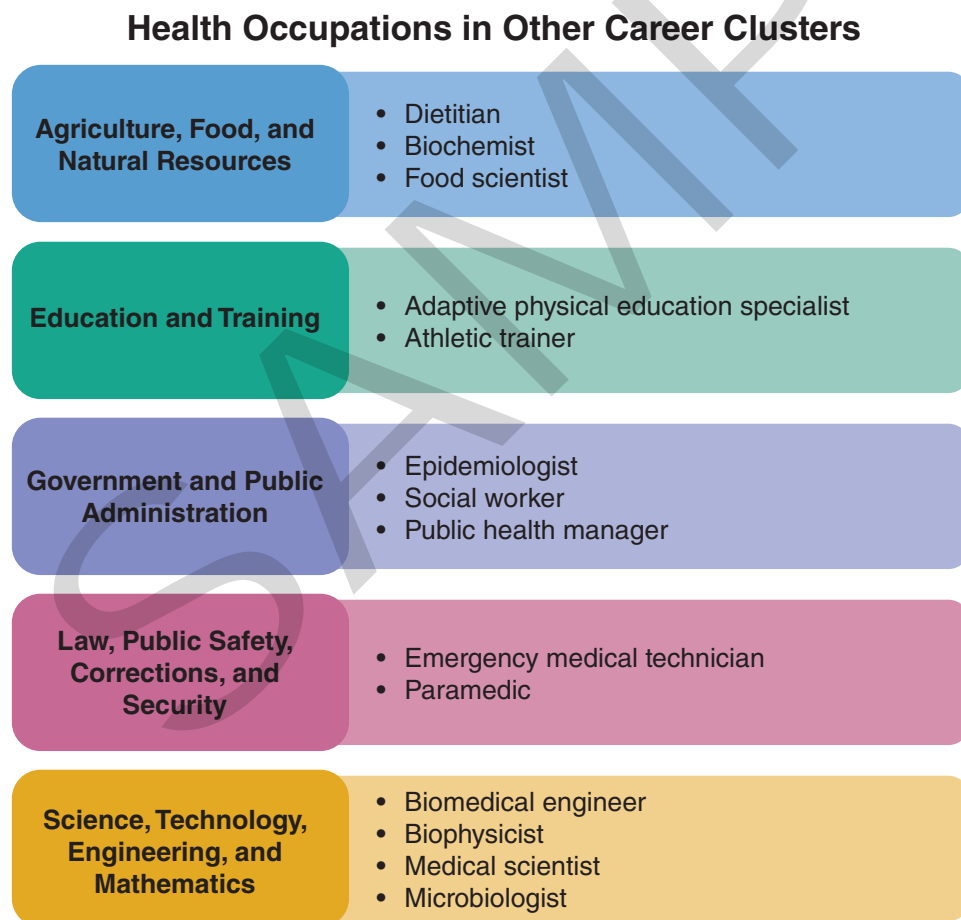
Knowing the career cluster and pathway you are interested in pursuing helps you create a program of study for high school and college. As a health science student, for example, a program of study based on your chosen career pathway can help you understand why math and science courses are important to your future. Knowing your program of study may also offer opportunities to earn college credit while you are still in high school. Many high schools offer

dual-credit and advanced-placement college coursework that is relevant to a student's career goals. In some cases, students attend courses at a college located near their high school. Following the sequence of courses outlined in your program of study will prepare you for employment in your chosen career.

As you research your healthcare career, include career clusters other than health science in your search. You may be surprised to learn that many occupations found in other career clusters are part of the healthcare industry (Figure 3.18). **Career assessments** are tools such as questionnaires and surveys that you can use to find careers that will match your individual needs. If you have completed a career cluster survey, you know your top career clusters. Even if health science was not one of your top clusters, you can find ways to use your chosen career in the healthcare field. For example, computer scientists, public relations personnel, and accountants all come from different career clusters. Yet, all of these people can work in healthcare facilities.

## Career Personality

Career clusters are organized according to different jobs within an industry. Since the clusters are not organized according to work interests, you will want to narrow your career search based on your own interests. By identifying your work interests, you can determine your career personality.



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**Figure 3.18** Other career clusters also contain many different health-related occupations.

Career psychologist John Holland identified six basic personality types through many years of work and research in the field of psychology. Review the chart in **Figure 3.19** to identify your top three personality types. Then, consider careers that match those personality types. Matching your personality to your career can lead to job satisfaction and success.

As you investigate careers that interest you, look for those that match your work preferences and personality type. Do you prefer to work indoors or outdoors? Are you willing to work only on weekdays and only during the daytime? How long do you want to attend school? How much income do you want to earn? These preferences regarding the practical parts of a career are important to your job satisfaction. Compare each career you are interested in with your list of personal preferences as you develop your career plan.

## Primary Work Tasks

As you continue to search for a satisfying health science career, consider the primary tasks of an occupation. Look for jobs that include tasks you enjoy performing. Knowing your likes and dislikes in your hobbies and activities will help you plan for a career that is a good match for you. All job tasks focus primarily on people, data, things, or ideas:

- People-oriented jobs provide care and services to people. They lead or guide people or sell products to people. These jobs may be a good choice if you enjoy helping someone who is sick, running for an elected office, listening to a friend’s problems, or showing a child how to do a new task.

Health Science Careers by Personality Type		
John Holland Personality Type	Characteristic	Health Science Career Examples
<b>Realistic/doer</b>	Likes mechanical hands-on activities	<ul style="list-style-type: none"> <li>• Central supply worker</li> <li>• Electrocardiograph technician</li> <li>• Surgeon</li> </ul>
<b>Investigative/thinker</b>	Is an analytical problem solver	<ul style="list-style-type: none"> <li>• Medical laboratory technician</li> <li>• Nurse practitioner</li> <li>• Psychologist</li> </ul>
<b>Social/helper</b>	Is cooperative and people-oriented	<ul style="list-style-type: none"> <li>• Certified nursing assistant</li> <li>• Health science educator</li> <li>• Physical therapist</li> </ul>
<b>Enterprising/persuader</b>	Is a competitive leader	<ul style="list-style-type: none"> <li>• Pharmaceutical sales representative</li> <li>• Healthcare administrator</li> <li>• Dean of nursing at a college or university</li> </ul>
<b>Conventional/organizer</b>	Pays attention to detail	<ul style="list-style-type: none"> <li>• Dental assistant</li> <li>• Medical coding specialist</li> <li>• Operating room nurse</li> </ul>
<b>Artistic/creator</b>	Likes creative activities	<ul style="list-style-type: none"> <li>• Medical photographer</li> <li>• Music therapist</li> <li>• Community health nurse</li> </ul>

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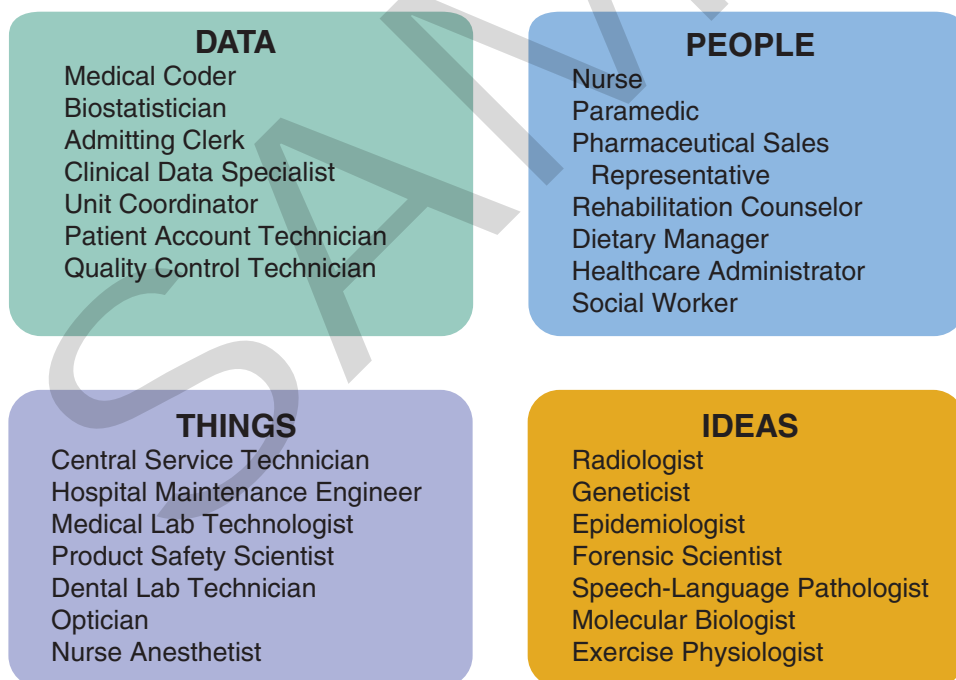
**Figure 3.19** Career personality types identify personal interests that match well with different health science careers.

- Data-oriented jobs deal with facts, numbers, and files of information. They involve business procedures. Do you like to complete science experiments? serve as a club treasurer? write a computer program? research an interesting topic?
- Ideas-oriented jobs work with knowledge, insights, theories, and new ways of doing or saying something. Are you interested in decorating a room? writing stories or music? performing in a play or a concert? inventing a new product?
- Things-oriented jobs involve working with equipment and machines; living things; or materials such as food, metal, or plastic. Do you find satisfaction in repairing a car? building something out of wood? gardening and lawn care? making craft projects? preparing food? operating computers, cameras, and other electronic equipment?

All jobs involve a combination of people-, data-, ideas-, and things-related tasks. You will be most satisfied when your preference for one or two of these areas matches the primary tasks of your job (**Figure 3.20**).

For example, Brittany knew that she was a people person. She studied nursing because she wanted to work with people but learned through a career assessment that she has a strong enterprising personality. She realized she enjoys the tasks of influencing people and helping them choose appropriate products more than tasks of caring for them directly. So she switched to studying business and became a medical sales representative.

When you research specific careers, read about the nature of the work to learn about the actual tasks performed by workers in your chosen career. Ask yourself if a job's tasks match your own preferences for working with people, data, ideas, or things.



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**Figure 3.20** Based on your interests, you may want to pursue jobs that specifically include people-, data-, ideas-, or things-related tasks. *Choose the category that best fits with your interests and investigate jobs that include that type of task.*

### 3.3-3 Career Portfolios

Your **career portfolio** records the work you have done to prepare for a career or get a specific job. You can use the contents of your portfolio to plan your high school course schedule, apply to college programs, complete scholarship applications, or apply for a specific job. Preserving your portfolio and keeping it up-to-date makes these tasks easier because you have all the information you need in one organized location.

A quality portfolio highlights your knowledge, experiences, skills, and abilities (**Figure 3.21**). It contains:

- a personal statement
- your résumé (REH-zuh-may)
- letters of recommendation
- records of paid and volunteer work experiences
- samples of projects and presentations that illustrate your skills
- health certifications you have earned
- a list of school and community activities in which you have participated
- scholastic and professional awards you have received

As you learn health science skills, you will develop your own career portfolio. Store your portfolio digitally for easier updates as you acquire more job skills and experiences.

A personal statement reflects your personality, passions, and goals for your career and your life. It should answer some basic questions. What experiences and interests have led you to this career? Why is this work important to you, and what do you think you can contribute to this career? What goals have you set for yourself in this career? Include an example of one of your positive characteristics. You may use information from this document as you write a college application essay or fill out job applications and prepare for interviews. Do not send your personal statement out to potential employers. Instead, use it to guide your decisions as you begin your career journey.

A **résumé** is a short, one-page document that contains your accomplishments and experiences and explains how these relate to a job in which you are interested. An online template can make it easy to create and revise your résumé. List your name and contact information at the top of your résumé. Include your educational background, employment history, extracurricular activities, employment certifications, and special awards or honors. Keep a separate list of references to include when specifically requested. Each time you apply for a job, adjust your résumé to fit the specific requirements of the position.



*Ermolaev Alexander/Shutterstock.com*

**Figure 3.21** Keep your career portfolio on hand when applying for jobs. Your portfolio should contain all the information you might need for a job application.

Your résumé must be easy to read, so use the same font throughout the document. Use phrases separated into bullet points rather than complete sentences. Be specific about your responsibilities and accomplishments. Since you may be applying online, format your résumé so it can be posted easily to a website; sent by email; or printed, mailed, and then scanned by a potential employer. Save your document in the file type requested by the employer, such as a PDF, Word, or plain text file (**Figure 3.22**).

Include the results of your career assessments in your portfolio so you can review them when considering a new job. These results will help you determine if a job is a good fit for you. Your portfolio is a tool you will use throughout your work life.



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**Figure 3.22** Your résumé should be formatted so you can share it easily with multiple employers.

### 3.3-4 Career and Technical Student Organizations

**HOSA—Future Health Professionals** is a career and technical student organization. **Career and technical student organizations (CTSOs)** are membership groups for students in career and technical education pathways to advance their career skills by participating in activities, events, and competitions. Through CTSOs such as HOSA for health science students, FBLA for business students, and SkillsUSA for a variety of industries, students can develop leadership skills (**Figure 3.23**). Members learn about career training programs, practice career skills, and participate in service-learning and other volunteer opportunities.

Welcome to the field of health science. Keep your eyes and ears open on this journey through the amazing variety of careers you will encounter in this field. Who knows? Maybe you will discover the pathway to your future.



HOSA—Future Health Professionals

**Figure 3.23** HOSA—Future Health Professionals is a CTSO focused on preparing students for careers in health science.

## Lesson 3.3 Review



Complete the *Map Your Reading* graphic organizer for the section you just read.

1. The National \_\_\_\_\_ Standards include the 11 healthcare standards you will study in this text. (3.3-1)
  - A. Healthcare
  - B. Health Information
  - C. Health Science
  - D. Fundamental
2. What do career assessments help you identify? (3.3-2)
  - A. Work tasks that you enjoy
  - B. Your individual work preferences
  - C. Your career personality
  - D. All of these.
3. A career portfolio \_\_\_\_\_ your career preparation and achievements. (3.3-3)
  - A. explains
  - B. records
  - C. acknowledges
  - D. eliminates
4. A quality portfolio contains (3.3-3)
  - A. job applications
  - B. rejection letters
  - C. recommendation letters
  - D. list of all high school courses

# Chapter 3 Review and Assessment

## Chapter Summary

- 3.1-1** Using specific reading strategies helps you comprehend the reading material and remember more information.
- 3.1-2** To develop your understanding of new information, use your own words as you take notes. Short and frequent review sessions build both understanding and memory. Turning chapter headings into questions will help you to find the main idea of each text section.
- 3.1-3** Recognizing and understanding your own learning style allows you to use the study method that is best for you. Mnemonic devices connect information with many senses and make it easier to recall the information later. Test-taking skills can change the way you study and improve your test scores.
- 3.2-1** The health science career cluster includes all the careers found in the field, while each of the health science pathways contains a smaller set of specialized occupations. Each career cluster has a core set of basic knowledge and skills used by all workers in that cluster. Each pathway contains a more specific set of knowledge, skills, and training that will build on the cluster's core knowledge. The health science career cluster includes five occupational pathways: health informatics services, therapeutic services, diagnostic services, support services, and biotechnology research and development.
- 3.2-2** Healthcare workers earn credentials by completing specialized training programs and passing a licensing test before they are certified to work.
- 3.2-3** Healthcare workers often progress to more advanced positions by seeking additional education and training.
- 3.3-1** Students learn how to contribute to the delivery of safe and effective healthcare by studying course content that is based on the National Health Science Standards.

**3.3-2** Career assessments help to identify potential careers that will lead to job satisfaction.

**3.3-3** A quality career portfolio highlights your knowledge, experiences, skills, and abilities. At a minimum it contains your résumé, letters of recommendation, your current references, and a list of your professional certifications.

## Maximize Your Professional Vocabulary

1. **Terms Target Practice.** On a sheet of paper or document, draw a target shape with two rings and a bull's-eye in the center. In the outer ring, list the professional vocabulary terms that refer to learning and memorization. In the middle ring, list the five health science career pathways. In the bull's-eye, list the terms that are connected to occupations and employment. Start with the outer ring and define each term. Circle each term you cannot define. Continue defining terms until you hit the bull's-eye. Then review the meaning for each circled term.
2. **Memory Flash Review.** Create a flash card for each level-1 essential term. Include a visual representation like a picture or a graphic above each term. As you review, repeat each word and definition out loud. Sort your cards into "know" and "do not know" piles. Lay your "do not know" cards in a line on the floor. Walk to each term and say the definition. Start over until you can walk the complete path of terms. Think about this review. How does it incorporate all learning styles?

## Reflect on Your Reading

1. Review the chart of cost estimates you made in the *Connect with Your Reading* activity at the beginning of this chapter. Ask each class member to research the cost of one item on the list. Work together to record the actual costs from your research. Add tuition and room and board fees and consider these questions: How much does a four-year bachelor's degree cost? How do you think students pay for college education expenses? Discuss your findings with class members. Think about your own experiences regarding the costs of education and training. List some options that can help to cover the costs.

## Review and Recall

- Which of the following is *not* a reading strategy? (3.1-1)
  - Survey the material
  - Preview the introduction and summary
  - Identify the main idea
  - Reclaim the information
- Which steps will help you determine the main idea of a text section? Choose all that apply. (3.1-2)
  - Turn the section title into a question.
  - Set a purpose for your reading.
  - Ask who, what, when, where, or how.
  - List all your text information in your notes.
- What is likely to be the most effective study technique for a kinesthetic learner? (3.1-3)
  - Ask for an outline of the lecture.
  - Ask yourself questions about the lecture.
  - Create a diagram of the lecture.
  - Join a study group to review the lecture.
- You need to remember the names of all the Great Lakes: Huron, Ontario, Michigan, Erie, and Superior. Look closely at the name of each lake. What mnemonic device works well for this task? (3.1-3)
  - Create an acronym.
  - Use rhythm and rhyming.
  - Create vivid images.
  - Create a short scene with dramatic voices.
- Which of these is *not* a health science career pathway? (3.2-1)
  - Health Informatics Services
  - Therapeutic Services
  - Pediatric Services
  - Biotechnology Research and Development
- Ruth plans to become a speech and language pathologist. Which career cluster and pathway represent the knowledge and skills required for this occupation? (3.2-1)
  - Human Services/Community Services
  - Human Services/Early Childhood Services
  - Health Science/Therapeutic Services
  - Health Science/Support Services
- Healthcare workers earn credentials by completing specific \_\_\_\_\_ and passing a test before they are certified to work in their profession. (3.2-2)
  - college coursework
  - career assessments
  - high school coursework
  - training programs
- Which of the following best illustrates a career ladder approach to education? (3.2-3)
  - Pharmacy technician to surgical technician
  - Respiratory therapist to physician's assistant
  - Dental assistant to dental hygienist
  - Medical laboratory technician to registered nurse
- Which statement best describes the purpose for the National Health Science Standards? (3.3-1)
  - They organize the knowledge and skills needed by all healthcare workers.
  - They contain 11 standards.
  - They prepare students for college and future health careers.
  - They strengthen communication and teamwork skills.
- Jasmine just heard a presentation by a polysomnographer (sleep specialist) who spoke to her health science class. She is excited to pursue this career. What steps should she take next? Choose all that apply. (3.3-2)
  - Complete a career cluster assessment.
  - Complete a career personality assessment.
  - Decide whether she likes working nights.
  - Apply for a position in this career.
- Choose the best description of a career portfolio. (3.3-3)
  - It is a record of your work history.
  - You use this document to get a work reference.
  - You give it to the person who interviews you for a job.
  - You use this document to apply for educational programs and job openings.



Nursing Degree	Certified Nursing Assistant	Licensed Practical Nurse	Bachelor's of Science–Nurse	Master's of Science–Nurse
<b>Cost of education for tuition and fees (Costs are for public colleges and universities)</b>	\$600 (one course)	\$5,500 (one year)	\$40,000 (four years)	\$64,000 (six years)
<b>Beginning yearly salary</b>	\$28,000	\$36,000	\$65,000	\$90,000
<b>Total 10-year income assuming annual 4% raises</b>	<i>Write answer here.</i>	<i>Write answer here.</i>	<i>Write answer here.</i>	<i>Write answer here.</i>
<b>Total income minus the cost of education</b>	<i>Write answer here.</i>	<i>Write answer here.</i>	<i>Write answer here.</i>	<i>Write answer here.</i>

## Build Core Skills

- Math.** The table above shows the education costs and beginning yearly salaries of several nursing degrees. For this activity, find the total dollar amount earned in a 10-year period minus the cost of education for each of the nursing credentials shown. Calculate total dollar amount using compounded 4-percent increases for salary each year and round totals to the nearest dollar amount. Does more education equal more income? Is further education worth the cost? Discuss with your classmates.
- Critical Thinking.** Complete a career clusters interest survey. Search the internet for “career clusters interest survey” and select an online or printable version. After completing the survey, identify your three top clusters of career interest. What factors will you consider as you choose a healthcare career if health science is not your first choice in the cluster quiz?
- Critical Thinking.** Select two of your own healthcare experiences from the following list. For each experience, identify a healthcare worker who played a role in that experience. Identify that worker’s health science pathway and describe the credentials required for that healthcare career.  
Healthcare experiences: eating hospital food, having hearing checked, having a blood test, having vision checked, receiving oxygen, having teeth cleaned, reading a medical bill, taking a sick pet to a doctor, taking a prescription medication, seeing a baby on a sonogram, riding in an ambulance, receiving physical therapy
- Critical Thinking.** Review the five health science career pathways. For each job task, write the health science career pathway of the worker who would perform the task.
  - Determine the cause of a disease outbreak.
  - Repair an ultrasound imaging machine.
  - Take an X-ray.
  - Give a vaccination.
  - Fill a prescription.
  - Register a new patient.
  - Inspect a new medical device for defects.
  - Print a physician’s appointment schedule.
  - Run a urine test (urinalysis).
  - Disinfect a hospital room.
- Problem Solving.** Review the chapter section about identifying main ideas. Create a question for each of the section titles listed. Then read each section and respond to your question using the chapter information.
  - Career Clusters and Pathways
  - Employment Opportunities
  - Career Education and Training
  - Job Titles and Credentials
  - Career Ladders
  - National Health Science Standards
- Writing.** Take a learning style survey. Access a survey online through your school’s career program or use a handout from your teacher. Write a one-page summary describing five study techniques that match your preferred learning style.
- Problem Solving.** Review the section titled *Using Mnemonic Devices*. Develop a device for recalling the five pathways in the health science cluster.
- Critical Thinking.** Review the figure that explains how to complete multiple-choice questions. Can you identify the least correct, and partially correct responses, as well as the response that does not answer the question? Use the same techniques to answer the following question. Identify the least correct, correct, partially correct, and “does not answer the question” responses.

Choose the most accurate description of career ladders.

- A. Career ladders show all the jobs within each health science pathway.
- B. An increasing number of students use a career ladder approach to their education.
- C. Jobs in a career ladder always “piggyback” on each other.
- D. Career ladders show the progression of jobs within a specific occupation or particular work setting.

## Activate Your Learning

1. Pick one of the healthcare careers listed in Figure 1.20. Research this career and write 10 brief factual statements about the career you chose. Be prepared to play “Who Am I?” Take turns being the Mystery Career Contestant. As the contestant, you will give one statement from your list and let the rest of the class guess the career. Continue reading statements until someone guesses correctly. You may collect points for correct guesses and for stumping the class.
2. Use an 8 1/2 x 11-inch sheet of paper or document to create a career ladder for a healthcare occupation or healthcare work setting of your choice. List the education and training required and the average salary for each career on your ladder. Display your drawing in a location assigned by your instructor. Complete a “gallery walk” to review all your classmates’ drawings. Keep the following questions in mind:
  - A. What is the relationship between years of education and training and the average salary of these careers?
  - B. What is the salary comparison for different career ladders?
  - C. What are the occupations or work settings with the highest and lowest salary ranges?
3. **Portfolio Builder.** Create a résumé and personal statement for your career portfolio. Follow the guidelines described in the chapter. Then ask for feedback on these documents from someone who knows you well, and who has good writing skills, such as an English or business education teacher. Revise your work according to their feedback. Place these items in your career portfolio.

## Think and Act Like a Healthcare Worker

1. Suppose your best friend, Sophia, tells you they are disappointed and frustrated. They have always had their heart set on a healthcare career, but their career cluster assessment results do not list the health science cluster. The results say they are well suited for careers in Agriculture, Food, and Natural Resources; Government and Public Administration; or Science, Technology, Engineering, and Mathematics. You know they do well in all of their science classes and love to help people. What will you say to them about pursuing a career in healthcare, and what steps will you encourage them to take as they plan for their future career?

## Go to the Source

1. Use the internet to search for more information and examples of the three note-taking methods described in this chapter: outline notes, Cornell notes, and mind maps. Select one of these methods and complete notes for this chapter using your chosen method.

## HOSA Event Prep: Family Medicine Physician



Dr. Kathy Steggers is a family physician. She has been Kayla’s family physician since Kayla was three years old. Now Kayla has her own child. Dr. Steggers has seen Kayla through ear tubes as a child, an appendectomy (surgical removal of the appendix), allergies, and asthma. Dr. Steggers was the first to celebrate with Kayla when she found out she was pregnant. She helped Kayla through a tough start breastfeeding her baby and with postpartum depression. Now Dr. Steggers is retiring, and Kayla has no idea what to do. She has never had to see anyone different and feels uncomfortable getting a new physician. Dr. Steggers reassures her that she will ensure Kayla is comfortable and the new physician will have all of the medical records and information about Kayla and her daughter.

### Think About It

1. Why do you think there is a shortage of family physicians in the United States? What should be done about this shortage?
2. What are the advantages of seeing one family physician over the course of one’s life? What are the disadvantages?
3. What do you think are the most important skills family physicians need to know? Explain.
4. Is family medicine a career that interests you? Why or why not?