

# FUNDAMENTALS OF NURSING

Welcome to the beginning of your nursing education! Fundamentals of Nursing is the first nursing class you will take to begin the nursing program. The skills you learn in this course will provide the foundation for the many nursing responsibilities you will assume throughout your career as both a nurse and a student. As you review the syllabus for this course, you might say to yourself, “OMG, how on earth am I supposed to learn all of this in a semester.” Stay calm and take it one day (and one section) at a time. It will take some time to adjust to the demands of the nursing program. Over time, you will develop study skills and confidence, and before you know it, you will be a pro at studying.

Let’s chat a little about what this course is all about. Fundamentals of nursing introduces you to the thorough assessment of patients, the nursing process, communication between nurse and patient, cultural differences, functional health patterns, and the overall framework of nursing practice. Think of it this way: When you build a house, you start with the foundation and then move to the framework, walls, and so on. I think you get the point. This class is the foundation for nursing, the beginning point. It gives you an overview of what to expect when working as a nurse.

It will take some time to learn the skills needed to assess patients; do not feel discouraged if you do not grasp the concepts right away. I found myself struggling at the beginning of the course. I felt overwhelmed, my mind was on overload from all the information, and I was nervous about performing the assessments in front of my classmates. I was not one for failure, but boy, did I feel like one at the beginning of this class. My test scores were poor, and my nervousness was undermining my assessment skills. I began to change my thinking. I studied day and night, went to study groups, and my grades began to improve. It is like the old saying: “Hard work does pay off.” I developed my study skills during this course, which helped me through the other courses, as well. You, too, will develop and improve your study skills as you progress through the course. So let’s jump to it and get started! We will begin with the history of nursing.

## HISTORY OF NURSING

We could talk all day about the history of nursing. Many books have been written describing the great works of the nurses who built the foundation for the nursing profession. Without their knowledge and perseverance, we would not have the growing field we do today. This chapter covers only a few details from the history of nursing. To be honest, very little of this historical information was tested, and I would not spend too much time trying to remember dates and exact timelines. Follow your professors' key points and highlight any information they emphasize. You will be required to know the influence of Florence Nightingale and her role in nursing.

- 
- **Florence Nightingale laid the foundation for professional nursing practice through her work in the Crimea in the 1850s. She later established her own nursing school.** Through her teaching and emphasis on sanitary care of patients, the nursing field progressed.
  - Nightingale was the first nurse epidemiologist.
  - The Civil War (1860–1865) furthered the expansion of the nursing field. Nurses were needed to tend to patients' wounds, and the field began to grow as additional women were trained. It was also during this time that the American Red Cross was founded.
  - Between 1860 and 1900, Nightingale established 400 nursing training schools and helped improve the conditions of hospital-based care.
  - In 1956, the first Health Amendment Act gave nurses the financial aid needed for training and school.

This short outline summarizes the points to focus on when studying nursing history. The most frequently tested information was on Florence Nightingale and her influence. Refer to your classroom notes and what the professor highlights for more in-depth information. The following chapters will focus directly on patient care and assessments.

## THERAPEUTIC COMMUNICATION

E-mails, text messages, Instagram, Facebook, WhatsApp, and Twitter are all forms of communication that we use in our daily lives. When communicating one on one with a patient, we must use compassion and care. Also, take into consideration the age and culture of the patients. It is unlikely that your 88-year-old patient will know the new lingo of "LOL" or "OMG." However, this may be just what is needed to connect

with your younger patients. Communication in nursing is so important. Patients and families are often scared or worried, and you are often their source of information and comfort. When entering a patient's room, smile and introduce yourself to both the patient and the patient's family. Make them feel comfortable and well taken care of.

**There are two types of communication: (a) verbal, which involves speaking to the patient, and (b) nonverbal, which involves the use of facial expressions, eye contact, and therapeutic touch.** Remember, culture also plays a role in communication, which will be discussed in further detail in the next section.

### Phases of Communication

There are three basic phases of communication: (a) introductory, (b) working, and (c) termination. You will use these three phases to understand your patient's problems and come up with solutions. In the *introductory phase*, you will introduce yourself, discuss any problems, and establish a relationship with your patient. Remember not every patient is cheery and upbeat. You will also have patients who are scared, angry, or discouraged. It will be your job to think of ways to establish an amicable relationship. Also, if a language barrier is present, this would be the best time to contact a translator.

The *working phase* is where you identify the patient's problem. For example, suppose the patient diagnosis is abdominal pain. In this phase, you would look further into why the patient is having abdominal pain using labs, scans, or physician notes. You would look for any resolution to the problems. Did the doctor prescribe pain medications? Was a CT scan performed? Is surgery necessary? The working phase is where the problem is identified and measures are taken to help the patient.

The last phase, the *termination phase*, is where the problem is being resolved. In the preceding example, if the patient was given pain medication as ordered and the problem has resolved, the nurse's communication with the patient would come to an end.

When thinking about the phases of communication, consider how you communicate when chatting with a friend, family member, or coworker who has a problem. They call you and state their problem. You talk about the problem and figure out ways to make it better. By the end of the conversation, your friend feels better because a resolution has been achieved or is in the making. Similarly, your patients are talking with you in the role of their problem solver, the one who makes them better. For all of you nervous nellys who are uncomfortable speaking

with people, now is the time to practice and muster up some confidence. Communication is the key to nursing; it involves constant talking with patients, families, and physicians.

### Tips on What *Not* to Do During Communication

When communicating with patients, there are some pitfalls you need to avoid. Do not be judgmental or abrupt, or speak down to patients. Avoid leading questions that may discourage or embarrass the patient. Do not crack jokes or speak about topics that may cause a patient to become offended. If language barriers are present, do not ignore these patients because you cannot understand them: Use an interpreter to communicate with the patient and try to avoid using family members to translate.

### Developing Communication Skills

There are several ways to create a great relationship with patients. Most important is to provide privacy when speaking with the patient—for example, by closing the door or shutting the curtain. Introducing yourself is the next step. Sit down, if possible, when talking—patients feel more comfortable when you are speaking to them at eye level. Listen carefully, and strive to make a comfortable environment for the patient.

→ **Use open-ended questions. Avoid yes/no answers to encourage your patients to give you details when discussing their health problems. You want as much information as possible, including anything about their past medical history.**

Be compassionate. Being in the hospital is scary for both patients and families. Emotional support is often needed. For patients who are confused or unable to respond, the use of touch is therapeutic. As a nurse, you will create ways of your own to make communication comfortable for you and the patient.

### THE NURSING PROCESS (NURSING CARE PLANS)

Along with communication techniques, nurses rely on the nursing process when caring for patients. The nursing process is a five-step systematic approach to problem solving. It allows the nurse to obtain both subjective and objective information to determine the health care problem. The five steps are (a) *assessment*, (b) *diagnosis*, (c) *planning*, (d) *implementation*, and (e) *evaluation*, which can be remembered using the mnemonic “ADPIE (A Delicious PIE).” Based on these steps a care plan is conducted for each patient.

## Assessment

Begin your assessment by asking the patient about the problem, signs, and symptoms that he or she has been experiencing. If the patient is unable to speak, ask a family member if present what has been going on with the patient. During an assessment, two types of data are obtained: *subjective* and *objective*. Subjective data are symptoms that the patient describes to you (e.g., “My arm feels itchy and has little red bumps all over” or “I feel like there is a ton of bricks sitting on my chest.”) Objective data are findings that are observed, assessed, and documented by the nurse (e.g., “There is a quarter size rash located on the right arm with redness” or “The patient’s respirations are increasing, and he is huddled over in pain.”) **Objective data are any signs that can be observed, and vital signs are a type of objective data.** ←

The first step is to assess the areas that can help you formulate a diagnosis. A patient can have numerous problems that can result in more than one diagnosis. For instance, a patient may have high blood pressure and a constant headache. The diagnosis would be hypertension and pain. Information can be obtained from the patient, medical records, family members, and physical examination.

## Diagnosis

A diagnosis is obtained on the basis of the patient’s assessment findings. A *nursing diagnosis* is the statement of a problem based on the actual signs and symptoms the patient is experiencing. For example, consider a patient who is admitted with pneumonia. One diagnosis for this patient might be “ineffective airway clearance related to accumulation of secretions.” This diagnosis indicates that patient is experiencing shortness of breath due to a productive cough. In simple terms, the nursing diagnosis is the statement of the patient’s problems and the causes.

During your clinical experience, your professor will ask you to compile a list of nursing diagnoses based on the patient you have assessed. Typically, two or three nursing diagnoses are requested. This would be a great time to invest in a nursing diagnosis book to familiarize yourself with these types of diagnostic statements. Diagnosing the patient will help with planning care for this particular patient and will help you focus on the problems at hand.

## Planning

Once the nursing diagnoses are obtained, it is time to start planning patient care and interventions. Based on the diagnoses, the

next step is to formulate goals and outcomes for the patient. For example, take the patient who was admitted with pneumonia. The nursing diagnosis is ineffective airway clearance related to accumulation of secretions. The corresponding nursing interventions are to perform chest physiotherapy to help loosen and bring up the secretions, to elevate the head of the bed to aid breathing, and to obtain the oxygen saturation level every hour. The nursing interventions are what you as a nurse can do to help the patient.

### Implementation

Once the patient is assessed, the diagnoses are made, and the planning is in place, you are ready to implement the steps of the nursing care plan. It is important to establish a realistic time frame for the patient to meet the identified goals and interventions. In this section of the care plan, you should provide scientific rationales to explain your diagnoses in further detail. Refer to your textbook and online resources for all scientific rationales. You should have a rationale for each intervention. For example, for the patient with pneumonia, the scientific rationale for patient positioning is that an upright position facilitates normal anatomical position and allows greater lung expansion for proper oxygen exchange. This gives support to the diagnosis based on facts and research.

### Evaluation

We have arrived at the last step in the ladder of “ADPIE”! This is the completion of the nursing care plan. The patient has been assessed and diagnosed, planning is in place, implementation is complete, and evaluation of the patient’s response to these actions is underway. It is during this step that the patient goals are met or close to being met as a result of nursing interventions.

The nursing process is important in patient care. It is a system to help nurses identify patient problems and, along with doctors, develop a plan to help the patient. You will use this process in nursing school and as a nurse. It is an essential part of patient care and recovery. It is not important to memorize each approved nursing diagnosis; you will not be tested on your knowledge of each one. Instead, use your nursing diagnosis book to help you as you construct your patient care plan.

## PATIENT EDUCATION

From the time a patient is first admitted up to the day of discharge, patient education is very important. It is important for

the patient to know and be aware of nursing care each step of the way. Explain patients' medical diagnoses and provide print-outs for them to review and read. Obtain information on any allergies. Explain each medication and make sure patients have a proper understanding of what it does and how it is going to help them. Maintain privacy and follow HIPAA guidelines when educating patients and families. Patients and their families feel most comfortable when they know what is going on and why. Discharge education is important to provide patients with the information needed for self-care at home. The information you provide to patients can help them on their journey to recovery at home. Most institutes provide materials for patients that you can print out and provide during their hospital stay and upon discharge.

### CARE ACROSS A LIFE SPAN

<b>Infant (birth–1 year)</b>	<ul style="list-style-type: none"> <li>• Infants react to sound and voices. They gain 5–7 ounces per week. They gain head control and begin to roll.</li> <li>• Maintain safety. Follow a feeding schedule. Follow up with immunizations. Maintain a healthy sleep schedule.</li> </ul>
<b>Toddler (1–3 years)</b>	<ul style="list-style-type: none"> <li>• Toddlers start to crawl, then walk. They begin to explore and touch. They begin to eat solid food and use utensils. They begin to talk and learn.</li> <li>• Maintain safety. Use gates for kitchens and stairs. Do not leave small objects on the floor; toddlers have a tendency to place everything in their mouths.</li> </ul>
<b>Preschool (3–5 years)</b>	<ul style="list-style-type: none"> <li>• Preschool children begin to ride bikes and run in the playground. They love to use their imaginations. They begin to learn the alphabet and are able to form sentences.</li> <li>• Start teaching safety measures such as wearing helmets.</li> </ul>
<b>School-age child (6–10 years)</b>	<ul style="list-style-type: none"> <li>• School-age children begin to gain independence. They are adventurous.</li> <li>• Maintain a schedule and hygiene, and initiate rules. Minimize fears. Teach safety measures. Maintain immunizations.</li> </ul>

<b>Adolescents (11–17 years)</b>	<ul style="list-style-type: none"> <li>• Adolescents begin to have independence. They start driving and going out with friends.</li> <li>• Initiate limits and rules. Teach adolescents to avoid smoking, drugs, and alcohol. Teach about safe sex and pregnancy prevention. Encourage positive behavior. Monitor for bullying and depression.</li> </ul>
<b>Young adult (18–30 years)</b>	Young adults have reached full maturity. They begin to work regularly and start careers. They feel confident in making choices. They begin to have families.
<b>Adult (30–60 years)</b>	Health begins to decline. Adults begin to care for their parents as they age. Family responsibilities increase. Stress tends to increase.
<b>Older adult (60+ years)</b>	Health problems increase. Retirement takes place. Older adults may enter an assisted living facility. Help with activities of daily living may be needed. Older adults may struggle with aging. Safety for older adults may need to be improved, especially those experiencing forgetfulness or confusion.

## FUNCTIONAL HEALTH PATTERNS

Functional health patterns are the basis for a series of questions that the nurse asks the patient to develop an in-depth nursing assessment. These questions help the nurse gain a better idea of the patient's overall health and lifestyle. They are part of the admission process when a patient is admitted to the hospital. The functional health patterns encompass the patient's general health, nutrition, elimination, activity, sleep, cognition, living environment, abuse, sexuality, spiritual/cultural beliefs, coping mechanisms, hygiene, and self-perception. They give the nurses and team a better understanding of the patient's situation in order to address problems and develop a plan for proper care, planning, and safety. It's like my mom used to say, "If you don't ask, you won't know!" It is important to maintain patient privacy while asking about these topics. If family members are present, you may want to ask them to step out of the room while these questions are asked.

I am warning you, as you review your packet of health patterns and the questions that are asked, that not all of the topics covered by these questions will be comfortable ones for you to discuss. I have to admit that, as a nursing student and as a nurse, I would blush when discussing sexuality with my 80- or 90-year-old patients. Most would reply, "Great, that's why



I take Viagra.” Never a dull moment in nursing, I will tell you that! Now I will not go into depth on each health pattern. Refer to your packet or book for the questions that should be asked. Again, you will not be tested on your knowledge of each question; rather, the goal is to become familiar with the health patterns and to become comfortable obtaining the information from patients during your assessment.

## CULTURAL DIFFERENCES

As a nurse and student, it is important to be aware of the cultural diversity among patients. It is important to identify and respect each patient’s culture, religion, and beliefs. When obtaining a patient’s past medical history, you should ask about and identify any spiritual or cultural beliefs. If there is a language barrier, use the interpreter services provided by your hospital or facility for assistance. Here are some important and common cultural beliefs to remember:

- In many Asian cultures, making direct eye contact can be offensive.
- In the Muslim religion, pork and pork products are prohibited.
- People who practice as Jehovah’s Witnesses do not receive blood products.
- For many cultures, in the interest of modesty, men are not allowed to be the caretakers of women; in these cases, a woman caretaker is preferred.

## NUTRITION

It is important to monitor the intake and output of all patients, making sure that patients have the correct amount of calories for their weight. A diet will be ordered for your patient based on his or her condition and medical history. For example, a patient who is admitted with cardiac complications will receive what is called a cardiac diet, which is low in sodium and fat. Patients who are malnourished will be placed on a high-calorie diet and may need IV nutrition. Also, pay attention to any cultural preferences that may be needed for a patient’s diet. Listed here are some common diets you will see ordered:

- Regular diet: There are no restrictions to diet or calories.
- Cardiac diet: For cardiac patients, includes food low in sodium and fat.
- Clear/full liquid: Ordered for patients before any GI diagnostics or after surgery. Clear liquid includes anything clear



such as apple juice, tea, broth, popsicles, ginger ale, or Sprite. **Avoid any liquids that are flavored or colored red for patients with gastrointestinal bleeds.** Full liquids include liquid foods; there are no restrictions.

- Soft/mechanical soft diets: These consist of foods that are easy to swallow and chew. Mechanical soft include mashed potatoes, ground meats, and other easy-to-swallow foods.
- Renal diet: These consist of foods that are low in sodium and potassium. Protein intake is also monitored.
- When monitoring a patient's nutrition, also be aware of any precautions such as those required for patients who are at risk for aspiration or who have difficulty chewing. Assist patients who need to be fed, as well. It is the nurse's responsibility to assess for any changes in feeding ability and nutritional status.

## URINARY AND BOWEL FUNCTION

Assessing a patient's intake and output is very important. Most physicians will order strict intake and output on patients, especially surgical or renal patients. It is the nurse's responsibility to make sure that the patient is urinating and having regular bowel movements every shift or daily. There are various reasons why a patient's urinary or bowel elimination may be disrupted. For example, renal patients who are on dialysis are anuric (or have little output). It is important to monitor any patient who has not had a bowel movement for several days as this may indicate a small bowel obstruction or severe constipation. During your assessment, it is important to ask the patient whether he or she is urinating regularly and having regular bowel movements. Remember, each patient is different; ask your patients what their normal habits are.

### Urinary Elimination



**An adult patient's urinary output should total at least 30 mL every hour.** This is measured by asking the patient to void in a plastic container that is placed in the toilet for accurate measurement; if the patient has a Foley catheter, the measurement is taken from the Foley drainage bag. Males may use urinals to measure accurate output. It is important to look at the urine; normal urine is yellow and clear. The presence of blood in the urine or cloudy or foul-smelling urine can signify a urinary problem or infection. A Foley catheter may be ordered for various reasons. Surgical, urinary incontinence, ICU patients, and others may require a Foley catheter during their hospital stay. Refer to your

class notes and visual images in your textbook on how to insert a Foley catheter. (I could write the procedure out for you, but, to be honest, you really need a visual picture in order to understand it.) Common urinary complications that can occur are:

- Urinary tract infection (UTI): An infection in the urinary tract that causes burning during urination, hematuria, foul-smelling urine. Elderly patients who present with a UTI may have confusion as an associated symptom.
- Incontinence: A person's inability to control the function of urination. In many cases, briefs are worn to prevent urinary leakage.

### Bowel Elimination

This topic and discussing a patient's bowel movements may not be the highlight of your day. But it is important to ask patients if they are having daily movements and making sure they are staying regular. Although it is not always necessary to assess the stool, complications can arise for which you will have to obtain a specimen or check the stool. Common bowel complications are:

- Constipation: The inability to have a bowel movement. Stool softeners, prune juice, or laxatives may be given to promote bowel movements. Common causes of constipation are pain medications, immobility, or bowel obstruction.
- Occult stool: Blood in the stool caused by various conditions such as hemorrhoids or ulcers.
- Diarrhea: Loose bowel movements that vary in severity. Can be caused by medications, food poisoning, viruses, and bacteria such as *Clostridium difficile* (*C. diff*).

### VITAL SIGNS

Vital signs, by definition, are a person's temperature, pulse/heart rate (HR), respiration rate, blood pressure (BP), and pain level. A person's vital signs reflects his or her respiratory function, cardiac stability, and hemodynamic status. Changes in vital signs can indicate disorders such as hypertension (high BP), hypotension (low BP), dehydration, respiratory distress, hypoxemia (low O<sub>2</sub> levels), tachycardia (increased pulse), and bradycardia (low HR). You will need to become familiar with these signs and practice obtaining accurate results. You will have plenty of time to practice on other students and those good-looking mannequins in the lab. At the end of the semester, you will go to the hospital or nursing home to practice on patients.

Time for a funny story that I know some of you will relate to. I had almost completed my fundamentals course and was at a local nursing home assessing a patient's vital signs. I felt comfortable and confident because I thought I had this skill down pat. When I exited the room, one of the nurses on the floor walked up and asked, "Did you take his temperature with the red thermometer?" My response, with hesitation, was yes. She chuckled a little and said, "Well, those red thermometers are used only for rectal temperatures." I was mortified, even though the thermometer was clean and capped. I was thinking to myself that it would have been nice if someone had told me. My confidence level went from 100% to 0% in no time. It is true that we learn from our mistakes, because I never made that mistake again. So always remember when you see a red thermometer, red stands for "rectal." With that said, let's go on to describe each vital sign.

### Body Temperature

→ **Definition:** A measurement of the body's temperature in degrees. **The body's temperature is controlled by the hypothalamus. This is in the preoptic part of the brain.** The hypothalamus is able to detect when the body's temperature is too high, indicating a fever, or too low, indicating hypothermia. A normal temperature on average is about 98.6°F (36°C).

→ **Assessing the Temperature:** The four main ways to assess body temperature are (a) oral, (b) rectal (most reliable), (c) axillary (under the arms), and (d) tympanic. Many hospitals use an electronic thermometer to obtain oral temperature readings. **Never use a rectal temperature on patients who are immunocompromised (have reduced immune function). When obtaining an oral temperature, make sure that the patient has not had anything hot or cold to drink for 15 minutes before the assessment, as this can alter the temperature.** It is important to tell your instructor or the nurse about any changes in a patient's temperature.

**Factors That Affect Temperature:** Age, exercise, stress, illness, and infection can all affect the temperature.

**Temperature Gone Wrong:** Changes can occur, and these are defined as pyrexia, hyperpyrexia, and hypothermia. In reality, nurses just say, "The temperature is high." But it is important to know these terms. Pyrexia means an elevation in temperature, hyperpyrexia means a critical increase in

temperature, and hypothermia is a temperature lower than average.

## Pulse

**Definition:** When the left ventricle pumps blood through the heart, it causes a pulse. **The heart pumps about 5 L of blood per minute.** This would be a great time to look over your anatomy and physiology book to review the structures and functioning of the heart. Remember the term *cardiac output*; this is the term used to describe the amount of blood pumped each minute through the circulatory system. The normal adult pulse ranges from 60 to 100 beats per minute (bpm).

**Assessing the Pulse:** The pulse can be obtained from various parts of the body. Most commonly used is the radial pulse found on the wrist. You can auscultate (listen to the pulse with a stethoscope), palpate (feel the pulse), or use a Doppler stethoscope to hear the pulse as well. During an assessment, you will have to obtain a pulse from various sites on the body. **The apical pulse is located between the fourth and fifth left intercostal space; it is the strongest pulse in the body and provides an accurate indication of the HR.** The radial pulse is located at the wrist right below the thumb (most commonly assessed). The brachial pulse is in the pit of the arm, known as the antecubital fossa. Carotid pulses are on the side of the neck. Femoral pulses are in a part the groin known as the inguinal area. The pedal pulses are along the top of the foot, in between the big toe and the second toe.

**Factors That Affect Pulse:** Age, gender, exercise, medications, stress, anxiety, positional changes, illness, and blood loss can alter pulse rates. Infants have a higher pulse rate of 110 to 160 bpm. School-age children have pulse rates of 75 to 120 bpm on average. Take age into consideration when obtaining a pulse.

**Pulse Gone Wrong:** An electrocardiogram (EKG) is used to determine a person's cardiac rhythm and HR. Normal sinus rhythm means the patient has a normal rate and rhythm. Dysrhythmia is a change in the heart's rhythm or pulse pattern. An increase in the HR (above 100) is termed tachycardia, and a decrease in the HR (below 60) is termed bradycardia. Many changes in rhythm can occur; these are described in further detail in Chapter 3. Patients are often placed on cardiac monitors or telemetry to monitor irregular pulses or heart rhythms.

## Respirations

**Definition:** Gas exchange is the exchange of carbon dioxide with oxygen in the lungs. It is the body's way of regulating oxygen through the circulatory system to maintain healthy cells through inspiration and exhalation. Here is a little exercise: Take a deep breath in; this is called inspiration. Now breathe out; this is called exhalation. A normal respiratory rate is 16 to 20 breaths *per minute*.

→ **Assessing Respirations:** The first step is to assess the patient. Is the patient breathing normally? Is the patient having difficulty breathing? Are the breaths shallow? Is there use of accessory muscles in breathing? These can all be assessed by looking at the patient and listening to his or her lungs. You can also ask the patient for a past medical history of respiratory problems, such as asthma, or inquire whether he or she smokes, because that can affect respiration. After a visual assessment, auscultate, or listen to the patient's lungs by placing the stethoscope on the upper chest and lower chest and counting the breaths per minute. **An easy way to determine the respiration rate is by counting the number of breaths for 30 seconds and then multiplying by 2 to get a full minute rate.** Have the patient sit upright and instruct the patient not to speak during the assessment.

→ **Factors That Affect Respirations:** Smoking, stress, anxiety, exercise, temperature, infection, pneumonia, asthma, underlying physiological causes, and medications affect respiration. There are a lot more factors that can change a patient's respiration, but these are the most common. I am going to share with you the biggest nursing secret of all time: **During an exam, when you are asked a priority question such as which patient to see first, always choose the answer that refers to a patient with a compromised respiratory system! Choose answers that coincide with the "ABCs" (airway, breathing, and circulation). Always help the patient who is in respiratory distress first.**

→ **Respirations Gone Wrong:** An increase in respirations is referred to as tachypnea (anything greater than 20 breaths per minute). A decrease in respirations is referred to as bradypnea (less than 12 breaths per minute). **Remember any words that have the ending -pnea refer to a change in respirations.** I know all this information seems like a lot to remember; take a deep breath so you don't experience any respiratory changes.

## Blood Pressure

**Definition:** Blood pressure (BP) is the force of blood against the walls of the blood vessels, especially the arteries. Picture a waterslide of blood pushing against the artery walls, creating pressure. Two terms are used to describe BP: *diastolic* and *systolic*. A normal BP is anything below 120/80 mmHg. The systolic number, 120 mmHg, indicates the pressure in the circulatory system during the contraction of the heart. The diastolic number, 80 mmHg, is the pressure when the heart is at rest or relaxation.

**Assessing the Blood Pressure:** Blood pressure is obtained by using a BP cuff, also known as a sphygmomanometer (try saying that three times fast), and a stethoscope. There should be a picture of this device in your class notes or textbook. **The part of the cuff that goes around the patient's upper arm should be placed over two-thirds of the length of the upper arm and cover three-fourths of the circumference of the arm, right above the antecubital fossa (middle part of the arm).** The sounds that are heard are called Korotkoff sounds, which can also be visualized on the meter and represent the systolic and diastolic pressures. When the cuff is inflated, the strongest beat will represent the systolic pressure, usually at 120 mmHg, and the deflation of the cuff and the last beat seen on the meter will be the diastolic pressure, at 80 mmHg. When measuring a patient's BP, use the correct size of cuff for the arm; some patients may require a small cuff. BP should not be taken on the arm on the same side where patients have undergone a mastectomy or where a peripherally inserted central catheter (PICC) line is inserted. Do not leave the cuff inflated as this can cause discomfort. Make sure the BP is taken on the bare skin and not over clothing. If there is a significant change in BP on the electronic cuff, a manual reading is performed through auscultation. Any changes in BP must be reported.

**Factors That Affect Blood Pressure:** Factors that affect BP are dehydration, stress, medications, illness, surgery, hemorrhage, and pain.

**Blood Pressure Gone Wrong:** A BP greater than 120/80 mmHg is hypertensive. A BP below 120/80 mmHg is hypotensive. Orthostatic hypotension is a decrease in blood pressure that occurs when patients change from a lying position to a standing position. **If a patient is orthostatic, make sure you help them to stand, as a loss of balance or dizziness may occur.** Hypertension and hypotension are discussed in further detail in Chapter 3.

This completes an overview of the vital signs in a nutshell. In hospitals, an electronic Dynamap machine is used to obtain vital signs. It is important to memorize and identify any changes in vital signs and report them immediately. They are called “vital” for a reason: The changes in these signs are usually the first signs that something is wrong in a patient.

### Pain

Pain is sometimes referred to as the fifth vital sign. Use a numeric pain scale to identify the patient’s pain level. Pain can signify that something is wrong; therefore it is important to identify and treat at once. Pain can be acute or chronic. Medicate pain as prescribed. It is important to maintain comfort for the patient and assess pain throughout the shift. Pain medications are ordered based on the patient’s diagnosis and severity. There are five major types of pain:

- Acute pain: New onset, lasting a short time and usually affecting one area.
- Chronic pain: Experienced over a long period of time; it is constant and persistent.
- Neuropathic pain: Caused by damage to the peripheral nerves.
- Phantom pain: Postamputation, patient can feel pain in the extremity.
- Nociceptive pain: Pain in the muscles or joints.

Methods of pain relief may include medications, relaxation, and touch. Pain medications ordered can be narcotics or nonnarcotic analgesics. A PCA (patient-controlled analgesic) may be ordered for patients postoperatively to better control pain. It is important to identify where the patient is having pain, have the patient use either the numeric or the FLACC (Face, Legs, Activity, Cry, Consolability) scale to rate the pain, and document.

## SKIN INTEGRITY AND IMMOBILITY

Immobility is defined as the loss or lack of movement of the legs or arms or both. This can have various causes such as paralysis, bedridden patients who have lost the ability to walk, or surgical procedures that require the patient to stay in bed. When a patient is confined to one position, complications can arise. Complications such as pressure ulcers, blood clots, and contractures of the extremities are the most common. Nursing interventions for the immobile patient are:



- Turning and repositioning the patient every 2 hours
- Maintaining proper skin care; applying lotion or barrier cream to affected areas
- Ensuring proper hydration by increasing the patient's fluid intake and encouraging him or her to drink water, or through intravenous fluids
- Performing range of motion (ROM) to increase mobility and decrease the risk of contractures of the muscles
- A specialty mattress, such as an air mattress, may be ordered for the patient.
- A wound care consult may also be needed for complex wounds

### Common Complications of Immobility

#### *Ulcers*

You will be responsible for memorizing and identifying the stages of skin breakdown and healing. Patients who are immobile, especially elderly patients, are at risk for pressure ulcers. A pressure ulcer is a sore that occurs in the skin, causing damage to various layers as a result of constant pressure exerted on one area of the body. **Pressure ulcers are classified into four stages based on severity. Refer to your textbook for a visual; you will be tested on the different stages.** Ulcers commonly occur on bony prominences such as the coccyx, heels, elbows, hips, and ankles. This is caused by shearing, tension, and friction on the skin. **As a nurse, your responsibility is to prevent pressure ulcers by repositioning the patient every 2 hours, applying barrier creams, maintaining dressing changes, and providing adequate hydration.** The four stages of pressure ulcers are:

Stage I: Reddening of the skin on the epidermal layer. Skin is intact.

Stage II: Reddening and edema of the epidermis and dermis layer. Similar to a blister. Skin is blanchable.

Stage III: Injury to the subcutaneous layer. Fat may be visible but bones, tendons, or muscles are not exposed.

Stage IV: Severe damage to all layers of the skin with exposed bone, tendon, or muscle.

A visual of these stages will give you a better understanding. A wound care consult may be needed. Dressings such as Duo-derm or Aquacel may be needed. Refer to your class notes and your textbook for pictures of different positioning that is used for patients.

### **Deep Vein Thrombosis**

Poor circulation and blood flow resulting from immobility can lead to thrombus formation in the veins and arteries. The most common place for a clot to develop is in the calf. Symptoms of a blood clot are warmth at the site, pain, swelling, and redness. An ultrasound is used to determine whether a clot is present. Patients who are immobile are placed on venous thromboembolism (VTE) prophylactics such as thromboembolism-deterrent (TED) compression stockings or a sequential compression device (SCD) to prevent blood clots. The patient may also be placed on an anticoagulant (blood thinner) such as heparin or Lovenox to decrease the risk for clots. **Do not place SCDs or TEDS on the leg with blood clots; this can cause the clot to travel or move.** The key is anticoagulation is dissolving the clot before it moves through the vein or artery or becomes larger in size.

It is the nurse's responsibility to maintain skin integrity and avoid complications in the immobile patient. When taking care of elderly patients who are immobile, use careful measures when turning and repositioning due to fragile skin and weakness. Report any changes in skin to your instructor.

### **Wound Care**

A part of maintaining skin integrity is performing proper wound care and dressing changes. It is important to examine and dress the wound based on the physician's orders. When a wound is present, you must first take a picture and obtain an exact measurement of the wound. It is important to maintain a clean and sterile environment for any open wounds. Once a sterile field is in place, clean the wound with either normal saline or sterile water, using gauze to clean in and around the wound bed. The type of dressing used will depend on the wound; the most common type is wet to dry. Check the doctor's orders to see if packing of the wound is needed. Packing involves inserting small strips of gauze, usually  $\frac{1}{4}$  inch wide, into the wound. Cover the wound with a 4-inch by 4-inch gauze and tape. Use only sterile surgical equipment when changing a dressing. At times, the physician may order ointments such as Santyl (collagenase) to be applied to the wound bed for further treatment. A Duoderm or Aquacel dressing to be placed over the wound may also be ordered. When undressing a wound, throw away the old dressing in a red contamination bag, and change gloves when applying a clean dressing. Document that the new dressing was completed. In severe cases, a wound vac is used for continuous drainage of

the wound through suction, which is used for a series of days and is only temporary.

## OXYGENATION

Oxygenation involves the amount of oxygen flow to the tissues. I am going to let you in on a little secret, probably the most important piece of advice you will receive during nursing school: Assessing a patient's respiratory status is always a priority. When a patient is experiencing any respiratory abnormalities, difficulty breathing, shortness of breath, or labored breathing, you need to assess and treat immediately. **On exams and tests, when any questions have to do with assessing an airway or treating a patient who has difficulty breathing, the answer always is: Assess the airway first!** Oxygen saturation is used to determine the amount of oxygen perfusion through the body. The normal values are 96% to 100%. Keep in mind that a patient with a respiratory disorder may require oxygen.

### *Common Respiratory Disorders:*

- Chronic obstructive pulmonary disease (COPD)
- Asthma
- Pneumonia/bronchitis

### **Alterations in Breathing Patterns**

Normal respirations are usually 12 to 20 per minute.

- **Tachypnea:** A rapid increase in respirations to anything above 22 respirations per minute. It is caused by fever, asthma, hyperventilation, anxiety, or pain. Patients present with fast and labored breathing.
- **Bradypnea:** Slow respirations of less than 12 breaths per minute. It is caused by pain medication or happens when a patient is sleeping.
- **Kussmaul breathing:** Deep and rapid breaths are usually seen in patients who are experiencing metabolic acidosis (excess acid in the tissues) and can be caused by chronic kidney disease or diabetic ketoacidosis.
- **Cheyne–Stokes breathing:** Very deep and shallow breaths. Commonly seen in patients with congestive heart failure and in terminally ill patients, as well.

### **Respiratory Diagnostics**

When a patient is experiencing a change in respiratory status, it is important to obtain the correct labs and exams to determine

the cause. Diagnostics such as complete blood count (CBC), chest x-ray, arterial blood gases, pulse oximetry, sputum culture, computed tomography angiography (CTA) of the chest, and many others may be used to help diagnose and treat respiratory disorders.

### Nursing Intervention

When a patient is experiencing a change in respiratory status, first assess the airway and oxygen saturation. Call for help from either the respiratory therapist or team on the floor. Call the doctor for orders. If the patient is experiencing shortness of breath, place the patient in semi-Fowler's position (an upright sitting position with the head of the bed elevated greater than 45°). Administer oxygen as ordered. **A nasal cannula is commonly used to supply oxygen to the patient. When placing the nasal cannula, set the amount to 2 L, and adjust it per physician's order.** In an emergency situation, the patient may require a mask that supplies a larger amount of oxygen.

There are nonemergent nursing interventions that you can perform to facilitate breathing without a physician's order. Chest physiotherapy (Chest PT) is used to break up secretion in the chest so the patient can better expel the secretions. This is performed by cupping the hands and beating gently on the patient's upper back. Giving the patient an incentive spirometer (IS) helps the patient expand the lungs and alveoli. Instructing the patient to take deep breaths and cough every 2 hours can help prevent hospital-acquired disorders such as pneumonia. Nebulizer treatments and steroids may also be needed for the patient.

**An early sign of a lack of oxygen is a change in mental status and low oxygen saturation levels, and a late sign is clubbing of the nails.**

### ACID-BASE IMBALANCES

Oxygen saturation level is determined by arterial blood gas (ABG) results—in other words, the amount of oxygen that is flowing in the arteries. The acid-base levels are based on pH,  $\text{CO}_2$ ,  $\text{PaCO}_2$ ,  $\text{O}_2$ ,  $\text{PaO}_2$ ,  $\text{HCO}_3$ , and H. Changes in these levels cause acid-base imbalances. When a patient's respiratory status is impaired, ABGs must be obtained to determine accurate readings. ABGs can be obtained only by a physician or a respiratory therapist using what is called an Allen's test. I know this may be difficult to grasp at first, but with a little practice, you will be able to identify the imbalances. **It is important to know the**

**normal values in order to identify the imbalance.** Respiratory disorders such as COPD, asthma, or upper respiratory infections can cause imbalances.

***Blood Gas Values:***

- pH: 7.35–7.45
- PaCO<sub>2</sub>: 35–45 mmHg
- PaO<sub>2</sub>: 80–100 mmHg
- HCO<sub>3</sub><sup>-</sup>: 22–26 mEq/L

### Changes in Acid–Base Balance

***Respiratory Acidosis***

In this condition, PaCO<sub>2</sub> is increased above 45 mmHg and pH is decreased (below 7.45). Respiratory acidosis can be caused by obstructive pulmonary diseases, pneumonia, hypoventilation, and asthma. Symptoms are rapid/shallow respirations, confusion, and hypoxemia. **Nursing interventions are to maintain the patient's oxygen saturation levels and airway, and treat the underlying cause.** Mechanical ventilation may be needed.

***Respiratory Alkalosis***

In this condition, PaCO<sub>2</sub> is decreased and pH is increased. Respiratory alkalosis is caused by hyperventilation and stress. Symptoms are muscle twitching, deep/rapid breathing, dizziness, tingling of the fingers, and difficulty breathing. Nursing interventions treat the underlying cause and use a rebreathing mask.

***Metabolic Acidosis***

In this condition, both pH and HCO<sub>3</sub><sup>-</sup> are low. Metabolic acidosis is caused by renal failure, diarrhea, diabetes, vomiting, and shock. Symptoms are fruity breath, nausea, Kussmaul breathing, vomiting, diarrhea, headache, and increased potassium. **Nursing interventions are to administer intravenous sodium bicarbonate and maintain respiratory status.** Ensure proper nutrition and adequate hydration. **Monitor potassium levels.**

***Metabolic Alkalosis***

In this condition, pH and HCO<sub>3</sub><sup>-</sup> are increased. Metabolic alkalosis is caused by vomiting, excessive intake of antacids, and gastric suctioning. The symptoms are tingling, irritability, confusion, tetany, decreased respirations, and muscle cramping. Potassium is also decreased. **Nursing interventions are to**

administer IV fluids, monitor electrolytes, increase potassium, and treat the underlying cause.

<b>Respiratory acidosis</b>	Increase in PaCO <sub>2</sub> (>45 mmHg)	Decrease in pH (<7.35)
<b>Respiratory alkalosis</b>	Decrease in PaCO <sub>2</sub> (<35 mmHg)	Increase in pH (>7.45)
<b>Metabolic acidosis</b>	Decrease in pH (<7.35)	Decrease in HCO <sub>3</sub> (<22 mEq/L)
<b>Metabolic alkalosis</b>	Increase in pH (>7.35)	Increase in HCO <sub>3</sub> (>26 mEq/L)

Understanding acid–base imbalances was a challenge when I was taking this course. Study groups were definitely very helpful. Memorizing this chart will help you match the imbalance with the corresponding values. Online, you can find many acronyms for the imbalances—try to Google acid–base imbalances.

## FLUIDS AND ELECTROLYTES

Hydration is the key to keeping the body fluid and electrolytes balanced. When electrolytes are imbalanced, symptoms such as tachycardia, muscle cramping, or arrhythmias may occur. Electrolytes include sodium, potassium, magnesium, calcium, and phosphorus. Memorize the lab values for electrolytes because you will need to know them for the rest of your nursing career. I know what you are thinking: “Oh, man, more things to remember.” Yes, more things to remember. It seems like a lot now, but once you become familiar with the values, it will get easier. As a nurse, you will find there are little cheats on the computer that will give you the lab values, so it does get easier. In school, there are no little cheat sheets, so you must memorize! I will describe each electrolyte in detail for you step by step. Let’s begin, shall we?

### *Electrolyte Lab Values:*

- Potassium (K): 3.5–5.0 mEq/L
- Sodium (Na): 135–145 mEq/L
- Magnesium (Mg): 1.5–2.6 mg/dL
- Phosphorus (P): 2.7–4.5 mg/dL
- Calcium (Ca): 8.6–10.4 mg/dL

Here is a little secret: The most tested electrolytes are potassium and sodium. Remember all of the lab values, but concentrate and understand K and Na. In the following section, we describe the imbalances. ←

## Fluid Imbalances

### *Dehydration/Hypovolemia*

Dehydration or hypovolemia is a loss of fluid volume. Causes of dehydration are poor nutrition or fluid intake, surgery, diarrhea, renal disease, vomiting, NGT suctioning, and diuretics. Patients may present with symptoms of increased HR, decreased BP, poor skin turgor, weight loss, low urine output, dizziness, and weakness. Treatment for dehydration is to increase oral intake and to administer intravenous fluids. Monitor intake and urine output.

### *Fluid Overload/Hypervolemia*

An excess of fluid is called hypervolemia. **Too much fluid can cause edema (swelling in the intravascular space), typically seen in the lower extremities and ankles, or crackles in the lungs.** Hypervolemia can be caused by renal disease or congestive heart failure. Symptoms include crackles in the lungs, edema (swelling in the body), bounding pulse, weight gain, increased BP, and shortness of breath. Treatment consists of administering a diuretic such as furosemide (Lasix), discontinuing all intravenous fluids, decreasing fluid intake, monitoring strict intake and output, monitoring daily weights, and cardiac monitoring. ←

## Potassium Imbalances

### *Hypokalemia*

In this condition, the potassium level is below 3.5 mEq/L. Hypokalemia can be caused by vomiting, diarrhea, gastric suctioning, kidney disease, and diuretics. Symptoms include irregular pulse, heart arrhythmias, muscle weakness, and muscle cramping. Treatment includes administering oral potassium, and intravenous fluids with potassium. Oral potassium is very bitter, so mix in a cup of orange juice to mask the taste. Cardiac monitoring is necessary. **Patients with hypokalemia usually have an EKG pattern with a depressed U wave. IV potassium is mixed with saline given only at a slow rate, over the course of two or more hours. Never push IV potassium, because it tends to burn and cause discomfort.** Monitor the patient's kidney status closely before administering potassium. ←

**Hyperkalemia**

Here, potassium levels are above 5.0 mEq/L. Hyperkalemia is caused by kidney disease, and medications such as angiotensin-converting enzyme (ACE) inhibitors are common causes. Symptoms include slow HR, weakness, cardiac arrhythmias, abdominal cramping, and muscle twitching.

→ **A peaked T wave may appear on the EKG;** this cardiac arrhythmia can be fatal and must be treated immediately. Treatment includes decreasing potassium in the diet and administering sodium polystyrene (Kayexalate), a medication that decreases potassium in the blood.

**Sodium Imbalances****Hyponatremia**

In this condition, sodium levels are below 135 mEq/L. Hyponatremia is caused by fluid overload, edema, diuretics, burns/wounds, and administration of an excess amount of D5W. Symptoms include headache, confusion, abdominal cramping, muscle cramps, nausea, dry mucous membranes, and clammy skin. Treatment consists of administering IV fluids with sodium. Medications such as tolvaptan (Samsca) may be administered to increase sodium. Monitor sodium levels.

**Hypernatremia**

Here, sodium levels are above 145 mEq/L. Hypernatremia is caused by dehydration and an increase in salt intake. Symptoms include edema, weight gain, thirst, weakness, and fatigue. Treatment consists of monitoring sodium intake, administering diuretics to remove sodium, and monitoring daily weights.

**Magnesium Imbalances****Hypomagnesemia**

In this condition, magnesium levels are below 1.5 mg/dL. An increase in Mg levels can be caused by alcoholism, vomiting, gastric suctioning, medications, and poor nutrition. Symptoms include increase in BP, positive Chvostek's and Trousseau's signs, mental status changes, and tremors. A positive Chvostek's sign is identified by muscle contraction in the face. When the facial nerve is tapped, usually in the jaw, there is a twitch on the nose or mouth. Trousseau's sign is identified by applying and inflating a BP cuff; a positive sign produces an abnormal spasm in the arm.



Treatment consists of increasing Mg levels by administering magnesium sulfate (high-alert medication) intravenously as ordered.

### ***Hypermagnesemia***

Here, magnesium levels are above 2.5 mg/dL. An increase in magnesium is caused by too much Mg in the diet, renal failure, or adrenal insufficiency. Symptoms include muscle weakness, decreased HR, respiratory depression, decreased reflexes, and GI upset. **Treatment consists of administering calcium gluconate intravenously. Monitor the patient's level of consciousness and monitor for confusion.**

## **Phosphorus Imbalances**

### ***Hypophosphatemia***

In this condition, the phosphorus level is less than 2.7 mg/dL. Causes of decreased phosphorus are lack of nutrition, increased calcium levels, thyroid disorders, alcoholism, and poor nutrition. Symptoms include muscle weakness, respiratory depression, irritability, and positive Chvostek's and Trousseau's signs. Treatment consists of oral phosphorus with vitamin D as the first line of treatment.

### ***Hyperphosphatemia***

Here, phosphorus levels are above 4.5 mg/dL. Causes of increased phosphorus are renal disorders, thyroid disorders, and a **decrease in calcium levels that increases phosphorus**. Treatment consists of administering a calcium-containing phosphate binder such as Renagel and Phoslo.

## **Calcium Imbalances**

### ***Hypocalcemia***

In this condition, calcium levels are below 8.6 mg/dL. Hypocalcemia is caused by thyroid disorders, renal failure, vitamin D deficiency, increased phosphorus, and chemotherapy. Symptoms are muscle numbness and tingling, positive Chvostek's and Trousseau's signs, seizures, and muscle twitching. Treatment consists of administering calcium and vitamin D.

### ***Hypercalcemia***

Here, calcium levels are above 10.4 mg/dL. Hypercalcemia is caused by overactive thyroid, cancer, and diuretics. Symptoms

are muscle weakness, weight loss, confusion, nausea, kidney stones, and abdominal pain. Treatment consists of calcitonin, loop diuretics, and bisphosphonates such as etidronate.

## INTRAVENOUS FLUIDS

Several different types of intravenous fluids are used to replace electrolyte imbalances:

**Isotonic Solutions:** Isotonic fluids are used to treat dehydration and metabolic acidosis. The types of isotonic fluids are 0.9% sodium chloride (the most commonly given fluid), lactated Ringer's solution, and 5% dextrose in water (D5W).

**Hypotonic Solutions:** Hypotonic solutions have low osmotic pressure and are used to treat edema and hypotension. Types of hypotonic solutions are 0.45% normal saline (NS) and 5% dextrose.

**Hypertonic Solutions:** Hypertonic solutions have high osmotic pressure and are used to treat blood loss, hypovolemia, and hyponatremia. They are usually given at a slow rate to decrease the risk of fluid overload. Types of hypertonic solutions are dextrose 5% in 0.45% NS, dextrose 5% in 0.9% NS, and dextrose 5% in lactated Ringer's.

When administering intravenous fluids (IVF), follow the physician's orders and administer the correct rate. IVF are given through an IV site, and it is important to assess the site for redness, infiltration, or swelling.

## INTRAVENOUS SITES

**Intravenous lines** are started on patients for a number of reasons. They allow health care professionals to administer medications, procedures, surgery, and fluids. Most hospital protocols require all patients to have IV access. An IV is best started in the distal veins of the arms and needs to be large enough to maintain the catheter. A 22-gauge needle is most commonly used. A 20-gauge needle is used for patients receiving blood products or requiring contrast. IV sites must be changed every 2 to 3 days. Complications of IVs include infiltration (swelling of the site due to fluid in the tissues) and phlebitis (inflammation of the vein). It is the nurse's responsibility to assess the IV site and change the site if any problems occur.

→ **Peripherally inserted central catheter (PICC) lines** are used for patients who are on long-term antibiotics or if intravenous

sites cannot be obtained. A PICC line is inserted through the cephalic or brachial vein and then advanced into the superior vena cava. A chest x-ray is used to confirm placement. A PICC line dressing must be changed every 7 days. Arm circumference is measured daily. If swelling or edema occurs in the arm, an ultrasound may be needed to see whether blood exists in the arm. Blood draws are allowed in PICC lines.

**A subclavian Port-a-Cath** is a central venous catheter that goes into the vein in the chest wall and into the heart. Dressing on the port is changed every 7 days. Aseptic technique is needed when changing and accessing the port. Blood draws are also allowed. Port-a-Cath use is common with patients receiving chemotherapy or frequent transfusions.

## MEDICATION ADMINISTRATION

Nursing has three main tasks. The first is to assess the patient, the second is to administer medications ordered by the physician, and the third is documentation. It is important to know the five rights of medication administration and carefully administer medications as ordered. The five rights of medication administration are right patient, right drug, right route, right dose, and right time. Using the five rights ensures the patient's safety and prevents you from administering the wrong medication.

Pharmacology is one of the hardest courses in nursing school, but one of the most important. You will need the information you learn in this class for the rest of your nursing career. I know you are probably staring at your notes and textbook, saying, "How on earth am I going to remember all of this?" It is possible. There are tons of tips and helpful secrets in Chapter 5 that will help. Medications are typically given orally, intravenously, intramuscularly, or subcutaneously. Be careful with patients who are at risk for aspiration or have difficulty swallowing; these patients may require medications to be crushed or given intravenously. Always assess, describe, and make sure the patient is aware of the medications you are administering. When administering cardiac medications, always obtain a BP/pulse and follow parameters.

During this course, I was a nervous wreck. The thought of giving a patient a shot would make me so nervous. I think it is because I am not too fond of shots myself that I felt awful giving them to my patients. My hands would shake, and I would start sweating and begin having a mini anxiety attack when my instructor would say it was time to start an IV or give a subcutaneous shot. But I am here to tell you that you will overcome

this fear! Once you begin to gain confidence and practice, you will become a pro in no time. The first time I gave a subcutaneous heparin shot, my hands were shaky, and I seemed like a mess inside while trying to stay calm on the outside. By the end of the course, I no longer felt nervous and gained enough confidence to comfortably administer shots. All it takes is a little practice and positive self-talk.

## INFECTION CONTROL AND PREVENTION

Infections are invasions of organisms such as viruses, bacteria, and parasites that enter the body. In all health care facilities, aseptic techniques are used to prevent the transmission of these organisms. Standard precautions consist of hand washing and the use of gloves when in contact with patients. There are different types of precautions based on the type of infection.

**Standard Precautions:** Standard precautions are used for all contact with patients. Wash hands and use gloves with all patients.

**Contact Precautions:** Contact precautions are the use of gown and gloves. Methicillin-resistant *Staphylococcus aureus* (MRSA), *Clostridium difficile* (*C. diff*), shingles, vancomycin resistant enterococci (VRE), and *E. coli* in the urine are common infections that require contact precautions. When treating patients with *C-diff*, you must wash your hands with soap and water to prevent infection; hand sanitizer does not kill the *C-diff* bacteria. Pregnant women or caregivers who have not had or been vaccinated against chickenpox (varicella) should not care for patients with shingles. Always throw gowns away before exiting the room, and wash your hands thoroughly.

**Droplet Precautions:** These require the use of gown, gloves, eye shield (if preferred), and mask. An N95 mask is needed and fitted by size. Patients who have TB or Ebola require droplet precautions. A negative pressure room is also needed. Droplets are found in secretions such as cough or other bodily fluids.

**Airborne Precautions:** These require the use of gown, gloves, and mask. A regular surgical mask can be worn. Patients who test positive for influenza require airborne precautions.

There are many pathogens, viruses, and infectious diseases that require precautions. I have listed the most common types above. Please refer to your textbook and class notes for further

details and information. Remember it is important to wash hands and use standard precautions with all patients. Keep yourself safe!

## THE SURGICAL EXPERIENCE

There are three main phases of the surgical experience: (a) preoperative, (b) intraoperative, and (c) postoperative. In the following section, I describe each phase in detail, highlighting the most important information. With each phase, aseptic and sterile techniques are used. Hand washing is very important! Hand washing is used on the unit and through all phases of the surgical experience.

### Preoperative Phase

The preoperative phase begins with the decision to consent to surgery and ends when the patient is transferred into the operating room. Before any procedure, it is important to have the patient sign consent for surgery, and to ensure that all lab work has been completed, vital signs are stable, and the patient understands the surgical procedure. The nurse's role in preparation for the day of surgery is to make sure all the consents are signed, prep the patient for surgery, assess vital signs and labs, remove jewelry, prepare the bowel/bladder (making sure the patient voids before going to surgery), ensure all preoperative medications are given, and make sure all the patient's questions are answered. **It is very important to administer BP medications and antibiotics prior to surgery. Beta blockers must be given if it is within parameters. If the BP is low, the surgeon should be contacted.**

Patient education is important, and the patient must be taught what to expect preoperatively, intraoperatively, and postoperatively. Preoperatively, you need to discuss the procedure and educate the patient on ways to avoid complications postoperatively. **Some of the main points that need to be addressed with patients to prepare them for the postop phase are to turn and reposition in bed every 2 hours in order to increase circulation, and to apply SCDs and TEDs in order to decrease the risk of blood clots. Encourage the patient to cough and deep breathe, and consider using an incentive spirometer to increase lung expansion and decrease the chances of developing hospital-acquired pneumonia.** Preventing complications is vital, and educating patients is important for a speedy recovery.

### Intraoperative Phase

This phase begins with the patient being transferred from preop to the operating room and ends in the postanesthesia care unit (PACU). In this phase, the surgeon performs the procedure. Nurses play many roles in the intraoperative phase. In the operating room, there is a scrub nurse and a circulating nurse to help assist the surgeon with any needs. They help with handing and counting all the instruments and materials used. They also help monitor the patient during the surgical procedure. The intraoperative phase ends when the surgical procedure is completed.

### Postoperative Phase

The postoperative stage begins when the patient arrives in the PACU and ends when the patient is placed in a medical–surgical unit. The postoperative phase is a critical phase where the nurse must monitor for any postop complications or any acute changes. The PACU nurse is responsible for maintaining the patient’s airway, assessing the wound or incision, controlling pain, monitoring urinary output, assessing vital signs, and assessing for any changes in the patient’s mental status. It is the nurse’s responsibility to convey any changes to the surgeon immediately.



**The most common postsurgical complications are shock, hemorrhage, pneumonia, wound infections, and blood clots.** In the preoperative phase, postop teaching was completed, with the goal of helping the patient understand these complications and learn how to decrease the chances of complications by using the numerous preventive measures. Once the patient arrives on a medical–surgical unit, it is the floor nurse’s responsibility to continue to assess for postop complications and any changes that might occur.

## BLOOD TRANSFUSIONS

Blood transfusions are needed for the patient with a decrease in hemoglobin and hematocrit. Conditions such as sickle cell disease, cancer, GI bleeds, and anemia can all cause a decrease in these levels. Blood transfusion is administered to increase these levels. A consent form must first be signed, there must be a physician’s order, and all complications must be explained. A cross-match is needed. The blood is prepared and refrigerated until transfusion. An IV site is needed. Two nurses are needed to check the blood. Obtain vital signs before the transfusion,

15 minutes into the transfusion, and after the transfusion. If the patient has an abnormal temperature, Tylenol may be given before the transfusion. Assess for a reaction to the blood. Sit in the room for 15 minutes once the transfusion has started. If a reaction occurs, call the physician immediately and stop the blood.

### SEE YOU LATER FUNDAMENTALS!

Congrats! You have completed the first course in nursing! You deserve a pat on the back, and more. This was a tough course to get through, and there is so much to learn, but learning is what nursing is all about. I hope this chapter has helped you to highlight all the important information. Pay attention to what your professors recommend as important content to study and learn. They are the ones who make the exams, so pay close attention! Try not to miss too many classes; professors love to drop little hints in class as to what might be on the exam. Remember, this is a tiny study guide with a big punch, but each course is designed differently; use this book as a guideline along with your class notes and textbook.

In fundamentals of nursing, you will also be attending your first clinical. You will apply all this information in a hospital or nursing home setting. The sections not reviewed in this book that you will need to know are how to wash your hands thoroughly and make a patient's bed. You will also be getting your first pair of scrubs. Now, I may sound like a nerd, but I was so excited to finally wear scrubs and attend a clinical, almost like I was in *Grey's Anatomy* or something. It feels good when you study so hard and finally get to use all this knowledge to begin your nursing career. Just a little side note: If you are having difficulty or need a little extra help, talk to your professor—this would be the best time. Study sessions are a great help. (Also, some students at this point figure out that this might not be the right field for them—if this is the case for you, speak to your counselor, and don't worry, because there are always other options.)

You should be proud: You have completed the first course, and you are on your way to becoming a great nurse. Let's bring on health assessment!