



SCIENTIA MEDIA GROUP

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THE NCLEX-RN EXAM STUDY GUIDE



PREMIUM EDITION

PROVEN METHODS TO PASS THE NCLEX-RN
EXAMINATION WITH CONFIDENCE - EXTENSIVE
NCLEX-RN - **NEXT GENERATION NCLEX (NGN)**
PRACTICE TEST QUESTIONS WITH ANSWERS

The NCLEX-RN Exam Study Guide: Premium Edition

Proven Methods to Pass the NCLEX-RN
Examination with Confidence – Plus Extensive Next
Generation NCLEX (NGN) Practice Test Questions
with Answers

Written by Rachel Belinelli

The NCLEX-RN Guide with NEXT GENERATION NCLEX-RN Questions

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Chapter One: The Fundamentals of NCLEX-RN

We have to start at the beginning, with the organization of the exam outline. This exam requires being organized to enable you to review everything that will come in the test. Let's start with the definition of the terms that you will come across in this manual:

Clinical Reasoning:

It is the cognitive process that allows you to analyze patient information using both formal and informal strategies. You get to gather relevant and essential information, evaluate the essence of this information to the patient's needs and diagnosis and weigh the necessary actions required. There are several stages to the clinical reasoning cycle:

Stage One:

Consideration of Facts:

As a nurse, the first thing to do during clinical reasoning is to consider the facts. When looking over a patient for the first time, you have to evaluate the patient's current medical status and the information they present to you to see if it tallies with the symptoms they are presenting.

Stage Two:

Collection of Information:

It is the second phase that is critical in getting the correct information to help your patient. You consider the complaints, pain points, current treatment plans, and vital signs. During this stage, you analyze the findings from your information collection process. Part of collecting information requires proper knowledge of the patient's pathology, pharmacology, physiology, and culture to help you get the right cues.

Stage Three:

Identify the Problem:

In this third phase, you get to identify the problem allowing you to make the correct care decision for your patient. After the first two stages, you have enough information to know what is causing a patient's current state so you can make solid decisions to help your patient.

Stage Four:

Establish Goals:

In this stage, you establish the goals you have for the patient's treatment. That is where you determine what each drug is supposed to do and what outcome you want. Your goals should not be open-ended; instead, they should be time oriented. That allows you to have a handle on the desired result, and when they don't come on as expected, you know how soon to consider alternative options.

Stage Five:

Implement:

That is the stage where you act on the treatment plan. The implementation part requires the input of other healthcare professionals like doctors and specialized medical staff. Everyone on the patient's medical team should be updated on the implementation of the treatment plan.

Stage Six:

Evaluation:

After starting the treatment plan, you must keep monitoring and evaluating its progress and whether it benefits the patient. Evaluation is critical to catch any issues that may arise from the treatment, like side effects, so that you can adjust it.

Stage Seven:

Reflection:

Now that you can see that clinical reasoning is working, you reinforce the skills you learn throughout the process. You also see what you should do differently in the future, and you can tweak your treatment plan and other processes related to patient care.

Clinical Judgement:

Clinical judgment is the process by which you decide which data should be collected from your patient, interpret the data, arrive at a diagnosis, and then identify the appropriate nursing action. Your clinical judgment requires a good amount of decision-making, problem-solving, and critical thinking.

ADPIE:

ADPIE refers to the five-prong approach that is synonymous with the NCLEX-RN test. This approach helps you to solve the questions that come with the tests. ADPIE stands for:

- A- Assessment
- D – Diagnosis
- P – Planning
- I – Implementation
- E- Evaluation

Developing Clinical Judgement

Perhaps the most critical part of clinical judgment is using the ADPIE approach discussed above: Assessment, diagnosis, planning, implementation, and evaluation. Clinical judgment is developed over time through continuous practice, experience, knowledge, and critical analysis. Clinical judgment is applied to all areas of medicine, from therapy and diagnosis to decision-making and communication.

For example, clinical judgment ranges from significant decisions like discontinuing life support for a patient or minor daily decisions like popping in to say hi to a favorite patient.

The best way to improve your clinical judgment is to participate in case reviews. Use current patient examples from actual patients, like reviewing the actions, interactions, and reactions of an emerging patient situation. Dialogue with other nurses will help while reviewing cases, so you grow your case review skills. But ensure that your fellow nurses are encouraging, patient, and thoughtful.

Nursing Diagnosis:

The nursing diagnosis is where you evaluate the health condition, vulnerabilities, or life processes of the people you are looking after.

Nursing Process:

That is the scientific and clinical reasoning process for a client's care from the assessment, analysis, planning, implementation, and evaluation.

NCLEX-RN Study Plan:

The NCLEX-RN study plan can be broken down into five weeks, allowing you to get the most out of the study material I will share with you. That is a plan I used and found it worked, and I have gone on to share it with other nurses who have found it to work for them as well.

If you have more time, like ten weeks, to dedicate to the exam, you can allocate two weeks for each section.

The five-week plan is for nurses who want to take the exam sooner or may have limited time to work on their preparation.

I would advise that you spread your study over ten weeks because not all subjects take the same time to prepare.

The Five-Week plan:

- Week One: Study the management of care and safety as well as infection control
- Week Two: Study psychosocial integrity & health promotion and maintenance
- Week Three: Study pharmacological therapies, basic care, and comfort & parental therapies
- Week Four: Study the Reduction of risk potential & physiological adaptation
- Week Five: Undertake several practice tests

The Ten-Week Plan

- Week one and two: Study the management of care and safety as well as infection control
- Week three and four: Study psychosocial integrity & health promotion and maintenance
- Week five and six: Study pharmacological therapies, basic care, and comfort & parental therapies
- Week seven and eight: Study the Reduction of risk potential & physiological adaptation
- Week nine and ten: Undertake several practice tests

Pro Tip:

Take the practice tests without referring to any of the study material, then look up the answers afterward. That way, you can know if you have grasped the correct concepts and can answer the questions correctly in the exam.

Also, take these tests a day or two before the actual exams to help you remember the study material. If you take them one week before the exam, the answers may not be fresh in your mind.

Areas to Cover in Management of Care and Safety & Infection control Study Block (Follow the order in the chapters)

1. Work ethics
2. Patient rights
3. Health care delivery systems
4. Models of care
5. Collaboration and coordination of care
6. Nursing care planning
7. Nursing processes
8. Nursing research
9. Medical transcription and terminology
10. Legal regulations

11. Evidence-based practice
12. Health care delivery and policy
13. Risk assessment and quality improvement
14. Billing concepts
15. Patient safety within the hospital
16. Patient injury prevention within the hospital
17. Controlling infections and infectious diseases
18. Administration of hazardous materials
19. Emergency response
20. Disaster management

Areas to Cover in Psychosocial Integrity & Health Promotion and Maintenance Study Block (Follow the order in the chapters)

1. Psychological assessment
2. Therapy-based relationships
3. Dealing with loss and grief
4. Dealing with family dynamics
5. Abuse and neglect
6. Psychosocial interventions, procedures, and pathophysiology
7. Education theories
8. Theories of human development and growth
9. Immunizations
10. Pediatric injury and illness prevention
11. Family education
12. Physical and pain assessment
13. Respiratory and cardiovascular assessment

14. Oncologic, endocrine, and immunologic assessment
15. Genitourinary assessment
16. Post-partum assessment
17. Neurological assessment
18. Integumentary assessment
19. Geriatric assessment
20. Musculoskeletal assessment
21. Gastrointestinal assessment

Areas to Cover in the Pharmacological Therapies, Basic Care, and Comfort & Parental Therapies Study Block (Follow the order in the chapters)

1. Principles of pharmacology, adult medication, and medicine administration
2. Respiratory pharmacology
3. Cardiovascular pharmacology
4. Hematologic pharmacology
5. Immunologic, endocrine, and oncologic pharmacology
6. Gastrointestinal pharmacology
7. Neurologic pharmacology
8. Integumentary pharmacology
9. Psychological pharmacology
10. Pharmacological pain management
11. Functional rehabilitation
12. Functional status
13. Assessment of body extremities

14. Wound assessment
15. Skin assessment
16. Wound classification and treatment
17. Bladder training
18. Bowel training
19. Pressure distribution and ulcers
20. Non pharmacologic interventions
21. Post-mortem services and care

Areas to Cover in the Reduction of risk potential & physiological adaptation Study Block:

1. Endocrine diagnostics
2. Neurological and hematological diagnostics
3. Oncologic and immunologic diagnostics
4. Cardiovascular diagnostics
5. Genitourinary diagnostics
6. Gastrointestinal diagnostics
7. Postoperative diagnostics
8. Ear, throat, and nose pathophysiology, interventions, and procedures
9. Respiratory and cardiovascular pathophysiology
10. Respiratory and cardiovascular interventions and procedures
11. Neurological and musculoskeletal pathophysiology, interventions, and procedures
12. Hematologic and integumentary pathophysiology, interventions, and procedures
13. Endocrine, oncologic and immunologic pathophysiology, interventions, and procedures

14. Multisystem pathophysiology, interventions, and procedures

15. Fever

16. Fibromyalgia

17. Geriatric pathophysiology, interventions, and procedures

18. Gynecologic and obstetrical pathophysiology, interventions, and procedures

The Next Generation NCLEX-RN (NGN) Questions

It is critical to focus on the NGN questions in this book because they make up a large chunk of the question section of the exam. The examiners want to ensure you can relate to the real time cases you will come across while practicing your profession. So these questions are quite in depth and require a detailed answer.

So while the traditional questions still remain as part of the exam, the addition of the Next Generation NCLEX questions amps the challenge of the exam and really prod your clinical thinking.

The premise of adding these questions is understanding that nursing clinical judgment remains at the core of safe and competent patient care. To be quite honest I find that the NGN questions are better than the traditional questions to help you think critically about the care you provide and decisions you make regarding your patients.

Please note that these questions tend to focus on caring for critically ill patients. This is because according to NCSBN findings, nurses are more often looking after critically ill patients than ever and the NCLEX exam must reflect this shift in patient status to equip the nurses on what to expect and be informed about.

I have peppered the entire book with them to give you a taste of what to expect. Here are some tips when answering them:

Begin by recognizing the cues which are given within the question. They tend to feature a lot of clinical data so identify and recognize the data. The

data is in the form of patient medical history, lab values, vital signs, and symptoms.

Second, analyze the cues using this manual and other relevant sources to determine what has been presented to you. That entails extracting the most crucial clinical data that is most concerning to you and apply it to their bedside knowledge.

Next, prioritize your hypotheses. Of the possibilities provided in the question, which one is priority or identifies the problem?

Now generate solutions using the data you have. If you have to collect more data from other relevant sources do so. This part requires critical thinking that reflects your understanding and application of the medical knowledge you have.

Next you should take action and implement the solution you have.

Finally evaluate the outcome of your thinking and action.

NGN reminds you that critical thinking and clinical judgment are the most important skills you bring to the care of your patient.

Step By Step Approach to Getting Through the NCLEX-RN

Break Down Your Study Material

After failing my first attempt at the exam, I realized that I was perhaps too disorganized in my study approach. So, on my second attempt, I did the following three things:

I organized my study according to the official test outline. I wrote down a list of all the material I needed to cover, which would feature in the test. I grouped the material in clusters that I could study together because they are related to each other. That is how I created the above five and ten week study plans I shared with you.

Second, I created a serene study environment. It wasn't easy to study in places with a lot of traffic because I was also getting used to the new American culture since I was relocating from my country.

I chose to always study in the library because the quiet in a library is universal worldwide. I found that this was an environment I could relate to despite being far from home. I would encourage you to find the best study environment for you. A quiet, serene, peaceful place would be ideal because nursing concepts can be complex and require a great deal of concentration and understanding.

Finally, I broke down the hours of the day that I would dedicate to my study. Do not confine yourself to studying all day and night, as that is not healthy; You will quickly burn out before the exam. Instead, have manageable study goals that you can achieve daily. Studying manageable blocks of information will help you retain information better and enjoy the study process.

Sometimes you may need to study with your friends, especially if you need help. Do not be afraid to join a study group.

Bottom line:

Do what you need to do to get the correct study plan and learn all the material you need to.

How To Retain Study Information

The whole point of studying is, of course, to retain the information. I recommend testing yourself after every study block to see if you can remember the material with minimal prompting. If you are studying alone, I recommend that you prepare study questions as you go along. After you finish reading the material, you go back to the study questions and answer them without referring to the notes and reading material. Ask a friend or family member to allow you to teach them a concept using examples. Speaking out loud about the material you are learning will help you retain the information better.

If you are studying in a group, each group member should prepare their own set of questions to be shared with the rest of the group after each study block. Doing this in a group can be good for you if you work better with teams than solo. Also, you will have access to more questions since everyone in the group contributes their questions.

Another way to retain information is by putting the questions into practice. That allows you to apply your knowledge, and the information sticks as opposed to simply recalling it, which you can forget faster.

As a rule, I always write out each step and even act it out to help me retain the information and knowledge. I can remember the study material better when I do this.

Some people learn better by visualization, which means drawing illustrations, while others need to color code information to help them remember it better.

Here are some modalities that work:

- ❖ Use symbols to remember specific information
- ❖ Use color coding for different study material
- ❖ Use illustrations and caricatures (it doesn't have to be professional looking)
- ❖ Write small notes next to the material.
- ❖ Use ticks or Xs to denote sections that you may have difficulty understanding and reread them over and over again until you grasp the concept.
- ❖ Use flashcards that you can carry around and look over wherever you are.

I also reviewed the questions I got wrong until I got them correct. I had to guess some questions, so I looked them over to see if I guessed the answer correctly. I then asked myself why I got the answer wrong, was it the vocabulary, or was it that I had trouble understanding the question.

Pro Tip:

Take your time before you get into the practice tests. Please do not rush into them; instead, study as thoroughly as possible before attempting them. Give yourself the best chance to get them right during self-trial before you can get them right in the exam. The more correct answers you answer in the practice test, the more confident you become, and you can handle the exam better.

Use the practice questions to help you time yourself, and learn to dedicate adequate time to each question without going overboard or taking too little time. When taking the practice test, I would recommend the following tips:

- I. The first time, take the test without placing any time constraints on yourself, and you are free to refer to the notes and reading material.
- II. The second time, take the test while timing yourself and with the note or reading material handy.
- III. The third time, take the test while timing yourself and without the notes or reading material at hand. Imagine yourself at the test center and act like you are taking the actual exam.

What To Expect From the National Council of State Boards of Nursing Clinical

Nursing Clinical is the body responsible for the nursing licensure examination you are preparing for (NCLEX-RN). They use the NCLEX exam to ensure that you, as a nurse attending to the public, have adequate clinical judgment skills to attend to and protect the public.

The exam may not focus on your cognitive skills as a nurse, but on the nursing processes you should know. You will have multiple choice questions and SATA (Select All That Apply) questions in the exam. These questions will not be presented in the context of a complex clinical environment; instead, they will test your basic content knowledge to discern what is right or wrong. The premise of this exam is to ensure that you have sufficient content knowledge to make sound clinical judgments.

Examples of multiple-choice questions to expect:

A patient who has Alzheimer's is brought in by his family. What is the priority that you as a nurse should first undertake when caring for this patient?

A - Give the patient environmental stimulation every time you enter the room

B - Keep the patient safe and protect him

C - Keep re-orienting the patient with every nurse that comes into the room

For this question, you need to know the proper care for an Alzheimer's patient. The above multiple has two wrong answers and one right one. Choose the right one, which in this case is B (Keep the patient safe and protect him).

Remember, the test requires you to choose the right or wrong answer from the multiple choices. In this case, the question is testing your clinical judgment ability. All the above three answers are general content knowledge you can apply when caring for a patient with Alzheimer's. But the correct clinical judgment answer for the specific question asked in the test requires you to prioritize the best course of action.

What is the priority that you as a nurse should first undertake when caring for this patient?", B. Keeping them safe and protected is the nurse's priority.

Example of SATA (Select all that apply) to expect:

A nurse caring for an elderly patient with rheumatoid arthritis has to be aware of certain signs when attending to their patient. Which are the typical signs a nurse expects to find during a rheumatoid arthritis assessment? Select all that apply.

- A - Ulnar deviation of the patient's wrist
- B - Joint pain and inflammation
- C - Deformity of the feet and hand joints
- D - Bony nodes on the patient's finger joints
- E - Subcutaneous arm-based nodules

The correct answer is A (Ulnar deviation of the patient's wrist), C (Deformity of the feet and hand joints), or E (Subcutaneous arm-based nodules). In this type of question, you are expected to focus on all the correct answers that apply to the question with a focus on the symptoms.

In SATA questions, you may or may not have only one answer only. As the description suggests, you should Select All The Answers that apply to the question (even if it is one). You have the content knowledge regarding

arthritis, but you need clinical judgment to determine which symptoms are specific to advanced rheumatoid arthritis.

I cannot stress this enough: This test examines your ability to reach sound clinical judgment and not just to regurgitate the content knowledge you know from nursing school, like the ATI-TEAS exam.

Chapter Two: Care and Safety Management & Infection Control Block

Part One:

Professional ethics and principles:

In this section, the questions will test whether you are conversant with the professional ethics of the nursing profession and what is ethically expected of you. You can expect to be queried on the following aspects of professional ethics and principles:

Nonmaleficence:

This ethical principle requires healthcare workers to offer care in a manner that doesn't intentionally cause harm to their patients. For example, your intention when providing a diagnosis and medication must be:

1. Only for good effect
2. Morally neutral

Also, the actual act itself must be good. For example, when giving an injection to a patient, you must be considerate of the actual act regardless of how mean or disagreeable the patient's character or personality is. Do not cause the patient intentional pain and discomfort during the act as payback for their mean disposition towards you or others.

Under the nonmaleficence ethical principle, you also cannot use a harmful effect to achieve a good effect. But if you do, the resulting good effect must have more benefits than the harmful effect you have used to achieve it.

Beneficence:

This ethical principle requires health workers always to do what benefits their patients at all times. Any procedure or treatment plan undertaken must achieve the ultimate goal of benefiting the patient. Any unhelpful or non-beneficial actions must be discarded or reconsidered. So you must monitor the patient to see how their condition changes, and those procedures or actions that do not contribute to positive change must be eliminated from the treatment plan.

Autonomy:

This ethical principle requires healthcare workers to allow and respect the right of the patient to make certain decisions about their healthcare. When minors are involved, or patients unable to make their own decisions are in your care, you have to allow and respect the decisions of parents or family members that are legally recognized as their decision makers. That means you have to keep the legal decision maker well and fully informed of their patient's state and care to allow them to exercise their autonomous decision-making process.

Justice:

This ethical principle requires equal distribution of healthcare resources to ensure that all members of society benefit equally. All medical resources have to be distributed fairly. For example, what do you do if you have two patients and one bed? You have to reasonably determine which patient can be transferred safely to another facility or cared for, like home visits, and which one needs the hospital bed most. For justice to prevail in dispensing treatment, you have to make sure that you do not allow your personal biases to cloud your judgment.

What Is Bioethics?

In a wonderful, normal world, you would expect that the nurses, doctors, patients, and their family members are all in agreement about the decision-making process, the decisions, and the principles behind every action. In such a case, there are no ethical dilemmas to complicate the situation. But that is not always the case.

You may encounter a situation where differences arise among the players named above, resulting in a bioethical dilemma. In such circumstances, the differences may be resolved as you share more information. However, when that doesn't work, you may have to defer the decision to the institution's ethics committee, which will rely on bioethics to find the best morally upright and correct resolution to the given circumstances.

That is the primary role of bioethics: To help you determine the moral and upright course of action for the patient in the event of differences of

opinions between the health unit, family members, and other relevant stakeholders.



Make sure you know the above ethical expectations before entering the exam. Try and apply them (as possible) in your study group by researching relevant examples. Pose the examples to each other (or yourself if you are studying alone) and try to identify what would be categorized as a breach of ethics and what wouldn't.

The Nursing Code of Ethics

With the technological advancement in the medical field, the nursing code of ethics keeps evolving, generating a lot of interest. According to the American Nurses Association, ANA, the nursing code of ethics is supposed to be a guide that helps you carry out your responsibilities in a manner that is in line with quality care and the profession's ethical obligations.

Ethics are the moral principles that govern your behavior as you perform your duties. The current ANA nursing code of ethics has the following nine provisions:

Provision #1:

A nurse practices, in all their professional relationships, with compassion and respect for the inherent dignity, worth and unique attributes of every individual.

Real Life Interpretation

This provision means that every practice you undertake in your profession must be unrestricted by considerations of the economic, social, or political status of the person under your care. It also requires you to provide unbiased care regardless of the nature of the health problem or your client's attributes.

For example, you are required to provide unbiased care to a patient with HIV/AIDS as you would to a patient with diabetes, regardless of the nature of their disease.

This provision also requires you to respect your patient's lifestyle, religious beliefs, and value system. For example, suppose you are treating a patient who is against specific medical procedures.

In that case, you must respect their feelings enough to ensure you have a conversation with them and their family members and get their consent before going ahead.

You are also required to respect the patient's right to self-determination, which allows them to decide what will be done to their body. Under this provision, your job is to ensure that you preserve, protect and support those choices even if you do not personally agree with them. And this respect and compassion for others extend to your colleagues in the workplace.

Provision #2:

A nurse's primary obligation and commitment is to their patient, whether an individual, community, group, family, or entire population.

Real Life Interpretation

As a nurse, you must be committed to your patient's care, irrespective of the client's uniqueness. Any treatment or care plan must consider individuality

and uniqueness and reflect it. To best achieve this, you may need to allow your patient to participate in the implementation of their care or seek their input.

For example, you may need to tailor the care of a Muslim woman differently from how you would tailor the needs of a Christian woman. They may both be bound by their faith, but the nuances and interpretations of their faiths cause them to have different needs. For instance, a Muslim woman may not be willing to remove their hijab during an MRI when a male nurse (or member of the health care unit) is in the room. You have to tailor their care with that consideration.

This provision also requires you to resolve any conflict or issues arising from the care plan between yourself and colleagues or even members of your patient's family. Unfortunately, sometimes, family members, while well-meaning, can interfere in critical health matters when they don't see the immediate results they expect from a treatment plan. That can put you in a position of conflict with them and their interests. Remember, this nursing code of ethics requires you to act per your patient's primary wishes while keeping them safe and preserving your professional integrity.

This provision requires you to collaborate with others to provide your patients with the best possible care and treatment opportunities. You can maintain collaboration and cooperation by establishing, building, and preserving healthy and cordial relationships with other healthcare stakeholders.

Provision #3:

A nurse promotes, advocates, and protects their patient's health, rights, and safety.

Real Life Interpretation:

Just because a patient needs healthcare does not give providers of healthcare permission to intrude into their life unjustifiably. That means you do not request unnecessary invasive procedures and must undertake all auditory and visual discussions with your patient in a private setting.

Also, all personal information about the patient must always be kept confidential.

The only people allowed access to the patient's data must be those in the health care team; even then, they must know that information to provide the best care possible for the patient. For example, the person disposing of the medical trash doesn't need to know about your patient's health condition.

If their information is part of a research process, they must have consented to it after having sufficient and correct information about the said research. It would be best if you also informed them of how their data will be protected and used.

This provision also requires you to protect your patients from potential harm when a colleague's judgment or practice is impaired and if the processes used in a facility pose any harm. Understandably, reporting unethical, illegal, and harmful practices may pose a significant risk to you, but that doesn't absolve you of the requirement to report them nonetheless.

Provision #4:

A nurse has the responsibility, authority, and accountability toward individual nursing practices, making decisions and taking actions consistent with the obligation to provide optimal patient care.

Real Life Interpretation:

The individual nurse bears the primary responsibility for their patient's nursing care while at the same time remaining responsible for their care. As a nurse, you must exercise your clinical judgment to cope with the changing strategies and complex patterns of health care delivery.

You have to use your clinical judgment about the responsibilities you accept, where you seek consultation, and to whom to assign and delegate activities. For example, some nurses with advanced practice and positions of authority are allowed to issue prescriptions and order junior nurses to proceed with specific treatment plans.

This provision also means that you are accountable for your judgments and actions while caring for a patient. You are allowed to accept or reject

specific responsibilities per the code of conduct. For example, nurses in administration, research, and education roles also have obligations to the patients receiving care in their facilities even though they have less direct contact with clients.

They share the responsibility for the care provided to patients if they are in charge of the nurses caring for the patient. If the nurse delegates responsibilities to learners and something goes wrong, they are directly responsible for the learner's actions. That means that as a nurse, in any capacity, you must only delegate to someone with sufficient knowledge and clinical judgment to carry out the assigned duties safely and correctly.

Provision #5:

A nurse owes the same duties to herself as to others, including the responsibility to promote health and safety, preserve wholeness of character and integrity, maintain competence, and continue professional and personal growth.

Real Life Interpretation:

This provision requires a nurse to owe themselves the same duties as they do to others. That means you should treat yourself with the same care and respect that you dedicate to others. Improving yourself professionally and dedication to self-preservation and care are some of the duties you owe to yourself.

The provision also requires you to evaluate your performance to maintain competence. Part of this self-evaluation means that you seek professional advancements like pursuing degrees and other advanced nursing skills. You also maintain knowledge of the evolving standards of nursing practices, controversies, concerns, and ethics.

Provision number five also requires you to maintain the wholeness of character. Your personal and professional identities can integrate without being wholly merged. Your personal life should reflect some of the values of your professional life, like respect for life and the willingness to help others in need.

Provision #6:

Through collective and individual effort, a nurse participates in establishing, maintaining, and improving the ethical conditions and settings of their work environment and employment to ensure conducive and safe health care.

Real Life Interpretation:

This provision requires you to influence and promote your workplace's moral values and virtues. That means you will influence others in your work environment to do what is right and do better. That way, you collectively and individually do your jobs with excellence and dedication. You will promote virtues like wisdom, courage, and honesty within your workplace, allowing you to fulfill your ethical obligations.

If you are in an administrative role, you will ensure that other nurses are treated fairly at the workplace and are involved in the decisions that directly impact their ability to work and live a balanced life. For example, do not force fellow nurses to work in an environment that violates their and their patients' rights.

Provision #7:

A nurse participates in advancing the profession through scholarly inquiry and research, knowledge development of health and nursing policy, and the development of professional standards in the workplace.

Real Life Interpretation:

This provision requires you to participate in creating, establishing, and maintaining health care and nursing policy through active development. You can also advance the profession by serving in leadership positions, committees, and mentorship roles at your workplace. In your capacity as a nurse, you should maintain professional integrity, which makes you a role model for other nurses.

Nurses in administrative positions should promote and maintain work conditions that allow fellow nurses to adhere to the professional, ethical standards of nursing expected of the profession. Nurses working in an educator's capacity should maintain and promote the utmost standards of excellence in nursing education and practice for learners.

Provision #8:

A nurse willingly collaborates with other medical and health professionals and the public to promote community, national and international efforts toward meeting health needs.

Real Life Application:

This provision means that you are required to work with other health professionals to establish and maintain the health, safety, and welfare of all people as they need. That means you should be aware not only of specific health care needs of your patients but also of broader health concerns like:

- Malnutrition across the globe and world hunger
- Pandemics like COVID-19
- Violation of human rights that affect health like female genital mutilation
- Lack of access to health care and unequal distribution of health care and nursing resources
- Environmental pollution and its health consequences

This provision also requires you to understand that healthcare is a right of everyone in the world regardless of their culture, religion, or ethnicity. So, in your delivery of services, you must not impose your beliefs on others just because you disagree with their cultural, ethnic, or religious beliefs.

It also requires you to work to overcome barriers to health care provision, like homelessness, abuse and violence, unsafe living conditions, and poverty.

Provision #9:

Through its collective responsibility, the nursing profession must articulate nursing values and maintain the integrity of the profession while integrating principles of social justice into health policy.

Real-life Interpretation:

The body governing nursing principles must ensure that the nursing fraternity is accountable to society through mechanisms such as:

- The code of nursing ethics
- The standards of nursing practice
- Educational requirements of nursing practice
- Development of nursing knowledge that is derived from scholarships, nursing theory, and research that guide nursing actions
- Certifications in nursing practice
- Evaluation of the effectiveness of professional nursing actions and judgment

It is critical to note that the nursing code of ethics, according to the American Nursing Association, is not negotiable in any setting. And it is only subject to amendment by a formal process undertaken by the ANA House of delegates.

Ethical Decision Making:

As expected by the nursing code of conduct, you must make ethical decisions in your profession, which is not always the easiest thing to do. That is why you need an ethical decision-making model. The good news is that there are many ethical decision-making processes to choose from. They include:

The autonomy ethical decision-making model – This is where the patient's right to autonomy guides your ethical decisions. It is used during most procedures where the patient is aware and capable of making decisions about their body.

The justice ethical decision-making model – This model is guided by striving to offer justice to your patient. It is typically used if a system is unfairly used to deny patients medical care due to their financial status, religion, ethnicity, gender, or culture.

The nonmaleficence ethical decision-making model – This model is guided by striving to ensure that you do not act in any negative way towards your patient and all your actions are geared towards keeping them safe and making them better.

The beneficence ethical decision-making model – It is a model guided by actions of compassion where you use goodwill to help a patient's family

member to process their loved one's condition, or you administer pain medication to a patient in significant pain.

The fidelity ethical decision-making model - It is the model that guides you to deliver health care with honesty, care, and loyalty to your patient regardless of who they are. It is used in cases where a patient wants to keep some or all information regarding their medical condition private. You do not divulge this information to family members or others outside the medical team without the express consent of your patient.

The Paternalism ethical decision-making model – The model allows you to decide to reveal or hide a potential treatment, diagnosis, or expected prognosis. It is usually used in cases of minors when announcing a difficult prognosis that the family may not be anticipating.

Usually, a family-interdisciplinary team is part of the healthcare team, and all the information is relayed to the family in a controlled environment. The need and benefit of sharing the anticipated difficult prognosis far outweigh the emotional trauma the family may go through. Still, care is given to ensure the family receives adequate support during this time.

Test Alert:

You may be asked to outline the general guidelines that apply during ethical decision-making. Here they are:

- ★ **Gather all the relevant information about the identified problem**
- ★ **Write down the possible and reasonable solutions or alternatives to the problem**
- ★ **Use ethical resources to determine the ethically critical elements of the solutions or alternatives you intend to offer.**
- ★ **Test each solution or alternative**
- ★ **From the results, choose the best solution**

The above steps apply to all the ethical decision-making models mentioned above.

Professional Boundaries

As a nurse, you must be aware of the professional boundaries that guide you; otherwise, you may find yourself in a compromising situation with a patient. You can expect a question regarding professional boundaries and how to use your clinical judgment to navigate them.

What are professional boundaries:

Professional boundaries are the space between your power as a nurse and your patient's vulnerability. You have a position of power in your relationship with a patient because you possess sensitive information about them and the knowledge to use it to help them get better. As a nurse, you should make every effort to respect the powerful position you constantly find yourself in the nurse-patient relationship.

In nursing, there are boundary crossings where you briefly cross the professional boundary purposefully or inadvertently while attempting to meet a patient's need. That is to be avoided as much as possible, and everything you do must be within professional boundaries.

However, minor boundary crossings can be overlooked as long as they are few and help the patient. On the other hand, there are boundary violations where you knowingly cross professional boundaries without any therapeutic cause, which can lead to significant legal problems.

Below are examples of nursing violations and crossings:

Accepting Gifts:

Accepting gifts can be considered as crossing the boundaries, and so does other violations. Over time, your patients may form a bond with you and feel grateful towards you for caring for them during their most vulnerable period. To show their gratitude, they may offer small tokens of appreciation like a box of chocolates which are usually acceptable (but it also depends on the institution's policy).

Taking a box of chocolates from a patient could be considered a boundary-crossing because your acceptance of the gift makes the patient feel great and happy.

However, in cases where the patient is showing cognitive impairment or is too ill or weak, receiving a gift from such a patient could be considered a boundary violation.

If a patient, whether fully cognitive or cognitively impaired, gives you an elaborate gift like money, expensive jewelry, or clothes, you must decline. Politely say to them, “Thank you for this kind gesture, but I am sorry I can’t take these. Nurses are not allowed to take gifts from patients, and all I did was in my line of duty. But once again, thank you for the wonderful thought.”

Patients can give such expensive gifts out of obligation to show their gratitude. Accepting these expensive gifts is a boundary violation.

Receiving Attention:

Nursing is a giving profession, and one may become more invested in a patient who needs constant attention. It would help if you always were balanced in providing care for your patients and maintaining professional boundaries. That is especially applicable to nurses who provide home care because the acts of kindness take place in a patient’s space and not in a professional setting like a hospital.

You may go the extra mile and prepare meals or go shopping for the patient. Doing this once in a while is not boundary crossing since you are meeting an immediate need for the patient, which results in them concentrating on healing. However, if you do these things consistently, you are building a dependency and obligation that is not helpful for the patient or yourself. And if your other patients suffer because you pay all your attention and give all your time to one patient, you have crossed the line into boundary violation. You may depend on the patient to make you feel great, needed, or meet an emotional need in your life.

On the other hand, if you neglect patients entirely, that is also a boundary violation. Because when you do not pay adequate attention to your patient, their health declines.

Sharing Personal Information:

If you have a pre-existing relationship or a business partnership with the patient, it is best to let another nurse care for the patient. If this is not possible because of staffing issues, you must maintain a professional nurse-patient relationship above any other relationship you may have with the patient.

That allows you to treat the patient as any other while keeping the professional boundaries between a nurse and a patient intact.

If you disclose their personal information to family members (who may be your friends, too) without the patient's consent, that is a boundary violation. Your social relationship with the patient and their family does not give you the right to disclose any information your patient does not wish to share.

On the other hand, the nurse must also not share too much personal information with their patient because that will compromise the professional relationship between the two. Do not share secrets or make yourself vulnerable to the patient. They are there to be cared for, not to be the caregiver and carry your emotional or mental burdens with you.

Coercing Patients

As a nurse, it is a boundary violation to coerce a patient to sign anything, even if you feel it is in their best interest. It is a violation of their trust to place undue pressure on the patient to accept a procedure or to act in a way that favors you. As earlier mentioned, as a nurse, you hold some power over your patient due to their vulnerable state.

It is a boundary violation to physically abuse a patient or intimidate a sick or weak patient into procedures they do not want or require. Patients have the right to refuse treatment plans regardless of their age. If the patient refusing treatment is a minor or a person with impaired cognitive abilities, then a legal guardian or adult will make these decisions for them. But in all scenarios, make every effort to get the patient to understand and possibly cooperate with the decisions you make.

Sexual Contact with Patients

Finally, there is sexual misconduct which is completely forbidden. This behavior is defined as engaging in sexual contact, or what the patient may

perceive as sexual contact; any verbally seductive behavior or using words that are sexually demeaning to a patient; or sexual exploitation of a current or former patient. Any kissing, suggestion, or discussion of dating or soliciting a date with immediate family members of the patient are also included in this misconduct. If you have any sexual contact or romantic relationship before the end of the professional nurse-patient relationship, legally, you are guilty of sexual misconduct. That is a boundary violation.

Sample question to expect on nursing ethics:

What are the five areas of ethics that are required by the nursing ethics code?

- A. Maleficence, beneficence, autonomy, and justice**
- B. Justice, fidelity, professional boundaries, and accountability**
- C. Beneficence and autonomy**
- D. Maleficence and professional courtesy**

ANSWER: A. Maleficence, beneficence, autonomy, and justice

Part Two:

Care Collaboration and Coordination

Test questions regarding this section will concentrate on the skills you need for collaboration and care coordination with others in your health care unit.

The Skills Needed For Medical Collaboration:

Nurses are required to master the collaborative skills needed to move the profession forward. That includes an active role in information gathering that will support evidence-based nursing practices. They are obliged to share this information with other nurses to better their profession.

For proper collaboration, you must:

- Communicate clearly
- Be willing to compromise and accommodate other people's points of view
- Focus on your tasks
- Point out specific workplace problems and challenges
- Work within teams

Communication skills required in care coordination and collaboration:

Casual conversation skills: casual conversation is essential in the collaboration setting because you are talking to your peers and juniors. You may use slang that applies to the nursing setting, laugh about some things and even share a few jokes. However, if you are talking to a superior, you may need to tone down the casual tone, but you do not have to be overly technical. Keep it understandable, professional, and relatable.

Assertive conversation skills: It is the use of an assertive approach to convey your opinion on professional matters. You must be able to argue your merits for an argument boldly but remain non-combative and not

threatening to others. Expressing your opinion with clarity can be done calmly and reassuringly.

Written communication skills: Writing down your ideas in a manner that flows and makes sense to others is critical in a collaborative setting. You should be able to communicate clearly and with the proper grammar because written documents tend to be shared across multiple units.

Public speaking skills: In a collaborative setting, you need to be able to address a group of people and put your ideas across to them. Presentation of your ideas in public is essential, primarily if you work within large teams and in policy-making capacities. The better your public speaking skills, the more credibility you gain in the group.

Please note that communication in collaborative settings is very different from what you have in a nurse-patient setting. As a nurse, you are primarily responsible for the internal and external transitions of care among your group of collaborators. It is your responsibility to ensure everyone in your collaborative team is on the same page regarding patient care.

There are several approaches to communication and handovers/offs in a collaborative nursing setting. Below are some that will help standardize the communication and handover between nurses collaborating in the same unit.

A) DRAW

- D for diagnosis
- R for recent changes to the patient's condition
- A for any anticipated changes
- W for what to look out for as the care progresses

B) I PASS THE BATON

- I for introduction to the patient
- P for acquainting yourself with the patient
- A for assessment of the patient

- S for the situation surrounding the patient and their treatment plan
- S for safety concerns for the patient as they receive treatment or for yourself
- B for background information relevant to the patient
- A for actions taken during the care of the patient
- T for the timing of each action
- O for ownership of the decision taken by the nurse
- N for the next course of action

C) ANTICipate

- A for administrative data that will help you make sound decisions
- N for new clinical information that may affect how you discharge your duties or the treatment plan
- T for tasks that you must perform
- I is for illness severity
- C for contingency plans in case things go wrong

D) 5 R's

- R for record
- R for review
- R for a round together
- R for relay the information to the other team members
- R for receive feedback from them

In all the above settings, it is best to have a reporting form or a checklist to work with to ensure your collaborative efforts flow seamlessly from one team member to another. That way, no aspect of care or coordination is overlooked. This checklist system works best in internal collaborative units.

For external collaborators, you have to ensure that everything is right and per set standards before allowing the external team to take over the collaborative effort. For example, all the necessary medical equipment and personnel must be available for ground transfers (short distances),

helicopter transfers (medium to long distances), and fixed-wing aircraft transfers (long distances).

The SBAR technique

The SBAR technique is a format used to hand over the patient from one caregiver to another systematically so that all the critical, relevant medical information regarding the patient is conveyed. In this technique, the following systematic process:

- S for the situation: This is the overview of the current situation and critical issues
- B for background: This is the crucial background information and patient history that highlights the issues that have led to the current health situation.
- A for Assessment: This is the assessment and summary of essential facts about the patient's condition
- R for Recommendation: These are the actions you will execute after dissecting all the information.

Shift reporting is mandatory in a collaborative team. The shift report should include the following critical points

- The acuity level of the patient and the triage category
- The diagnosis should be confirmed or at least be a close potential
- The current status
- The imaging and laboratory status (pending or completed)
- Medication administered or pending
- The monitoring equipment
- The invasive treatment

Collaboration between nurses and patients/family members

Collaboration also goes into the relationship between patients and nurses. Your patients have to become collaborators because one cannot work without the other. You need to ensure that you make your patients part of

your collaborative unit so that they can get the best treatment while feeling that their feelings are respected during the whole process.

During the patient-nurse collaboration, you can strive to find out (where the treatment plan allows, like during the delivery of a baby)

- What do you want?
- Whom do you want around?
- Do you want medication or not?
- How do you want to break this news to your family?
- Whom do you want to participate in certain aspects of your care?

Collaboration between Interdisciplinary teams

Interdisciplinary and intradisciplinary teams are critical to facilitating the best patient care. Communicating in an intradisciplinary and interdisciplinary team requires:

- Open communication is where all members are encouraged to participate and are valued members of a collaborative team.
- Active listening is where you pay attention and ask relevant follow-up questions.
- A space where everyone can be heard, so there is no interruption or finishing of colleagues' sentences (unwanted help).
- Avoid jumping to conclusions that damage relationships and communication.
- Respect other people's ideas and opinions
- Asking others for clarification when you do not understand their statements to avoid misunderstandings
- Avoid giving unsolicited advice to others or forcing your opinions down other people's throats.
- Allowing others to come to you for advice in their own time.
- Dealing with facts and evidence instead of responding to hearsay and gossip.

Leadership Styles to Expect In a Collaborative Unit

The leadership style used during collaboration can make or break the collaboration. Here are some styles you can expect to encounter in collaborative teams.

Autocratic leadership: It is a leadership style that strictly enforces rules and works alone in making decisions. You do not allow input from team members in your collaborative group, and leaving them out of the decision-making process alienates them. While this type of leadership may work in crises where you need quick decisiveness, you likely encounter difficulty getting the support of the team members.

Charismatic leadership: This style relies on your charm, power of persuasion, influence, and communication skills to win over colleagues to do as you require. While you may be very persuasive and engaging, this leadership style may limit your effectiveness because it tends to work best in small collaborative groups. If you have a large group or an entire organization, you may not be able to engage with everyone.

Bureaucratic leadership: This leadership style follows fixed rules and hierarchy. You only follow the rules set by the institution, and you are inflexible to change. You also use your position of fixed authority to expect team members to do as you tell them, by the book. While you may gain the respect of team members for being consistent and rule-oriented, you may not be able to change or improve areas that require it within your team. Bureaucratic leaders are best in administrative roles and managing dangerous work environments like places with disease outbreaks.

Participatory leadership: This leadership style invites all members of the collaborative team to participate in the decision-making process. You present a potential decision based on your analysis and experience but invite other team members to give their input, and the final decision includes said input.

While it is excellent to seek input from everyone and be inclusive, this leadership style may compromise the running of the unit as some of the final decisions may be too broad to accomplish anything substantive.

However, suppose you have experts that can provide exceptional professional insight and ideas. In that case, this is an effective leadership style to help you create policy and streamline the working of your collaborative group.

Consultative leadership: It is a style of leadership that allows every team member to air their views before the leader takes the final decision. It is essential to note that the leader doesn't have to incorporate all the input or ideas of the team members. The final decision lies with the leader, but they listen and consider the ideas and views of the team members. It is the best leadership style when you need the support of the staff.

Democratic leadership: It is a leadership style that requires the input of everyone in the team. It is a great leadership style if you want everyone to feel equal and respected in the group. The team leader makes the final decision, but the team members' input is factored into the final decision. Democratic leadership makes the decision-making process longer, but it ropes in all the stakeholders making everyone feel appreciated in the team.

Free rein leadership: This leadership style is also known as laissez-faire leadership. It is where the leader doesn't exert any control or offer direction. Everyone is free to do as they see fit, as the leader doesn't micromanage everything. This leadership style allows team members to be creative and use the resources at their disposal to reach the common end goal.

Unfortunately, the lack of leadership also translates to poor management of resources, so the team members do not benefit from a stable work environment.

Whatever leadership style you adopt in your collaborative team, remember: Conflict resolution is the responsibility of the team leader. It would help if you found a way for team members to work together and resolve any conflicts that arise for a healthy and happy work environment. Unresolved conflict can compromise patient care and coordination of the treatment plan.

Do not be afraid to implement change that will enhance your team's performance. Without change and evolution, collaborative teams cannot operate at optimum.

Expect resistance to change. Not everyone will embrace new ideas, and that is normal. But with reassurance and listening to team members, you will win over some of them, and the rest will see how practical your ideas are and get on board. Be patient with those that take longer to accept change but move on with purpose and resolve to make the changes work.

Team Members in a Collaborative Health Unit

Case Manager:

A case manager is a registered nurse (RN) in charge of providing healthcare services in the collaborative team. They are given several caseloads (patients) with the same range of diagnoses. Their job as diagnosis expert is to manage and coordinate the services that fulfill the healthcare needs of the group of patients.

As a case manager, your job utilizes clinical information, evidence-based pathways, and other treatment plans to take care of the patient and keep track of their treatment and progress.

Among the roles of the case managers in the collaborative unit are:

- To authorize treatment and treatment plans
- To pre-certify care for the patient
- To negotiate for payment
- To liaise with other case managers where the need arises
- To report patient progress to the relevant stakeholders

The Occupational Therapist

The team requires an occupational therapist to help the patient to get back to complete (or the best possible) functionality and prevent further impairment or injury. They facilitate interventions that help the patient to improve their basic cognitive and motor skills. They also provide patients with strategies that enable them to meet the challenges they experience at home and work.

The occupational therapist may use:

Physical exercises to promote and improve balance, strength, and agility
Cognitive exercises improve and promote thinking, problem-solving, and memory.

These exercises are meant to improve the patient's quality of life and facilitate adaptation to their "new" way of living in private and public. They also help patients learn how to use new tools like wheelchairs, computer programs, or orthotic devices.

The Respiratory Therapist

Another critical member of the collaborative unit is the respiratory therapist. This therapist diagnoses, evaluates, and treats patients with disorders that affect the cardiovascular and respiratory systems. Their role is to administer medication and provide postural drain therapy and bronchopulmonary hygiene.

That allows the therapist to provide essential care for patients on mechanical ventilation and maintain their natural or artificial airways.

Additional responsibilities of the respiratory therapist include:

- Obtaining arterial blood gas samples (as well as other blood samples)
- Assembling respiratory equipment
- Maintaining respiratory equipment
- Teaching patients how to self-administer medication like aerosolized medication

- Teaching patients how to use life support respiratory equipment at home

The Physicians

The physician's role is to diagnose, clarify and treat the patient, which includes performing specialized procedures and medical exams to determine the best treatment plan. They are also involved in decision-making when it comes to significant life-changing or threatening situations involving the patient. Their strong assessment skills are vital for the success of any collaborative team because of their extensive medical expertise and license to practice medicine.

The Social Workers

The social worker is the patient's advocate who ensures that the patient's wishes are respected and coordinates patient care. That involves

- Counseling the patient and their family where necessary
- Arranging home-based care
- Arranging patient placement where applicable
- Offering psychosocial rehabilitation

As we wind up this section on collaboration, remember, it is critical to ensure that when collaborating with any other team where patient referral is necessary, it falls on you to ensure that the patient needs the referral.

Do not refer a patient just because they are difficult. Also, consider the following Rs when referring or delegating duties to another collaborative team or nurse:

Right tasks: delegate the right tasks to other nurses. If a nurse is junior to you or a team is not well-staffed, do not delegate tasks that require planning or intensive coordination.

The right person: delegate tasks or refer patients to the right person by their expertise, skill, and education level.

Right circumstance: delegate tasks or refer patients under the right circumstances. You should not delegate tasks to an already overwhelmed nurse or refer a patient to another unit when they are at capacity with their patient caseload.

Right Supervision: delegate tasks or refer patients under the correct Supervision. As I mentioned earlier, do not just refer a patient because they are complicated, and do not delegate a task just because it is difficult.

Right direction: When you delegate a task or refer a patient, ensure that you give the correct instructions and provide direction to those involved so that you can get the desired result. Also, if you can, share the expected outcomes so that everyone has the same vision as you.

Sample of question to expect:

What type of communication skills are essential to effective nursing collaboration? Select all that apply

- A. Competent public speaking
- B. Written communication
- C. Cracking jokes
- D. Assertive expression of information

Answer: A, B and D. You need to be confident to express yourself in public and have excellent written communication. Also, you must be able to assertively express your honest opinions to your colleagues. This reassures them that you know what you are doing and they can have faith in your treatment plan. You do not need to be good at cracking jokes to collaborate with others.

Test Alert: You may be asked the best communication and handover approach and why you chose it according to your clinical judgement.

Part Three: Patient Rights and Responsibilities

Just like nurses are guided by ethics, their patient's rights should also guide them. It would help if you empowered patients to know their rights and responsibilities so that they can act as their advocates. In cases where the patient cannot stand up for themselves, their family or legal guardian should be next in line to be empowered. Rights should be given to the patient/family in written form or audio/visual form on admission or as soon as the patient is stable in case, it is an emergency.

The rights of the patient:

A patient is entitled to non-discriminatory treatment and medical care that respects their privacy. They are also entitled to be involved in decisions that affect them, and they can refuse care they disagree with.

Patients also have a right to be explained the treatments they are receiving, other available treatment plans and options available to them, and their outcomes. They also have a right to access their medical records, know about transfers, changes in treatment plans, and their billing information.

Example:

A patient is admitted to the hospital and needs a blood transfusion. This patient is a Jehovah's Witness faithful, and according to their faith, it is against God's will to receive blood. The patient refuses a blood transfusion despite knowing that they need it. It is their right to refuse the blood transfusion even if you do not agree with their reasoning or faith. Accepting blood transfusions has, in some cases, caused patients in Jehovah's Witnesses to be expelled from their religious community, and the patient would rather die in the faith than die outside of it.

The Responsibilities of the Patient:

A patient is responsible for giving the healthcare team correct, honest and reliable information about their medical history and health issues. It is also the patient's responsibility to ask for clarification where they do not understand the information provided. They are also expected to raise their objections where they disagree with a treatment plan, but they must remain respectful and cordial to the healthcare unit staff and other patients.

The Importance of Informed Consent

Informed consent is the process in which a patient and their family members/legal guardian are provided with critical information about the diagnosis and treatment plan, including the risks and benefits of the care plan. This information is to help them make the best decision for themselves based on the reality of the situation they are facing.

The patient or their family/legal guardian must provide the hospital with informed consent for all the treatment their loved one will receive. They must read and understand all the procedures and treatments offered and their associated risks. Where they do not understand, they must ask for clarification. According to the American Medical Association, nurses must use the following established guidelines to obtain informed consent from the patient/family or legal guardian.

- Explain the diagnosis
- Explain the nature of the procedure or treatment and why you are recommending it
- Explain the benefits and risks of the procedure or treatment, from reasonable risks to any complications that could increase the chances of morbidity or be life-threatening.
- Explain alternative treatment or procedure regardless of the cost or level of invasiveness
- Explain the risks and benefits of the alternative options
- Explain the risks and benefits of no treatment

Obtaining informed consent from patients or their family members is a legal requirement in all states in the U.S.A. Otherwise, the patient can sue you for denying them this right. However, there are cases where the patient waives their right to informed consent, and in such cases, they must sign a document waiving this right. Also, informed consent is not required if the patient cannot consent to a procedure to save their life or limb.

The Importance of Confidentiality

The nurse-patient relationship is a professional one that is protected by confidentiality, and that means that any information the patient provides concerning their medical condition is safeguarded and protected. Using a password when the family calls with inquiries about their patient helps to safeguard the flow of information and ascertain the caller's authenticity.

Computerizing records also helps as one needs a password to access the information, and paper records should be kept secure with only certain people allowed access to them.

Confidentiality allows patients to trust in your care and be honest about their progress. Even if the patient doesn't want their immediate family members to know about their medical issues, you must keep the information confidential for your patient.

Sample question to expect about patient rights:

Are you obligated to tell a patient about the risks and benefits of no treatment?

- A. Yes**
- B. No**
- C. It depends**

ANSWER: A. Yes.

Part Four: Medical Terminology and Transcription

In the medical field, the words can be technical and lengthy to spell out. So, abbreviations come in handy. Here are standard abbreviations to expect when communicating with members of a patient's care team regarding the patient.

- S&S – signs, and symptoms
- N/V/D – nausea, vomiting, and diarrhea
- C.B.C. – complete blood count
- R.B.C. – Red blood cells
- WBC – white blood cells
- G.I. -gastrointestinal
- H.A. – headache
- U.T.I. – urinary tract infection
- URI -upper respiratory infection
- ESRD -End-stage renal disease
- D.O.E. – Dyspnea on exertion
- C.N.S. – central nervous system
- MI - Myocardial infarction
- U.S. – Ultrasound
- B.M.P. -basic metabolic panel
- M.O.A. -Mechanism of action
- ORIF – open reduction internal fixation
- R.O.M. – Range of motion
- S.O.B.- Shortness of breath
- IDDM – insulin-dependent diabetes mellitus (type 1 diabetes)
- SIDS – Sudden infant death syndrome
- P.E. - Pulmonary embolism
- F.S.H. -stimulating follicle hormone
- ac – before meals (take medication before meals)
- b.i.d – twice daily (take medication twice daily)
- p – after meals (take medication after meals)
- q.i.d – four times a day (take medication four times a day)

- t.i.d – thrice daily (take medication three times a day)
- q.d – daily (take medication daily)
- q2h – every two hours (take medication every two hours)
- q3h – every three hours (take medication every three hours)
- qhs – At bedtime (take medication at bedtime)
- qAM – Each morning (take medication every morning)
- qPM - Each evening (take medication every evening)
- qod - Every other day (take medication every other day)
- A.F.R. -Acute renal failure
- A.D.R. -Adverse drug reaction
- ADH – antidiuretic hormone
- B.L.D. – blood
- B.P. -Blood pressure
- Cap – capsule
- Ca- cancer
- CPAP – continuous positive airway
- CABG – a coronary artery bypass graft
- CC – chief complaint
- Chem panel – chemistry panel, involving comprehensive blood screening to determine the state of the electrolytes, kidney, and liver.
- C.T. – chemotherapy
- C.V.A. -stroke or cerebrovascular accident
- D.C. - discharge from hospital
- D/C -discontinue use of a drug or medication
- D.M. – Diabetes mellitus
- D.N.C. -dilation and curretage
- DVT -deep vein thrombosis
- D.N.R. -Do not resuscitate (an order not to revive the patient artificially if they succumb to the disease)
- F.X.- fracture
- GOMER – Slang for "Get Out of My Emergency Room"
- Gtt – drops
- P.D.- progressive disease
- H.T.N. – hypertension
- I.C.U. – intensive care unit
- I&D - incision and drainage

- P.T.- physical therapy
- I.M. – intramuscular
- I.T.U. – intensive therapy unit
- In vivo – in body
- In vitro – in the laboratory
- LBP – lower back pain
- NCP -nursing care plan
- N.P.O. – nothing by mouth
- O.S. – left eye
- O.D. - Right eye
- O.U. – Both eyes
- P- pulse
- R.O.S.- review of systems
- Tab – tablet
- T – temperature
- u/a or U.A. – urinalysis
- ut dict – as directed
- V.S.S. – vital signs stable
- Wt- weight
- X.R.T. – radiotherapy

According to the National Patient Safety Goals, all telephone and verbal orders must be written down by the nurse receiving the orders, read back to the person giving the orders, and confirmed once again before being carried out. However, such orders should be written down by the physician instead of being given verbally.

Application of HIPAA to Nursing Practice

HIPAA is the Health Insurance Portability and Accountability Act. This act, together with state laws, determines who may receive medical information regarding a patient and how permission to access this information is to be obtained. They also determine how the information is shared while protecting patients' rights regarding their personal information. In all ways, HIPAA strives to protect patients' personal and private healthcare information. So it stipulates that a patient must sign a release

form allowing sharing their healthcare-related information.

Penalties for violating HIPAA laws are governed by the state attorney general's office and the Department of Health and Human Services' Office for Civil Rights.

You can apply HIPPA to nursing practice by adhering to the following requirements.

Read and follow, to the letter, your facility's policy on the transfer of patient data.

Always ensure that any audio or visual communication with a patient is in a private place to avoid sensitive information from being overheard by those who should not have access to this information.

Patient care information should not be posted by the bedside where unauthorized personnel can see it. Instead, it should be in a protected area or the patient's care plan.

Information should not be given to anyone else, including family members and visitors, unless you confirm that they have a right to the information. Access to health care information should only be made available to team members directly involved in the patient's treatment and care.

All computers and devices containing the patient's information must be password protected and feature other safeguards to prevent easy access to sensitive information.

No family members should be relied upon to interpret medical information for the patient. Always have a professional interpreter present, and the information shared must remain confidential, and that is to protect the patient's privacy.

Nurses should not leave patients voicemails containing sensitive and protected healthcare information. Instead, ask the patient to call back.

Application of OSHA to nursing practice

OSHA is the Occupational Safety and Health Act; on the other hand, it keeps nurses and other health workers safe at their workplaces. This act

mandates employers to ensure that they maintain a safe work environment and their workers have access to personal protective gear that protects them from hazardous materials.

Also, it mandates that employers make their workers fully aware of the potential hazards they will encounter in their workplace. Sharing this information helps to keep injury and illness to a minimum.

OSHA rules apply to

- Healthcare employees handling biological and chemical agents
- Healthcare employees exposed to radiation when caring for patients
- Healthcare employees use regular cleaning procedures and decontamination
- Healthcare employees handling hazardous waste material disposal
- These rules apply to everyday hospital operations and in disaster situations as well.

Application of OBRA 1990 in nursing practice

OBRA stands for Omnibus Budget Reconciliation Act of 1990, and it includes an amendment known as the PSDA (Patient Self-Determination Act).

This amendment requires health institutions to provide patients with written information concerning advance healthcare directives (wills, health care proxy, or power of attorney) and the right to reject or accept surgical or medical treatment. The medical facility must educate and be sensitive to its healthcare staff on the rights of all patients so that they can respect the patient's wishes and stay on the right side of the law.

Application of EMTALA in Nursing practice

EMTALA stands for the Emergency Medical Treatment and Active Labor Act which prevents the dumping of patients from emergency departments. It is a federal law that requires medical facilities to stabilize and treat

anyone coming into their emergency departments, regardless of the person's ability to pay or insurance status. It was enacted in 1986 to ensure everyone had access to emergency services, whether they had the money to pay for it or not.

Unfortunately, this mandate remains a bone of contention in the medical field because of staff training for compliance and risk management issues. EMTALA requires that:

- ❖ All transfers from the emergency department must be to another facility or intrahospital.
- ❖ A patient with emergency conditions or active labor must be stabilized in the emergency department before any transfer.
- ❖ Initial screening must be given to the patient before asking for their insurance status or ability to pay.
- ❖ The receiving emergency department must be capable of treating the patient and dealing with any complications that may occur during treatment.
- ❖ Women experiencing active labor in the emergency department must deliver the child and placenta before they are transferred.
- ❖ Stabilization of the patient requires a reasonable belief that their emergency condition, although it may not be wholly resolved, will not deteriorate further during the transfer process.
- ❖ Transfer to another facility is required if the patient needs specialized services unavailable within the receiving hospital.

Application of C.M.S. in Nursing Practice:

The Center for Medicare and Medicaid (C.M.S.) is part of the U.S. Department of Health and Human Services department. Its work is to ensure that healthcare regulations are observed in healthcare institutions that receive federal reimbursement. That means they reimburse funds to healthcare facilities that provide care to recipients of the state's Child Health Insurance Program (CHIP), Medicaid, and Medicare.

C.M.S. examines all the documentation regarding the care given to ensure it is in line with their regulations related to the quality of patient care. The healthcare facility must provide guidelines that enable nursing staff to meet the specific documentation required by C.M.S.

Part Five: Nursing Care Planning for Patients

There are three primary considerations to focus on when planning nursing care for a patient. They are:

- Critical needs
- Desirable outcomes
- End goals

The critical needs of patients are stabilization, diagnosis, a treatment plan, and medication administration.

Desirable outcomes are the defined outcomes you would like to see once the diagnosis is prioritized. The desired outcome indicates that the nursing care has met its set objectives.

End goals are the yardsticks by which you measure the patient's progress and efficacy of the treatment plan.

There are short-term, medium-term, and long-term goals, all of which require evaluation and monitoring to prevent complications.

Implementation of the Nursing Care Plan

The nursing plan is implemented immediately when a patient is stabilized. During stabilization, there is no nursing care plan as the priority, and the immediate concern is to move the patient from the life-threatening situation they are in.

So, the nurse uses standard nursing practice and logarithms that are set in place to eliminate the threat to life and stabilize the patient.

After stabilization and monitoring, the nursing team can now prepare a nursing care plan to maintain the positive progress of the patient and

improve their condition. Guidelines for a patient's individualized nursing plan include:

- Planning nursing interventions that must be implemented to meet the patient's needs
- Delegating and coordinating care given to the patient by other nurses
- Noting and reporting additional patient information, changes in their condition, patient priorities, and other needs that modify the care plan.
- Checking the lab tests and results to determine further action in the care plan.
- Get patient input and response to the interventions in place and implement the input as the care progresses.

Psychosocial Issues that Affect the Nursing Care Planning

Psychological state

The patient's psychological status must be evaluated at all times because this is a leading hindrance to most nursing care planning. You may have the best nursing care plan, but if the patient is not ready to accept their diagnosis, they will most likely resist the care, which is detrimental to their health.

Cultural factors

Cultural factors also may pose a hindrance to an excellent nursing care plan. Some cultures do not allow patients to seek medical attention or for certain genders to be cared for by members of the opposite sex. In cases where specialized treatment is required, and cultural hindrances occur, it becomes difficult to implement even the best nursing care planning.

Social factors

Social factors can also play a role in enhancing or hindering nursing care plans. For example, someone who needs surgery that may leave a scar but

works as a model, and the scar may be visible, may reject a nursing care plan because of how it may affect their social status.

Care Planning Using Clinical Pathways:

Clinical pathways are the written tools that nurses use to direct the treatment of their patients according to the diagnosis. They standardize the care plan along the lines of evidence-based practices while promoting cost-effectiveness, timeliness, and quality assurance. Clinical pathways outline:

- The group it is supposed to address
- Time frames for specific results
- Desired outcomes for each segment of care

The nurse charts the patient's progress according to the pathway and accordingly changes and modifies the pathway to accommodate the issues the patient(s) are presenting.

You can use the following resources to create a professional nursing care plan. These helps create nursing care planning that works long-term.

NANDA -The North American Nursing Diagnosis Association

This resource usually compiles a list of the most commonly utilized nursing care plans and refines them. You can use one of them and tweak it to adapt to your patient's care. The NANDA list is updated twice a year and is an excellent resource for planning nursing care.

N.I.C. – The Nursing Interventions Classification

This resource contains interventions that can be individualized for every patient, and you can tweak it to accommodate your particular nursing needs.

N.O.C. - The Nursing-sensitive Outcomes Classification

This resource offers a comprehensive list of nursing outcomes for specific needs. Each outcome will help you evaluate your patient's progress according to the associated scale of achievement.

The Taxonomy of Nursing Practice classifies patient issues into four main categories:

Environmental: This domain is concerned with the health of entire populations, the public, and individuals concerning their environment.

Physiological: The physiological domain focuses on the body's needs for the proper functioning of the respiratory, cardiovascular, neurological, immune, gastrointestinal, integumentary, metabolic, and musculoskeletal systems. It also focuses on the medication given and how it affects the systems mentioned above.

Functional: The functional domain classifies a patient's relief from symptoms, nutrition, movement, sleep, sexuality, and development.

Psychosocial: The psychosocial domain focuses on the patient's emotional well-being and how to cope with their self-esteem and image. It also pays attention to the patient's mental health and how they view their social status.

Part Six: Research and Nursing

As a nurse, you must understand the concept of critical analysis and also be able to conduct a survey using the correct sample size and sample selection, valid resources, and critical reading. You need critical reading to be able to evaluate the research. Critical reading requires the following:

Consider the source of the research. Do not rely heavily on material from the popular press because it may be biased or published for shock effects. Instead, opt for information published in a peer review or a credible medical journal.

Verifying the writer's credentials. The writer should be an expert in their field with relevant experience, expertise, knowledge, and education to offer credibility to the research material.

Determination of the thesis. The thesis is the central claim of the research, which must be clear and backed by evidence. During the determination of the thesis, you must review the evidence provided to see if it is factual or a matter of the writer's personal opinion.

Finally, evaluate the research to determine if its overall argument is authentic, ethical, and medically correct.

In nursing, research can be carried out in the following formats:

Case-control studies: - This is where you use pre-existing medical cases to determine cause and effect. During the analysis of the cases, you do not need to have an order of interest. This research format is excellent for studying rare diseases.

Cohort studies: - This type of research format follows a specific population for some time, studying them to connect to a specific disease. For example, you can follow a group of people exposed to contaminated water to study the link between the water and certain diseases.

Cross-sectional studies: - This research format uses a cross-section of data from the public to analyze specific variables during a given period. It helps to deduce correlating characteristics in specific diseases or disorders.

Random-controlled studies: - This research format is the gold standard for nursing research. There are two groups: one assigned to a control group and the other to the experimental group. While it is more challenging to execute this type of study because of the expense involved and the complexity of its design, the results are more accurate because they can be well controlled.

You can use either qualitative or quantitative data to carry out nursing research. Qualitative data are presented in verbal terms or graphically, and the results are subjective and require observers to provide the information. Interviews are typically used to collect qualitative data.

On the other hand, quantitative data is presented numerically in a statistical format. Surveys and questionnaires are some of the tools used to collect this type of data, and they are usually utilized in the later stages of the research process.

Part Seven: Evidence-Based Practice in Nursing

This nursing practice bases all the treatments a nurse implements on the best possible evidence that they work. That means you look at literature supporting the treatment and clinical research and studies supporting it. The evidence-based information is used to create multi-departmental protocols, treatments, timelines, and advice on the best medication to utilize. Evidence-based nursing is critical in improving nursing care because it determines the reasons behind all nursing practices and their positive outcomes.

Levels of evidence that determine evidence-based Interventions

Category 1A: This is well-supported evidence from a clinical, experimental, or epidemiologic study or research. Due to the strength of the study or research, this intervention is strongly recommended.

Category 1B: This level of evidence has supporting facts from some credible studies and a solid theoretical basis. This intervention is also strongly recommended.

Category 1C: this evidence-based intervention is required by federal and state laws, or it is an industry-standard, which makes it credible and trusted.

Category II: This evidence-based intervention is supported by suggestive epidemiologic studies or clinical research, and due to its theoretical basis, it is suggested for implementation.

Category III: This evidence-based intervention is supported by comparisons, correlations, and similar descriptive studies like case studies. While it may be helpful, it cannot be recommended for implementation.

Category IV: This evidence-based intervention is derived only from an industry expert's opinion or the authorities.

In some cases, there is no evidence to support claims, so such an intervention cannot be recommended for a lack of consensus and evidence.

Part Eight: Nursing's Role in Risk Assessment and Quality Assurance

The role of the nurse in quality assurance:

- Identifying situations that need improvement
- Identifying the items that require improvement
- Collecting data to support their argument
- Analyzing the data to find specific things that can be used to implement the required changes
- Share your recommendations with the relevant authorities
- Implement the changes after administrative approval
- Finally, collect data to measure whether your recommendations have worked or not.

The role of the nurse in risk management:

The nurse's role in risk management is to minimize the chances of legal liability and prevent harm by identifying the patient's risk factors. That means that all the treatments and interventions you consider must always be examined for their potential risk to the patient. There is a lot a nurse can do to prevent mistakes that may put their patients, colleagues, and other medical stakeholders at risk.

When a mistake occurs, the actions to remedy the situation must be undertaken fast, and the attending physician should be notified according to the facility's policy.

Legal issues to look out for in the nursing sector

Nursing malpractice

This is the implementation of unethical actions or lack of proper action by a nurse as they carry out their duties. Malpractice may be due to a lack of

proper skills to carry out the scope of work required.

Negligence

This is the failure to act in the patient's best interests even when you have the correct and relevant information to implement helpful interventions. When you fail to act as any other diligent nurse would have acted in a similar situation, you are considered negligent.

Unintentional tort

Negligence can lead to unintentional tort, which is an unintended accident. But the patient is required to prove that an accident occurred because of the nurse's neglect to administer their duties.

Intentional tort

This is the nurse's breach of duty regardless of knowing the assumed duty they have to their patient. Their breach of duty could be through slander, assault, invasion of privacy, or false imprisonment of the patient that results in the patient's injury or harm.

Part Nine: Health Care Delivery and Policy

Health policy is the effort to improve the industry and implement positive change that will improve and promote nursing care. On the other hand, health delivery is the actual implementation of favorable policies that improve the health care provided to the public.

The delivery of nursing care is typically affected by

Social factors: this is the increasing public demand for better nursing practices and actions to maintain the best public health.

Political factors: This is the intervention of government at the state and federal levels to improve or implement various guidelines and limitations that promote better healthcare nationally.

Economic factors: This is the consideration of cost implications to every nursing decision and how that plays into better service delivery. The stakeholders that govern the economic factors affecting the delivery of nursing care include insurance companies, cost-containment committees, government bodies, and even the healthcare institutions themselves, which determine who can and can't access certain procedures and why.

Regulatory factors: These are the local, state, and federal laws that determine what type of service delivery patients can access from one state to another.

When it comes to the delivery of nursing care, the Nursing Agenda for Health Care Reform helps to develop the health care agenda. This agenda fundamentally requires vital medical attention to be available to everyone and also for the industry to maintain an organized health care system to make it easier for nurses to provide the best care delivery. This expectation organization cuts across the board to both private and public sectors so that there is standardized access to treatment and the quality of care is similar (or close).

Part Ten: Billing Concepts

Medicare:

Medicare is a federal-directed program meant to provide health care to elderly citizens of the United States, younger people with disabilities, and some people with end-stage renal disease (ESRD). This program covers the doctor, hospital, and other medical attention that the patient needs. The best part is that the patient's earnings are not considered when it comes to eligibility for the program.

Original Medicare consists of parts A, B, and D, covering most medical care when the patient seeks medical attention at a facility that accepts Medicare.

Medicare part A covers the patient's inpatient hospital stays, hospice care, care in a skilled nursing facility, and some aspects of home-based health care.

Medicare part B covers some of the patient's doctor's services, medical supplies, outpatient care, and preventive services.

Medicare part D covers some of the cost of prescription drugs, depending on the patient's needs. This part of Medicare covers many of the recommended vaccines and shots. However, to access Medicare drug coverage, you must enroll in the Medicare-approved plan offering drug coverage.

How much you pay for drugs depends on which Medicare plan you choose.

While most people don't pay a premium for part A, you can buy it if you don't qualify for part A. However, everyone must pay a premium for part B.

Medicare Advantage is the private plan of Medicare, and it is offered by a private company that provides financial help for health and drug coverage. With Medicare Advantage, you may have extra coverage that you may otherwise not have with the Original Medicare, like vision, dental and hearing coverage. However, Medicare Advantage plans must follow Medicare rules.

Medicaid:

This is a federal-directed program that helps low-income members of the public to access quality health care. The funding for this program comes directly from the state and federal taxes, but each state can add optional eligibility and put restrictions on federally funded aid.

Unfortunately, even though the government requires that all states support specific individuals in the community who are unable to meet their medical bills, this program doesn't allow everyone that falls below the federal poverty line. The following groups are the mandatory eligibility groups:

- Patients that already receive financial support from their state are deemed categorically needy by the state.
- Elderly patients over 65 years old and with a complete disabilities like blindness.
- People that receive federal Supplemental Security Income (SSI).
- Adults under the age of 65 years making equal to or less than 133% of the federal poverty line and are not on Medicare.
- Children younger than six years old and pregnant women that live in families are up to 133% of the federal poverty line. Some states allow people with a higher income into this criteria.

These are the two federal government-funded medical programs that aim to ensure that every member of the public can access quality health care regardless of their status in life.

Third-Party Compensations

Medicare and Medicaid have reimbursement agreements with the facilities that they partner with. But also, some private third parties can give compensation depending on the patient's illness.

Private insurance will reimburse according to the contract and the state's insurance commission. TRICARE will reimburse members of the armed forces, retirees, their families, and dependents. Finally, the Federal Employees Health Benefits Program (FEHBP) compensates federal and non-military employees and their families.

How Does Billing Occur in the Office Setting

There are several billing classifications and codes that nurses use to quantify the patient's treatment financially.

ICD-10-CM

This is known as the International Classification of Diseases, 10th revision, Clinical Modification, and is the coding system used in various diagnoses. Using this coding system ensures that the codes match the correct diagnosis. All the codes contain at least three characters, but some may have additional subcategories. A decimal point is placed after the first three characters. The first character in the code must be alpha, while the second and third are numeric, and the remaining characters can be either numeric or alpha.

With this coding system, injuries are not grouped by the injury category but by the body part where the injury occurred.

CPT Level I Codes

These are known as Current Procedural Terminology codes, used to describe medical and surgical procedures, treatments, and diagnoses. The codes are specific to the procedures and the typical times the treatment is required. These codes are revised and updated once a year in October, and they are mandatory, according to HIPAA and CMS, to help provide uniform language across the medical field.

Under CPT Level I codes:

- Category I codes identify the service or procedure
- Category II codes identify the diagnostic procedures and performance measures
- Category II codes identify the temporary codes used in data collection and other briefly used technology

HCPCS Level II Codes

These are known as Healthcare Common Procedure Coding System codes. They are typically used when filing claims for equipment used in the

provision of treatment but are not covered in the CPT level I codes. Such services and equipment include non-physician products like

- Ambulance services
- Laboratory services
- Prosthetics
- Orthotics

These codes are also used in outpatient care and Medicaid. You can expect the following codes in this category:

- D codes for dental procedures
- L codes for prosthetic and orthotic devices and procedures like orthopedic shoes
- E codes for long-lasting medical equipment like bedside commodes
- P codes for laboratory and pathology services

And while this last one may not be a billing code; it is an essential grouping that allows nurses to find it easier to bill their patients correctly. The Diagnostic-related group (DRGs) classifies patients with similar diseases and billing needs together so that there is no discrepancy in the way one patient is billed vis a vis another.

There are roughly 500 DRGs, and they help nurses know what to bill for every procedure using the International Classification of Disease codes. BY using DRGs, Medicare and others can correctly determine what to reimburse the hospitals for patient care.

Types of Next Generation NCLEX-RN Test Questions to Expect in this Exam

In this section the test will use extended drag and drop questions, extended multiple response questions and matrix questions to test your clinical judgment in applying the subject material.

Extended drag and drop questions offer you instructions on how to answer them. The question may instruct you to choose only certain answers or to arrange the answers in a specific order.

The extended multiple response questions require you to choose multiple correct answers from the choices offered to you.

And the matrix questions offer you multiple choices and there is only one correct answer to choose.

A patient suffering from varicella requires assistance in taking a shower. Because of the contagious nature of the virus, you must wear personal protective clothing to avoid contracting chicken pox. Write down the correct sequence of donning the personal protective clothing before entering the room.

Wear the gloves

Wear the mask

Wear the gown

Clinical judgment requires you to analyze the situation before you begin anything. Varicella is an airborne disease, so what are the essential PPE items you will need? The most critical PPE items are the N95 respirator mask, gloves, and gown.

Next, ask yourself what you need to wear first. After performing hand hygiene which you always do before and after any contact with a patient, remind yourself why you need the PPE because the disease is airborne. So do you need to wear your gloves first or your mask? Correct, the mask goes on before the gloves.

But what about the gown? Does it go on before or after the mask? Remember, the gown needs to go over your head, and the process of wearing it may interfere with the placement of your mask if you already have it in place.

So, you should wear the gown first, then wear the mask. Do not forget to perform a seal check and ensure it sits correctly on your face. Next, wear your gloves, and you are ready to go in and help the patient.

THE ANSWER:

Wear the gown

Wear the mask

Wear the gloves

2. A nurse is attending to a patient exposed to radioactive materials. In the table below, click the appropriate, inappropriate, and not applicable intervention that applies when providing nursing care for this patient.

Action to be taken after assessment	Not applicable	appropriate	inappropriate
Put on a lead apron when around the patient	X		
Assign the patient a private room		X	
Allow the patient to have unlimited visitors			X
Remove the scrubs used while caring for the patient		X	
Keep the patient's room open to allow in fresh air			X

Using your clinical judgment to answer the above extended multiple response questions, you have to go through each action to be taken and figure out if it is appropriate, inappropriate, or just not applicable.

Answer

Do you need to put on a lead apron when caring for the patient? A lead apron is typically used as a protective garment to prevent unnecessary exposure to diagnostic radiology procedures.

They may be unnecessary when treating a patient exposed to radioactive material because they do not have you are not at risk of being exposed to radioactive material. So a lead apron is not applicable when caring for this patient.

Should you assign the patient a private room? Yes, exposing them to other patients with different ailments may pose a health risk to the other patients.

Should you allow unlimited patient visitors? Children, pregnant women, and older adults should not be around the patient. Also, visitors must remain six feet away from the patient and not stay for more than two hours visiting time.

Should you remove the scrubs, you use after attending to the patient? Yes, and once you have removed the scrubs, place them in the provided radioactive waste box or linen bag and save them until the relevant hospital department releases them. Also, only essential cleaning should be done, and housekeeping may not enter the room unaccompanied.

Should you keep the patient's room open to allow for fresh air? No. The room should be out of bounds and properly sealed. Only release the room to housekeeping once the relevant authorities have removed the radiation caution signs.

Chapter Three: Safety and Infection Control Study Block

Patient Safety and Injury Prevention in the Hospital

All patients must be safe from harm and injury while in the hospital. The Joint Commission has guidelines and goals that impact the safety of patients in each type of healthcare facility. In the hospital, the Commission expects the following rules to be followed and adhered to:

- The medical facility must have effective ways to identify its patients without errors.
- There must be a medical system that prevents medication errors from occurring.
- All caregivers must ensure that they give accurate information and communicate clearly with their patients about their care to avoid mistakes.
- All medications must be reconciled before the patient is discharged to other caregivers or moved from one department to another in the same hospital.
- All facilities must have a fall prevention program that is consistently evaluated for its effectiveness.
- Medical facilities must minimize the risk of infection within the facility to reduce the risk of patients getting hospital-related infections.

To help achieve the above, the Commission encourages patients and their families to be active in their treatment plans to avoid errors. If they feel something concerns them regarding their safety or well-being, they must speak out so that their concerns can be acted upon.

Critical Aspects of Patient Safety in the Hospital

Prevent falls

The hospital must be organized without clutter on the floors, hallways, or patient rooms. Electrical cords must be secured away from areas with high foot traffic, and all electronic devices must be inspected to ensure that they are functioning correctly. Where necessary, patients with walking difficulty must be given devices to help them with movement, like walkers.

Assign Rooms Correctly

Hospitals must ensure that patients are assigned rooms correctly. Patients with highly contagious airborne diseases should not be put next to a pediatric ward or the ICU. Also, patients needing constant supervision must be allocated rooms near the nurse station because they need to be within sight of the nurses at all times. Nurses must be able to see their patients who are under critical care from their nursing station.

Patient Education

Patients should be informed about how to signal nurses when in need. There is a call light next to each patient's bed, which signals a nurse to come to the patient's aid. The position of the call light is easy to reach for the patients and is also easy to use. In some cases, the patient may be provided with a handheld bell as an alternative means of signaling the nurse. For patients unable to use any of the signaling facilities provided, the nurse should check in on their progress at least every hour.

Patient Conditions that May Impact Safety in Hospital

Hearing loss

Patients with hearing impairment may not hear critical signals like fire alarms, fire trucks or police sirens, smoke detectors, or tornado warning sirens. As a result, they may not be aware that they are in danger. Unfortunately, the high frequency of smoke detectors and other warning

signals may go unnoticed by patients with high-frequency hearing impairment.

Visual Impairment

Visual impairment puts patients at risk of many injuries, including falls, trips, burns, and poisoning. Without the ability to see their way around their environment, they are vulnerable to even the most basic hazards in their way.

Sensory loss

Patients that have lost their perceptual senses may not be able to move about with ease, and they have lost their ability to control their movements, placing them in danger as they move around. For example, a person with a stroke on one side may not be able to move that side effectively, making them prone to one-sided accidents.

Nursing Errors that Compromise Patient Safety

Nurses can sometimes be why patients are not safe in the hospital environment. According to research and studies, nursing errors in administering doses of medication results in errors occurring in 1 in 5 doses of medication given to patients in hospitals. The following nursing errors contribute to the lack of patient safety in the hospital.

The use of error-prone abbreviations or symbols

The joint committee has a list of abbreviations approved to be used in hospital settings. These are error-free and approved for use because they are understood by everyone caring for patients. However, to be on the safe side, it is even better to avoid using abbreviations altogether because they can confuse some people. Symbols should be avoided completely.

Unclear handwriting

As earlier mentioned, written instructions are preferred to verbal ones in the medical industry to avoid misunderstandings. However, when writing anything related to patient care, it is critical to ensure that your handwriting is eligible and clear. Instead of writing in shorthand that only you understand (even if they are your notes to yourself while on duty), it is best to write everything in capital letters to reduce any chances of confusion or error when reading your notes.

Using verbal orders only

While there is nothing wrong with verbal orders, the likelihood of errors in remembering them is very high, and that could cost a patient's life. If you must take verbal orders, like when you are out in the field and have no place to write, ensure that you repeat the orders back to the physician even thrice if you have to and let them confirm that you are repeating the right thing.

Ignoring hospital protocols

Reputable medical facilities have an established institutional policy used to administer medication. These protocols ensure the verification of the drugs, the correct dosage, and the correct patient to receive the medication. Also, they require using scanners and barcodes to scan the patient's medication for verification to ensure they receive the correct medicine. When nurses ignore these protocols and take shortcuts to complete their work faster, errors are likely to occur.

Allergies and Hospital Safety



Patients coming to the hospital to receive medical services may have specific allergies that, if not monitored, may make them vulnerable to life-threatening situations. So, when a patient comes into the hospital, it is essential to ask them about any known allergies and what treatments they typically use to manage the symptoms.

Some of the allergies that occur in the hospital setting include

Medication allergies: This type of allergy occurs when your body's immune system reacts abnormally to a drug. The most common symptoms of this type of allergy are hives, fever, and a rash. However, if the reaction is adverse, it can cause vital organs in the body to fail.

Food allergies: Patients who have to stay in the hospital may consume hospital-provided food that could cause an allergic reaction. To avoid food allergies, most hospital food is bland and features basic ingredients like chicken breast, peas, potatoes, carrots, etc.

Latex allergy: Some people are allergic to latex which is found on the gloves used to handle patients and medical supplies. A latex allergy can cause a rash and itching in mild cases and an anaphylactic shock in more severe cases. Some conditions cause patients to be more sensitive to latex, including Spina bifida or if a patient has had multiple surgeries. Fortunately, there are non-latex gloves available to handle patients with latex allergies.

Environmental allergy: Something in the hospital environment may be causing an allergic reaction in the patient. That could be pollen from the flowers outside or dust mites, mildew/mold, nearby animals, cigarette smoke, or pests like cockroaches. Ask your patient if they are allergic to any of these and more environmental causes and take corrective measures to ensure the triggers are eliminated. As a nurse, ensure that you do not use strong perfume or cologne because some patients are allergic to them. Some of these internal codes of conduct are regulated by the hospital's code of conduct.

Safety Precautions in Cases of Seizures

Seizure disorders can be categorized as partial or generalized.

Partial seizures

Partial seizures begin locally, and they can feature impaired consciousness or not. Simple partial seizure affects sensory, motor, and autonomous symptoms, but the patient will not suffer from impaired consciousness. On the other hand, there are complex partial seizures that go hand in hand with impaired consciousness, and they feature psycho-sensory, cognitive, psychomotor, and affective symptoms. Complex partial seizures can sometimes be categorized as partially secondarily generalized seizures.

Generalized seizures

Generalized seizures are symmetrical and bilateral, and they may cause convulsions or not. Generalized seizures fall under the following classifications:

- Tonic
- Clonic
- Tonic-clonic
- Atonic
- Petit mal (absence)
- Myoclonic
- Unclassified

As a precaution, seizure protocol is a standard in medical facilities to ensure that those patients are safe despite the vulnerable state that seizures place them in. Such precautions include:

- Padding the bed's side rails
- Lowering the bed to its lowest setting
- Preparing supportive care during the seizure
- Ensuring patients at high risk of recurring seizures have adequate privacy in case they experience a seizure
- Maintaining suctioning at the patient's bedside

In case of a seizure, ensure that the patient is gently eased onto the floor and there is adequate padding for their head. If the patient experiences a seizure while in bed, raise the side railings and remove the pillow from under their head. Once the patient is lying on their back, place them on one side and flex their head so that their tongue is not blocking the airway. Do not restrain the patient or use a padded tongue blade in their mouth.

Fire Safety for Patients

The acronym R.A.C.E is used in the hospital unit for fire safety. It stands for:

- Rescue – remove all the patients from the affected area and other dangerous areas
- Activate – Activate the alarm to alert other people in the hospital of the fire and then call 9-1-1

- Confine – If you can, confine the fire to the affected area only. That means closing doors so that the fire doesn't spread.
- Extinguish or evacuate – where possible, extinguish the fire using the available fire extinguisher. Pull the nozzle, aim at the base of the fire, squeeze the trigger and use a sweeping motion from left to right to put out the fire. If you cannot extinguish the fire, evacuate the building entirely.

There are five core strategies to help you establish and maintain fire safety in health facilities.

A. Monitor your kitchens

The kitchen is the number one place to expect a fire to start because it is equipped with all the cooking equipment. In 2009, a study by FEMA (the Federal Emergency Management Agency) found that the peak time for fires in hospitals was during meal prep times in the hospital kitchens which were 8 am and 4 pm. However, such fires rarely left the kitchen, with most being contained to the problematic appliance that started the fire.

According to OSHA (the Occupational Safety and Health Administration), hospital kitchens can follow the following guidelines to prevent such fires:

- Regularly empty grease traps on appliances to eliminate the chances of grease fires occurring
- Always check all electrical cords on kitchen appliances for tears or fraying
- Do not store any flammable liquids, gases, oils, or other such items near the cooking equipment or source of a potential fire.
- Always keep portable fire extinguishers in accessible places in the kitchen and ensure that every staff member working in the kitchen knows how to use them.
- Regularly clean the grill ducts to remove anything that may fall through the grill gaps.
- Ensure the staff in the hospital are well aware of the hospital safety plan and protocol. This will enable employees to act fast and calmly if a fire occurs to avoid spreading to other areas of the hospital.

B. Avoid Smoking

Smoking in a health facility is not a good idea. These facilities have oxygen tanks, and any fire that comes into contact with the oxygen will have enough fuel to spread exponentially. Patients who smoke or those with family members should be advised against the habit within the hospital premises. Many people hide in the bathrooms and others step out onto the balcony, but no matter where it is, as long as it is on the hospital premises, it should be discouraged.

Instead, encourage smokers (staff and visitors) to step outside the hospital where there is no danger of igniting oxygen machines. And ensure that the smokers have deep, non-tip ashtrays, so that cigarette butts do not ignite the outdoor oxygen-rich air.

C. Check the Electrical Wiring and Outlets

A single appliance in the room with poor wiring or plugged into a faulty outlet can cause a massive fire. So, ensure the hospital's team of electricians performs routine checks on all the appliances, outlets, and wiring. If a fault is reported, only professional electricians should be allowed to attend to it. FEMA found that many unconfined fires in the hospital result from overloaded outlets that ignite the insulation surrounding the electrical wiring.

The fire departments recommend using extension cords where possible in a healthcare facility and always ensure that cords in use are in good condition. And never run a cord through the hallways, doors, walls, or windows or run them under a carpet or rug on the wall.

Use a checklist to ascertain that:

- The cords are not broken or split
- The outlets do not have wiring sticking out
- No sparks are coming from the outlets
- None of the outlets are overloaded
- The cords are not laid in areas where they could be stepped on

D. Have a Designated Fire Safety Officer

Ensure the facility has a designated fire safety officer that can perform routine inspections and ensure everything is working as it should. This fire

safety officer should be from the electrical and maintenance team, preferably the head of the department or supervisor.

The designated fire safety officer should conduct regular inspections of fire equipment and training for the hospital staff to help them know what to do in case of a fire.

In my younger years, before I joined the nursing profession, I worked briefly in the hotel industry in Dubai, the United Arab Emirates. I vividly remember the chief engineer of the property I worked at would regularly conduct fire training sessions or randomly ask a member of staff where the designated fire convergence area was on the premises in case of a fire or what to do when there is a fire. His dedication to ensuring we all knew what to do in case of fire helped me to become serious about fire safety at all the facilities I have worked at. It is among the first things I learn about any medical institution I join.

Finally, the designated fire safety officer should visually inspect the fire extinguishers to ensure:

- No fire extinguisher has damage on its outside
- The pressure gauge readings are proper
- No safety seals are broken or missing
- The instructions on the extinguisher are clear and eligible
- The nozzles of the extinguishers are not clogged, corroded, or leaking
- The extinguishers are full

If any of the extinguishers fail these visual tests (which should be carried out monthly), they should be immediately replaced. After that, a certified inspector should perform in-depth maintenance of the extinguisher and make recommendations.

E. Always Have An Action Plan

An action plan is mandatory in the hospital setting to ensure safe and quick evacuation and action in case of a fire. It not only makes things move faster as everyone knows what to do, but it also keeps patients calm, and you can locate all the patients in time. While the establishment of the action plan is the responsibility of the management of the facility or institution,

implementation of the plan should be carried out by the nurse and other medical staff on site.

Safety and Injury Prevention For the Nurse

Nurses tend to sustain musculoskeletal injuries in this profession. But with correct ergonomics, they can prevent some of these injuries at the workplace. Using these three essential ergonomic principles, nurses can prevent common injuries:

Use Body Mechanics

When you keep your body in the correct alignment, you have used body mechanics to prevent injuries. For example, when bending to pick up a box, instead of bending at the waist and putting a strain on your back, consider bending your knees to 90 degrees to pick up the box and then straightening slowly with the box held frontally on your midriff; your back straight and your elbows tucked to your side. Bending like this allows you to use the larger muscles, like the thighs and buttocks in your lower body, your core in the middle, and the shoulders in your upper body, instead of smaller muscles like the waist and arm muscles. Using larger muscles prevents injury as the weight of what you are lifting is evenly distributed across a large surface area.

Avoid Manual Lifting

Manual lifting should be avoided at all costs because of the unnecessary strain it places on your body. Instead, use the appropriate transfer devices or get help and carry the load with as many people as possible. And when you carry small loads, do not twist or bend when lifting. Once again, bend your knees to pick up the load, keep the weight close while tightening your core.

Avoid Repetition

Avoid stressors that compromise your joints and body alignment. Repetitive movements can be stressors. For example, if you need to listen to a device with loud noises repetitively, put on ear plugs to protect your ears. Alternatively, schedule the use of that device once a day.

Top Ten Tips for Nursing Safety at the Workplace

Tip #1: Needle Safety

Be aware of dirty and used needles. In nursing, a prick from a used syringe is one of the most common accidents in this work environment. It actually poses a major threat to the safety of nurses in the workplace. Some of the situations that result in poor needle safety for nurses include

- Being in a hurry
- Troublesome patient
- High-stress situations where you ignore your environment
- Poorly discarded syringes

Remember not to recap the used syringe by hand and instead recap it using the scoop technique that you learned in nursing school. Using one hand, scoop the cap of the used syringe that should be on a benchtop while holding the syringe with the other hand.

Also, remember that the syringe has safety features that help you when handling it. Keep your fingers behind the needle as you insert it into the patient. Most importantly, point the needle directly into the sharps container when disposing of the syringe.

Tip #2: Adhere to Special Drug Handling Requirements

When handling drugs, ensure you adhere to hazardous drug administration requirements. If you must wear gloves and other personal protective gear when administering some drugs, ensure you do so. Unintentional exposure to certain drugs could severely compromise your safety as a nurse.

Some drugs are excreted via urine or fecal matter or can be found in blood samples. So when handling these materials, ensure that you protect yourself according to the set guidelines for handling them. If there are drugs you are unfamiliar with handling, ask the pharmacy to advise you and your colleagues about how to properly handle them for your safety.

Tip #3: Always Handle Patients with Care

Safe handling of patients is essential to keep nurses safe. Unfortunately, most people come to the hospital when they are acutely ill, which

unfortunately means they may be highly contagious. Also, it means that they cannot manage themselves and require help with even the most basic tasks like walking, bathing, and going to the bathroom. Wear protective gear where necessary, and do not decide to help a patient twice your size onto the bed and herniate the discs in your back in the process.

Tip #4: Avoid Misusing Your Body

When you abuse your body by overusing it, you strain it, and once specific injuries occur over and over, you weaken yourself.



Did you know that the most common injuries registered nurses report are tears, strains, and sprains? These are avoidable injuries if you take care of yourself and avoid repetitive hazardous movements. Lifting heavy items and over-exerting yourself when handling heavier patients means you are not prioritizing your health and safety as required in the workplace. If you notice recurring pain in your back, knee, hip, or any other part of the body, please go and see a doctor and have the problem looked at and resolved.

Resolving injuries at the earliest will prevent considerable problems in the future.

And do not forget to wear compression stockings or socks and quality shoes with a good insole while at work.

Tip #5: Run from Physical Harm

Sometimes nurses have to deal with patients who are manifesting physical symptoms. For example, a patient having seizures may be thrashing, but in their state, they are unaware of the physical nature of their interaction with the nurse. In this case, call an orderly or colleague to help you contain the situation as you administer the appropriate nursing care appropriately.

Unfortunately, some patients are physically abused, and they consciously target nurses and attack them during treatment. It is impossible to know the triggers for a patient that may cause them to act this way. The most important thing for your safety as a nurse in this scenario is to read the situation and try to calm the patient down. If you cannot, press the call light or call out for help the second you notice that the level of aggression towards you is escalating even in the slightest. Nurses must possess solid situational awareness because they are always caring for strangers with whom they have limited knowledge.

Patients and their families in very high-stress situations can become physically aggressive. The critical rule to remember is never to let anyone or anything stand between you and the door. If you do, you will be trapped in a situation that may escalate from verbal aggression to physical aggression in an instant. When you feel the energy in the room shift, back away from the patient or family member while keeping them in your sights (do not turn your back to them) and get out of the room.

Always report such interactions to keep colleagues aware of a potential situation as they attend to the patient and also to ensure you have the protection you need to execute your job.

Tip #6: Prevent Infections

Being in the hospital environment means you are vulnerable to infections when caring for patients. So go for the necessary vaccines and shots that

ensure you are safe even as you carry out your duties. Also, do not forget to wear the protective gear you need when helping contagious patients. In nursing school, you are taught a crucial lesson you must not forget while practicing the profession: treat every substance you come across as if it is a contagious substance and protect yourself as necessary.

Tip #7: Be Aware of Social Media

Social media has become a tool for many things, including cyberbullying. Take any form of online threats seriously because many people can find you using your social media footprint. Be careful about what you post online, from your personal information to your work timings and other details. Disgruntled patients could use social media to harass or find you and physically harm you.

During the COVID-19 pandemic, many nurses were asked to keep off social media and refrain from posting because of the misinformation by anti-vaxxers and others that made them targets for cyberbullying.

Tip #8: Be Aware of Burnout

It would help if you took care of yourself to take care of others. Remember the nursing code of ethics that says a nurse must show the same care to themselves as they show to others? That is the reason why. Burnout is a constant reality in the nursing field because nurses work long hours, and during all that time, they are required to look solely to the well-being of others. It can become routine to neglect yourself and live for others. Unfortunately, this thinking has severe ramifications as it can adversely affect your mental health.

Burnout can be due to long-term care for a terminally ill patient, so all you focus on is the end of life. Or it could be due to a pandemic that must be contained, so you do not get enough sleep and are under pressure to contain the illness. Or it could also be because you are studying for your exams, like this one, and working simultaneously.

Whatever the reason for the burnout, when you notice that you are feeling too tired, take some personal time and take care of yourself. Go and get a massage, do your nails, go to dinner with friends, go for a run, or binge-

watch episodes of your favorite TV program. And switch off your phone. Do not call the hospital for an update about your patients, or drive by to see if you can help. Take time off and rejuvenate. If you do this, you are of more use to your patients than if you don't.

Tip #9: Take Breaks At Work

Do not expect to be on your feet throughout your shift without feeling tired. Take a fifteen-minute break, eat an apple, drink some water, call your father/mother/husband/wife/kids/best friend or therapist, and check in with someone. Hearing a friendly voice not associated with your workplace can help you rejuvenate and feel stronger. Nursing is a draining job. You have to meet so many needs, and unfortunately, you find yourself being privy to various forms of human suffering. It is not easy to see that every day and not get affected. Those breaks at work help you step away, notice the blue of the sky, the smell of coffee from the coffee shop down the street, and people hugging and laughing, and this restores some normalcy in your day.

If you have a one-hour break, consider taking it in two half-hour bits so that you have two scheduled times in your shift to get away from it all.

Also, do not neglect your bladder by not going to the toilet throughout your shift. Urinary stasis can result in a urinary tract infection or, worse, a bladder or kidney infection. Take a bathroom break when you need to, and then you can attend to your patient with the required care. Also, drink enough water and eat well. Dehydration and hunger put you at risk of dizziness and fainting at work.

Tip #10: Consider Therapy

As mentioned earlier, nurses constantly care for other people, which can take a toll on them mentally. Seeing fellow human beings in pain or being the bearer of difficult news about loved ones can cause emotional and mental stress. Consider therapy to help you talk about how you are feeling and unburden yourself.

PTSD in nursing is real, and nurses working in trauma centers may experience it differently from nurses working in the pediatric ward. Having a professional to unload on (and not family) can help you find permanent

coping mechanisms. And the therapist doesn't have to work in the same facility as you.

Handling and Administration of Hazardous Materials:

What are hazardous Materials?

These are corrosive, toxic, reactive, or ignitable materials that are harmful to human beings by inhalation, ingestion, and even touch. Hazardous materials can come in gaseous, liquid, and solid forms. In the hospital, these materials should be contained in particular hazardous waste containers for transportation to treatment storage and disposal facilities where they are inactivated, disposed of, or recycled. All medical facilities should have a plan for handling hazardous materials properly and safely.

Guidelines when handling hazardous or administering materials

- Always wear appropriate personal protective clothing and equipment. PPEs should always be available for all staff members who are expected to handle or administer hazardous materials.
- Only staff trained in handling hazardous materials should be allowed to handle or administer them. And they should repeat the treatment at least once a year.
- All hazardous materials must be appropriately labeled to ensure they are correctly identified and stored.
- All hazardous materials must come with safety data sheets (SDS)
- Hazardous materials must always be stored under the correct temperature and conditions and away from the public.
- Anyone handling or administering hazardous materials must have been authorized to do so according to hospital protocol.
- Records of accidental exposures must always be maintained and reported to the relevant internal and external authorities whether an injury occurred or not.
- In a facility with hazardous materials, decontamination procedures must be reviewed regularly and updated as necessary. Also,

decontamination devices and facilities must always be available in the facility, including showers and eyewash stations.

Biohazardous materials in hospitals

Biohazardous waste is biological waste that is contaminated or contains pathogens that are harmful to human beings. They can be found in plants, animals, human matter, blood, cells, cultures, and tissue products.

Biohazardous materials must be inactivated before disposal into hazardous waste materials containers using bleach (hypochlorite solution) or by autoclaving.

Any sharp items contaminated with biohazardous material must be kept in special sharps containers to prevent injury to people handling the containers. They must also be inactivated before disposal using the same methods mentioned above. Uncontaminated gloves may not require inactivation, but they must be disposed of in biological waste containers to avoid contamination.

How to Clean Blood Spills

In the hospital setting, it is guaranteed to encounter small blood spills. The best way to clean up such blood spills is to use a gauze pad or paper towel to absorb the spill and then wipe the area down with disinfectant. Nurses know that simple water and soap do not have disinfectant qualities or alcohol. Use hospital-grade disinfectant to clean up spills and never scrape at dry spills because that aerosolizes the dried-up pathogens, which then enter your body. Instead, moisten the blood with the disinfectant and then wipe it off.

How Biological Hazards Enter the Body

- Through the air (airborne pathogens that enter the lungs)

- Through the mouth (ingested pathogens that enter through eating or drinking)
- Subcutaneously (Through broken skin and open wounds)
- Through the mucus membrane (through the nose and mouth linings)
- Percutaneously (through the skin even though it is intact with no wounds or broken skin)

Is Internal Radiation Therapy Hazardous?

Internal radiation therapy is typically used to treat certain cancers from the breast to the cervical and prostate. Sealed radiation implants may be embedded in the patient and may have a high or low dose of radiation, and these implants are administered.

- Using an IV with radioactive isotopes
- Using catheters and tubes (intraluminally or intracavity)
- Using seeds, implants, needles, or wires (interstitially)

Now because patients undergoing radiation also emit radiation during therapy, the following safeguards are essential:

- The patient must be placed in a private room
- Visitors must be limited to people over 18 years old, and they must stand at least six feet from the patient.
- Visitors must be in the room for only 30 minutes per day
- Staff must also be in the room for the duration of time required to carry out the necessary nursing care, and they must wear dosimeters.
- Only non-pregnant adults (staff and visitors) are allowed into the room
- The patient's room must feature posted outlines and guidelines for the limits on contact and time allowed.

Controlling Infections and Infectious Diseases In Hospitals

Infections and infectious diseases are synonymous with hospitals. So, nurses are expected to know the different types of infections and infectious diseases and how to deal with them.

Types of infections

Catheter-related bloodstream infections (CRBSI)

These are infections that arise from the presence of bacteria that originates from the intravenous catheter placed in the patient. CRBSI is one of the most commonly occurring forms of infection in hospitals, with lethal and costly implications causing a high percentage of patient morbidity.

These infections tend to occur due to enterococcus, staphylococcus, and fungal infections like candida. When these infections are left untreated, they progress to lethal conditions like:

- bacteremia,
- septic pulmonary emboli,
- infective endocarditis,
- septic shock,
- superficial thrombophlebitis
- osteomyelitis

To avoid catheter-related bloodstream infections, utmost care must be taken when patients exhibit chills, fever, or any discomfort around the site of the catheter. Also, monitor and evaluate the catheter site for any signs of erythema or purulence.

When inserting a catheter, it is preferable to use the subclavian vein for an intravenous site because it has a lower likelihood of infection than the femoral vein, which is more prone to CRBSI. The nurse should test for a catheter-related bloodstream infection via blood samples and catheter tip cultures.

Treatment of CRBSI

First, remove the catheter and administer antibiotics. The antibiotics should be empiric at the beginning and then progressively directed towards the culture. The antibiotic treatment should last two weeks, but if the problem persists, it can be continued for four to six weeks to combat complications.

Nosocomial Infections

Nosocomial infections are typically acquired at the hospital or associated with health care, and you get these infections while at the hospital for another reason. Here is a comprehensive list of nosocomial infections and their causes:

Escherichia coli: It causes infections of the urinary tract, diarrhea, and neonatal meningitis, which sometimes leads to neonatal pneumonia.

Staphylococcus aureus: It is a major cause of post-operative infections especially surrounding indwelling devices and tubes. It can cause a localized or systemic infection.

Enterococci – It causes urinary infections and other conditions like endocarditis. It also causes wounds and infections in the pelvic and abdominal areas.

Candida: This causes a yeast infection, leading to cutaneous and mucocutaneous lesions and sepsis.

Methicillin: It is the cause of surgical infections.

Group B β-hemolytic streptococci: Causes sepsis, meningitis, and neonatal pneumonia. It commonly occurs in neonatal units.

Enterobacteriaceae: It causes most urinary tract infections and postoperative infections.

Aspergillus spp. – It is a filamentous fungus that causes pneumonia by producing airborne spores that attack the respiratory tract.

Clostridium difficile: It causes most cases of nosocomial diarrhea.

Measures to Control Infections in Hospital

Every facility has standard infection control plans that mitigate the spread of infection among patients and staff. These measures are expected of everyone entering the hospital setting, including basics like washing your hands frequently and coughing into your elbow, to advanced ones like wearing personal protective equipment and operating from a negative pressure room.

Airborne precautions include wearing an N95 (or essential surgical mask) and face shields to prevent diseases spread by cough and sneeze droplets.

Contact precautions, on the other hand, require wearing gowns and gloves to avoid contracting diseases that infect you due to contact with bacteria or viruses. For example, coming into contact with Clostridium difficile will result in diarrhea. So, wear gloves and a gown, and do not forget it is essential to wash your hands with soap and water and not with an alcohol-based sanitizer.

An infection control plan should be outlined clearly so that the staff knows the protocols in case of an outbreak. It should cover the following areas:

How to decrease the infection rates:

The control plan must have a way forward to reduce the number of infections. Using a monitoring and evaluation process, the facility must find the practices that contribute to a reduction in infection rates.

Identification of outbreaks:

Infections tend to occur in outbreaks. Regular and timely evaluation of the endemic threshold rates will help identify the outbreaks quickly so that they can be dealt with before they get out of hand.

Inspire Staff Compliance:

The infection plan should provide irrefutable evidence of an infection outbreak to inspire staff and public compliance.

Compare infection rates with other facilities:

Facilities must compare their infection rates with others to see where they are falling behind in containing an outbreak and where they are doing well. Such comparisons help facilities identify where to focus their attention and resources best.

Meet accreditation standards:

Some organizations and agencies that partner with medical facilities require reports on infection rates to maintain their support of the facility. When a facility is the only one struggling to combat its infection rates, it may lose its status.

Protect the facility from malpractice suits

The infection plan must show that the hospital was not negligent and did all it could to contain and stamp out the infection.

Here is the COVID -19 infection control plan from the Joint Commission and the CDC (Centers for Disease Control and Prevention) according to the Joint Commission website:

- "Minimize the chance of exposure by working to identify patients before arrival (e.g., asking screening questions for patients calling for appointments) and as early as possible upon arrival (e.g., place signs for patients advising them to put on a mask if they have respiratory symptoms)".
- "Implement triage procedures to detect for 2019-nCoV during and before patient triage or registration (e.g., at the time of patient check-in) and ensure that all patients are asked about the presence of symptoms of a respiratory infection and history of travel to areas

experiencing transmission of 2019-nCoV or contact with possible 2019-nCoV patients".

- "If screening at triage is positive and the patient becomes "a person under investigation" (PUI), this should be communicated directly to the clinicians who will care for the patient, prevention and control services, and other health care facility staff according to a standard protocol".
- "Adhere to the standard contact and airborne precautions, including eye protection".
- "Monitor stock and the supply chain of personal protective equipment".
- "Manage visitor access and movement within the facility".
- "Implement mechanisms and policies to promptly alert key facility staff including infection control, health care epidemiology, facility leadership, occupational health, clinical laboratory, and frontline staff about known or suspected 2019-nCoV patients".
- "Identify specific staff to communicate and collaborate with state and local public health authorities".

The Joint Commission website also states the following additional control plan guidelines, which are per the CDC:

- "Have a clear system notifying patients of their role in preventing the transmission of communicable diseases. Most organizations do this by posting materials provided through the CDC, such as respiratory etiquette, and providing access to hand hygiene products and masks".
- "Ensure that staff at points of entry and intake know how to screen and respond to patients or visitors who may be infectious (e.g., cough, fever, rash, diarrhea, and vomiting)".
- "Implement all elements of standard as outlined in the CDC core practices, including
 - Hand hygiene
 - Environmental cleaning and disinfection
 - Risk assessment using appropriate personal protective equipment (e.g., gloves, gowns, face masks) based on activities being performed.
 - Reprocessing of reusable medical equipment

- Hands-off communications, inter and intra-facility, should include notification of colonization or infection with a potentially transmissible pathogen.
- Organizations should implement a system for evaluating and managing exposed or ill health care workers and support staff that could expose patients, visitors, or other staff.

Protocol in cases of Needlestick Injuries

Earlier in the book, I mentioned that injuries involving accidental needle pricks are among the most common in the nursing field. If you encounter such an injury:

Begin by irrigating the wound with soap and water immediately after the prick occurs, and then report the incident to the supervisor on duty.

Next, get medical attention which requires the administration of post-exposure prophylaxis (PEP) according to the established protocol. The testing considers any diseases the patient may have, from HIV to Hepatitis B and others. In cases with no PEP available for the disease the patient carries, like Hepatitis C, the CDC offers an effective management plan. The PEP should be initiated within the first 72 hours of exposure, so it is imperative to report the incident to your supervisor and get the process underway within that time.

Infectious Diseases

I) Measles, Mumps, and Rubella

This combination of diseases is vaccinated against in infancy and childhood because of their highly infectious nature. According to the CDC, the following demographics should get the vaccine:

Children

Children between 12 months and 12 years should get the MMRV vaccine to prevent these diseases. The MMRV vaccine is only licensed for children within this age group and not for those older.

Minors in Post-high school educational institutions

Students in this category who do not show presumptive evidence of immunity require two doses of the MMR vaccine, which should be administered at least 28 days apart.

Adults

Adults who do not have presumptive evidence of immunity should receive two doses of the MMR vaccine administered 28 days apart. That is the same vaccine given to adult health workers and international travelers.

Infants between 6-11 months should receive one MMR vaccine dose if they travel internationally. But even if they get this one dose of MMR, they should stick to the scheduled MMRV vaccine doses they are supposed to receive. They can still get the MMRV vaccine, with the first dose being administered between 12 -15 months and the second at least 28 days later.

Women of childbearing age must ensure that they have been vaccinated before getting pregnant. Measles infection during pregnancy can result in a miscarriage or premature birth of the baby. You cannot get the vaccine during pregnancy, although having a measles infection does not increase babies' chances of congenital disabilities.

However, it is safe to get the MMR vaccine when a woman is breastfeeding because the vaccine doesn't affect breast milk. Also, breastfeeding doesn't affect the body's response to the vaccine.

Healthcare personnel

Health care personnel should already have documented presumptive evidence of immunity. But in cases where they don't, they must get the two doses of MMR vaccine as soon as possible.

Unfortunately, not everyone can get the measles, mumps, and rubella vaccine. The following groups of people are excluded from getting the MMRV or MMR vaccines:

- People with severe, life-threatening allergies due to any vaccine components. If you suspect that you may be allergic or suffer from severe

allergies to medication, ensure that you ask your doctor about the vaccine before it is administered.

- People with a weakened immune system because of diseases like cancer or HIV/AIDs or medical treatments like radiation, chemotherapy, and steroids).
- People with a family history of immune system problems.
- People with tuberculosis
- Women who are pregnant (or suspect pregnancy). If you just got the MMR vaccine, it is best to wait one month before getting pregnant.
- People with health conditions that make them bruise easily or bleed uncontrollably.
- People that have recently received a blood transfusion or other blood products like plasma. In this case, the doctor will advise postponing the vaccine for at least three months.
- People that have received another vaccine within the last four weeks. The live cultures in two vaccines back-to-back may cause each not to work effectively.

If you have already contracted measles before, you do not need to get the measles, mumps, and rubella vaccine because your body has built immunity to the disease, and you cannot get it again. Also, if you were born before 1957, you do not need to get the vaccine because you are likely to have contracted the disease and built natural immunity. The disease was rampant in those days, and the MMR vaccine was created after 1957.

Measles is spread through respiratory secretions, and its infections peak between late winter and most of the spring. The incubation period of this infection is 7 to 14 days, and it causes cough, high fever, congestion, conjunctivitis, Koplik spots, and a maculopapular rash.

Mumps is a viral infection with an incubation period of 12 to 24 days, and it is spread through saliva. It occurs mainly in winter and spring, just like measles causing painful swelling of the salivary glands.

Rubella is also a viral infection with an incubation period of 2-3 weeks. It is spread via respiratory secretions, and it causes fever, aches, swollen lymph nodes, conjunctivitis, and a maculopapular rash that appears on the face first before appearing on the rest of the body.

Complications of Measles, Mumps, and Rubella

Mumps, if left untreated, can cause complications like meningitis, pancreatitis, and infertility (orchitis).

II) Chicken Pox

Chickenpox is considered a highly contagious childhood disease, but it also affects adults. It is a viral infection (Varicella) that commonly occurs during the winter and spring seasons. It has an incubation period of 10 to 21 days and mainly infects children under the age of 10 years.

This infection is highly contagious a day or two before the rash appears and remains contagious until all the blisters have dried up. If an uninfected person comes into contact with the fluid from the blisters, they can get infected with the disease. While symptoms tend to be mild and manageable in children, they can be severe and very uncomfortable for adults.

Symptoms of Chickenpox include:

Fluid-filled blisters

High fever of about 104 degrees Fahrenheit

Sore throat

Coughing

Itchy rash

Headache/stomachache

General malaise

Loss of appetite

The itchy rash appears after the incubation period of 10-21 days. Before the rash, the patient may complain of fatigue and malaise, headaches, muscle

ache, loss of appetite, and a fever. The onset of the rash signals the onset of the appearance of the raised papules that contain fluid. These break out in waves over several days, including on the genitals and the head. As the blisters form, they take one day to break and leak out their fluid, leaving crusts and scabs that heal over the coming few days.

While you can treat the symptoms of Chickenpox like itching (with calamine lotion), aches (with painkillers), and the mitigate the fever, there is no specific cure for chicken pox. You have to ride the infection until your body overcomes it. The result is built-in immunity, meaning you will not suffer from the disease again.

Since the disease is very contagious, it is best to avoid contact with others. Call ahead to make an appointment with the doctor, and mention that the patient may have chicken pox. The staff at the health facility will make the necessary arrangements to accommodate you. Chickenpox can be life-threatening to babies, pregnant women, and people with weakened immune systems.

Complications from Chickenpox

In severe cases, the blisters may cover the patient's eyes, throat, and the mucous membrane of the vagina, anus, and urethra. Also, look out for a very warm, red rash, which tends to make the skin feel tender. That could indicate the presence of a secondary bacterial skin infection. Other complications in patients with chicken pox include shortness of breath due to infection of the lungs (pneumonia), encephalitis or cerebellar ataxia (swelling or infection of the brain), and hemorrhaging. Reye's syndrome is if the patient takes aspirin while suffering from chicken pox.

III) Herpes Simplex Virus Infections

Herpes simplex virus, also known as HSV, is classified into two categories: HSV-1 and HSV-2. HSV-1 is contracted through oral-to-oral contact with someone infected with the virus, and it causes cold sores and genital herpes. On the other hand, HSV-2 is caused by sexual contact with someone infected with the virus, exclusively causing genital herpes.

HSV-1 tends to be asymptomatic, but its symptoms include cold sores around the mouth and open sores in the mouth. The sores will appear periodically, but the frequency varies from person to person. If you have HSV-1, you tend to feel a tingling, burning, or itching sensation around your mouth before the sores appear.

HSV-2 is also mostly asymptomatic, or it may manifest in mild symptoms that can go unrecognized. The symptoms include genital blisters and ulcers on the genitals or the anal area. Additional symptoms are fever, swollen lymph nodes, and body aches. You can expect more frequent recurrence with HSV-2 than HSV-1. The first episode of HSV-2 is usually severe, but the recurrences become less severe and can decrease considerably over time.

HSV-1 is contracted through contact with infected saliva or the sores around the mouth. The greatest risk of infection is when the sores are actively open; however, people with HSV-1 cannot get re-infected with it. HSV -2 is contracted through sexual contact with an infected person's anal surfaces or genitalia. You can also get it from the sores or body fluids of the infected person. HSV -2 can be transmitted even without broken skin when the skin looks normal. Rarely can mothers pass the HSV -1 and HSV -2 to their newborn during delivery causing neonatal herpes.

Unfortunately, these infections are not curable, although they can be managed with antiviral medication like famciclovir, acyclovir, or valacyclovir which are WHO recommended. The incubation period of the herpes simplex virus is typically between 2 and 12 days. The virus remains dormant in the body but can be activated when one feels stressed or ill, or their immunity is compromised. Even too much sun exposure can reactivate the dormant virus.

Complications from Herpes Simplex Virus

The resulting complications from Herpes Simplex Virus include encephalitis, keratitis, herpes gladiatorum, perinatal infection, herpetic whitlow, and other secondary infections. People with symptoms that suggest an HSV -2 infection should be offered HIV testing as well.

IV) Influenza

Influenza is a common infection of the entire respiratory system, highly contagious and affecting everything from the nose to the lungs. There are three types of influenza: A, B, and C, with C being the least severe and common and A and B being the most common, highly contagious, and severe, which sometimes can be fatal. Since influenza A and B are the most commonly seen, they are the ones that have an annual vaccine that one can take to combat them.

The incubation period of the influenza virus is 1-4 days, with a very sudden onset of symptoms. The suddenness of flu symptoms is one of the main differentiators of the flu from the common cold. And because the other symptoms are similar between the two diseases, it is best to take a test to confirm that it is a case of influenza. Symptoms of influenza include:

High fever lasting up to five days

Sore throat

Cough

Body or muscle aches

Fatigue

Vomiting and diarrhea in some people (especially children)

Stuffy or runny nose

Influenza is spread when an infected person's respiratory secretions are disbursed when they speak, cough or sneeze. These droplets may land on a surface that someone else touches and then touch their mouth, nose, or eyes or directly enter the body through the mouth or nose.

Children younger than 18 are more likely to contract influenza compared to older adults over 65 years old. The period of contagiousness means people can spread the flu to each other even before they know they are sick. People are most contagious three to four days after their symptoms manifest, and for some people, it is one day before developing symptoms. Others are contagious up to 5-7 days after becoming sick.

If a patient has a compromised immune system, it can be continually contagious for even longer, as can children.

But you can prevent flu infection by taking a flu shot annually. The vaccine has shown efficacy in helping to reduce flu complications which may result in hospitalization and even death. Antibiotic treatment is typically ineffective in treating influenza unless a secondary bacterial infection warrants it. During supportive treatment of influenza, nurses must look for secondary infections like recurring fever, cyanosis, and dyspnea). Antivirals can be used in cases of continuous high fever in high-risk groups and as analgesics. The patient needs a lot of fluids and rest.

Complications from Influenza

Complications of the flu include severe ear infections that could compromise hearing, bacterial pneumonia, and sinus infection. Flu complications also contribute to the worsening of chronic conditions like diabetes, asthma, and congestive heart conditions. While anyone can get complications from contracting the flu, the most vulnerable groups include pregnant women, older people over 65, children under five, and people with chronic diseases.

V) CORONAVIRUS

Coronavirus is a respiratory infection that has been around for many years, most recently since 2019. The symptoms are very similar to a cold with a runny nose, cough, congestion, and sore throat. While the infection has reached pandemic levels, in many cases, the coronavirus infection is not dangerous and only needs slight attention, or it can pass on its own.

However, specific strains of the disease have caused severe symptoms resulting in death or diminished capacity of critical body organs. The first strain was SARS (Severe Acute Respiratory Syndrome) which had symptoms like dyspnea, high fever, cough, and malaise. It spread quickly and easily through sneezing and coughing and had a high mortality rate killing nearly 10% of the people who contracted it.

The second strain is the COVID-19 strain which reached epic global proportions and has claimed the lives of millions worldwide. SARS and

COVID-19 have similar presentations, high fever, coughing, malaise, dyspnea, and one additional symptom, which is loss of taste or smell. The disease is still being studied as it keeps evolving, but several vaccines can be used to mitigate the symptoms of the infection. They include:

Moderna vaccine

Oxford AstraZeneca vaccine

Johnson and Johnson vaccine

BioNTech, Pfizer vaccine

Sinopharm BBIBP vaccine

Recommendations by health experts to avoid COVID-19 infection include:

- Avoid crowded places with a poor inflow of air
- Get vaccinated and a booster shot if necessary
- Keep a social distance of at least six feet between you and others when indoors if you aren't fully vaccinated.
- Avoid close contact with a sick person or anyone with the symptoms.
- Wear a face mask indoors and in places with high numbers of people with COVID-19, like hospitals, even if you are vaccinated.
- Always cover your mouth and nose with your elbow or tissue when coughing or sneezing and throw away used tissue.
- Frequently wash your hands with soap and flowing water for at least 20 seconds. If you cannot access water to wash your hands, rub an alcohol-based sanitizer on your hands, and the sanitizer should be at least 60% alcohol.
- Do not touch your eyes, nose, or mouth without disinfecting or washing your hands first.
- Ensure surfaces are cleaned and disinfected regularly
- Self-isolate to avoid getting the disease and protect others if you already have it.
- Immediately notify health officials to initiate contact tracing

The rules and guidelines surrounding COVID-19 keep changing and evolving as more information is discovered regarding the disease.

Complications from CORONAVIRUS:

Complications include acute respiratory distress syndrome, pneumonia, septic shock, multi-organ failure, and even death. The organs most affected by COVID-19 are the lungs, which compromise the patient's ability to breathe. This disease is particularly brutal to people with underlying medical conditions like high blood pressure, diabetes, chronic respiratory disease, cardiovascular diseases, and cancer. Also, elderly patients are at higher risk of complications even if they do not have pre-existing conditions because of the physiological weakness in the body that comes with aging.

VI) Epstein-Barr infection

The Epstein-Barr infection is also known as EBV. The human herpesvirus 4 (a herpesvirus) remains latent in the epithelial and B-cells of the body. It causes infectious mononucleosis linked with specific lymphatic and epithelial conditions like Hodgkin's Lymphoma, nasopharyngeal carcinoma, and Burkitt lymphoma.

This infection is passed along via saliva, earning it the name the kissing disease. It is common among teens and young adults and has an incubation period of between 30 and 50 days. Most people will get an EBV infection, but it will remain asymptomatic. But if it shows symptoms, they include:

Swollen neck lymph nodes

Inflammation in the throat

Fever

Extreme fatigue

A rash

Swollen liver and enlarged spleen

Elevated levels of white blood cells

In sporadic cases, EBV can cause a chronic infection that, if left untreated, can become fatal. An EBV infection affects the patient's blood and bone

marrow, causing the body to produce excessive amounts of white blood cells.

This infection is contagious as long as the patient is in the incubation period and also while they manifest the symptoms. It is possible for some individuals to be infected for up to 18 months. Treatment with antibiotics is ineffective; instead, administer analgesics to the patient, increase their fluid intake, ensure they rest and advise them to gargle warm salty water. Using antibiotics like ampicillin and amoxicillin often results in a pruritic, maculopapular rash.

As the patient recovers, they must avoid contact sports for up to two months or more. Recovery is typically slow, with the symptoms lasting several weeks and the fatigue going on for even longer.

Complications from Epstein-Barr Infection:

The complications arising from EBV include anemia, liver failure, nerve damage, and in some cases, interstitial pneumonia. The symptoms may keep recurring, or they may remain continuously there and worsen with time. The longer a patient suffers from EBV, the more compromised their immune system becomes, so it cannot fight other infections. Additional complications from this infection include hepatitis, Guillain Barre Syndrome, thrombocytopenia, and splenic rupture due to the enlargement of the spleen.

VII) Polio

Symptoms of the post-polio syndrome are:

Muscle atrophy (losing muscle tissue)

Exhaustion and fatigue

Weakness in the joints and muscles

Pain in the joints and muscles that get worse with time

Poor tolerance to cold temperatures

Problems breathing and swallowing

Development of sleeping disorders like sleep apnea

Complications from Polio:

Most people get healed from polio, but it can cause paralysis in others. It can also cause muscle atrophy and breathing or swallowing problems that may compromise the patient's ability to breathe.

Fifth Disease

The fifth disease is caused by parvovirus B19, which is more common in children than adults. This infection has an incubation period of 14 days. It is also called erythema infectiosum. An outbreak of parvovirus is most common in spring, mostly in daycare centers, preschools, and elementary schools.

Fifth disease is transmitted when one comes into contact with contaminated nasal or oral secretions, but one can contract it through contact with the infected person's blood. The main symptom of this infection is a bright red rash that starts on the cheeks before spreading to the child's torso, legs, and arms. The rash lasts two to four days and is accompanied by low fever, itching, runny nose, diarrhea, sore throat, and headache.

The effect of the bright red rash on the cheek gives the disease the name "slapped cheek disease." This rash can keep coming and going for one month in some cases.

There is no vaccine for this infection, and you can only provide supportive care to the patient, like medication to mitigate the fever or body aches. It can't be treated with antibiotics because it is a viral infection. Usually, Fifth Disease is mild and can be managed.

Complications from Fifth Disease

Fifth disease in pregnant women can cause a miscarriage of the fetus.

Diphtheria

This is a bacterial infection that is caused by the *Corynebacterium diphtheriae* bacteria. It has an incubation period of 2-7 days and is most commonly experienced in fall and winter. Transmission of Diphtheria is via

the eye, nasal and oral secretions, and one can also contract the disease when they touch the open sore of a person infected with Diphtheria. The symptoms of Diphtheria include a mild fever with nasal discharge, loss of appetite, general malaise, swollen airways, and sore throat.

The infection causes a build-up of thick gray coating to overwhelm the nose and throat, making it hard to breathe or swallow. Diphtheria also affects the skin causing shallow ulcers and open sores.

Since it is a bacterial infection, antibiotics are prescribed. However, because it is highly contagious, the patient must be isolated until they have been taking their antibiotics for at least 24 hours. You also need to administer analgesics to bring the fever down and plenty of fluids.

The vaccine against Diphtheria, tetanus, and whooping cough, DTaP, is very effective in preventing this severe infection.

Complications from Diphtheria

Because of the poisonous nature of *Corynebacterium diphtheriae*, the bacteria which causes Diphtheria, the patient can develop breathing problems, heart failure, and paralysis, or it can cause death.

Scarlett Fever

Group A beta-hemolytic streptococci cause scarlet fever. It is also known as scarlatina and can develop in people with strep throat. The identifying feature of this infection is the bright red rash that covers the entire body. A high fever and sore throat always accompany this infection.

The symptoms include nasal discharge, stomach and headaches, extreme throat soreness, malaise, vomiting, chills, and a rash that appears in about 12 hours. The rash has sandpaper-like red pinpoints, which are found in the skin's creases. The patient will also have a strawberry tongue and a flushed face.

This very contagious infection has an incubation period of between one to seven days. During this time, it can get transmitted through direct contact with the infected person's eye and oral and nasal secretions. Scarlett fever

can be managed using antibiotics, but isolation is required since it is a contagious disease. Also, the patient needs plenty of rest and fluid intake.

Complications from Scarlett Fever

Scarlett fever rarely causes complications, but it can be deadly when it does. They include developing abscesses around the tonsils, pneumonia, arthritis, post-streptococcal glomerulonephritis, rheumatic fever, and swollen lymph nodes in the neck.

Rotavirus

This is a virus that causes intestinal symptoms, including diarrhea. It is contagious and the leading cause of diarrhea in young children and infants. The virus derives its name from its circular shape. Symptoms of rotavirus include inflammation of the intestines and stomach, severe diarrhea, vomiting, stomachache, dehydration, and fever. While there is no cure for the virus, there is medication that can help with the symptoms.

Unfortunately, even vaccinated people can get rotavirus, but getting immunized against the disease can prevent up to 98% of severe rotavirus cases.

Rotavirus can be extremely contagious, affecting large clusters of children, especially in preschool, daycare, children's clinics, and pediatric centers, elementary schools, and children's hospital units. Children must wash their hands after visiting the bathroom and before eating to prevent the spreading of the disease. Adults and caregivers should always wash their hands before handling and preparing food and after using the bathroom or changing diapers.

Complication from Rotavirus

Rotavirus can cause severe dehydration due to continuous and severe diarrhea. It can also result in metabolic acidosis, which is when the chemical balance in your blood is interfered with, causing it to become more acidic. Metabolic acidosis can cause kidney problems, osteoporosis (bone loss), and muscle loss. That makes you susceptible to bone fractures in crucial bones in the body.

Tetanus

Tetanus is a bacterial infection that is present in the soil, dust, and gastrointestinal tracts of human beings and animals. This infection is also known as lockjaw disease because its most identifiable symptom is a locked jaw due to spasms in the jaw. Clostridium tetani cause tetanus, and the infection has an incubation period of 3-21 days.

The symptoms start mildly and increase in severity if not treated. They include headaches, inability to open the mouth, jaw cramping, sudden and involuntary stomach muscle spasms, painful, stiff muscles all over the body, seizures, jerking or staring, rapid heart rate, trouble swallowing, profuse sweating, and fever.

You can get tetanus through a wound or cut that is infected with the bacteria. Even a tiny scratch can be an entry point for the tetanus bacteria, but the chances are higher of an infection from a deeper puncture wound from a nail or knife. Treatment requires administering the human tetanus immune globulin, valium, and penicillin G and being placed on a ventilator. Also, the patient should be kept quiet and peaceful to prevent spasms. That is because the stimuli can directly trigger the spasm.

Complications from tetanus

Without proper treatment, tetanus can be fatal. That is because the infection causes muscle rigidity in the abdomen and neck, which results in tightening of the vocal cords and constraining breathing. It can also cause blockage in the lung from a blood clot resulting in a pulmonary embolism. Generalized spasms may also result in broken bones or fractures of the spine.

Cryptococcosis

It is a fungal infection that one gets from inhaling the Cryptococcus neoformans fungus. This fungus is found in the soil, and it is also associated with bird droppings and some trees in the Northwest United States. This infection is synonymous with people with a compromised immune system; it is an AIDS-defining opportunistic infection.

Symptoms include chest pain, headache, dry cough, blurred vision, extreme fatigue, disorientation, fever, profuse all-night sweats, swollen glands, and skin rash. But these symptoms are consistent with patients who have severe

immune system deficiencies. In healthy patients, the symptoms may only be pulmonary lesions on CRX that resolve themselves.

Mild cases of infection do not need more than monitoring to ensure the infection doesn't spread. However, in cases of severe infection, the patient may require antifungal medication (sometimes lifelong antifungals).

Complications from cryptococcosis

Complications arising from cryptococcosis infection include meningitis and disseminated disease. It can also cause optic nerve damage, neural deficits, and hydrocephalus.

Pneumocystis

This is also a fungal infection that causes pneumonia. The fungus responsible for the infection is *Pneumocystis jiroveci* (PCP), and most people have already been exposed to it by the age of three to four years old. However, in immunocompromised people, it quickly manifests as a severe infection with symptoms like a dry cough, weight loss, dyspnea, and high fever. Diagnosis of pneumonia is usually by testing the sputum.

Most people who get this infection have a compromised immune system due to a disease like HIV/AIDS, or they are taking medication like corticosteroids which lower the immune system's ability to fight infections.

Symptoms of pneumocystis include difficulty breathing, fever, cough, chest pain, fatigue, and chills. Unfortunately, there is no vaccine to prevent pneumonia, but high-risk patients can receive medicine to prevent it. In fact, these preventative medications are usually recommended for patients with HIV/AIDS, stem cell transplant patients, and patients with solid organ transplants.

Because PCP is airborne, it is always advisable to sneeze into a tissue or handkerchief. Some asymptomatic people may carry the fungus in their lungs for a long time and spread it to others around them without knowing it.

Complications from Pneumocystis

Some complications from pneumocystis include acute respiratory distress syndrome (ARDS), which is severe respiratory failure. Patients with ARDS must be placed on a ventilator or breathing machine to help them breathe. Another complication is lung abscesses which have pus-filled pockets in the lungs.

Impetigo

This skin infection is highly contagious and affects young children and infants. It spreads like wildfire in daycare centers and schools. When impetigo affects the skin, it causes sores that, when touched, can transmit the disease to others. The sores are noticeable where the skin is exposed, like around the mouth, nose, legs, and arms.

Other symptoms of this highly contagious disease include red, itchy, fluid-filled sores that burst open and leak the fluid or pus within a few days. After the sores burst open, they will leave a crusty, yellow scab that heals without leaving any scars. The incubation period of this bacterial infection is 10 days, and any childhood activities where the child gets scraps and cuts can expose them to this disease. Close contact with an exposed person puts others at risk, which makes daycare centers and schools prime locations for the spread of impetigo.

To prevent the spread of the disease, it is essential to wash hands, take regular baths and maintain facial cleanliness.

Complications from Impetigo

The main complication of impetigo is cellulitis. Cellulitis is a condition where an infection develops in the deeper skin layers and underlying tissue. It is life-threatening because the infection could spread to the lymph nodes and bloodstream. One of the bacteria that cause impetigo can cause kidney damage.

Respiratory Syncytial Virus (RSV)

The Respiratory Syncytial Virus is a viral infection that affects the respiratory system. Its symptoms which are similar to a cold and influenza, include sore throat, congestion, cough, and headache. Some children are more at risk of developing Respiratory Syncytial Virus due to

immunosuppression from surgery or illness. Also, children born prematurely or those with cystic fibrosis and chronic lung disease are more adversely affected.

RSV is the leading cause of infant pneumonia and bronchiolitis, which is an inflammation of the small airways in the child's lungs. Transmission is through contact with an infected person's droplets from the throat or nose when they cough or sneeze.

Complications of Respiratory Syncytial Virus

Respiratory Syncytial Virus can cause breathing difficulties which, if they persist, could become fatal. The disease causes poor oxygenation of the blood. It also causes recurrent wheezing and asthma, not to mention decreased lung function and the possibility of allergic sensitization.

Roseola

This is another viral infection prevalent among children 6-24 months old. This disease is highly infectious, but it doesn't need treatment because it will go away on its own. The most a caregiver can do for the child is to make them comfortable and provide supportive care. Plenty of rest and fluid intake is essential during this time.

Roseola is caused by the herpes virus, which enters the baby's mouth by mouth or nose when the child breathes in sneezed or coughed droplets from an infected person. Adults can also be infected if they did not get roseola in childhood, but it is primarily a childhood disease. It can also become reactivated in adults with a compromised immune system.

Symptoms of this infection include a high fever that lasts three to five days, after which the patient appears to be well. But it is followed by a light pink maculopapular rash which lasts a day or two.

Complications from Roseola

The main complication of this disease is the possibility of febrile convulsions (fits) triggered by a high fever. There is also a possibility of an ear infection which can be uncomfortable. In sporadic cases, roseola can

cause encephalitis, the inflammation of brain structures. However, this disease tends to have little to no ongoing problems.

Histoplasmosis

This is an infection caused by a fungus known as Histoplasma, which lives in the soil. It is particularly present in an environment with large bat and bird droppings. The symptoms of histoplasmosis include fever, extreme fatigue, cough, chills, chest pain, and body aches. Severe symptoms include coughing up blood, sweating, and shortness of breath. Skin lesions can be spread throughout the body in some cases of histoplasmosis.

In most cases, histoplasmosis causes mild flu-like symptoms that manifest 3-17 days after exposure to the fungus. Sometimes the symptoms of histoplasmosis go away on their own without any intervention. However, the administration of antifungal medication is used to treat a severe infection when it enters the lungs or spreads from the lungs to other parts of the body (a condition known as disseminated histoplasmosis).

The amount of time taken for the treatment of histoplasmosis ranges from three months to one year, depending on the severity of the infection and the patient's immunity level. Diagnosis is made through testing the patient's urine and serum sample for antigens or cultures.

Complications of Histoplasmosis

People with weak immune systems may get complications from histoplasmosis, which include disseminated histoplasmosis where it spreads to other areas of the body, creating infection-related complications. For example, the patient may develop inflammation of the sac surrounding the heart (the pericardium) in a condition known as pericarditis. Histoplasmosis can also cause acute respiratory distress syndrome and damage the lungs to the point the air sacs fill with fluid. Sometimes this infection can cause meningitis or adrenal insufficiency.

Candidal Infections

Candida is a type of fungus which causes yeast infection. It is a fungus that lives on the skin and inside the body in the throat, gut, vagina, and mouth

without causing any infection. However, if the growth of the candida fungus gets out of control in the body, it results in a yeast infection.

There are a number of candida infections, including:

Oral thrush is common in diabetic patients and other immunosuppressed patients, like those with HIV/AIDS or underlying neoplasm. It causes a burning tongue and a curd-like appearance of white patches that leave red tissue when scraped off. This type of candida is treated with topical and oral antifungals.

Candida esophagitis is also common in immunosuppressed patients and causes chest pain, odynophagia, and dysphagia. Candidemia is found in the blood and causes the worst candida-related complications.

Candidal intertrigo is also known as diaper rash and presents as lesions in skin fold areas. It is treated with topical antifungals.

Complications of Candidal Infection

Sometimes the fungus grows out of control, and it can enter vital organs like the brain, heart, kidney, and bloodstream. In such cases, it can result in severe infections that can compromise the function of these vital organs.

Malaria

Malaria is caused by four known parasites, which include:

P. malariae

P. vivax

P. ovale

P. falciparum

These protozoa live in the female anopheles mosquito and are passed onto human beings when the mosquito bites you. Once inside your body, the protozoa migrate to your liver, where they multiply while attacking your red blood cells. The incubation period is as little as nine days or as many as multiple years, depending on the type of parasite.

Symptoms of malaria include high fever, headache, joint aches, sweating and chills, anemia, jaundice, and hepatosplenomegaly. The infection is diagnosed from blood smears. The treatment uses medication like chloroquine, and the good news is that malaria can be cured.

Be aware of cerebral malaria, an acute encephalopathy caused explicitly by the *Plasmodium falciparum*. It is a severe neurological complication that is characterized by seizures, delirium, and coma.

Complications of malaria

Complications of malaria include shock due to a sudden drop in blood pressure, yellowing of the skin due to liver failure, and jaundice. Additional severe issues arising from malaria are the buildup of fluid in the lungs (pulmonary edema), hypoglycemia (low blood sugar), and acute respiratory distress syndrome (ARDS). Organ failure from malaria complications may eventually result in death.

Rocky Mountain Spotted Fever

This is a potentially fatal disease that is carried by ticks. The ticks carry the protozoa known as *Rickettsia rickettsia*, which is introduced into the bloodstream. The protozoa cause damage to the lungs, skin, brain, and other organs. On the skin, it causes a rash. In the lungs, it causes pneumonitis, and in the brain, it causes encephalitis.

The symptoms of Rocky Mountain Spotted Fever include fever, headache, vomiting, nausea, stomach and muscle pain, and lack of appetite. This condition is expected in the summer and spring seasons. It has an incubation period of seven days, and treatment involves using antibiotics (Vibramycin).

Complications of Rocky Mountain Spotted Fever

This disease can cause severe complications, including nerve damage, gangrene of the toes and fingers, severe incontinence, and even partial paralysis. Additional long-term issues include inflammation of the brains, heart, and lungs, kidney failure, and liver enlargement, which can even turn fatal.

Worms

Worms in the body are also known as helminth Infestations. These worms include roundworms, tapeworms, flatworms, flukes, and filaria.

Roundworms like hookworms cause anemia, flatworms like tapeworms cause weight loss, filariae cause elephantiasis, and flukes attack the liver and intestine. The most common helminth is the pinworm, a type of roundworm that causes enterobiasis and is most prevalent in warm weather.

Pinworms are highly contagious, and they frequently occur in children. When the child scratches their anal area where the pinworm eggs tend to congregate, they get under their nails and on their fingers and then transmit to other kids when they play together. The eggs can survive for up to three weeks on inanimate objects.

Symptoms of a helminth infestation include abdominal pain, retardation in cognitive growth, rectal prolapse, nausea, and vomiting. The anal itching intensifies at night, causing insomnia which can be terrible for children. Diagnosis is made with a tape test which is a cellophane tape pressed over the perianal area to pick up the eggs. The tape is then placed under the microscope. Also, other helminth infestations are tested from stool samples. However, filariasis needs a blood smear test or an antigen test to diagnose.

The good news is that helminth infestations can be treated and cured. The medication for this disease is given in a single dose and repeated in two weeks to kill their larvae and pinworms.

Complications from worms

The main complications from worms include intestinal blockage and anemia.

Toxoplasmosis

Toxoplasmosis is caused by a parasite known as *Toxoplasma gondii*, which is found in the soil. This infection is transmitted through cat feces and can also be transmitted by eating uncooked or undercooked pork, venison, lamb, and vegetables that aren't properly cleaned.

During toxoplasmosis, the parasite can remain latent, but if you are ever immunocompromised, it will become active and cause symptoms. Symptoms include swollen lymph nodes, fatigue, headache, fever, and body aches. Ocular toxoplasmosis symptoms include blurred vision, pain with bright lights, reduced vision, tearing in the eye, and redness of the eye.

Complications from Toxoplasmosis

Complications from toxoplasmosis typically occur in people who are immunocompromised and when left untreated in healthy people. It can also be serious in pregnant women and their unborn fetuses. It can affect various organs causing failure, and also cause encephalitis, a brain infection. This disease can also lead to blindness, stillbirths, and seizures. In pregnant women, it can be tested for the disease using the amniotic fluid test and serology for Toxoplasma antibodies in healthy people.

Lyme Disease

This disease is also carried by deer ticks and is caused by *Borrelia burgdorferi* which is found in the spirochete bacterium. Lyme disease is prevalent in the United States, especially for people always in wooded areas. Heavily wooded areas, especially in the winter, tend to have adult ticks, while the nymphs are more active during the summer and spring, which are warmer seasons.

When the tick bites you, it stays attached, and within 48 to 72 hours, it transmits the spirochete. The nymphs take 26 to 48 hours to transmit the spirochete bacterium. The incubation period for these protozoa is 3-30 days, and it can occur in three stages.

Stage one (75%) is the expansion of the red rash followed by headache, fever, fatigue, myalgias, and chills immediately after the infection. Stage two occurs in the weeks and months following the initial infection. This stage involves systemic symptoms like a stiff neck, migrating pain in the joints and muscles, headaches, confusion, Bell's palsy, fatigue, heart palpitations, and myocarditis.

Finally, stage three occurs months or years after the initial infection. It involves rheumatologic and neurologic problems like arthritis of large joints

like the knees.

Diagnosis of Lyme disease can be made using a two-tiered approach. There is a treatment for localized Lyme disease, which involves two to three weeks. For the more severe manifestations of the disease, IV antibiotics are used to deal with the disease. To prevent contracting Lyme disease, it is advisable to wear long pants covering the skin on the legs and arms, use tick repellent, and shower soon after being outdoors in tick-prone areas.

Unfortunately, the Lyme disease vaccine is not available anymore, and even previous recipients of the vaccine are at high risk of contracting the disease over time. Complications with Lyme disease begin when the condition is left untreated.

Complications from Lyme Disease

Complications arising from this condition include chronic knee joint pain, facial palsy, cognitive effects like poor memory, and irregular heartbeat.

ZIKA virus

The ZIKA virus is extremely dangerous to unborn children, so pregnant women must be wary of it. The condition is transmitted by the Aedes mosquito and also through sexual contact, and it causes severe congenital disabilities in the unborn child while at the same time showing no symptoms in the mother.

The symptoms of the ZIKA virus include a maculopapular rash, headache, fever, conjunctivitis, and myalgias. It is usually advisable for pregnant women not to travel to Africa, Mexico, South and Central America, and the Caribbean.

The incubation period of this disease is 3-14 days, with symptoms (for the mother) that may last between four to seven days. Unfortunately, this parasite has been found to live longer in semen than in other body fluids.

Complications from ZIKA Virus

Complications from the ZIKA virus include losing the fetus, preterm birth, and stillbirth.

Giardia Lamblia

This condition commonly affects children, and they can get it through the fecal to oral route. The Giardia Lamblia protozoa infect the water supply, and that is how it enters the body. Children typically get infected by the swimming pool or by putting contaminated items in their mouths. It is the most common form of non-bacterial diarrhea in the United States.

Symptoms include flatulence, stomach cramps, greasy floating stool, and nausea. The symptoms occur within 7 to 14 days of infection and last around two to six weeks. Giardia Lamblia's treatment involves consuming Furazolidone and metronidazole over the course of seven to ten days. Unfortunately, chronic infections can be resistant to treatment.

Complications from Giardia Lamblia

Complications from Giardia Lamblia include irritable bowel syndrome, reactive arthritis, and recurring diarrhea. In children, severe Giardia Lamblia can cause a delay in the physical and mental development of the child.

The Difference Between Immunization and Vaccination

Vaccination is utilizing vaccines to build the body's immunity, while Immunization is the process your body undergoes after the vaccine is introduced into it.

Vaccination:

This is the act of introducing the vaccine into the body; according to the CDC (Centers for Disease Control and Prevention), the vaccine is the preparation used to stimulate the body's immune response against diseases. They are usually administered through needle injections, although some can be sprayed or taken orally by mouth.

During vaccination, a small amount of the virus or bacteria causing the disease is introduced into the body to prompt it to produce antibodies to fight the foreign antigens from the bacteria/virus. Vaccination prevents the infection from spreading in infants and other recipients.

Immunization:

According to the CDC, this is the process by which your body processes the vaccine and builds protection against the disease you are trying to prevent. Once your body has processed the vaccine, your body becomes protected. In the case where a lot of people need to receive a vaccine, they are creating herd immunity like in the case of COVID -19. Herd immunity results in a majority of the population becoming immune to the disease to minimize transmission.

For herd immunity to be considered, 80 to 95% of the population must be immunized from the disease, depending on how contagious the disease is. Highly contagious diseases like measles and COVID-19 require 90-95% herd immunity, while lesser contagious diseases require 80-85% herd immunity. Herd immunity can be attained by widespread vaccination or widespread infection.

Understanding Anti-Vaccination Sentiments

Anti-vaccination has existed for as long as vaccines have been around (although difficult situations like the COVID-19 pandemic compound it). Health experts and historians have named vaccination as one of the top ten achievements in public health in the 20th century. Despite this, the opposition has always existed, and those against vaccines have given the opposition to a myriad of vaccines, from the smallpox vaccine to the COVID-19 vaccines. There are newspaper clippings from as far back as the 1860s that indicate there was opposition to existing vaccines even then.

Opposition to vaccinations has been given several reasons, including some people feeling that it was government overreach while others were not trusting the contents of the vaccines and feeling like guinea pigs. The opposition was and remains so great that parents resort to subterfuge to avoid vaccinating their children. Many people procure fake vaccine certificates, and others change addresses to avoid the vaccine altogether. In the COVID-19 Era, we have seen many lawsuits filed, and rallies held to oppose the vaccine making it just another chapter in the anti-vaccination history.

The history of vaccinations began centuries ago with the concept of inoculation, also known as variolation. This is the idea to give yourself the disease, like in the case of smallpox, to allow your body to control the timing and severity of the disease. For hundreds of years, inoculation was practiced in the Far and the Middle East and among indigenous people in Africa and the Americas as part of their medicine, but it made its way to Europe much later when it was introduced to England by the British Ambassador's wife to the Ottoman empire, Lady Mary Wortley Montagu. This was in the 18th century.

The method of inoculation involved inserting a small amount of a preserved smallpox scab under the skin and introducing a controlled dose of the disease into the healthy person. This inoculation method was fairly effective, especially when people followed up with the appropriate care while waiting for the infection to clear. However, some people would contract severe smallpox from the injection, which is one of the reasons many were opposed to the vaccine.

To overcome Anti-vaccination sentiments and build public trust in public health measures, it is critical to address the failings of vaccines and also address the sources of mistrust. In the case of smallpox, public trust was gradually built by creating a more effective and less life-threatening vaccine in the form of the cowpox vaccine, which made people immune to smallpox. Also, the death rate of smallpox in children dropped by 50%. In the case of COVID-19, it is built by refining the vaccines and the public seeing the efficacy of the vaccines in building herd immunity.

As a nurse, it is essential to remember that COVID-19 is not the only vaccine that patients can refuse. Some parents still refuse to let their children receive the DTP (Diphtheria, Tetanus, and Pertussis) vaccine and the MMR (Measles, Mumps, and Rubella) vaccine. They base their reasons on the 1970s international controversy that alleged that 36 children in the Great Ormond Street Hospital for Sick Children in London had neurological conditions after being DTP immunization. This controversy rocked Europe, Australia, North America, and Asia, and even after the Joint Commission on Vaccination and Immunization, an expert and independent advisory committee in the UK, confirmed that the vaccines were safe, parents were

still reluctant to vaccinate their children. And the varied opinions of medical professionals did not help the situation. But in the US, it was the media attention created on the alleged risks of the DTP vaccine by the documentary DTP: Vaccination Roulette which detailed alleged adverse reactions to the vaccine. The documentary was made in 1982, but it still is cited by many conspiracy theorists today.

In 1998, doctor Andrew Wakefield from England recommended that the MMR vaccine should be investigated for a possible connection between autism and bowel disease. He then alleged that the vaccine was not adequately tested before being put on the market. The media amplified these allegations and created mass hysteria among parents who then refused to have their children vaccinated against these very contagious diseases. Although it was later found that Dr. Wakefield had a conflict of interests when he made these allegations, including hoping to benefit financially from making them, the harm was done. Many parents still believe that this vaccine may cause their healthy child to develop autism or bowel disease. Wakefield was later struck from Great Britain's medical register, and he could not practice medicine, and the magazine that published his false allegation, which he got by falsifying data, also retracted his paper.

Anti-vaccination proponents cite the presence of thimerosal, a compound containing traces of mercury that is used to preserve vaccines. There is no evidence to support any claim that the minimal amount of thimerosal in vaccines is harmful. And leading U.S. medical and public health organizations and vaccine manufacturers decided to eliminate it from vaccines as a precaution, so most childhood vaccines do not contain the compound. However, anti-vaxxers still claim a link between childhood vaccines and autism, ADHD, and language/speech delay in children. They claim that the only way they can agree to these vaccines is if vaccine manufacturers go green with vaccines by removing toxins. Some of the anti-vaccination movements under the banner of the "Green Our Vaccines" campaign are led by celebrities like Jenny McCarthy's advocacy group Generation Rescue.

Anti-vaxxers have claimed that the Pfizer and Moderna vaccines, which stimulate an immune response using mRNA (messenger RNA), can alter a

person's DNA. Others have claimed that COVID-19 vaccinations directly caused some deaths in Europe despite evidence showing the patients had pre-existing conditions.

Conspiracy theories and bad players will always prop up anti-vaccination sentiments. The more patients believe in the conspiracy theories, the less likely they are to accept vaccinations which puts public health safety at risk. Nurses and other healthcare providers are responsible for disseminating the correct information to patients and providing them with all the facts to help make the patient make the best decision for themselves. However, you must not vaccinate anyone against their will or coerce them to get vaccinated. You have to respect the patient's freedom of choice when it comes to their health, regardless of whether you agree with their decision or not.

For example, Cora is a nurse who has seen the worst of the COVID-19 pandemic. She couldn't go home for weeks at the height of the pandemic for fear of passing the virus to her family. She saw many patients die from the virus when there was no vaccine available, and all she could do was make them comfortable since they were not even allowed to have their loved ones near. So when the first vaccinations were introduced at her facility, she sighed with relief.

But soon, she heard people were refusing to get vaccinated. Having seen many people lose their lives to the virus in weeks, she was appalled that anyone would refuse the vaccine. The facility gave their staff training on how to handle an active COVID-19 patient who has refused the vaccine. One of Cora's patients was a forty-four-year-old father of three who refused to be vaccinated despite his wife and two older sons getting the vaccine. As she cared for the man, she asked him why he didn't want the vaccine, and he explained that he didn't believe COVID-19 was real and would soon get better to prove to others that it was a hoax from the government. With time his condition deteriorated, and he was soon on a ventilator with severely damaged lungs.

Although Cora wished she could have done more for him, there is only so much a nurse can do for a patient without their consent. The patient refused the vaccination and to wear a mask for his protection, and no one could force these safety precautions onto him. When you come across such a

patient, your job is not to preach the gospel of vaccination to them. Instead, do your job without bias and make them as comfortable as you can while respecting their wishes. No matter how strongly you feel about their decision, do not administer a vaccine without their consent. That is grounds for a major lawsuit against you and the medical facility, not to mention grounds for dismissal and deregistration as a nurse.

I would advise you to read more on the history of anti-vaccination movements. That is because although the times and technological advancements have improved over time, the deep-rooted spiritual, philosophical and political beliefs and accompanying emotions regarding vaccinations have remained relatively consistent. Understanding them will help you better understand how to help patients that hold such beliefs without infringing on their liberties.

Sometimes, anti-vaxxer sentiments may be given credence by celebrities with a wide reach. For example, Lisa Bonet, a star in the much loved black American sitcom Cosby Show once called vaccines alien microorganisms that could cause leukemia, cancer, multiple sclerosis, and SIDS (sudden infant death syndrome). And then there was 1994's Miss America Heather, who was deaf and suggested that her deafness was caused by receiving the DTaP vaccine. It later emerged from her pediatrician that a vaccine-preventable disease, Hib Meningitis, caused her deafness.

Comedienne Jenny McCarthy has written three books on autism, erroneously linking the condition to the MMR vaccine. According to McCarthy, her son's autism is due to the MMR vaccine and "the complication of so many shots".

Jim Carey says he is against thimerosal which was used to prevent contamination of the vaccine by life-threatening microbes. Currently, most childhood vaccines do not contain this compound. But according to Carey, not all, and that is why he is against vaccines. Note that despite the removal of thimerosal from most childhood vaccines, autism rates continued to increase, according to the CDC. One would expect them to fall if thimerosal was the cause.

Kat Von D tweeted in 2018, while pregnant, that she intended to raise a vegan child without vaccinations. She then deleted the tweet after backlash and customers boycotted her makeup line. She later put out a statement walking back her statements about not vaccinating her child, saying, "my husband and I are not anti-vaxxers. Just because we have hesitations and valid concerns about injecting our baby with specific chemicals and toxins doesn't mean we are anti Anything. As a soon-to-be parent (and especially a first-time mom) I do feel it is my responsibility to have questions and to listen to my motherly instinct to question things and do my research.

If you come across a parent like Kat Von D, who is afraid of vaccines because of a lack of information, take the time to educate them and share your healthcare knowledge. Sometimes people are not anti-vaccines and may just be without adequate knowledge. Parents want what is best for their baby, and introducing toxins or diseases in the form of a vaccine into their baby's body may not seem like the best thing to do for their baby, even if it is. Be patient, understanding, and compassionate.

Now with the COVID-19 pandemic, more celebrities and people of note have come out against the vaccine. Unfortunately, to make their stand, they have also been peddling a lot of serious misinformation.

Rapper Offset has said he doesn't trust the vaccine because he doesn't trust the government. Many black Americans against the vaccine share his sentiments despite a disproportionately large number of African Americans dying of COVID-19 compared to other ethnicities. He is quoted as saying, "I'm not tryna be a lab rat man," on the radio show The Breakfast Club, which has a listenership of millions of Americans.

Actor Chet Hanks, son of celebrities Tom Hanks and Rita Wilson, shared on his Instagram, "If it ain't broke, don't fix it. I never had COVID. Y'aint sticking me with that M*#\$\$@%\$ needle. It's the M*#\$\$@%\$ flu. Get over it. If you're sick, stay inside." Both his parents have had COVID-19.

Actress Samaire Armstrong posts several anti-vax statements regarding the COVID-19 vaccine calling it an untested shot made by criminals in one. That is misinformation that has reached millions of her fans. The COVID

vaccines have been extensively studied and tested before being used on people.

Conservative podcast host Joe Rogan contracted COVID -19 and claimed to have ingested Ivermectin to combat the disease. He has encouraged young people who are healthy and exercise not to get the vaccine since they don't need it.

And the story of the anti-vaxxers gets sadder as some prominent anti-vaxxers have themselves succumbed to COVID-19 and died. Marc Bernier, a prominent conservative radio host who called himself Mr. Anti-Vax, died from COVID-19 in August of 2021. Caleb Wallace, a 30-year-old anti-vaxxer who founded the San Angelo Freedom Defenders, succumbed to COVID-19 after refusing to get the vaccine or wear masks. He also took Ivermectin and vitamins, among other drugs, to combat the disease before he became seriously ill.

All the above examples represent the type of people with anti-vaxxer sentiment that you will come across. Some are afraid, others are defiant, others lack information, and others are bitter.

As more celebrities, politicians, and thought leaders lend their voices to anti-vaxxer lies and misinformation, that wave of deception is not about to end. As a nurse, you must equip yourself with knowledge of what anti-vaxxer sentiments are out there about different vaccines so that you can advise and counter them when the need arises. And as you can see, the anti-vaxxers come from all ethnicities and walks of life. Knowing what to counter allows you to broach the subject while respecting the other person and leaving them with their dignity.

What To Do Around Anti Vaccination Colleagues?

It shouldn't surprise you that some of your colleagues in the healthcare industry are hesitant about vaccinations. But you should not make it your mission to "help them come to their senses". Difficult as it is, you must respect their stance and accept there are some clinical judgment tips to help deal with such a colleague in your work environment:

- Listen (if they are willing to share) and try to understand where they are coming from
- Ask if they can use other safety precautions to ensure their safety and well being
- Inform a supervisor of the situation, especially if the colleague is not taking any preventive measures for their safety (and even if they are).
- While you do not judge their decision, do not encourage them to share their sentiments with patients or the family/loved ones of patients.
- Protect yourself using the necessary safety precautions if you feel at risk by working next to such a colleague.

Types of Vaccines

There are five types of vaccines. These vaccines are given shortly after birth until the later stages of childhood.

Toxoid Vaccines:

These are vaccines that contain a weakened toxin (antigen). The toxin is weakened using chemicals or heat, making it too weak to cause disease, but it can still stimulate the body to produce antibodies.

Recombinant forms vaccine:

This vaccine is genetically modified and uses proteins instead of the whole cell to get an immunity response. Examples include the Hepatitis B vaccine.

Killed Virus Vaccine:

This vaccine contains a virus that has been killed or inactivated completely, but it can still cause an immune response in the body. An example of the Killed Virus Vaccine is the inactivated Poliovirus.

Conjugated Forms Vaccine:

The organism in this vaccine is altered before being joined to another substance, like a protein, to stimulate the body's immune response. Conjugated Hib is an example of such a vaccine.

Live Virus Vaccine:

This vaccine contains a live virus, but it has been attenuated (weakened) so that it cannot cause the disease, but it can stimulate an immune response from the body. An example is the measles vaccine.

Vaccines to Expect from a Medical Facility

Hepatitis B Vaccine

This vaccine contains a combination of three injections of monovalent HepB. The injections are given at birth, at one to two months, and 24 weeks. In cases where the mother tests positive for Hepatitis B, their newborn must receive both the monovalent HepB and the HepBimmune globulin within 12 hours of birth since Hepatitis B is transmitted through body fluids like blood and amniotic fluid.

Vaccine schedule

- Three injections for a newborn (within 12 hours of birth), between 4 -8 weeks (1-2 months), and at 24 weeks (6 months)
- Unvaccinated adolescents between 11 and 15 should receive two doses 4-6 months apart
- Adults over 18 years require two doses 4-6 months apart
- Adults in high-risk groups require two doses 4-6 months apart

Remaining unvaccinated for Hepatitis B puts one at risk of severe liver disease and liver cancer.

Side effects of Hepatitis B vaccine:

Some people complain of headaches and dizziness after receiving the vaccine. Infants and children may become irritable and fussy with a sore throat or running nose in the next few days. Many recipients will experience soreness, redness, or a purple spot or lump at the injection site. It is possible also to feel fatigued.

Hepatitis A Vaccine

The Hepatitis A vaccine is recommended for all children when they get to one year; however, it is not licensed for use with younger infants. This vaccine is administered in two doses, the first between 12 and 23 months and the second six months after the first one.

Vaccine schedule

- First dose at one year old (or between one and two years old) and second dose six months after the initial one.
- Older children and teens can receive the two-injection series six months apart

Side effects of Hepatitis A vaccine:

The side effects of the Hepatitis A vaccine include soreness at the site of the vaccine, headache, and malaise. These side effects are typically mild.

Inactivated Poliovirus Vaccine

Polio is a severe viral infection that can be fatal, while in some survivors, it causes paralysis. Before the introduction of the Inactivated Poliovirus vaccine, there were over 20,000 child deaths from the disease in the United States. And although the U.S. is polio-free, the disease is still present in some third-world countries, so the vaccine is still required for children worldwide.

The oral vaccine (OPV) is no longer administered in the U.S. because of the minimal risk (but a risk nonetheless) of causing the disease. Instead, the children are given four doses of the injectable polio vaccine.

Vaccine schedule

- Children receive the injections at
- Two months
- Four months
- 6-18 months
- A booster between 4 and 6 years

Side effects of Inactivated Polio Vaccine:

This vaccine is not given to children with a severe reaction to streptomycin, neomycin, or polymyxin B, although there may be allergic reactions, these are very rare. There are typically no serious complications from using this vaccine.

DTap/TDAP vaccine

This is the vaccine against Diphtheria and Pertussis, both very contagious bacterial diseases that attack the upper respiratory tract. The same vaccine protects against tetanus which can be contracted from cuts, scratches, and wounds. This vaccine is recommended for all children.

DTap is a newer, improved version of the DTP vaccine that caused much controversy in the 70s all over Europe, North America, Asia, and Australia. DTP is no longer in use in the United States. TDAP is the booster shot for DTaP, which is meant to continue the body's immunity to these diseases throughout adulthood. It should be given every 10 years starting from the age of 11.

DTap in children is administered in five doses:

Vaccine schedule

- In children, DTap is given at 2, 4, 6, 5-18 months, and 4-6 years. If the child missed the 4-6 years vaccine, they could be given a booster at 11 to 12

years.

- The vaccine can be administered between 7-9 years as part of a child's catch-up series, but they still require the booster shot at 11 years.
- It can be administered to minors between 11 and 18 years in one shot as an adolescent Tdap booster.

Side effects of DTap/ Tdap

The child may experience mild soreness on the vaccination site, nausea, or fever. Adverse reactions may occur in some children, including a high fever of over 105 degrees Fahrenheit, which may cause seizures.

MMR

This vaccine protects against measles, mumps, and rubella, which are all viral diseases, and all diseases are highly contagious and can catch children and adults. Children may also receive MMVR, which protects against not only measles, mumps, rubella but also chicken pox.

Vaccine schedule

- Children get two doses of the vaccine at 12-15 months and 4-6 years. It is okay for children to receive the second dose at least 28 days after the first one.
- Teens and young adults should receive two doses at least 28 days apart.
- Adults who don't have presumptive immunity should get at least one dose of the vaccine.
- Others may need two doses 28 days apart.
- Women of childbearing age should ensure they are vaccinated before getting pregnant.
- Pregnant women should not receive the vaccine

Side effects of the MMR vaccine

This vaccine has common side effects, including soreness on the arm after the shot, fever, pain, and stiffness of the joints, especially in teens and women who do not have immunity against the rubella component of the

vaccine. Some children also get mild rash. Complications from the vaccine are rare, but they can include the slight risk of seizures caused by high fever (febrile seizures). This complication is typically associated with older children getting the vaccine, which is why it is recommended to be given in infancy. Adults may experience swelling in the neck or cheeks, while others may experience a temporary drop in platelet count. Both febrile seizures and low platelet counts from the vaccine resolve themselves and do not leave long-term complications.

Varicella Vaccine

The varicella vaccine protects the body against the Varicella Zoster virus, which causes a blister rash, fever, muscle aches, and uncomfortable itching. This disease can become fatal if the blisters affect the air passageways, among other complications. Two vaccine doses are considered 90% effective in preventing chicken pox. The 90% efficacy means that some people vaccinated against chickenpox may get a milder version of it despite the vaccination.

Vaccine schedule

- Infants should receive the first dose of the vaccine at 12-18 months and the second dose at 4-6 years.
- Children should receive two doses 4-8 weeks apart.
- Adults should also receive two doses 4-8 weeks apart.

Side effects of the Varicella vaccine

The side effects of this vaccine are generally very mild, with some localized pain at the site of the injection, redness, and a slight swelling. Some people develop a rash around the site of the injection. A rare reaction to the vaccine is pneumonia, and some people also may get febrile seizures due to high fever.

HPV Vaccine:

The Human papillomavirus vaccine (HPV vaccine) contains over 100 viruses. This vaccine helps to protect the body against viruses that attack the mucosal tissue causing genital warts or putting one at low risk of cervical cancer. HPVs are very common; although they cause little to no symptoms, they are responsible for 99% of cervical cancer. They also cause anal, vaginal, and vulvar cancers. This vaccine is currently recommended for children under the age of 26 years, and it features a series of three injections.

Vaccine Schedule:

- The first dose is received at 11-12 years, but it can also be given to children (boys and girls) below 9 or above 18.
- The second dose is given two months later
- The third dose is given six months after the first dose.

Side effects of the HPV vaccine

Possible side effects include pain, redness, swelling at the injection site, fever, nausea, dizziness, joint and muscle pain, and headaches. Because of the dizziness and sometimes fainting experienced by some people after receiving the vaccine, it should be administered while one is lying down and the recipient monitored for at least 15 minutes to ensure they are well enough to stand and walk. The biggest concern is the recipient of the vaccine fainting and hurting themselves during their fall.

PPV Vaccine

The PPV vaccine is the Pneumococcal polysaccharide-23 vaccine which protects the body against the 23 types of pneumococcal bacteria. This is not a typical childhood vaccine, although it is administered to children at high risk of contracting a pneumococcal disease. It is also administered to older adults over 65 years due to their lowered immunity and susceptibility to this infection.

The vaccine is offered to children with chronic conditions like sickle cell anemia, chronic heart disease, lung disease, or diabetes. It is also given to kids with low immunity due to diseases like leukemia, lymphoma, HIV/AIDS, renal failure, Hodgkin's disease, nephrotic syndrome, and those who have undergone organ transplants.

Vaccine Schedule

There is no age-specific schedule to follow since the vaccine is administered as required.

- Adults over 65 need two pneumococcal doses: PCV13 and PPSV23
- Adults between 19 and 64 years also need two pneumococcal doses: PCV13 and PPSV23
- Healthy babies and young children should receive only the pneumococcal conjugate vaccine (PCV13)
- Children with medical conditions like those mentioned above should receive two pneumococcal doses: PCV13 and PPSV23. The number of doses depends on the child's medical condition.
- Children under two years should receive the PCV7 vaccine instead of the PCV13.

Side effects of the PPV vaccine

This vaccine may cause side effects like a decrease in appetite, elevated temperature, poor sleep or sleepiness, irritability, chills, and redness/pain or swell at the site of the injection. These side effects are typically mild and may last one to two days. A rare side effect is an anaphylactic reaction which causes breathing difficulties. It can occur within minutes of the administration of the vaccine. While it is alarming, it can be treated using adrenalin.

PCV7 Vaccine

This is the Heptavalent pneumococcal conjugate vaccine is used in children below the age of two years. The PCV7 vaccine offers immunity against seven serotypes of the Streptococcus pneumonia bacteria. As such, the child

is protected against invasive pneumococcal diseases like meningitis, otitis media, and pneumonia, among others. This vaccine is given early in the child's life because children are at a higher risk of contracting these diseases when younger due to their low immunity.

In some cases, this vaccine has been recommended for children between 2 and 5 years with chronic conditions like sickle cell anemia, heart/lung/liver disease, diabetes, cancer, spleen problems, or who are under drug therapy like chemotherapy or steroid use.

In healthy children, the vaccine is administered in four doses, but doctors advise the dosage in older children with the above-mentioned medical conditions.

Vaccine schedule

- They receive the first shot at 6-8 weeks
- The second shot is given at four months
- The third shot is received at six months
- The final shot is given between 12 and 18 months

Side effects of the PCV7 vaccine

The side effects of this vaccine include pain, tenderness, redness and swelling at the site of the injection, headache, fatigue, and low-grade fever. The child may also become fussy and irritable and experience muscle and joint pain, while others may have chills and loss of appetite.

Hib Vaccine

This is the Haemophilus influenza type b vaccine which protects the body against the deadly Haemophilus influenza. Haemophilus influenza causes severe respiratory infections, including meningitis, pneumonia, and pericarditis, among others, in children under the age of five years.

Children over six years do not typically require this vaccine. Still, doctors may recommend it for older children with chronic medical conditions like HIV/AIDS, Sickle cell anemia, cancer and chemotherapy, organ and bone marrow transplants, and damaged spleen.

Vaccine Schedule

The first dose is given at two months

The second dose is given at four months

The third dose is received at six months (it may or may not be necessary, depending on the brand of the vaccine).

The fourth dose is usually a booster that can be given at 12-15 months

Side effects of the Hib vaccine

The vaccine may interact negatively with some of the chemotherapy or immunosuppressive drugs or corticosteroids that the child may be used to treat their chronic condition. But in healthy children, the side effects are the typical headaches, pain at the site of the injection, high temperature, irritability, sleepiness, and loss of appetite.

How to Minimize the Side Effects of Vaccines

Immunization reactions can be made less distressing, making the child more comfortable by giving painkillers like acetaminophen even before the immunizations. The reactions that can be minimized include fever (less than 102 degrees Fahrenheit), decrease in appetite, swelling, irritability and tenderness, and redness at the injection site. That allows the child to pull through the side effects with at least some control over the discomfort.

However, suppose the child has more severe reactions to the vaccine, like fever over 102 degrees Fahrenheit, prolonged irritability, symptoms lasting more than two days, or high-pitched crying? In that case, they should be taken to the ER.

The Role of A Nurse In Educating Patients

As a nurse, your primary role is typically caring for the patient while they are in your care. Hopefully, they get better and are on their way without needing further assistance from you. But sometimes, caregiving doesn't always end in the ideal scenario of the patient resuming their everyday capabilities. And that is where clinical judgment in education comes in. You have to step in and teach the patient to live with their new deficiencies yet still enjoy a full life. Using your clinical judgment, you also have to discern which patient can learn new self-care skills in light of their treatment plan and which one needs outside help from home care nurses to cope.

Strategies of Adult Learning:



Adult patients already come into the medical facility with plenty of life experience, which may considerably affect their attitude towards education. This means that you will come across different patients that learn and process information differently. Below I will share with you the

principles/strategies of adult learning that will help you educate your patient or their family/caregiver when you need to.

The Practical and Goal-Oriented Strategy:

This approach provides adults with examples and summaries of the information they need to care for themselves or their loved ones. It gives the adult problem-solving exercises, and they also have collaborative discussions with you about the problems presented to them in the exercise. This strategy encourages the patient/loved ones to remain organized and timely with the ultimate goal in mind.

Example:

A patient has been injured on a construction site, and after treatment in a hospital facility, they need to continue their recovery and rehabilitation at home. The nurse has to teach the patient how to get off the bed correctly to avoid exacerbating their injuries. Also, how to care for any open wounds and how to approach physiotherapy if the patient is going to undertake that aspect of rehabilitation.

Also, it would help if you gave the patient reasonable timelines so they can work on their recovery journey. Please do not give them too much hope, too soon, which could cause them to have very high expectations which they cannot meet. But also, do not be pessimistic because you could kill their hope. Balance is called for when it comes to timelines.

The Knowledgeable Strategy:

This strategy works well with adults who are familiar with the medical industry. A nurse may face hurdles with well-educated and informed doctors or nurses who are the patients. They may not want you to tell them what they already know, so instead of trying to educate them, consider sharing with them so that you can tap into their vast knowledge.

In this approach, your job is to share new information with the patient, like new clinical trials or new therapies that they could consider.

Example:

A doctor has been diagnosed with a form of cancer caught in its early stages. As a nurse, although you may not need to provide new information to the patient since they may know about it, with some research, you could provide them with new information that they may not know. However, at the same time, you need to validate their knowledge and ask for feedback. Do not forget to show respect for their experience and knowledge.

The Self-Directed Strategy:

This strategy is excellent for patients and family members who like to be deeply involved in their treatment plans. So this approach gives the patient/family member specific responsibilities and allows them to explore different options when it comes to their treatment. There is a lot of active involvement, and the patient is allowed to offer their input as to what makes them most comfortable.

Example:

A parent with a child with diabetes, a chronic condition, needs to care for their child at home and as they live their daily life going to school and enjoying everyday activities. The parent has to remember to give their child insulin shots while also keeping up with new therapies that may come into the medical field to help manage the condition. The child's parent is actively involved in the treatment plan and allowed to explore different options for the patient's treatment. They also allow the patient or parent to have input that ensures they are as comfortable as possible.

The Motivated Strategy:

This approach is excellent for people keen on medical studies and contributing to the medical field. Medical staff tends to fall in this category because the study may provide certificates that contribute to their professional advancements or an education credit.

Example:

A nurse has a medical condition that is being studied, and they volunteer to be studied throughout their treatment plan. COVID-19 is an example of a disease in that people may volunteer to be studied as they receive treatment, and getting certification at the end may be beneficial for their careers.

The Relevancy Oriented Strategy

This approach informs the patient about the objectives of the treatment plan, and it explains everything being done to the patient during treatment and its relevance to the patient's well-being. Detail-oriented patients tend to want to know how every aspect of their treatment is relevant to their well-being.

Example:

A patient is diagnosed with blood cancer which requires a bone marrow transplant. With the delicateness of the procedure in mind, the patient needs reassurance and asks questions about the relevance of certain aspects of the treatment and objectives to expect. As a nurse, using the relevance-oriented strategy enables you to help the patient understand how critical each aspect of their treatment plan is.

Learning Styles that Work for Adult Patients

A nurse can use three learning styles, and they work with adult patients. They are:

Auditory (listening) style:

This style involves learning by talking and listening. It involves explaining procedures to the patient, who then repeats it. For patients that learn best with this style, you need to plan time to discuss and answer their questions. In some cases, you can provide audiotapes.

Visual style:

This style involves learning by reading and seeing visual materials that explain the step-by-step procedure of what the patient should do. Provide written instructions, pictures or images, and videos for a demonstration. You can also use charts and graphs.

Kinesthetic style:

This kinesthetic style requires learning through practice, doing, and handling. The patient receives hands-on experience as they learn as they handle equipment and supplies and also allow the patient to demonstrate back. In this case, there may be instruction, but it is kept to a minimum, and the patient is allowed to explore the equipment and supplies they will use. One way to know how effective a nurse's education is to evaluate the patient's outcome.

How to Ensure Patients are Ready to Learn

The family/patient/loved ones should be ready and willing to learn, and your job as the nurse is to determine that the patient is ready to learn. If they are not, then the instruction is of little value, and you may need to get psychological help to help them accept their current medical condition before you begin to give them any self-care instructions.

For a patient to be ready to learn, the patient must satisfy the following capabilities:

Physical capabilities: - The patient must be able to move and have the manual dexterity to perform the tasks required for their self-care. The nurse determines that the patient can perform the task according to their age and physical condition. To determine the patient's readiness, you may need to do some tests with the patient ranging from simple tasks to complex ones. Remember that age, gender and health may impact a patient's physical capabilities.

Mental capabilities: - The patient must also be able to emotionally and mentally deal with the tasks they need to accomplish for their recovery. In most hospitals and medical facilities, the patient must undergo a psychiatric evaluation to ensure that they are mentally and emotionally stable enough to handle the rigors of self-care and rehabilitation.

Anxiety, depression, and fear make it very difficult for the patient to learn. It is critical to reassure the patient and wait until they are emotionally and mentally receptive to learning and accepting their situation.

Knowledge capabilities: - The patient/family member must have knowledge capabilities, including cognitive skills. As a nurse, you must always begin by determining the amount of knowledge the patient/family member has about the disease, condition, or recovery process. When testing the knowledge capabilities, steer clear of technical language and medical jargon. Even basic medical terminology may be complicated for the patient, and it may interfere with your patient's ability to learn. Keep the instructions simple, basic and understandable.

If there is a language barrier, you should get a translator and take the culture and motivation to learn into account. Also, consider the patient's experience with learning, which could hinder acquiring the new skills needed to cope with their self-care. Some people come from a bad past learning experience and may be averse to learning. Find a way to communicate with the patient and alleviate their fear of learning.

Teaching Patients with a Visual Disability

When teaching a patient with a visual disability, it is critical to speak in a normal tone of voice. You will be using verbal teaching most of the time, where you repeat things several times for the patient. Avoid touching the patient too much because tactile stimulation may distract them too much. Never push the patient, and try to inform them when you want to go past them. Encourage the patient to verbalize when they understand the instruction to show that they have attained the knowledge.

Also, use vision-related words. Most people who can see tend to feel uncomfortable talking to the visually impaired using vision-related words and phrases. For example, you may feel uncomfortable telling a visually impaired patient, “nice to see “you”. Actually, using these words may be beneficial to normalize the conversation.

And when you talk to visually impaired patients, be very clear in your meaning. For example, instead of saying, “There is a seat there”, you can say”, “There is a seat to your right.”

Teaching Patients with A Hearing Disability

Use visual cues to help the patient understand your meaning and to follow instructions. Ensure your instruction has few words and is more demonstrative. Role-playing, demonstration, and practical examples work best with patients with hearing disabilities.

Print out learning materials with images and pictures. If the problem is a partial loss of hearing, perhaps you could slow down your speech. You can also give a heads up when a vital instruction is coming up and use sequencing words like first, second, third, and finally.

Also, there is assistive technology which involves wearing headphones that reduce background noise and allow the patient to focus on the instructions.

Teaching Patients with expressive problems

Allow the patient to process the information at their own pace when dealing with a patient/family member with expressive problems. The patient should be able to answer questions according to their understanding of the instruction and ensure they are patient; just because the patient has an expressive problem does not mean that they are slow to understand.

The nurse and patient can use hand gestures and demonstrations and even use their five senses to communicate with each other during the learning process. If the patient has developmental disability needs, the nurse is to present the instructions in a format that is easy for them to understand according to their level.

Considering that you have to teach patients with disabilities about critical aspects of their care, like medication and procedures, here are some tips to ensure that they get the relevant information and don't overwhelm the patient with too much information:

- Do not use technical language
- Offer the patient praise and feedback when they get the instruction right.
- Offer the patient empathy with each learning session so they can feel free to express themselves during their learning process.
- Provide the patient with adequate information to understand and manage their condition despite their disability.
- Prepare a checklist for the patient that they can use to ensure they have covered all the required aspects of their self-care.
- Provide the relevant resources that the patient will need to accomplish self-care at home upon discharge.

Ensure the patient is well trained on specialized equipment and has access to supplies outside the hospital. This ensures the patient has everything to enable them to recover properly.

During the learning process, ensure that you give priority to the essential instructions and plan to be flexible when the patient may not be responsive to the learning process.

Always observe the patient's state of mind before you begin the learning process. If they are not receptive to the instruction or session, kindly do not force them. A little compassion goes a long way in helping you and your patient to achieve your goals on both ends.

Teaching Elderly Patients

When handling elderly patients, you must be not only patient but also cautious. Their bodies move differently because of age, and the deterioration of their muscle and bone mass makes them susceptible to breaks and fractures.

As a nurse, you must determine the capability of the elderly patient to function before you let them take over their self-care. Ensure that their cognitive abilities or mobility are not affected by their condition.

Some of the conditions to look out for when teaching them about their care include:

- Diminished concentration levels
- Short-term memory loss (they may forget that they have taken medication and retake it, resulting in an overdose).
- Delayed or complete inability to react to dangerous situations.
- Poor vision or hearing or problems expressing themselves
- Color discrimination, when the patient cannot discern and differentiate the colors.

Tailor the teaching to accommodate patients' age, conditions, and deficits. It is recommended to have the patient's family sit in on the teaching so that they can pick up the slack where the elderly patient may fall short.

It is also recommended that any written instructions be put down on non-glare paper and that they are printed in large font. Also, consider using color coding cues to help the patient remember essential aspects of their self-care.

When teaching an elderly patient, here are some tips that could be beneficial for you:

- Use as much visual/audio support as possible to ensure that the patient has a visual or auditory memory of the instruction.
- Repeat information as much as possible and get verbal acknowledgment from the patient to denote understanding.
- Encourage the patient to use any devices that help, like hearing devices or reading glasses.
- Face the patient when speaking so that they can make a connection between you and the information you are giving them.

- Speak calmly and slowly while making eye contact. Ask if the patient understands what you are regularly saying but do not be condescending. Some elderly patients may mistake your repeated queries about understanding to mean that they are slow or diminished. Reassure them that that is not the case and show respect for their past professional and life experiences.
- Always make sure that the room you are using is well-lit.

Aside from teaching a patient how to care for themselves, a nurse needs to add to their knowledge to promote their clinical judgment and professional knowledge. Nurses must keep up to date with their knowledge and education, considering that they are in an ever-evolving care environment.

Here are five approaches that you will encounter in the nursing education field:

One-on-one instruction: This is where you have a one-on-one interaction with the person instructing you. It is the preferred approach when it comes to giving targeted instructions for a procedure on individual patients.

Discussions: This is whereby you are paired with other learners creating small groups where people can actively participate. Discussion groups are excellent for brainstorming and coming up with solutions to difficult problems.

Lectures: Lectures are used to pass detailed information to a large group of people. This approach limits discussion while disseminating a lot of information. There may be a lot of questions and answers to clarify the points offered in the lecture. For a lecture to be practical, it is best to have audio-visual aspects as well.

Educational seminars: These are workshops that allow small groups of people to interact, providing maximum participation. Educational seminars are excellent for practice and demonstration sessions.

Online modules: This approach allows everything to be done online. So all the learning is carried out online, making it an excellent option for independent learners.

Chapter Four: Disease Prevention and Health Promotion Block

The role of a nurse in disease prevention and health promotion is to assist patients in changing their behavior patterns to maintain optimal well-being. When you prevent diseases and promote healthy choices, you control the spread of disease, which mitigates early deaths and high costs of medical care.

Understanding Human Growth and Development in Human Beings

To use your clinical judgment correctly, it is crucial to understand what happens from infancy to adulthood. That process is known as human growth and development. Understanding human growth and development helps you to know how to deal with and discern certain conditions in people of all age groups.

In the medical field, human development and growth help you understand what other people are going through, how to support mental and emotional health, and to lead more effectively in your health care unit.

What is human growth and development?

Human growth and development is a lifelong process featuring behavioral, physical, mental, emotional, and cognitive change and growth. It is broken down into eight stages

1. Infancy

This stage of human growth and development is the time in life when a child learns about trust and mistrust. Understanding the infancy stage will help a nurse use clinical judgment in the following ways when caring for a patient in this age group:

- Know when to pick up the baby and when not to
- Know what cry is a typical fussy cry or a cry due to pain or discomfort
- Know the best way to carry a child that makes them trust you more

As a nurse caring for infants in the pediatric ward, you need to build trust in the infants you care for. When an infant cries to be fed or changed, and you carry them, they learn to trust and rely on you. So when you need to dispense medicine, the infant will still trust you. If you do not meet the infant's needs, they trust you less.

Pro tip:

The pediatric nurse must use their clinical judgment to build trust in infants and to know when they need emergency attention and when to let the child calm down by themselves.

2. Toddlerhood

In this stage of human growth and development, the child is learning autonomy and still depends on the adults they trust. Use your clinical judgment to help you allow the toddler enough independence to safely take care of minor medical details and know when to step in with the more crucial medical procedures.

For example, understanding a toddler's independence allows you to change a small band-aid on a minor cut. But you also use your clinical judgment to know when to step in and give a child a cold compress to bring their temperature down or use medication.

Pro tip:

Use your clinical judgment to tell when to encourage a toddler's independence and when to take over the situation.

3. Pre-school

In this stage of human development, the child is more independent, taking the initiative. As a nurse, you need to use clinical judgment to know how to navigate the assertive nature of kids at this age. If you need to administer vaccines and other medication or prepare a child for a procedure, you need to use your clinical judgment to handle their fears, reassure them, and still do your job with care.

For example, while respecting the child's initiative, you must use your clinical judgment to know when to accomplish your job without being overly assertive with the child. Over assertiveness may make the child fearful or feel guilty about being ill in the first place.

Pro tip:

Use your clinical judgment to allow initiative in a pre-schooler and know when to become assertive. For instance, you can allow the child to choose which part of their body to get a shot, on the bum or the arm, but become assertive about them sitting still and not talking during the shot.

4. Early School Years

Constant comparisons with peers characterize this stage of human growth and development. A nurse needs to use clinical judgment to know how to tread softly and not bruise a fragile ego or body image during treatment.

For example, if the child is conscious of a body part, respect their reluctance to expose it. Reassure them of their self-worth and assure them that the procedure is necessary and they can trust you to be respectful of their space. If you overlook their concerns and fears, they may not trust you to provide the critical care they need.

Pro tip:

Use your clinical judgment and take them to a private room and talk to them away from prying eyes and ears (even if they are parents, if it makes the child more forthcoming with critical information).

5. Adolescence

This developmental and growth stage is characterized by an identity crisis where the minor feels very conflicted about many things in their lives. When they seek treatment, connect with them and acknowledge their fears and self-consciousness. Adolescents are very perceptive and sensitive so use your clinical judgment to know how far to push and when to hold off on certain things.

For example, if an adolescent girl comes for treatment and wants to talk about having a surgical procedure to enhance their features, do not be judgmental. Use your clinical judgment to find out the underlying reason for their insecurity and how it affects their well-being.

Pro tip:

Use your clinical judgment and provide treatment while inspiring confidence in the teenager. Remember, this is still a child, so be gentle and understanding. But even as you use your clinical judgment to deal with the adolescent, respect the parental boundaries and keep it professional.

6. Young Adulthood

In this stage, the person is old enough to be legally considered an adult but may not have the life experience to make adult decisions. There is a lot of experimentation at this stage of human development and growth as one seeks to solidify their identity following the confusion surrounding adolescence.

For example, a young adult could have struggled with their appearance as a teen. But now, they can make their own decisions about any changes they want to their appearance without needing their parent's consent. Again, this is another situation where you use your clinical judgment to determine the underlying reason for the patient seeking surgery.

Pro tip:

As a nurse, you should use your clinical judgment to determine whether the surgery is needed and beneficial or if the patient needs therapy to overcome their insecurities without going under the knife.

7. Middle Adulthood

In this stage, one is steeped in their life experiences, so they may be busy pursuing careers and raising families. When they come to the hospital, they may not want to share information that could jeopardize their professional or home situation.

For example, a military pilot's job description may have specific medical stipulations preventing the patient from continuing their career path. An example is the pilot's eyesight or hearing.

Suppose the pilot's eyesight and hearing are compromised. In that case, you need to use clinical judgment to explain the situation to the patient and give them counseling to cope with the upcoming changes to their career.

Pro tip:

As a nurse, you should use clinical judgment to see if the patient can handle the life-changing news that will be delivered to them. Prepare the hospital psychologist/psychiatrist to have a session with the patient and their family.

8. Late Adulthood

These are older adults facing the end of life and the decisions that come with it. Fear of disease or cognitive decline could make such patients afraid of seeking medical attention.

For example, an older adult comes with a fracture, and they are ashamed of having fallen in the bathroom or their decline in mobility as they grow older.

Pro tip:

As a nurse, use your clinical judgment to reassure the patient, treat them respectfully and discuss the treatment plan with the patient.

Issues Of Human Development That Will Help Your Clinical Judgment

Nature versus Nurture

As a nurse, you need to know nature according to the patient's genetics. Nurturing, on the other hand, is listening and understanding the patient while giving them the care they need according to your clinical judgment.

Universality versus Context Specificity

Universality typically implies that all individuals develop similarly regardless of their culture. However, context specificity suggests that culture can influence and affect every individual differently.

Behavioral Issues

Children tend to behave the same way regardless of where they are and who they are with. On the flip side, children change their behavior depending on the setting and whom they interact with.

Continuity versus Discontinuity

Continuity allows human growth and development to progress steadily. On the other hand, discontinuity halts or interrupts progress, and its effects on early development tend to have a bearing on later development.

Activity and Passivity

Activity refers to a child's development influenced by their own initiative, while passivity is development influenced by outside forces, including parental interference, among others.

The critical versus the sensitive period

During human development and growth, there is a period when a child is sensitive, which is when they are most receptive to learning new skills. There is also the critical period, the window when a child grows and acquires new behaviors and skills.

The Three Doctrines about Human Nature

There are three doctrines about human nature: original sin, innate purity, and tabula rasa. According to original sin, all children are bad and must be taught to be good. Innate purity, on the other hand, implies that children are inherently good. And finally, tabula rasa implies that children are born without any bad or good in them, but good and bad tendencies are taught.

The Different Aspects of Human Growth and Development

Piaget's Theory of Cognitive Development

Jean Piaget's theory of cognitive development implies that intelligence in children grows as they grow. And cognitive development is not only about

acquiring knowledge but also the development of their mental outlook on the world.

There are four stages in this theory:

The Sensorimotor stage: This stage is from birth to two years old, a period of rapid cognitive growth and development. During this stage of development and growth, infants develop an understanding of their world through sensory experiences and motor actions.

The sensorimotor stage is essential because it is when infants realize that events and objects are all around them. That is why a child will look for items when you hide them or get excited about a birthday party. The sensorimotor stage is further broken down into six sub-categories:

- a) Reflex acts – this is the first substage that comes in the first month of life. For example, when you touch a finger to a baby's cheek or mouth, they reflexively begin to suck.
- b) Primary circular reactions –this is the second substage within the first to fourth months. It involves the infant mimicking the pleasurable actions you may have done to them. For example, if you rub their feet, they will rub their feet together when alone or suck their thumb. Remember, these are not involuntary reflex actions; they are deliberate actions that the infant indulges in for their own pleasure.
- c) Secondary circular reactions – this is the third substage within the fourth to the eighth months. During this stage, the infants repeat pleasurable actions involving toys and their own bodies. For example, they want to shake the rattle or press the rubber duckie when bathing.
- d) Coordinating secondary schemes – In this fourth substage, the child can sustain an interest in the events around them. So the child uses the knowledge they have acquired to reach goals.
- e) Tertiary Circular reactions – This is the fifth substage where the child is now taking things apart intentionally to be able to take them apart again. For example, the child stacks Legos up and then tears them down, only to build them up again.

f) Symbolic thought – This is the final substage where the child can form a mental representation of the events occurring around them. This stage of human development indicates that the child can think of things beyond the physically present. The child is able to reason, has forward-thinking skills, and indulges in abstract thinking.

The Preoperational stage: This is the stage between the ages of two and seven years. It is the age when language skills develop, but their thoughts are entirely focused on themselves. The child cannot think abstractly, so they have a lot of fantasy moments.

During this stage, the child goes through:

Centration

Centration is where the child focuses on only one aspect of the situation. That is why you can give a child multiple instructions, but they can only focus on one and get lost in it while forgetting everything else. For example, you may tell a child to color a picture and then clean their room, but hours later, you will find the child still coloring their picture.

Play

The child is very playful during the preoperational stage. They are interested in parallel play, meaning they will play in the same room with other children but do not necessarily play directly with the others. In this case, each child is absorbed in their own private game. So the speech capability in the child during this period is more to communicate with themselves rather than communicate with others.

Egocentrism

Egocentrism is a person's ability to see the situation from someone else's point of view. Children between the age of two to seven years have egocentrism not because they are self-centered but because they believe that other people feel, hear or see exactly what the child is feeling. So the child

is not trying to be difficult; they are still growing in their empathy and understanding of other people. You will notice that most children this age are always talking about themselves or things that matter to them.

Symbolic representation

In the preoperational period, you will notice the child makes an object or word represent something apart from the actual thing. This is symbolism. For example, a child may call their potty “The Big Box”.

The Concrete Operations Stage: This stage is between 7 and 11 years of age, where logical operations and logical reasoning characterize a child’s thinking capabilities. The child is beginning to classify things like flowers and animals, and they further understand additional classifications like red and yellow flowers or animals that swim and those that walk.

The child can also do mental gymnastics, like sorting a group of things in order. They can learn patterns and classification and understand the relationship between events and objects.

The Formal Operations Stage: This stage starts at 12 years old and goes on as the child grows older into adulthood. It involves abstract thinking, where the person can think and reason about things and make critical analysis that helps them make arguments for or against a situation.

This process is characterized by logical sequences of thinking resulting in rational decisions. The child is willing to think about possibilities and systematically search for solutions.

In case they are faced with a complex issue, they can come up with several possible solutions before settling on the best possible one for the scenario. Formal operations help adolescents and adults become rational, self-conscious, and decisive.

Pro tip:

Understanding Piaget's theory of cognitive development helps you to make the correct clinical judgments when interacting with patients of different age groups. For example, you cannot expect a child of 7 to 11 in the concrete operations stage to have the same cognitive capabilities as a child/adolescent in the formal operations stage.

Developmental Tasks According to Erikson

This theory comes from Erik Erikson, a German psychologist who believed that there were eight stages of psychological struggle that every human goes through, resulting in their personality. These eight stages are what we know as Erikson's developmental tasks or stages. I mentioned these stages above in detail. They are

- Stage one: Infancy (trust versus mistrust)
- Stage two: Toddler (Shame and doubt versus autonomy)
- Stage three: Pre-school age (initiative versus guilt)
- Stage four: School age (industry versus inferiority)
- Stage five: Adolescence (identity versus identity confusion)
- Stage six: Young adulthood (Intimacy versus isolation)
- Stage seven: Middle age (generativity versus stagnation)
- Stage eight: Older adulthood (Integrity versus despair)

All the stages relate to each other intricately. If an infant doesn't have their needs met or is neglected, they develop mistrust. Unfortunately, when trust isn't established at this stage in life, it becomes much more challenging for the child to trust others later in life. Because their needs are constantly unmet, the infant develops a sense of hopelessness when faced with a crisis because they have no one to depend on.

The mistrust follows the child into toddlerhood, where they are supposed to develop autonomy. Without praise to encourage them to become autonomous and develop a foundation of self-belief, the child develops doubt about their abilities.

When the child enters the pre-school stage, if they are unable to learn to become independent and develop a sense of goal, they struggle as adolescents with growing in their formal operations. As the child progresses into their early school years, their mistrust increases, and they struggle with their individuality. They seek praise and support from others to feel a sense of accomplishment. This support and affection are critical for the child as they go into adolescence, where there is a lot of identity confusion.

In adulthood, the person moves from young adulthood to middle to older adulthood with all the challenges that come with these stages. The challenges range from isolation to stagnation and despair as you grow older.

Pro tip:

Understanding Erikson's stages of development help you make the best clinical judgment when dealing with people at these different stages of development. You can reassure an older adult in despair due to their health or encourage a middle-aged person who feels like they are stagnating in their health goals. You can give early schoolers the responsibility of writing down their healing progress when recovering from an injury or caring for a wound.

Sigmund Freud's Stages of Psychosexual Development

The Sigmund Freud stages of psychosexual development focus on the development of gender association and roles in the child's mind.

Stage one: This is the oral stage which is from birth to one year. During this stage, the infant is obsessed with oral activities and has an immense attachment to the mother, and the mother should reciprocate the attachment. At this stage, the mouth is the erogenous zone, as the child derives pleasure from sucking and eating.

Stage two: This is the anal stage, when the child masters their toilet training. It runs from one to three years old, and the anus is the erogenous zone as the child enjoys pooping. Parents should avoid shaming, ridiculing, or scolding the child for accidents because this stage needs encouragement to master. If the parent is too strict with this process or starts toilet training too early, the child is likely to get an anal-retentive personality that makes them too rigid, orderly, or obsessive.

Stage three: This is the phallic stage which ranges from three to six years, where their primary focus is on the genitals. It is a crucial stage when children begin to notice the differences between boys and girls. Also, Freud believes that at this stage, girls begin to view their mothers as a rival for their father's affections, and boys begin to view their fathers as rivals for their mother's affections.

In Electra complex describes these feelings in girls, and the Oedipus complex describes them in boys. Eventually, the child begins to identify with the same-sex parent at some point.

Stage four: This is the latent period that entails inactive sexual feelings ranging from six years old to puberty. This allows the children to develop social skills and relationships with peers while strengthening their cultural and familial values.

As the sexual energy becomes dormant and repressed, the child can explore their intellectual pursuits and improve their social interactions. It is a critical stage in developing self-confidence and social skills.

Stage five: This is the genital stage which ranges from puberty to death, where one's sexual interests mature. At this stage, the individual develops a strong sexual interest in members of the opposite sex (or the same sex). The genital stage lasts from puberty to throughout a person's life.

Pro tip:

This theory is critical in clinical judgment when dealing with illness or trauma of a sexual nature. You learn what to expect from all life stages and how that affects one's mental and physical health.

Maslow's Hierarchy of Needs

Maslow's hierarchy of needs is portrayed as a pyramid of physiological, safety, love/belonging, esteem/self-respect, and self-actualization.

Physiological needs refer to the need for shelter, sleep, warmth, food, air, and water.

Safety refers to a safe place to live, a safe society, the stability of a job, protection from harm, and savings for the future.

Love and belonging refer to a sense of family and community. It involves having friends, family, co-workers, and religion that you belong to.

Esteem refers to being respected and feeling worthy and successful in your life.

Self-actualization refers to accepting your life, the choices you have made, and situations that are out of your control. It also involves being empathetic to others while feeling free to enjoy and appreciate life.

Pro Tip:

When one has Maslow's hierarchy of needs met, they are more likely to follow through with treatment and be optimistic about it. As a nurse, you need to use your clinical judgment to determine what of the above needs you can meet to facilitate a positive treatment environment for your patient.

Behavioral Theories

The Pavlov Theory

This theory claims that learning occurs once a behavior results in responding to a stimulus entirely unrelated to the behavior. For example, a dog with classic conditioning will salivate when given food, but it would also salivate when the person who gives it food is present. Pavlov did an experiment where he rang a bell during a scheduled feeding time, and the dog would also salivate when it heard the bell. This experiment reinforced his theory that you can learn behavior in response to a stimulus that is not necessarily related to the behavior.

Pro Tip:

As a nurse, you should learn patient behavior that accompanies a particular stimulus and use clinical judgment to navigate the behavior safely. For example, a patient may begin to tremble when you walk into the room in your nurse's uniform, but they won't when you walk and are wearing scrubs while attending to them. Use your clinical judgment to wear clothing that puts them at ease so they can receive the best treatment.

The Skinner Theory:

This theory claims that behavior can be changed depending on what response is given to it. If you praise a patient when they behave a certain way, you reinforce their behavior to that stimulus, and it will increase in frequency. If you react negatively, they will cease the behavior or decrease it.

Pro Tip:

Use your clinical judgment to learn what behaviors to reinforce and which to discourage. The reinforced behaviors should be beneficial to the patient's treatment plan. For example, you have a child patient who is afraid of injections but must have a series of them to get well. Every time it is time for injection, they run from the room or fight you. Once you give them the injection, hug them and praise them for their bravery, but also give them the treat to take the edge away.

Many pediatricians keep treats in their offices to entice their small patients enabling them to carry out examinations and treatments with less fuss. Hugging and praising gives the interaction with the child a positive spin lessening their fear of the injection and building trust. Use your clinical judgment to determine the best approach, depending on the patient's age.

Biological Theories of Aging

Aging is not an instant process but a gradual one. The biological theories of aging highlight how the aging process occurs and how they affect the overall being. There are several biological theories, including:

The autoimmune reaction theory: This theory claims that the body develops an automatic immune reaction to itself due to aging causing damage and destroying tissues.

The wear and tear theory: According to this theory, the body begins to wear down over time because it is like a machine, and it wears down because of damage due to many years of use.

The homeostasis theory: In this theory, due to the shelf life of the body, over time, it is unable to maintain stable chemical levels in the body.

The cellular programming theory: This theory claims that every organism has a programmed and pre-determined life expectancy, and one cannot survive beyond it.

The free radicals theory: This theory claims that the accumulation of free radicals in the body results in aging and disease.

The mutation theory: In this theory, mutations occur in all organisms over time, eventually affecting life because they make changes incompatible with the sustenance of life.

Pro Tip:

When dealing with middle to older adults, it is essential to consider the biological theories of aging to guide your clinical judgment. This will help you determine where the patient is in the aging process and how to approach their treatment while maintaining their dignity and compassion.

The Biopsychosocial Theory in Patient Care

This theory claims that psychological, biological, and social circumstances interact with each other in the development of an illness. So they must also interact in the treatment and recovery of the illness. That is why the treatment plan features a multidisciplinary approach where nurses, mental health experts, physicians (surgeons if need be), and social workers are involved.

Depending on their specialization, these professionals speak to the medical problem, the social and cultural issues surrounding the patient, their economic situation, and their psychological state. It can be challenging to treat a patient struggling in one of these areas effectively.

Pro Tip:

Use your clinical judgment to determine when to recommend some of these experts in the patient's treatment journey. For example, you may notice a patient lose their zest for life and call in a psychiatrist who may identify that the social and cultural situation of the patient is the culprit. In this case, the social worker's services are also needed to resolve the patient's concerns and ensure the best care.

The Seyle's Theory of Adaptation

This theory claims that a person's physiologic response to stress is fight or flight in what is known as the general adaptation syndrome. Patients get these symptoms when faced with their diagnosis. In the beginning, the body releases catecholamines starting the adrenal cortical response, which is the alarm response.

The alarm response is quickly followed by the resistance stage, as the body cannot sustain the alarm response for long without dying. The resistance stage is when the body begins to adapt to the stressor. But if the stressor consistently continues to cause stress, the body becomes exhausted and starts to shut down. The shutdown affects the immune system as well as the gastrointestinal and cardiovascular systems.

The good news is that the body doesn't typically become exhausted by most stressors. But as it ages, the body loses some of its resistance and adaptability to these stressors, even the small ones. If the body is too aged and weak, the stressors could cause exhaustion and death.

Pro Tip:

Use your clinical judgment to determine whether a patient can adapt to the stressor causing their illness. Then create a treatment plan that helps them cope with the stressor while recovering. You may notice that you need this aspect of clinical judgment more when dealing with elderly people than with younger people.

Self-Management in Health

Health is determined by lifestyle choices, personal habits, and environmental factors that may or may not be beyond our control.



According to the U.S. Public Health Service Program called Healthy People 2030, there are five main sections of this program which are:

- Health behaviors
- Health conditions
- Populations
- Social determinants of health
- Settings and systems

The goal of the program is

1. To attain healthy, thriving lives free of preventable illnesses, injury, disability, and premature death.
2. To create conducive environments for health promotion

3. To eliminate health disparities, achieve health equality, and increase health literacy
4. Improve health in all life stages
5. Collaborate with leadership and key stakeholders in designing a policy that improves the overall health of all people.

Committing to health self-management is essential, which promotes health maintenance and disease prevention. It consists of strategies that maintain and improve health over time, including:

Primary prevention: measures you undertake before any illness to avoid infections in populations.

Secondary prevention: Measures that detect, screen, and treat illnesses in their early stages.

Tertiary prevention: Measures that prevent comorbid illnesses that may arise from the original disease.

The Main Components of Health Promotion

Education:

Individuals must be educated about making the best lifestyle choices that promote their health and allow them to live with dignity. That means they should be taught about their risk factors and encouraged to make informed choices that will mitigate those factors.

Good nutrition:

People must be taught about good nutrition to ensure that their bodies get enough nutrients to sustain life. Books and articles about nutrition play a massive role in teaching nutrition and its benefits. Individuals must inform themselves about the best foods with nutritional value that they need to sustain their energy levels and overall health.

Good nutrition also involves avoiding taking anything that could compromise your health. That means you stay away from drugs, including marijuana, cocaine, heroin, prescription drugs, and alcohol. The individual needs to be educated about the harm that comes with consuming some of these substances.

For example, smoking is acceptable in many cultures and not even considered a drug. But nicotine is a drug. In this case, you can use your clinical judgment to teach the individual the following strategies:

- Educating the individual about the effects of smoking on the body
- Educating the individual about quitting strategies and medications that could help the process
- Coming up with a quit date
- Offering information about the smoking cessation program
- Rewarding the successes of the individual as they gradually overcome their addiction to nicotine
- Encouraging the individual after relapses and addressing the cause of the relapse
- Provide support via phone calls and personal visits. Ensure that you make time to talk with the individual to help with accountability and keep the momentum going.

Physical fitness:

Individuals must be encouraged to view physical fitness as an essential part of the health and wellness journey. It helps improve an individual's cardiovascular health, relieves stress, delays aging, and increases endurance.

Stress:

Stress has become a constant in daily life in this era. Individuals must always learn to manage and decrease their stress levels to maintain and achieve good health. The effects of stress can exacerbate chronic illnesses and trauma and increase the risk of additional infections.

Principles of Health Nutrition

To eat healthily, you need a plan and a direction when it comes to nutrition. Here are healthy nutrition principles to follow:

- ❖ Carbohydrates should make 55 to 60% of the meal, and fats should be 30%, with the remaining 10 to 15% being lean protein. When eating for weight loss, the patient should be encouraged to increase their lean protein while not neglecting their carbohydrates completely.
- ❖ Maintain calcium of 1300 mg daily for girls to women between 13 and 18 years. That is also a good range for pregnant women or lactating mothers who need enough calcium intake. Reduce the calcium intake to 1000 mg for women aged 19 to 50 years and then back up to 1500 mg for women above 51 years. People should take 200-800 IU of vitamin D to absorb calcium adequately.
- ❖ Eat a lot of vegetables and fruits to ensure you consume vitamins and nutrients.
- ❖ Restrict the cholesterol to 300 mg and saturated fat to less than 10%.
- ❖ Use little salt and sugar and also take multivitamin supplements to boost folic acid for pregnant and childbearing-age women.
- ❖ Pregnant women should not be encouraged to lose weight. People on chemotherapy and other drug therapies should also not try to lose weight while taking the medication.
- ❖ On the other hand, weight loss should be encouraged in individuals with diabetes, inflammation, joint pain, renal disease, cardiovascular disease, and hypothyroidism.

Importance of Health Screening

Health screening is taking tests to look for diseases that an individual may be worried about.

Health Screening in Young Adults:

Young adults may be oblivious of genetic diseases they carry because they are at the prime of their lives health wise. According to the (USPSTF) U.S. Preventive Service Task Force, screening for this age group (20 to 39 years) should include the following:

- A pelvic assessment and pap smear every three to five years together with HPV testing.
- A full body physical every five to six years
- An annual dental checkup
- PPD test for tuberculosis if one is at higher risk of contracting the disease (health care workers, immunocompromised people, homelessness, or prison settings).
- Thyroid palpitations every three years
- Cholesterol screening every five years with follow-up visits if the tests indicate 200 mg /dL.
- Men should perform testicular exams monthly and women's breast exams every month.
- Women should have a comprehensive clinical breast exam.
- Annual influenza vaccination
- Blood pressure screening every three to five years

Health Screening in Adults

Adult screening is necessary, and according to (USPSTF) U.S. Preventive Service Task Force, the following areas should be included in their screening. The average age group for this adult screening is 40 years and above.

- Blood pressure screening annually
- A complete head-to-toe physical once a year
- A clinical breast exam once a year
- A biennial mammogram for women above 50 years
- An ECG annually but only if there is a risk of cardiac problems
- In men, prostate specific cancer screening for men over 50 with an average risk of the illness
- General colorectal cancer screening annually for risk
- General colorectal cancer screening using a colonoscopy every ten years

However, there are some controversial screenings in the medical field. These include:

- ★ Screening for depression in a person who has not shown any symptoms
- ★ Screening for cholesterol in an individual without any symptoms
- ★ Screening for dementia in an individual without any symptoms of the disease
- ★ Screening for prostate and colon cancer
- ★ Screening for osteoporosis and bone densitometry in postmenopausal women

It is also considered controversial to counsel female patients to take hormone prophylaxis

How to Achieve Disease Prevention in the Elderly



The primary reason for death in elderly patients is usually chronic diseases that come with age. That is why healthy older people should make it mandatory to go for an annual health and wellness checkup. This age group can react very well to the prevention of diseases.

There are several primary prevention strategies for disease prevention in older adults. They include:

1. Immunization

This is where elderly people take vaccines to prevent diseases or mitigate the harshness of certain illnesses should they contract them. For example, older adults were encouraged to get the COVID-19 vaccine to help prevent the disease or lessen its severity should the individual contract it.

2. Fall prevention

Older people are at a high risk of falling as they experience overall weakness, balance problems, vision issues, cognitive problems, and frailty due to age. Unfortunately, most injuries in elderly people result from falls, with the leading injury being fractured. Prevent these falls and subsequent

injuries by assessing and adding the necessary home safety devices like a walker, cane, railings, and ramps.

3. Physical fitness

The more physically fit an older adult is, the less likely they are to contract certain chronic lifestyle diseases like diabetes and high blood pressure. Physical fitness improves cognitive functions like memory and promotes physical health by preventing diseases like heart disease and hypertension. Also, it helps with mental health by reducing stress and anxiety.

4. Healthy Nutrition

Healthy food and proper nutrition are critical to preventing disease. Eating junk food and sugary fizzy drinks will increase the chances of diabetes, obesity, and hypertension. Focusing on eating fruits and vegetables will allow the individual to keep to an ideal weight while keeping up their strength.

5. Health screening

Older adults should keep a regular health screening schedule annually and otherwise, depending on what they are being screened for. Routine screenings for elderly individuals include:

- Papanicolaou smear
- Electrocardiograms
- Glaucoma
- Dipstick urinalysis
- Fecal occult blood screening/sigmoidoscopy
- Thyroid function
- Fasting glucose
- Cholesterol
- Hearing and sight

Understanding Pediatric Illnesses

When tackling pediatric illnesses, you have to begin with the risk analysis before taking the correct measure to proceed with the appropriate treatment plan. Early identification will help in prompt treatment, increasing the chances of recovery and containing the cost of the treatment.

Risk analysis in pediatric medicine:

Risk analysis in pediatric medicine helps you to identify the risk factors that may increase a child's chances of certain diseases. This will help the medical team to know what to expect. Risk analysis in child medicine utilizes:

- A. Interviews with the parents and the child
- B. Observations of the child when they encounter different types of stimuli
- C. Questionnaires that allow the child and parents/guardians to give written comprehensive answers

In pediatric medicine, the areas of risk analysis include:

- Cardiovascular function
- The child's nutrition
- Exercise (or lack of)
- Family history of chronic diseases like diabetes, cancer, heart disease, vision and hearing problems, or other significant life-altering or threatening diseases
- The child's overall lifestyle
- The child's behavior

The risk analysis is not meant to diagnose an illness. Instead, it is supposed to only indicate the risk range for a child to contract certain conditions. The range can be low, medium, and high.

Maternal factors that increase the pediatric risk of certain diseases

Hepatitis B and HIV: These are both infectious diseases that are contracted via body fluids during birth. Both are also sexually transmitted diseases, and they can enter the baby's system as the baby passes through the mother's birth canal.

Diabetes mellitus: Diabetes Mellitus is also known as type 1 diabetes, and children tend to inherit its risk factors from their parents. Regarding this type of diabetes, 21.2 % of children are reported to have inherited it from their mothers. Another 12.1% inherited it from their fathers, while 6.1% have risk factors from both parents.

Substance abuse: There are many drugs, prescription and recreational, that a mother may ingest during pregnancy that may increase the chances of certain conditions in their unborn child. Problematic prescription drugs include isotretinoin (an acne drug), high doses of Vitamin A, Accutane, lithium, and male hormones. Recreational drugs like tobacco, cocaine, marijuana, heroin, methamphetamines, and alcohol are also culprits in increasing risk factors for certain diseases. It is critical to know that there are no safe amounts of any of the above drugs for consumption by a pregnant woman.

Substance abuse increases the following risk factors that are associated with fetal drug exposure:

1. Premature weight, which results in weight issues as the child grows up so that they are smaller for their gestational age.
2. Increased risk of SIDS (Sudden Infant Death Syndrome)
3. Increased risk of congenital infectious diseases
4. Increased risk of difficulty in suckling, causing the child to eat less
5. Increased risk of tremors, seizures, and developmental problems as the child grows

Substance abuse can go further than just introducing risk factors and causing severe health challenges for the child. They can also cause:

Facial deformation

These drugs can cause facial abnormalities like Maxillary hypoplasia, which is a bone malformation that causes the upper jaw to be underdeveloped, giving the face a protruding jaw. Other malformations include underdevelopment of the lower jaw, a groove under the nose, or abnormality around the palpebral fissure of the eye.

Growth deficits

Growth retardation is a common challenge in children born from mothers who abuse the above substance. The child's language cognition, behavior, and achievement development in the long term are affected so that they cannot achieve an age-related milestone like other kids.

Neurological deficits

Most drugs tend to cross over the placenta, enter the fetus's system, and affect fetal brain development. That translates to poor intellectual capabilities, microcephaly, motor delay, decreased learning achievements, attention disorders, visual acuity, poor reaction times, and increased stress.

Behavioral issues

Behavioral issues that may develop in children exposed to maternal drug and substance abuse include depression, anxiety, and elevated stress levels. Other behavioral issues include hyperactivity and irritability, which make the child appear difficult and temperamental, which is not intentional on their part.

Unfortunately, fetal withdrawal symptoms from drugs and alcohol can be fatal because they are so brutal and challenging for the infant and their delicate body.

The withdrawal symptoms include:

- Irritability
- Diarrhea
- Dry skin
- Seizures
- Vomiting
- High pitched crying

When a child is born to a substance abuse mother, it is recommended that they stay in the hospital for a while longer to receive medical support to cope with the withdrawal symptoms. Also, the hospital stay allows the nurse and other professional experts to monitor their feeding and intake of drinks. These infants are often underweight and dehydrated because they tend to feed very poorly.

Treatment for babies born to addicted mothers may be given lower doses of the opiates or drugs to wean them off the drugs gradually. They cannot survive going cold turkey in beating the addiction.

Useful Facts:

- An estimated 25 % of women who smoked before pregnancy continue to smoke even while pregnant. The most commonly abused drug during pregnancy is nicotine, followed by alcohol, marijuana, and cocaine.
- An increase in opiate use has increased since the recent opioid drug crisis.
- Most substance abusers abuse more than one drug simultaneously, even while pregnant.
- Around 5% of pregnant women abuse addictive substances during their pregnancy.
- Teenage parents between 15 and 17 years have the highest percentage of abusers (20.9%), followed by young adults aged between 18 and 25, who make up 8.2%, and adults aged between 26 and 44 make up 2.2%.

If a child is accidentally exposed to carbon monoxide, it can also cause the same effects as nicotine exposure in infants. Secondhand smoke after birth can result in:

- Growth retardation is due to damage to the neurotransmitter, and it also causes the death of cells in the nervous system. The dead cells cause damage to the peripheral autonomic nervous system.
- Cognitive deficiency causes learning disorders, so they find it hard to process auditory questions. The children of mothers who smoke are likely to have a 50% chance of developing idiopathic processing defects and intellectual disability.
- Vasoconstriction, caused by carbon monoxide, causes difficulty breathing as the oxygen doesn't move effectively. Carbon monoxide can cause fetal hypoxia.
- An increased likelihood for certain cancers like lymphoma and acute lymphocytic leukemia.

A fetus accidentally exposed to carbon monoxide due to mom being in a fire may have an increased likelihood of SIDS, premature birth, and low birth weight. Or the mother may experience a spontaneous abortion or have a stillbirth.

The Risk Factors for Children In Poverty

Poverty is another significant factor contributing to the high risk of certain medical conditions. Poverty is the lack of resources that allow the child to access the best or at least adequate medical care when needed. Poverty exposes children to significant health risk factors, including:

Lack of access to vaccines: Because of a lack of money, the child cannot access the essential vaccines that would keep them healthy.

When the body doesn't build immunity from a younger age, it becomes susceptible to even common and minor diseases like the cold and flu.

Poor sleep: Due to the state of poverty, the child may not have a place to sleep, or they may not feel safe sleeping in their environment. For example, if the child is sleeping in a shelter or out in the street, they may not feel comfortable or safe completely getting to sleep. Also, living in close quarters with adults coming in and out of the house at all hours of the day and night may disrupt a child's sleep patterns.

Lack of hygiene: Poor hygiene makes the child vulnerable and at high risk for certain infections, especially those that involve hygiene, like skin infections and respiratory issues. Living in an environment where you have to share personal items causes infections to spread faster and makes it harder for them to be overcome due to reinfection.

Poor hygiene also can be personal where the child does not have access to a shower and soap. They may not have toothpaste and a toothbrush, so they cannot clean their teeth, resulting in dental cavities.

Poor diet: Poor diet is synonymous with poverty because one cannot afford healthy, nutritious meals. And unfortunately, a poor diet takes a worse toll on children than adults because their bodies are still developing and need every nutrient they can get. Also, a poor diet can affect brain development and leave the child tired and unable to concentrate on school activities.

Sex-related trauma: When children live in poverty, they are very vulnerable and are exposed to situations that leave them unprotected. A parent or guardian may leave their child without supervision because they have to go to work. That leaves the child exposed to sexual abuse or sexual activity that may result in unwanted pregnancy or a sexually transmitted disease.

Unfortunately, sex-related trauma is not gender-specific and can be perpetrated on children as young as months old.

Injuries: Children in poverty may not be more prone to injuries like cuts and bruises. However, since they do not have access to medication and health services, their injuries could result in major infections because they

do not get proper treatment. On the flip side, poor children may be in communities where they are exposed to certain dangers like gunshots or gang-related violence in initiations.

Mental illness: Poverty and all its hardships can take a toll on a young child. Seeing parents struggle to make ends meet and standing out among peers for not having the best clothing can result in depression, social anxiety, mood swings, and full-blown depression in the child. Poor mental health can result in suicidal thoughts, substance abuse to cope with, or behavioral problems that put the child in even more dire situations. For example, a poor child with behavioral problems may decide to join a gang and end up in juvenile detention or prison for life.

Risk Reduction for Children with Diabetes

There is an increase in children with diabetes due to a lack of exercise and obesity. Obesity has become a health crisis globally. With the increase in technology, more and more children are less interested in playing outdoors and would rather play indoors on their computers and phones. Changing the child's diet and reducing their sugar intake can mitigate the risk factors for diabetes. It is possible to mitigate diabetes because the chances increase in puberty since hormones during this period cause changes to insulin.

Risk can be reduced by exercising and watching the sugar levels a child is allowed to consume.

Children with Cardiovascular Conditions

Some children are more likely to get cardiovascular disease due to other pre-existing conditions like:

- Diabetes
- Kawasaki disease
- Familial hypercholesterolemia

These conditions cause coronary artery disease, progressively becoming severe as the child grows and the disease becomes persistent, turning into a chronic condition. Typically, this cardiovascular condition becomes more severe in less than ten years after the onset of the disease. It is critical to have screening for cardiovascular conditions if you have a child with the above conditions, preferably from the age of two years.

The child should have an early dietary intervention to help reduce and maintain low cholesterol levels, significantly preventing the increase in LDLs. The National Institutes of Health for people (children and adults) at risk of cardiovascular has guidelines in their Therapeutic Lifestyle Changes diet recommends:

- 10-25 grams of fiber daily
- 25 to 30 percent of fat but less than 7% saturated fat
- More than two grams of plant stanols and sterols per day
- Less than 200 milligrams of cholesterol per day
- Also, the child should have 30 minutes of exercise and physical activities (moderate to vigorous activity).

When the child goes for screening, the following parameters will be used to determine how their cholesterol is doing in relation to their cardiovascular state.

1. If the total cholesterol is less than 170 and the LDL is less than 110, that is normal.
2. If the total cholesterol is between 170 and 199 and the LDL is between 110 and 120, that is borderline elevation.
3. If the total cholesterol is more than 200 and the LDL is more than 130, that is elevated.

After the screening and monitoring of the child as they live with their condition, it is critical to keep a wellness evaluation chart. The chart should include the following health updates:

- Basic height, weight, and head circumference according to the child's age. So the child should be in the same age range as their peers.
- Information about vital signs like respiration, pulse, blood pressure, and body temperature.
- Information about the child's nutrition, meals, and snack, to keep track of their nutritional value
- Information about activity and exercise levels for each day. This should be updated information that explains the exercise and physical activity in detail. This is critical to help you know whether the child is getting in enough exercise as expected for their age and build.
- Detailed results from screenings that have recently been done for the child, whether elective or standard.
- Information on any disease prevention activities that the child has undergone. The details should include the duration of the prevention strategies, results, compliance, and prescribed interventions from the experts.

Pediatric Injury Prevention

Pediatric injury prevention is critical in the care of children. That is why parents at home, teachers at schools, and other adults make every effort to ensure that children around them are always in a safe environment. When working on pediatric injury prevention, one should consider:

Dangerous weapons

Dangerous weapons can be found in the home in the form of hunting knives or guns. Parents that keep hunting knives and guns in their space should ensure they secure all their weapons from children. The child shouldn't even know where these items have been stashed.

Also, parents with such equipment in the house must educate their children about dangers. Do not romanticize shooting guns; instead, be as realistic as possible while outlining the dangers of the gear in question.

Kitchen appliances:

Kitchen appliances can be dangerous. Knives and other sharp objects should always be kept away from children, especially when they are toddlers, and can reach up to counters. The danger of kitchen appliances ranges from cuts and burns to being electrocuted. It is always advisable to keep little ones from the kitchen space because even if they cannot reach a knife or corkscrew, they can slip on water or fluids on the floor or bump into the refrigerator door.

As a rule, infants and toddlers should not be allowed into the kitchen. Some parents put a child's car seat on the kitchen island or leave it on the kitchen floor. It is always a good idea to keep the child in a safe space.

A child's stroller should also not be put near an electric outlet where the child can reach out and pull the cables.

Boat safety

Boat safety is critical for minors. When a child is on a boat, they must be wearing a life jacket (a U.S. coast-guard approved life jacket), and it is essential also to ensure that the child at least knows how to swim the following basics of being in open water:

- a) They can float or tread water
- b) They can turn around and orient themselves with their environment and find a safe place
- c) They can jump into deep water and bob to the surface
- d) They can combine forward momentum with breathing
- e) They can exit the water
- f) They do not panic due to the poor visibility of open water
- g) They are aware of uneven surfaces, depth, currents, and undertow

The life jacket should be the correct fit for the child's age, weight, and water activity. Younger children, like toddlers and infants, should use a PFD, which has a strap between the legs and a collar to support the head. They should keep the PFD on even when on the dock or the marina.

Some parents like to jump out of the boat and swim with their kids in the sea/ocean/lake water. However, if that is the case, the propeller should be out of bounds, and the adult must watch the child.

Boats also have hazardous machinery and equipment like anchors and, if it is a fishing boat, fishing equipment like harpoons nets. Children should not be allowed to play near or with any fishing equipment. And finally, children and adults should only venture to designated safe areas in open waters.

According to the U.S. Coast Guard, infants who are not yet the age or weight to fit into approved personal flotation devices PFDs should not be taken out onto recreational boats, including:

- Rowboats
- Kayaks
- Motorboats
- Sailboats

Dangerous Toys

Unsafe toys can cause injuries that can be life-threatening, including choking, fallings, strangulation, poisoning, and burns, among others. According to a CPSC report in 2016, 85,000 toy-related injuries were treated in emergency rooms for children under the age of five years. Toys' many hidden hazards can cause a medical emergency in children.

When giving children toys, adults must ensure that:

- a) They read the instructions and labels carefully
- b) Check for any toy recall (recalls occur when the toy is identified as hazardous or unsafe for children to use. In 2016, more than 630,000 toy units were recalled by the CPSC).
- c) Check toys for loose parts that can come apart in the child's mouth. Children tend to put their toys in their mouths quite often.

- d) The toys do not have cheap paint, which may contain lead. Even small amounts of lead ingested can be fatal to a child.
- e) The toys do not have tiny magnets that can fall out and be ingested by the child. A swallowed magnet can continue to attract even while inside the child, causing extensive gastrointestinal damage and becoming fatal. The court overturned a federal ban on magnet sets, meaning these hazardous components will be in children's toys, so parents and guardians must be extra vigilant now.
- f) Hoverboards have been identified as hazardous toys after being recalled in 2017 and 2017, respectively, for being a fire hazard. Hoverboards that are considered safe to use must carry the UL2272 standard Mark, and they are purchased after 2016. The fire danger comes from charging the boards, so they must not be left to charge overnight. Also, they can cause falls and crashes, so they must not be used in traffic or at night, and children must wear protective gear when using them.

There have been many examples of dangerous toys, some of which are still on the market. The CSI fingerprint examination kit is a toy based on the popular CBS show CSI: Crime Scene Investigation. This toy kit comes with special powder and brushes to help children look for fingerprints.

Unfortunately, the special powder contains about 5% asbestos. Inhaling asbestos fibers can lead to serious illnesses like colon cancer, lung cancer, mesothelioma, and asbestosis, which scars the lungs. Luckily this toy was removed from the shelves but not before it made massive sales during the Christmas holidays of 2007.

Magnetix is one of the toys which have come back into the market after the court overturned a federal ban on magnets sets. It is a construction toy consisting of several plastic building pieces embedded with neodymium magnets and steel bearing balls that are used as connectors to form geometric structures and shapes. However, the small plastic pieces could break open and expose the small magnets inside, which curious toddlers put in their mouths and swallow.

Unlike most things that pass through the digestive system when swallowed, magnets do not. They connect through the tissue walls and end up cutting off critical blood supply to vital organs resulting in a painful death within hours of consumption. This is what happened to a 22-month-old boy who swallowed nine of these magnets, and they ended up reconnecting in his bowels, leading to his death.

Lead is considered the second most deadly toxin found in the standard household. The American Academy of Pediatrics recommendation is that no toy should contain more than 40 parts per million lead. However, lab tests showed that the famous Hannah Montana Pop Star card game contained 75 times more lead than that recommended level; That is 3,000 parts per million instead of 40 parts per million. By the end of 2007, there were 42 toy recalls that involved 6 million assorted toys being recalled due to very high levels of lead. Sadly, the Hannah Montana toy stayed on the shelves because the lead was found in the vinyl, not its paint.

Aqua dots were trendy until they began to make children vomit and put them in a coma within hours of use. These toys were colorful tiny beads that the child would arrange into different designs and then set permanently by sprinkling water on them. They were coated with glue that allowed them to adhere to each other. What parents did not know was that the glue contained chemicals that, when combined, metabolized into GHB (gamma-hydroxybutyrate), the date rape drug.

The last example is Aqua-Leisure's inflatable baby boats which were supposed to be a safe way to allow babies and toddlers to float in a pool. Unfortunately, the leg straps were poorly manufactured, so they would tear off, leaving the baby or toddler to slip into the water. It took more than 30 infants almost drowning for four million of these toys to be recalled back in 2009.

The manufacturing company Aqua-Leisure was aware of the problem for at least six years and did nothing about it. It was fined \$650,000 by the CPSC (Consumer Product Safety Commission).

The manual highlights here are examples and a drop in the ocean compared to the dangerous toys being sold today to help you as a nurse be aware of some of the chemicals and hazards to look for when treating your young patients. Children cannot articulate some symptoms, so you have to use your clinical judgment to know what you may be looking for.

Car seats

Car seats have also been found to be a danger to children when not used properly. The correct car seat depends on the child's age, weight, and developmental needs. Infants and toddlers should always be kept in a rear-facing car seat until they reach the maximum height and weight that the seat recommends. Parents can also invest in rear-facing convertible seats, which can be used rear-facing for the recommended time and then be converted into a front-facing so that the child continues using the same seat.

Pre-schoolers should use forward-facing seats with harnesses. These seats can accommodate children as heavy as 65 pounds or more. School-aged children should use a belt-positioning booster seat until the vehicle's seat belt fits the seat correctly. As a rule, all children younger than 13 should always ride in the back seat. When children reach 12 years and above, they can begin to use the seat belt, but only if they are large enough for the seat belt to fit them correctly.

They must use both shoulder and lap seat belts to keep them safe.
Additional safety tips include:

- Recline the seat to prevent the infant's head from falling forward
- Secure the child into the seat by buckling them appropriately
- Place blankets over the belts and buckles and not underneath them
- Place padding around the infant but not under them to prevent the child from slouching to one side
- Do not place the car seat on the front seat due to the hazard posed by airbags should they deploy in a crash.

The car seat should be placed appropriately to avoid tipping over as the car is in motion. Whichever brand you're buying, research its safety record and be on the lookout for any recalls. In April of 2022, more than 20,000 car seats were recalled due to loose pieces of foam on the seat that the child can reach, and they can cause a choking hazard. In 2016, Evenflo Company Inc .recalled over 56,000 transitions 3-in-1 combination booster seats because a child could loosen the seat harness while sitting in the seat, increasing the risk of injury to the child in an accident.

Falls around the home

According to the CDC (Center for Disease Control and Prevention, about 8,000 children come to the U.S. emergency rooms to be treated for injuries related to falls daily. Falls are the most common injury to children, especially with babies and toddlers. Because of their age and still developing cognitive skills, this age group doesn't have the best balance and movement control.

Children will fall from

- Windows
- Beds that do not have railings
- Down staircases
- Balconies
- Elevated landings
- On pathways
- Slippery showers and bathtubs
- Furniture

Falls can cause broken bones, accidental impact where the child is struck by an object when they fall,

To succeed in pediatric injury prevention, you must pay attention to the child's environment in an in-depth environmental assessment.

What is Environment Assessment?

Using clinical judgment, you will know what environments are unsafe and unhealthy and which children have been exposed to such environments when they come to the medical facility for treatment.

It is always essential to ask parents and guardians about their environmental health history to know what may be ailing their child. The assessment should include questions about

- Industrial pollution
- House plumbing and painting
- Exposure to cigarette smoke
- Exposure to an abusive environment
- Allergen exposure, including pet dander, mold, mildew, and pollen
- Water quality
- The child's nutrition

Example of environmental assessment

When a child comes to the hospital with a fall, the nurse is supposed to triage them immediately. Children with emergency signs like difficulty breathing, convulsions, or signs of shock are immediately taken for treatment. Suppose a child has priority signs like a tiny infant, hot temperature, sickly pallor, burns, malnutrition, or edema in both feet. In that case,

they are given priority in the queue to be assessed and receive treatment without delay. Non-urgent cases may have to queue like everyone else.

As the child is being assessed, the nurse asks pertinent questions like

- Do you know what your child ingested?
- Has this happened before?
- Are there any pre-existing health conditions we should be aware of?
- Is your child allergic to any medication that you know of?
- Did you give the child anything to eat or drink?

- After the child has moved on from the emergency and they are on a treatment plan, a nurse may ask follow-up environmental assessment questions, including:
 - Do you or someone else in your home smoke
 - Do you live in an area where there is known industrial pollution
 - Are you the primary caregiver for your child? If not, who else looks after the child in your absence?
 - How is your child's nutrition?
 - Have you recently purchased a toy that your child puts in the mouth?

The first series of questions help health care workers to identify what may be the cause of the child's symptoms and treat them accordingly. The second series of questions determines if the child is exposed to an unhealthy and unsafe living environment. Together with social workers, the medical team will give recommendations and perhaps some social help to mitigate the challenging situation in the child's life.

For example, if the child is found to have recurring asthma attacks, the hospital will recommend that the child is not exposed to secondhand smoke.

But the questions are not only for adults. The child may also be asked a few questions to ensure that this was an accident and not a pattern of abuse or an underlying medical condition causing the injuries. For example, suppose a child is always in the ER due to falls and broken bones. In that case, the nurse must try to find out if they are having falls, are abused, or have an autoimmune condition affecting their ability to coordinate movement.

Children who are obese may need parents/guardians to commit to an hour or more a day to allow them to enjoy exercise. Some children may decide to act out violent behavior they see on TV or a video game, making them become aggressive and unnecessary risk takers.

Before the child returns home, their parents/guardians must address the environmental hazards that could have caused the child's injury or illness. That means looking into and ensuring that the following aspects are taken care of at home.

Sanitation: ensure the home is clean to avoid health problems like cockroaches

Environmental hazards: ensure that there are no environmental hazards around the home indoors and outdoors that could affect the child's health.

Pets: pets should be fully vaccinated, and if there is a problematic one, the necessary safety standards are followed to ensure the health of the rest of the family.

Drugs and alcohol: Children should not be exposed to drugs and alcohol because they may be tempted to imitate the actions of the grownups around them. Nicotine is also a drug, so adults should not smoke near the child or within the home. Those who must smoke can do it outdoors.

Heat and Air conditioning: The home environment must be well-ventilated and heated during the different seasons of the year. In the winter, the home needs to be well heated, so the child is warm, and in summer, air conditioning or proper window ventilation should keep the home cool enough.

Lighting: well light hallways without clutter are essential to avoid accidents like falling or cuts. Also, lighting is essential so that the child is not uncomfortable performing daily activities like reading or climbing a staircase.

Securing: Dangerous liquids like bleach, medicine, and insecticides must be secured to prevent the child from ingesting them. Also, adults who keep weapons like guns, hunting knives, or crossbows should ensure they are under lock and key so that children do not have access to them. Check all the toys that children play with to ensure there are no loose or breakable parts and research the toy's safety.

Away from home, the following safety aspects should be emphasized:

Strangers: Children must be sensitized and warned against interacting with strangers and receiving gifts from people they do not know. Children should be taught to raise the alarm if a stranger approaches them with a request to carry something out of the car or help look for a kitten or puppy or offer them food or treats. Guardians and parents must stress to children that they are not to go with anyone who says they are taking the child to their parent. Also, children should know their parents full names, addresses, school, and phone numbers as soon as they are old enough to know. If someone is trying to take them, they should loudly yell:

“This woman/man is trying to take me!”

“This is not my mother or father!”

“Help me, I don't want to go with this woman/man!”

“Help! I am in danger!”

This will draw the attention of nearby adults to rescue the child.

Bullying: children should be taught that others have no right to bully or make fun of them. Adults who notice a change in their children where the child doesn't like to go to school, is afraid of other kids, becomes withdrawn and angry, out of character aggression, has unexplained bruises, or doesn't have friends, should talk to the child and if there is confirmation of bullying address it with the school. Also, parents and guardians must be on the lookout for cyberbullying where a child is bullied online. Block the senders and report their activities to an adult.

Violence: Children should not be exposed to violence, whether physically or through violent TV shows and video games. Being exposed to violence can make a child act aggressively towards others as they emulate what they have learned. Children exposed to physical and emotional abuse are likely to perpetrate on others around them, all while experiencing feelings of worthlessness and poor self-esteem.

An example of the influence of violence on a child's mind and how it affects them when they grow up is seen in studies of serial killers and other violent repeat offenders. For example, **Richard Ramirez was known as**

the "night stalker" who brutalized over two dozen people and killed at least 13 over two years. His mother was exposed to toxic fumes at the boot factory where she worked when pregnant with Richard. In addition to this exposure, Ramirez and his six siblings were also exposed to pollution from nuclear bomb tests in the area in the 50s.

Ramirez's father was physically abusive to his family, and as a boy, he was also exposed to a violent older cousin who had just come back from Vietnam. This cousin shot his wife dead in front of Ramirez and told him not to tell anyone. Soon after this, Ramirez became involved with drugs and petty crimes, gradually graduating to violent and brutal crimes that saw him convicted of 46 counts of these crimes. According to a licensed psychologist working in the prison system, Dr. Ashley Hampton, the traumatic and violent childhoods of this and other individuals may have shaped and contributed to adult behavior.

Leading Causes of Death In:

Birth to 10-year age group

Here are the leading five causes of death in this age group according to the U.S. Preventive Services Task Force:

1. Placental problems, umbilical cord problems, infections, trauma during birthing, and hemolytic disease of the newborn.
2. Congenital disabilities like anencephaly and spina bifida
3. Sudden Infant Death Syndrome
4. Motor vehicle injuries
5. Unintentional injuries

11 to 21-year age group

The leading causes of death in this age group are:

1. Unintentional injuries or motor vehicle accidents.
2. Homicide

3. Suicide
4. Different forms of cancer. The most common and fatal cancers in this age group include leukemia, brain tumors, neuroblastoma, Hodgkin's lymphoma, and Ewing sarcoma, among others
5. General heart diseases involving faulty valves and cardiomyopathies

This age group also engages in risky behavior, which has been identified through a program conducted by the CDC known as the Youth Risk Behavior Surveillance System. This program monitors six categories of health risk behaviors in adolescents.

- i. Drug and alcohol abuse
- ii. Tobacco use
- iii. Behaviors like fighting and gang activity that contribute to violence and injuries
- iv. Unhealthy approaches to weight and dieting behaviors
- v. Inadequate physical activity
- vi. High-risk sexual behavior that results in teenage and unwanted pregnancy and contracting sexually transmitted diseases

After identifying these risky behavior and risk factors, the CDC has developed five strategies to help control and prevent the spread of sexually transmitted diseases. The strategies are:

- a) To educate those at a high risk of getting STDs to change their sexual practices and prevent further infection.
- b) To identify asymptomatic and symptomatic people who are infected but have not yet sought a diagnosis or treatment.
- c) To diagnose and treat people who are infected
- d) To provide PEPs (post-exposure prophylaxis) for those who have been exposed and post-exposure vaccinations for those who have not.
- e) To prevent infection of current partners through evaluation, treatment, and counseling

Nurses need to take the sexual histories of their patients to assess their risk using the 5Ps approach. This approach focuses on

- Partners (the gender and number of partners)
- Protection method used
- The pregnancy prevention method used (birth control)
- history of STDs and behavior, including high-risk behavior like prostitution, promiscuity, and any risk of contracting HIV (Human Immunodeficiency Virus) or Hepatitis.
- Practices including the type of sexual practices the patient has indulged in anal, vaginal, or oral sex and how frequently they used protection (condoms).

After this evaluation, according to CDC guidelines, the nurse should recommend the following clinical guidelines to prevent sexually transmitted diseases:

- Abstinence or reduction in the number of sexual partners
- Taking the pre-exposure vaccination where applicable, like Hepatitis B for all evaluated for STDs and Hepatitis A for men having sex with men and people using illicit drugs
- Use condoms and diaphragms but not with spermicides containing N-9 (nonoxynol-9). Also, avoid using N-9 during anal sex as a lubricant.
- Use male latex condoms for all sexual encounters with only water-based lubricants. Also, use female condoms where applicable.
- Do not use non-barrier contraceptives like pills and the coil to protect against sexually transmitted diseases.

Illness and Injury Protection of Preschoolers

- Children must use helmets and knee and arm pads when riding around on their bikes
- Children must have seat belts on when in the car with an adult.
- Do not leave a child alone in the car for any reason
- Do not leave a child unattended at home
- Lock away household cleaning materials and have a poison control number written down where it can be quickly accessed. Medicines

- and others should have a safety cap that the child cannot open.
- Watch for unsafe areas in the playground and ensure all playground equipment is safe for the children.
- Children should be taught to swim by a swim instructor and wear a life jacket when on open water.

Illness and Injury Protection of School Age Children

- Teach school-age children the dangers of taking medicine without adult permission and supervision and lock away the medicine.
- Teach kids to apply sunscreen when playing outside
- Teach the kids to stay away from guns and not handle them. The parents must lock their weapons away and keep the ammunition locked away in a separate place
- Teach the kids about fire escape routes for them. Also, teach them what to do in case of a fire and whom to call.
- Begin talking to the child about drug abuse, smoking, and alcohol addiction
- With the input of the child, identify a neighbor or friend, or place where the child can be safe if need be
- Teach kids not to talk to a stranger, enter a stranger's vehicle or take anything from a stranger.
- Help the child memorize your telephone number (s), home address, school phone number if possible, and how to call 911.
- Do not allow the child to cook anything without adult supervision.

Illness and Injury Protection of Adolescents

- Teenagers who begin to drive must have rules to help them grow in their new skill, including:
- Limiting night driving for new teenage drivers and emphasizing no driving while under the influence.
- No answering mobile calls or texting while driving and music cannot be too loud.
- No use of prescription drugs and then driving
- Teach the teen to handle handguns and how to store them afterward safely. But the adult must keep the key to the locked weapons cabinet and daily check the cabinet for missing weapons or ammunition.

- Actively talk to the teenager about smoking, drug abuse, and alcohol
- Actively talk to the teenager about sex, sexually transmitted diseases, and how to protect themselves if necessary.
- Encourage teens to engage in their preferred physical activity to help them maintain a healthy weight and mental health.
- Encourage teens to stay safe during sports activities like football or baseball by wearing the right gear.

2. Understanding Mother's Health and Education

Educating a mother is critical for the overall well-being of the family, from the unborn children they carry to caring for the elderly, which in many communities falls on the women. But these women also need to be educated on taking care of their own needs to be healthy.

"The natural state of motherhood is unselfishness. When you become a mother, you are no longer the center of your own universe. You relinquish that position to your children." – Jessica Lange.

These sentiments echo what many mothers believe and try to live up to, even to their detriment. Mothers need care and are "selfish" sometimes for their own mental and physical well-being.

New mothers can be overwhelmed by the new life they have to care for, so here are some of the areas they need to be educated on (or reminded of). Remember, their educational needs depend on their cultural, educational, religious, and social backgrounds, so consider that when working with women.

New mothers tend to have questions and concerns about three main areas at this time:

- Childcare
- Contraception
- Resumption of sexual (work and life-related) activities

Share information as the mother asks and respect their boundaries. Some new mothers may feel it is taboo to speak about sexual matters. In this case, speak to a female family member and ask them to relay the information, and you can answer any questions they have.

Some women practice traditional methods of child care, which may be controversial. Talk to them about it without sounding judgmental but seek to learn more before you offer any advice. Other women have religious rites that must be performed on a child, like the Jewish circumcision of a male child at eight days. While you may not understand or agree with it, if it doesn't harm the child and is done correctly, it is the right of the mother to do it.

Pro tip:

New mothers need understanding, compassion, and patience. They are navigating new waters with the massive responsibility of caring for another life. Do not add to their burden with your judgment.

That being the case, there are some critical areas that new mothers need a hand with, and these are all learned behaviors. They need help to know how to do certain things correctly, including:

Positioning the baby safely

As a rule, infants should be positioned on their backs while sleeping to reduce the risk of SIDS. SIDS is more common in infants laid on their stomachs to sleep. Place the child on their back while the mothers should be educated to turn the infant's head from one direction to the other to prevent one side of the head from flattening.

As the baby grows, the mother should schedule a time to place them on their tummy to help the baby strengthen their neck and head and prevent the flattening of the head in some areas. This time should be supervised, and the child should only be laid on firm surfaces.

And with time, encourage the mother to put the child in a side-lying position and use side supports to help the child to maintain this sleeping position. But the mother must remember to alternate the child from one side to the other.

While positioning the baby is critical for their well-being, new moms should be encouraged to hold their infants in their arms more than put them in strollers and cribs.

Umbilical Cord Care

New mothers need education about how to care for the umbilical cord because it is still a healing wound.

Teach the mother to:

- Avoid letting the cord become moist. Having the top of the diaper folded under the cord is one way of preventing moisture, and it also ensures that the area's healing process is not interfered with.
- Avoid swabbing the cord with alcohol to clean it. It is best to clean it with clean water and soap and then dry it. Some cultures allow the baby to stay naked after a bath so that the umbilical cord can air dry (as long as the weather allows).
- Sponge bathe the baby until the cord falls off in 10 to 14 days
- Dress the infant in clothing that doesn't irritate the umbilical cord while it is healing
- Monitor the umbilical cord for signs of infection. If there is any swelling, inflammation, or smelly discharge, they should take the child to the ER immediately.
- Be aware of the colors to expect as the umbilical cord heals and falls off. At first, it will change from gray to a dull brown, and then it blackens and dries before falling off.

Clearing the Cradle Cap

New mothers may be concerned about a crusted cradle cap or flaky/scaly skin on the infant's scalp. They may think it is a sign of poor hygiene but reassure them that it is not and neither is it contagious. It actually clears up on its own in one to two months.

Teach the mother to:

- Clean the infant's scalp gently but thoroughly by rubbing the area with a soft terry cloth. With time they can progress to using a brush to loosen the crust and brush the flakes away.
- Use olive oil to soften the crust before they try to rub the area. Let the mother gently apply the olive oil to the scalp and leave it in for 15 minutes before gently rubbing the area and washing the hair with baby shampoo. The flaky skin will eventually all fall off.

Monitoring the Stool

The first stool that comes out of the baby is usually within 24 hours of birth. It is called meconium, and it is black. As the baby picks up breastfeeding or drinking formula, it transitions and becomes yellow-green or yellowish. By the third-day breast-fed children maintain yellow-green to yellow stool, and formula-fed children have yellow to light brown stool. An infant should have three to five bowel movements in a day.

Teach new mothers to:

- Clean the child thoroughly, though gently, after defecation with unscented wipes, plain water or water, and soap.
- Monitor the stool for abnormalities like blood in the stool, hard or watery stool, whitish or clay-colored stool, and stool that looks like currant jelly or with black spots after the meconium has passed. If any of these types of stool show up, the mother must take the child to the hospital.
- Examine the skin for any rash or irritation.

Monitoring Urine Elimination

Educate the mother on what to expect with urine elimination in terms of the number of diapers per 24-hour period. On the first day, the infant should have one wet diaper, and the number increases as the days go by until they stabilize at six to eight diapers a day.

Teach the mother to:

- Check the diaper frequently during and after feeding so that the baby doesn't remain with a wet diaper for a long time.
- Change diapers when they become wet, and cleanse the area with water and mild soap, water only, or bay-friendly unscented wipes.

Caring for Diaper Rash

Diaper rash comes when an infant is left with wet or soiled diapers for long periods without being changed. It can also come when the skin around the private parts is not properly cleaned. However, a diaper rash may also be caused by the lotions or oils applied to the baby's bottom or the wipes the mother is using. Also, sometimes breastfed babies react to something that their mother ate, which causes a skin reaction.

Teach the mother to:

- Monitor the rash and look for a fungal infection characterized by red and weepy open sores. If the sores become further infected, they could have purulent discharge.
- Change the oils and lotions they use to see if they could be the cause of the diaper rash.
- Change diapers as soon as the baby wets or soils them
- Clean the skin around the private parts gently and with water and mild soap
- Get medical help for the child if the diaper rash worsens and doesn't respond to treatment like cortisone, antifungals, or topical antibiotics.

Infant Car Safety

Another crucial area to educate new mothers on is how to use the infant car seat. All infants, no matter what age they are, must be placed in their car seats safely and properly when moving about with them in a vehicle.

Teach the mother to:

- Buckle the child properly into the car seat
- Face the infant to the rear of the car
- Place the car seat in the rear seat of the car
- Ensure that the baby's head does not fall forward by reclining the seat
- Place supporting padding on the sides of the car seat to prevent the infant from slouching. This is especially important for tiny infants.

It is not safe to hold an infant in a moving vehicle. If your child is fussy and irritable, find a safe place to pull over and soothe them. The good news is most infants tend to fall asleep on car rides due to the lulling motion of the car.

Bathing the Infant

Newborns are fragile and delicate, and handling one can be scary if you are not used to it. But it is essential to maintain body hygiene for the child to be healthy and well. As earlier mentioned, in the first 10 to 14 days, the baby should be sponge bathed until the umbilical cord falls off. But after that, the mother should give her infant baths to relax them, keep them clean and help them sleep.

Teach the mother to:

- Bath the infant in the correct infant tub, which can be bought in any baby shop
- Use mild shampoos and soaps specially formulated for the baby's skin.
- Test the temperature of the water to ensure it is warm without being too cold or too hot. Most infant tubs come with a small button that

shows the temperature that lights red when the water is too hot and blue when it is too cold. With time, the mom will know just by touching the water if it is too hot for the baby's sensitive skin or too cold, and it will make them ill.

- Only fill the tub with two to three inches of water.
- Support the baby's head, neck, and upper back with one arm, not a hand, when bathing the child. The other hand can rub the soap gently onto the body and rinse the baby off. To wash the hair, put a few drops of shampoo onto the baby's head and gently rub it into the scalp in a circular motion, then gently rinse it off. The baby may squirm, so encourage the mother to have a firm but gentle grip on the child during bath time.
- Lift the baby gently and wrap them in a dry, preferably warmed towel. In some cases, the baby may pee right after the bath, but that can be wiped gently with clean water.
- Dry the baby's crevices and folds thoroughly to avoid moisture that can cause irritation and rashes. Some people put talcum powder in these crevices and folds to keep them dry.
- Avoid using creams and lotions on the baby, no matter how much they claim to be hypoallergenic and baby-friendly.

Burping the Baby:

All babies, breastfed and formula-fed, must be burped to expel the air they swallow during feeding. If this is not done, the baby will squirm, make faces, grimace and cry because they are uncomfortable due to the air trapped in their bellies. Formula-fed babies tend to swallow more air because of the shape of the bottle nipple, which, while it mimics a human mother's nipple, falls short.

Teach the mother to

- Burp the infant every time they consume two to three ounces of formula, or they have nursed at the breast.
- Place the infant on the shoulder and gently rub or pat the child on the back. She must have a burp cloth on the shoulder, and the baby's head

lies on the cloth so that when they burp and spit out some milk, it doesn't soil the mother's clothes.

- Change the child to a different side and keep rubbing until the burp, even if it is a small burp.

Circumcision

As mentioned earlier, circumcision can be for religious purposes, and for some people, it is a preference. According to the American Academy of Pediatrics, the health benefits of male circumcision are immense, but they leave that decision to parents to make. The benefits include

- Reduced risk of urinary tract infections
- Reduced risk of prostate cancer
- Reduced risk of HIV infection

Post circumcision care is critical.

Teach the mother to:

- Be aware of some bleeding post circumcision, and the foreskin may be red and swollen
- Change the infant's diaper immediately if it is soiled because urine can cause the open tissue to be raw and painful
- Clean the wound gently with water and plain water and pat dry
- Do not use commercial soaps and baby wipes when tending to the healing wound
- Monitor the wound and note any changes that may cause redness, hot temperature, smelly discharge, and swelling.
- Mothers with uncircumcised male infants should be educated to:
 - Avoid retracting the foreskin on the child's penis
 - Avoid trying to clean it using cotton swabs
 - Only wash the penis with soap and water or with only water during bathing

Help a Choking or Gagging Infant

Every new mother must have first aid lessons for their newborn. One of the lessons they must learn is how to help a choking or gagging infant.

Teach the mother to:

- Keep hazardous materials, including baby powder, cotton balls, and safety pins, from an infant's reach.
- Avoid propping the bottle for feeding the child. Always hold the bottle yourself when feeding.
- Keep the baby's head elevated and in an upright position when feeding them
- Check the nipple to ensure it is dripping and not running too much milk out
- Secure the infant face down on the forearm with a downward tilt and, using the palm, thump gently but firmly on the mid back. If the choking persists and there is difficulty breathing, call 911 and start CPR on the baby.
- Burp the child severally after every feed to avoid gagging and choking.

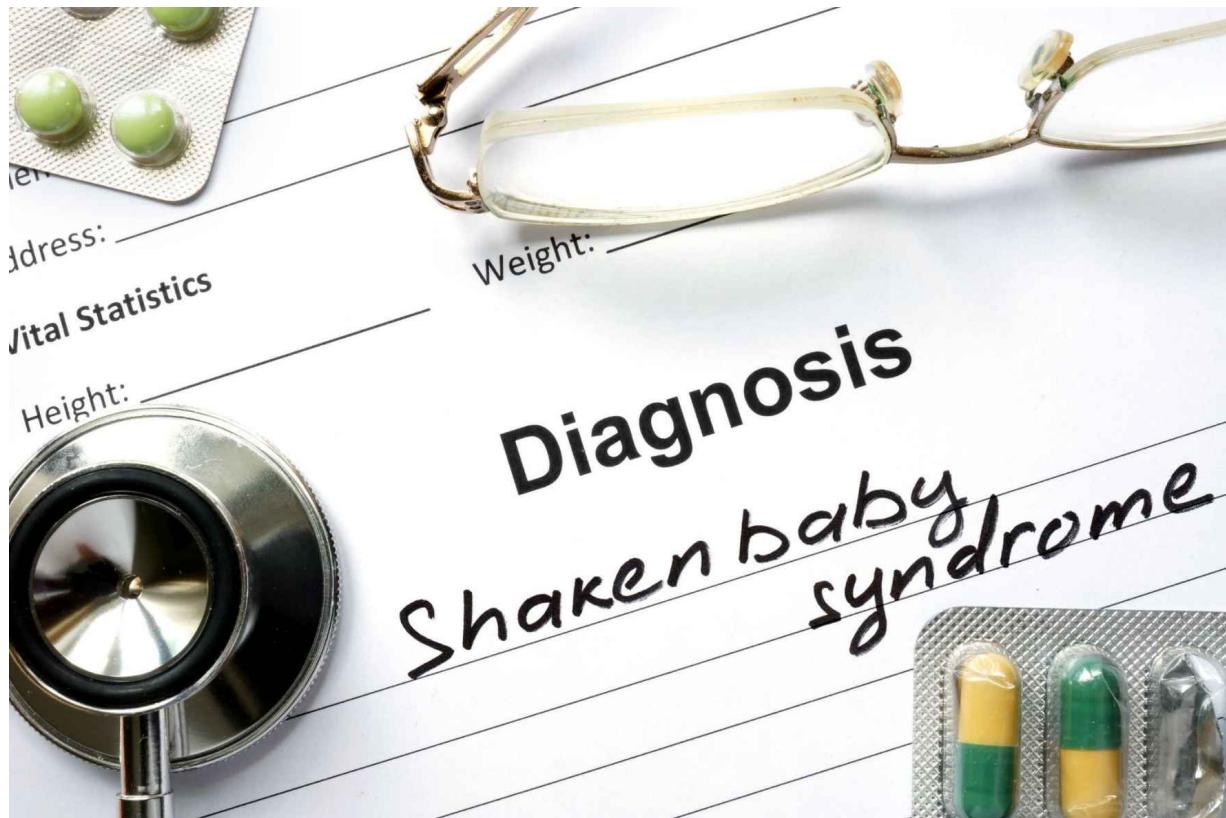
Shaken Baby Syndrome?

New mothers need to be educated about Shaken Baby Syndrome. Being a new parent can be frustrating, especially when you try as much as possible to ensure care for a new being that cannot communicate effectively with you. But despite how frustrated a mother may feel, they must never shake their baby. Educate the mother on shaken baby syndrome and its effects:

- Encourage the mother always to support the infants at all times to protect the head.
- Encourage the mother not to carry their child while doing vigorous exercises like aerobics.

- Encourage the mother to not throw the child up and down during playtime

Children with shaken baby syndrome may not exhibit obvious neurological symptoms immediately, but they have learning disabilities and behavioral issues later in school.



The effect of Shaken Baby Syndrome is acute subdural hematoma and retinal hemorrhages. The shaking could also result in cerebral edema and damage to nerves and vessels in the brain.

Reasons why mothers can shake their babies?

Mental illness: this is when a mentally unstable woman has a baby, and while the baby is in their care, they shake them without knowing the consequences

Frustration: the mother may be frustrated by the child's constant crying. They may try to shock the child by shaking them to get them to keep quiet.

Postnatal depression: The mother may suffer from postnatal depression and harms their child in her depressive state.

What Is Neonatal CPR?

New mothers are expected to know neonatal CPR, which helps them keep helping their babies in case they choke or gag. The procedure is not similar to the usual CPR process we see in adults. In infants, cardiac distress is typically caused by respiratory arrest instead of cardiac arrest.

It is called cardiopulmonary resuscitation and follows the ABC protocol instead of the compression protocol used on adults. All new mothers/parents should learn this CPR in preparation in case an unfortunate case of arrest occurs. But they must also call 911 whenever this occurs, even after the infant begins breathing normally again.

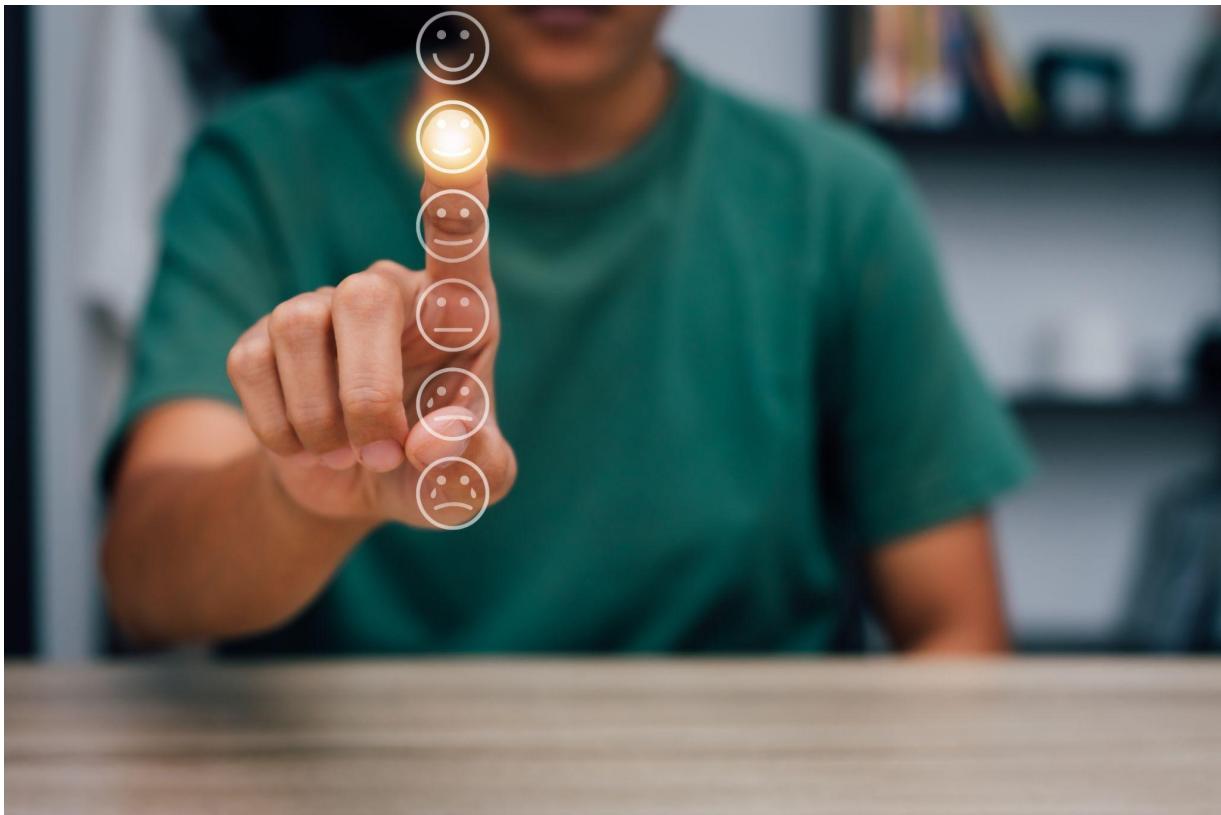
Step by Step Neonatal CPR:

- The adult should tilt the infant's head slightly back while lifting the chin to open and access the airway.
- Suppose the baby doesn't begin to breathe on its own, breathe two puffs into the mouth to ventilate the lungs. For very small neonates, the adult's mouth should cover the infant's mouth and nose when administering the two puffs. The two puffs should not be more than one second.
- Observe the infant's chest to ensure it is rising and falling. If the infant has a heart rate of more than 60 beats per minute without breathing, give one breath every two to three seconds. In total, you should administer 20 to 30 breaths per minute.
- If the infant needs chest compressions, they should receive two breaths for every 30 compressions if it is a single adult. If two adults

are administering the CPR, they should each give 15 compressions per two breaths. Depress the chest approximately 1.5 inches using two thumbs or two fingers.

Chapter Five: Pain Assessment Block

Understanding Pain Assessment



When people come to the hospital, they expect the medical professionals to help them mitigate the pain and assess it and point out its cause. Here is a breakdown of the pathophysiology of pain:

Nociceptors:

Nociceptors are also known as sensory receptors, and they are the primary neurons that respond to stimuli in the skin, joints, muscles, bladder, stomach, and uterus. They have specialized responses to all stimuli, from chemical to thermal and mechanical, which they accomplish in four stages. When a tissue injury occurs, the neurons are stimulated by:

Transduction – this is where the changes occur in the tissue

Transmission – this is where the impulse signal is transmitted along the neural path

Modulation – This is where the signal is translated

Perception - This is where the patient feels the pain.

Nociceptors consist of two fiber axons: A-fiber axons and C-fiber axons.

The A-fiber axons are much faster at carrying the impulse signal (pain signals) than the C-fiber axons. There are two types of pain:

- 1) Nociceptive pain
- 2) Neuropathic pain

Nociceptive Pain:

Nociceptive pain is pain caused by stimulation of the neuroreceptor, which is caused by direct tissue injury. The pain one experiences are usually proportionate to the severity of the injury: The more extensive the injury, the more severe the pain. This type of pain is typically divided into two categories which are: visceral and somatic pain.

Visceral pain:

This is described as cramping or squeezing and is linked to internal organs. However, not all internal organs have nociceptors meaning they are not sensitive to pain. These organs include the kidney, pancreas, and spleen, which may withstand a lot of damage without the individual feeling pain directly from the organ.

Visceral pain also doesn't have a localized definition, so it can feel like the pain is spread over a large area, but one cannot pinpoint the exact source. It can also cause pain in other remote areas of the body. The individual typically has generalized pain symptoms, and this type of pain is treated with opioids most of the time.

For one to feel visceral pain, the pain receptors in the pelvis, chest, abdomen, or intestine must be activated. Visceral pain feels like pressure, deep squeezing, or aching.

Causes of visceral pain:

Injuries to internal organs like the kidneys, bladder, gallbladder, and intestines

Acid indigestion

Menstrual pain

Spasms in the core muscles

Damage to the abdominal wall or core muscles

Endometriosis

Infections of the renal system

Infections of the digestive system

Cancer affecting internal organs

Problems or damage to specific internal organs like the liver and pancreas

Damage to the prostate gland

Somatic pain:

Somatic pain comes from pain receptors found in the musculoskeletal and cutaneous tissues. If the pain is in the musculoskeletal tissue, it is described as deep bodily pain. Metastasizing cancers tend to cause this type of pain. Deep somatic pain also tends to be deep and throbbing, and it is focused on the site of the trauma.

On the other hand, surface pain occurs on the dermis and cutaneous layers. Surgical incisions cause this type of pain, which is sharp and may have a prickling or burning sensation. It is a constant pain that is stimulated by movement and other stimuli like:

- Force
- Temperature
- Swelling
- Vibration

These stimuli activate the pain receptors in the skin and tissue, resulting in sharp pain. Somatic pain, which is localized to the injury site, can be treated using opioids.

Causes of Somatic Pain

- Injuries (small and large) to bones or joints
- Trauma to the skin
- Cuts or incisions on the skin
- Bone fractures
- Disease of connective tissues like osteoporosis
- Arthritis that causes swelling and inflammation in the joints
- Cancers that affect skin and bones

Risk factors of Somatic and Visceral Pain

Everyone will experience these pains at some point, but women are more likely to experience them than men for two reasons:

- a) Women are more sensitive to pain than men
- b) Women are more likely to develop conditions that lead to this pain, e.g., menstrual pain, osteoporosis, endometriosis, and breast cancer, among others.

Neuropathic Pain:

Neuropathic pain occurs when the nerves transfer information to the brain and spinal cord from the skin, muscles, joints, and tissues. This pain is often described as burning, making the place sensitive to touch. In fact, people use words like prickling, pins, needles, and excruciating pain to describe neuropathic pain.

The common reasons for neuropathic pain are nerve pressure or damage due to trauma, viral infections, alcoholism, vascular malformations, cancer, diabetes, neurological conditions like multiple sclerosis, or after surgery.

Example

Dora is a patient who has suffered migraines for the better part of her 30s into her 40s. Because she was hypertensive, doctors blamed the constant headaches on elevated blood pressure and put her on medication. However, the headaches did not abate. One time she was admitted to the hospital due to significantly elevated levels of blood pressure, and no matter what the attending physician gave her, her headache would not abate. They called in a neurosurgeon for a consult, and he found a benign tumor in the back of her head, but it did not affect her brain in any way.

The neurosurgeon scheduled Dora for surgery, and it went well enough, and she seemed to be okay after coming from the anesthesia. But a few days into recovery, she reported leaving clear fluid from the nose, and soon after, she developed meningitis. The surgeon had to go back in and fix the leak. When Dora came out of her second surgery, she began complaining of prickling, pins, and needles pain in her right cheek.

The surgeon came in and talked to her, explaining that some of the nerves connected to the affected cheek had been damaged during surgery. Dora was suffering from neuropathic pain, for which she was put on pain management medication. The risk of third surgery was too high, and the patient preferred to use oral medication rather than risk it. After a few trials and errors, the medical team found a drug combination that helped her cope with the chronic condition.

Sometimes this kind of pain results from certain medications and drug therapy like chemotherapy. And occasionally, medical experts may find no identifiable reason for the pain. Unfortunately, chronic neuropathic pain is very common, and regular painkillers like paracetamol, aspirin, or Ibuprofen (NSAIDs and opioids) are ineffective against the pain.

The Most Common Treatments for Neuropathic Pain

Anti-epileptics

While these are treatments used for epilepsy, they can also reduce nerve pain and, at the same time, ease the neuropathic symptoms that accompany this pain. The carbamazepine drug helps treat people with trigeminal neuralgia, but it doesn't mean the patient is at risk of developing epilepsy.

Side effects of Anti epileptics:

- Headaches
- Dizziness
- Drowsiness

Opioids:

Some people have found it beneficial to use opioids to mitigate chronic neuropathic pain, although they must be educated about the risks of taking opioids before they start taking them.

Side effects of Opioids:

- Feeling spaced out/ high/ out of it
- Drowsiness
- Nausea
- Constipation

Antidepressants:

These drugs may reduce feelings of depression, but they are also prescribed to help people manage nerve pain. Antidepressants do not put one at risk of developing depression.

Side effects of Antidepressants:

- Dry mouth
- Drowsiness

Nerve blocks

These are usually in the form of injections. Nerve blocks are a combination of steroids, local anesthesia, and opioids but do not have a long-term effect. They can reduce the pain for several days to a few weeks, but one has to keep injecting when their effect wears off.

Side effects of nerve blocks:

- General discomfort for some days
- Tingling or numbness at the site of the injection

Capsaicin Cream

This cream is made from chili peppers, and it is absorbed through the skin. When absorbed, it reduces the levels of the neurotransmitter associated with inflammation and pain, Substance P. The individual may have to use the cream three to four times a day to feel its effects.

Side effects of Capsaicin cream:

- Redness
- Localized heat on the area of application

Acupuncture:

Acupuncture is synonymous with Chinese medicine, and it involves inserting fine needles into what are known as energy channels (specific points) on the skin all over the body. The needles are believed to stimulate the nervous system and activate the body's healing process so that the individual stop feeling pain. An acupuncturist inserts the acupuncture needles, and they cause a dull ache or tingling sensation when inserted into the skin. If one is considering this option, it is best to do it under the guidance of a well-trained acupuncturist.

Side effects of acupuncture:

- Pain from the needles may exacerbate the already existing pain

TENS and PENS

TENS is transcutaneous electrical nerve stimulation that is produced by a TENS machine. The machine produces a mild impulse imparted to the skin through electrodes (sticky pads) placed on the skin from the machine. The electrodes allow the impulse to spread over the painful area to selectively stimulate certain nerve fibers that then block signals carrying the pain messages to the spinal cord and brain. The muscles relax after the impulse reducing the pain. TENS can be self-administered, but it is always advisable to have a professional do it because they know the correct parameters for the impulse and its effects.

PENS, on the other hand, is percutaneous electrical nerve stimulation recommended for people with difficult-to-treat neuropathic pain. This procedure is similar to the TENS procedure, but instead of placing the electrode on the affected area's skin, the electrode goes under the skin using a needle. The PENS needle is connected to the electrical stimulator machine.

Side effects of TENS and PENS:

- Tenderness and bruising where the needle from the PENS machine is inserted
- Skin irritation or tenderness where the electrode patch sits on the skin
- An allergic reaction to the electrode

Pain assessment goes hand in hand with a health history and physical assessment. It is not prudent to quickly jump to conclusions about a patient's pain without having the correct and vital background about their health history and doing a physical assessment.

Components of Health History:

The following make up an individual's health history:

- ❖ The chief complaint
- ❖ The biographic element
- ❖ The history of the current illness
- ❖ Past medical history
- ❖ Family history
- ❖ Lifestyle history
- ❖ Social history
- ❖ Psychological status

The chief complaint: It is the main reason why an individual has sought medical attention in the hospital.

The biographic element: This is critical information regarding the patient that identifies them, including their sex, age, name, marital status, physical address, occupation, religious preference, sexual orientation (if necessary), and regular physician and health care financing.

The history of current illness: These are details of what ails the patient currently, when the symptoms began, how bad they are, and if the individual has used any medications or alternative approaches to treat it.

Past medical history: past medical history is information about past medical conditions and the usual health status of the individual. It includes information about past surgeries, recurring diseases, chronic conditions and their management, immunizations, allergies, recent vaccines, and current medications.

Family history: This is medical information regarding the individual's family pertaining to their health, like inheritable genetic conditions, including heart disease, diabetes, hypertension, mental illness, arthritis, and some cancers.

Lifestyle history: This is information about lifestyle habits that could contribute to certain illnesses. For example, a person with liver cirrhosis

will be asked about alcohol consumption habits, and an obese person will be asked about nutrition and activity levels. A person with hypertension may be asked about their stress levels and occupation, while a person with lung cancer may be asked about smoking.

The lifestyle history also allows medical professionals to note the individual's ability to cope with daily activities. Most people who find it hard to deal with the challenges of daily life tend to make poor lifestyle choices, from consuming too much alcohol and promiscuous behavior to abusing recreational or prescription drugs. On the flip side, people who can deal with life's challenges tend to sleep better, have hobbies, enjoy a healthy diet, and embrace change.

Social history: This is information about the individual's family relationships, ethnicity, cultural and religious beliefs, educational levels, and home and work environment.

Psychological history: This is health information regarding the individual's past state of mind and any pre-existing mental issues that may compromise their ability to embrace health care.

How to Obtain Health History

The primary purpose of obtaining an individual's health history is to get subjective data about them that enables the medical team to make the best treatment and nursing care decisions for them. With this information, the nurses, doctors, psychiatrists, social workers, and other stakeholders will be able to collaboratively:

- Address acute health symptoms and problems
- Minimize the effects of chronic health conditions
- Promote overall health

Health history is typically taken after a person is immediately admitted to the hospital, but even during ongoing care, it can be asked for to inform proper care. Here is a sample health history checklist

STEPS TO BE TAKEN	ADDITIONAL INFOFRMATION
Biographical information	<p>Name:</p> <p>Age :</p> <p>Marital status/living arrangements:</p> <p>Occupation:</p> <p>Sex:</p> <p>Physical address:</p> <p>Healthcare financing:</p> <p>Regular physician:</p>
The chief complaint	<p>Reason for seeking medical attention:</p> <p>Onset of the present health condition:</p> <p>Course of the health condition:</p> <p>Symptoms and any problems related to them:</p> <p>Aggravating factors e.g. movement:</p> <p>Causes of the health problem e.g. fall, surgery etc</p> <p>Related health concerns:</p>

	<p>Effect of the health problem on daily life:</p> <p>Any previous history with the said medical condition:</p>
Past health history	<p>Any pre-existing conditions:</p> <p>Any medications currently being used (herbal and prescription):</p> <p>Allergies to medication and any environmental factors:</p> <p>Recent surgical procedures or hospitalization:</p> <p>Problems with substance abuse (alcohol or drugs):</p>
Family history	<p>Relevant health problems of family members:</p> <p>Family history with chronic conditions:</p>
Functional assessment of body systems	<p>Any pain in the chest:</p> <p>Any headaches/migraines:</p> <p>Any abdominal pain:</p>

	<p>Dizziness or faintness when standing:</p> <p>Any changes in appetite:</p> <p>Any psychological or physical changes:</p>
Lifestyle history	<p>What physical activities does the individual do on a daily basis:</p> <p>How long do the activities last:</p> <p>What leisure activities does the individual do:</p> <p>Average amount of sleep daily:</p> <p>Any sleeping problems:</p> <p>Coping mechanisms for stress:</p> <p>Alcohol consumption:</p> <p>Any prescription drugs in use:</p> <p>Occupational and environmental hazards:</p> <p>Any psychosocial changes:</p>
Social history	<p>Cultural-health related beliefs:</p> <p>Religious-health beliefs:</p> <p>Nutritional restrictions/considerations related to religion or culture:</p> <p>Community-social considerations:</p> <p>Preferred language or communication:</p>

	Spiritual belief/practices or religious affiliations that may affect health care:

To obtain a comprehensive health history from an individual here are some tips to follow:

1. Begin by checking the individual's chart for already gathered information, so there is no need to repeat the same questions. Also, this enables the nurse to ask follow-up questions for clarity.
 2. Use the facility's assessment form (like the sample provided above) to record this information and customize it to the patient. This is the same place to record any changes to the patient's history during the treatment plan. For example, a patient may have claimed to be one blood group, but they turn out to be another.
 3. Always plan for the interview to obtain a health history when the individual is out of danger and the critical health care needs have been met.
 4. Before beginning the questions take time to establish trust, calm the patient down and build a rapport. Do not be aggressive with the question, and approach the patient with sincerity and respect regardless of age.
 5. Allow the patient to expound on where the need is and use therapeutic listening skills during the interview.
 6. Ask the patient to give any other information they feel may be relevant to their health care. Sometimes the questions may not cover intimate details, which could be critical to the individual's health care management.
- Obtaining health history should not only be confined to the individual seeking treatment; Interview family members for additional information which the patient may have missed.
- After obtaining the relevant data on a patient's health history, it is time for a physical examination.

Physical Examination Techniques

The physical examination is a medical examination, which means the medical professional is examining the individual to discover and explore the extent of their symptoms and signs. A physical exam is conducted through:

- Observation
- Percussion
- Palpation
- Auscultation

A physical examination may occur in the doctor's office, hospital, and sometimes at the site where the patient is found in an emergency. One of the most important aspects of a physical exam is to inform the patient that some portions of the exam may be uncomfortable. Be polite when addressing the patient.

Example:

Instead of coming into the room and saying,

"Why are you still dressed? You are supposed to be wearing the hospital gown and in such and such position."

You should say,

Hi, my name is nurse.....I will conduct a physical exam to examine some of the symptoms you mentioned you were feeling. I will now ask you to kindly remove your clothes and lie in such and such position. I will step outside to give you privacy. Once you are done, call me, and I will come in. Do you have any questions for me at this point?"

A respectful approach to a physical exam will not only make the patient more comfortable but

also build trust, and the patient can be more forthcoming with information during the exam. But please note it is not necessary, maybe not even recommended, to continue a conversation with the patient during the exam. Talking too much may be off-putting, and you may miss vital signs because you are focused on the conversation.

Ensure that the draping covers the patient's private parts and that patients are not left unduly exposed during the exam. Please do not end the examination abruptly; it can come across as disrespectful.

For example, do not say, "Get dressed!"; instead, say, "You may get dressed now."

The second is firm and authoritative without sounding like an order, while the first is curt and unfeeling. Remember, the patient is feeling very vulnerable at this point, so addressing them unfeelingly makes them feel uncared for in a moment of extreme anxiety.

A physical exam should proceed systematically so that nothing is forgotten. Also, the exam should require minimal movements on the part of the patient. Asking the patient to shift positions all the time can be tedious and make you look unprofessional. Also, the exam should consider the patient's age and development. How a female pre-schooler is examined is different from how a female adolescent is examined.

Step by Step Physical Examination Guide:

1. The nurse should begin by making visual, olfactory, and aural assessments of the individual. Is there a foul smell, and where is it coming from (wound, cut)? Are there abnormal sounds accompanying the patient's breathing? Does the patient have unhealthy, pale skin pallor?
2. The nurse then moves to palpation. This entails touching the patient in certain areas to ascertain the symptoms are in line with the diagnosis. For example, if the patient claims to have throat pain when they swallow, palpations of the tonsils can reveal whether they feel swollen or not.

3. After palpation, the nurse moves on to auscultation, examining the sounds within the body, like wheezing or crackling in the lungs. This aspect of the examination is conducted using a stethoscope.
4. Finally, the nurse should conduct the percussion portion of the examination, which involves tapping various parts of the body to ensure the shape and condition of the organs are normal. Percussion entails quick taps using fingers to reveal any tenderness and assess reflexes.

Best Practices when Performing Palpation

- ❖ Ensure that hands are clean by washing them. Also, ensure to warm the hands before touching the patient (it is just out of consideration for the patient).
- ❖ Avoid using gloves for skin-to-skin contact examinations. But if the examination requires contact with bodily fluids, ensure you wear gloves.
- ❖ Before beginning the examination, explain to the individual what the process will be and how they can expect to feel. Mentioning this to them can help them get comfortable and follow instructions correctly. For example, the patient may feel pressure during certain exams. And the pressure may cause them to tense their muscles. However, if they are informed to expect the sensation, they may relax their muscles allowing the exam to be conducted effortlessly.
- ❖ Ask the patient to relax to palpate their relaxed abdomen so that you can identify any abnormalities in the abdominal borders and structures.
- ❖ Palpate the cervical lymph nodes and thyroid glands to feel for thrills in superficial blood vessels.
- ❖ When palpating female reproductive organs, use both hands with one hand, pushing on the organs into the reach of the other hand.
- ❖ Palpation takes time to learn to do correctly, and while each patient is different, there are similarities in the borders and structures of human organs. The most comprehensive physical exams are the periodic health assessment test carried out annually (or as required) and the hospital admission examination.

Best Practices when Performing Percussion

- ❖ When striking the body part under examination, do not use too much force. The aim is to produce certain sounds in relation to the underlying organs. Percussion allows the examiner to know whether the body cavity is filled with fluid or air or is dense.
- ❖ Place the middle finger of one hand over the area that needs to be examined and tap it with the middle finger of the other hand.
- ❖ Use percussion to strike areas near each other to assess the physical condition of the surrounding organs.

Sounds to expect during a percussion exam:

- Resonance: This is a low-pitched sound found in healthy, normal lungs.
- Dullness: This is dull thud sound that is normal with dense organs like the liver.
- Tympany: This is a hollow drum sound that comes from organs that have air like the stomach.
- Hyper-resonance: This is the low pitched almost rumbling sound that emanates from lungs that have emphysema
- Flatness: This sound emanates from bones and muscles like the thigh when struck.

What to Do When Performing Percussion

- Inform the patient that you are about to use the stethoscope and that the equipment may be cold to the touch.
- Use the stethoscope correctly, and do not be afraid to take your time during the examination. The bell of the stethoscope helps listen to the lower frequencies of heart murmurs or bruits while placing it lightly on the skin. The diaphragm helps with high-pitched sounds like the lungs and heart or the bowel sounds.
- The stethoscope must not come into contact with clothing or hair.
- The stethoscope tubing should not come into contact with your hand.

- Auscultation sounds differ in frequency which is the pitch of the sound (low or high), intensity, which is the loudness of the sound, and quality which helps determine whether they are rumbling or high.

Signs of Physical Pain

When assessing physical pain, there are four pain levels and their meanings. Usually, a nurse will ask the patient to assess their pain levels on a scale of 0 to 10:

- 0 means there is no pain
- 1 to 3 means there is mild pain
- 4 to 6 means there is moderate pain
- 7 to 10 means there is severe pain.

This pain assessment scale is known as the numerical assessment, where 0 represents no pain at all to 10, which is the worst pain imaginable for the individual. Other pain assessment scales include:

The verbal scale: This scale uses words to describe the pain. The person in pain will describe the intensity of the pain and how they feel. It sometimes involves using a questionnaire.

The Wong-Baker scale: This scale is represented by faces with no pain having a smiley face and severe pain having a crying face. It is used on children and people with cognitive disabilities.

The Observer scale: This scale is used to relate past to current behavior when addressing psychopathology. For example, they are used to gauge the severity of medical states like depression, anxiety, obsessive-compulsive disorders, and psychotic symptoms.

Importance of Pain Assessment in Advanced Disease

Over 90% of advanced disease patients in medical facilities experience chronic pain daily. Nurses are trained to ensure that patients manage their pain using medication and other therapies that can improve their quality of life.

During the pain assessment, it is critical to understand that patients may not be able to communicate their pain level. Pain can compromise their ability to communicate because it can even exist in an unconscious state. As a nurse, it is important to notice changes in the patient's behavioral, physical, and psychological symptoms.

The ABCDE Method of Pain Assessment:

- A - A stands for asking the patient what pain they are feeling
- B - B stands for believing what the patient says about their pain.
- C - C stands for choosing the correct method of controlling pain for the patient, which leaves them comfortable but lucid where applicable.
- D - D stands for delivering pain interventions in a logical, timely manner and appropriately.
- E - E stands for empowering patients and their families by helping them understand the pain management the individual is undergoing. When everyone is on the same page regarding treatment, there is a higher chance of getting it right.

The ABCDEs of pain are shrouded in the following five elements of pain assessment:

- The intensity is the degree of pain on a scale of 0 to 10 or whichever scale you decide to use
- Quality is the type of pain, whether dull and achy, sharp and burning or shooting.
- Duration is how long the pain lasts. Does it come in waves, or is it consistent
- Location is the place where the patient is feeling the pain

- Aggravating factors are the additional external or internal factors contributing to the pain.

There are two primary tools for assessing pain: unidimensional and multidimensional tools

The unidimensional tools include the following:

- 0-10 rating scale
- The faces chart with a facial expression
- Descriptive scale where pain is described in simple terms of severe, moderate, or mild.

The multidimensional tools include the following:

- Questionnaires with about 20 questions help the patient describe their pain. The questions have everything from current pain to how the pain is interfering with their daily life, from movement to moods and anxiety levels, etc. A good example is the McGill pain questionnaire. This questionnaire can be used to evaluate a person in significant pain.
- Multidimensional pain inventory is another questionnaire that also assesses the patient's pain using multiple dimension questions.

How Does Pain Affect the Body?

When an individual is caught up in adverse pain, their pain can affect other body systems:



The cardiovascular system:

People with chronic pain are more likely to develop heart problems like a heart attack or stroke compared to those without pain. Experts have found that acute pain can reduce peripheral blood flow, resulting in ideal conditions for stasis or clotting.

Pain also increases the heart rate, and the blood pressure becomes elevated. These are signs that, if not mitigated, could result in cardiac arrest or stroke respectively.

The respiratory system:

Pain influences the flow, frequency, and volume of respiration. Nurses will sometimes ask patients to breathe slowly to manage their pain. An example of this is during childbirth. The nurses and midwives tend to encourage the woman to breathe a certain way during contractions as this helps them manage their pain.

The secret is to breathe in and then breathe out slowly, allowing the air to surround all the pain and tension to leave the body as the person breathes

out. Close your eyes and imagine blowing the pain out like a whale blowing water out of its blowhole.

The Endocrine System:

Pain puts a lot of stress on the endocrine system, which can cause a hormonal imbalance in some patients. That could be a result of an increase or decrease in the hormones. Anabolic hormones like testosterone and insulin could decrease, while catabolic hormones like glucagon and cortisol may increase. Pain tends to stimulate the HPATG system secreting extra hormones from the thyroid glands, gonads, and adrenal glands.

Currently, studies have not shown the effect of pain on progesterone, estrogen, and testosterone on reproductive organs and the menstrual cycle.

The Gastrointestinal system:

Pain can make it hard to eat and may interfere with the secretion of gastric acids necessary for the digestive process. And in gastrointestinal problems like irritable bowel syndrome, inflammatory bowel syndrome, GERD, functional dyspepsia, and diverticular disease, pain is a defining factor.

For example, constipation in a person with lower back pain can be related to pain. A herniated disc can cause pain that radiates to other parts of the gastrointestinal system resulting in issues like bloating.

The Urinary System

Pain in the urinary system could cause urine retention, where the patient cannot completely empty their bladder when urinating. Urinary retention is where an individual has:

- Has difficulty starting the urination process
- Has a slow urine stream
- Feels the need to urinate but removes very little urine or still feels the need to urinate just after urination
- Frequently urinates but in minimal amounts.

Also, pain can make one afraid to have bowel movements or urinate. For example, a urinary tract infection may cause the lining of the urinary tract

to become irritated and inflamed, which produces pain when going to the toilet.

The Emotional System

Pain tends to cause emotional distress, and being unhappy or sad can result in feelings of anxiety, depression, fear, and anger, among others.

Areas to focus on when Assessing pain:

- Focus on the physical aspect of the pain where the patient shows physical discomfort.
- Focus on the social and cultural effects of the pain on the patient.
- Focus on the behavioral effects of the pain in terms of how the pain and discomfort is doing the patient act.

Assessment Tools for Non-Verbal and cognitively Impaired patients

The CNPI:

This tool is known as the Checklist of Nonverbal Pain Indicators. It is used to measure and gauge pain in nonverbal patients and adults with cognitive impairment.

The DS-DAT:

This tool is known as the Discomfort Scale for Dementia of the Alzheimer's type. It is used to assess elderly patients experiencing cognitive decline, dementia, and a decrease in verbalization.

The PAINAD:

This tool is known as the Pain Assessment In Advanced Dementia, adapted from the DS-DAT. That means that it is also used to assess the level of cognitive and verbal decline in elderly patients with dementia.

The ADD:

This tool is known as the Assessment of Discomfort in Dementia Protocol and is used to assess dementia patients showing problematic behaviors.

The PADE:

This tool is known as the Pain Assessment for Dementing Elderly, and it assesses the physical pain behaviors of the patients.

The PATCOA:

This tool is known as the Pain Assessment Tool in Confused Older Adults, and as the name suggests, it helps determine the level of pain in older adults confused due to dementia. It helps focus on the observation of the patient's nonverbal cues.

The Abbey Pain Scale:

This tool is used to assess late-stage dementia, especially in nursing home environments.

The NOPPAIN:

This tool is known as the Noncommunicative Patient's pain Assessment Instrument, and it is used specifically by nursing assistants to assess a patient's pain.

Assessment Tools for Neonates/Infants:

In this age group, one needs careful observation to help determine the problem, especially since they are too young to verbalize their health needs. The nurse needs to use the NIPS tool, the Neonate/infant Pain Scale. It enables the medical professional to assess six areas of concern in neonate pain assessment. Out of the six areas, five are gauged between 0-1, and one area is gauged 0-2:

Area of Pain Assessment	Zero	One	Two
Crying	No crying at all	Whimpering, moaning and	Shrill, continuous, loud crying

		intermittent crying	
Pain in upper extremities	Relaxed movement	Rapidly extending the limbs as they flex, rigid or tense limbs	
Expression on the face	Normal and rested	Grimace, frown, tightened facial muscles	
Pain in the lower extremities	Relaxed movement	Extending the limbs rapidly with flexing and tense/rigid limbs	
Respiratory patterns	Normal relaxed breathing	Irregular breathing, gagging, tachypnea, holding their breath	
State of arousal	Wakefulness, sleep or relaxed quiet with random movements	Fussing, irritable crying, restlessness and thrashing about	

especially on the legs and arms	
---------------------------------	--

During pain assessment in neonates and infants, the nurse should consider the child's chronological and developmental age. This knowledge will help the nurse understand the child's capability to express themselves and their pain level. Also, it helps determine what course of treatment one should embark on.

Using the tool above will also help the nurse to identify the exact place where the pain is emanating from and then identify the underlying cause of the pain. Also, they can determine whether nonpharmacological measures can be used to mitigate the pain.

Assessment Tools for Pre-teens and Adolescents

Minors around this age group can express themselves so they can tell the nurse how they are feeling and where it hurts. The most appropriate pain assessment tool for pre-teens and adolescents is the 1 to 10 pain scale.

0 means the child is in no pain at all

1-2 means the child is in mild pain (it is almost negligible pain)

3-5 means that the child is in moderate pain (The child is aware of the pain but can perform daily activities despite it)

6-7 means the child is in severe pain (This is significant pain that affects the child's ability to function normally)

8-9 means the child is in very severe pain (This is debilitating pain and requires immediate intervention. It causes the child to become weak.)

10 means the child is in excruciating pain (It may cause a psychotic episode or completely incapacitate the child so that they are unable to function. It is a pain that the body cannot deal with, so the child may be put on medication like morphine to mitigate it)

In this age group, the children tend to show their discomfort due to the pain by moaning, whimpering, shouting, and crying. But children with a high pain tolerance may stoically look indifferent to the pain even though they are suffering. So nurses should not judge the pain level by the child's behavior alone.

In any scenario where the nurse is taking care of a child, the following protocols should be followed in pain assessments:

- Question both the child and parent/guardian about the pain the minor is experiencing
- Use the pain scale to help the child explain the level of pain. It is best to use the pain scale that is age appropriate: Pre-teens and adolescents can do the 0-10 scale, and pre-schoolers and below should use the face chart scale as described above.
- Evaluate the child's physiological and behavioral changes due to their condition and subsequent pain.
- The nurse must ensure that they secure the parent's participation in the treatment plan.
- Take action after proper evaluation of the minor.

Understanding All Types of Medical Assessments

Cardiovascular Assessment:

This is the assessment of the cardiovascular system. It begins with exploring the patient's family history and asking questions about early deaths in the family or cardiovascular diseases. Unfortunately, the most susceptible demographic to cardiovascular conditions is elderly African American males. The following questions are a must:

Step by step of cardiovascular assessment:

- Ask about any family members with a cardiovascular condition of any sort.
- Next, ask the patient if they are experiencing any fatigue, chest pain, syncope, edema, vertigo, leg pain or cramps, weight gain, being in and out of consciousness, or dyspnea.
- In case of chest pain, press the patient to answer about the intensity of the pain, location, radiation, how long it lasts, and any other symptoms it comes with, like nausea or dyspnea. Also, ask about any factors that increase or reduce the pain.
- Next, do a physical assessment which includes checking vital signs like heart and lung sounds, circulation to the extremities, sensation to the extremities, and aorta auscultation. Also, do a skin assessment and draw a blood sample to test the lipid profile and electrolytes.

Assessment of Heart Sounds:

Auscultation of the heart will help you determine if the patient has cardiac conditions and which one(s) in particular. You must auscultate the pulmonary region, aortic region, tricuspid region, Apical region, and the point of the Erb. Listen for normal sounds, which should be the opening and closing of the heart's valves.

The first sound should be the "lub" (S1) which is the closure of the tricuspid and mitral valves. You will hear it around the left ventricular area of the heart. The second sound is the "dub" (S2) sound which is heard at the base of the heart as the pulmonic and aortic valves close. It is normal to hear a slight splitting of the S2. The systole and the diastole should be silent, but the presence of a ventricular disease will cause murmurs as the valves fail to close. Also, it causes

Snap Sounds: This is a high-pitched sound that occurs when after the dub sound. It is common with rheumatic heart disease when mitral valve stenosis occurs.

Murmur sounds: These sounds indicate a turbulent blood flow due to malfunctioning or stenotic valves, increased blood flow, and congenital

disabilities. Murmurs are graded from 1 to 4 according to intensity. They are also diagnosed by location, timing, pitch, quality, and radiation. You must listen to the pitch (low to high), radiation (if they radiate to the back, shoulders, neck, carotids, or axilla), and the quality (do they rumble, blow, or whistle).

Gallop sounds: These S3 sounds occur after the lub sound (S2) in young adults and children. However, they may indicate heart failure or left ventricular disease in older adults when they can be heard as the patient lies on their left side. S4 sounds occur after the lub sound (S1) as the atria contracts if there is ventricular atrophy. Ventricular atrophy is common with artery disease, aortic valve stenosis, and hypertension.

Friction sounds: These sounds are harsh and grating, indicating pericarditis.

Ejection sounds: These sounds are brief and high-pitched, and they typically occur after the lub sounds. They indicate aortic stenosis.

Using the Electrocardiogram:

The electrocardiogram is a device that shows the graphic display of the heart's electrical activity using various waveforms, intervals, and complexes and records it. It has the P-wave, which shows the start of the electrical impulse in the sinus node and as it spreads through the atria. It also shows muscle depolarization.

Next is the QRS wave, which shows ventricular muscle depolarization and atrial repolarization. After that is the T-wave which shows the ventricular muscle repolarization as the cells negatively charge up in their resting state, followed by the U-wave, which repolarizes the Purkinje fibers.

The II ECG monitors the heart's primary rhythms and dysrhythmias. During an electrocardiogram, you will:

- Place the 2 lead ECG 3-5 cm inferior to the left lower ribcage and right clavicle.
- Place the 3-lead ECG on the right arm near the shoulder
- Place the Vs over the 5th intercostal space
- Place the LL on the upper left leg's region near the groin.

The 12-lead ECG is used to indicate chest pain, syncope, dyspnea, pulmonary embolism, and acute pulmonary syndrome, among other things. This ECG gives you a perspective of the patient's electric heart impulse activities from 12 perspectives using 10 body leads.

Cardiac Monitoring:

During cardiac monitoring, you should evaluate the following intervals on the ECG:

The QT interval: This is the entire time frame of the ventricular depolarization and repolarization. It begins with the QRS segment and ends with the completion of the Y-wave. The duration of the QT interval is typically between 0.36 and 0.44 seconds depending on the heart rate. When the duration is shorter, so is the interval, and vice versa. But a prolonged QT interval means the patient is at risk of dangerous arrhythmias.

The ST Segment: The ST segment is the isoelectric period during which the heart's ventricles are in a plateau, meaning they are completely depolarized and are beginning to recover and repolarize. When the ST segment is at or below 0.5mm of the baseline, it may indicate myocardial ischemia or digitalis toxicity. It may indicate myocardial injury if it is at or above 1mm.

Cardiac Output:

The cardiac output is the amount of blood pumped through the ventricles during a specified timeline. The expected cardiac output of a healthy heart is roughly five liters per minute when the organ is at rest. Unfortunately, for someone with poor cardiac output, exertion from exercise or stress can

cause the output to multiply by three to four times causing changes to the heart rate and stroke volume.

Cardiac Index:

This is the cardiac output which is divided by the body's surface. The cardiac index is tailored to the patient's body based on height and weight. It is measured in liters per minute and per square meter of BSA.

The Jugular Venous Pressure:

This is the neck vein that is used to assess cardiac output. It also can be used to assess the pressure in the heart when the pulsations change according to the pressure in the right atrium. You can assess the jugular venous pressure using a non-invasive procedure by doing the following:

- Elevating the patient's head by 45 degrees (up to 90 degrees) while the patient's head is turned to the right.
- Use light to illuminate the veins and shadows at an angle.
- Use a ruler to measure the jugular vein's pulsation height above the sternal joint. The normal height should be at or above four centimeters. Below four centimeters means the patient is susceptible to right heart failure as there is increased pressure to the right atrium.

What are Preload and Afterload:

Preload is the amount of elasticity in the myocardium when the ventricles are filled to the maximum volume stretching the muscle fibers to their maximum at diastole. Preload may be affected by dehydration, vasodilation, and diuresis, which cause it to decrease. It may increase during transfusion and intake of intravenous fluids.

Afterload is the amount of systemic vascular resistance towards the left ventricular blood ejection and pulmonary vascular resistance towards the right ventricular blood ejection. The afterload is determined by the size and elasticity of significant blood vessels and the function of the aortic and

pulmonary valves. Afterload will increase hypertension, vasoconstriction, and stenotic valves.

Respiratory Assessment:

In cases where respiratory system distress is detected, you must stabilize the patient before beginning the assessment. Always begin by asking about the family history of respiratory conditions when assessing a patient with respiratory distress. Here are some questions to ask:

- Ask the patient if they have any risk factors like smoking, previous lung problems, toxin inhalation, allergies, or exposure to secondhand smoke from their environment.
- Ask the patient how long the symptoms have been present and the aggravating factors.
- Ask the patient what the symptoms of their respiratory problems like coughing, sputum production, chest pain, dyspnea, and fatigue, among others, are
- Ask the patient about the severity of the symptoms.

Next, perform the physical assessment assessing the vital signs, which include listening to lung sounds, checking the skin pallor, posture, and pulse oximetry. Also, check the nails for clubbing and signs of edema and anxiety due to being unable to breathe. You may also need to take a blood sample for testing, depending on the patient's condition. You would be looking for arterial blood gases, CBC, and electrolytes. Also, you may need to take a sputum sample for testing.

Normal versus Abnormal Breathing Sounds

Normal breathing is divided into three types of sounds:

- Vesicular breathing sounds, which are low and soft. They can be heard over the peripheral lung space.

- Bronchovesicular breathing sounds, which have a moderate pitch sound. They are typically heard in the upper parts of the lungs.
- Tracheal breathing sounds, which are the highest in pitch and are heard over the trachea.

Abnormal breathing sounds are also known as adventitious lung sounds. They are divided into three types of sounds:

Wheezes that have high-pitched sounds and are expiratory are often a result of air pushing out through an obstructed airway.

Stridor breathing sounds are high-pitched, but they are heard in the upper airways.

Coarse crackling sounds are often caused by excessive amounts of secretions in the airways.

As the name suggests, they produce a crackling sound and can be heard during inspiration and expiration.

What to Expect During Pulmonary Assessment:

Diagnosing the respiratory system requires several procedures and tools, as outlined below. Of course, these will vary according to the degree and type of disease or injury.

1. Conduct a thorough physical examination which includes pulmonary and cardiac status. This examination checks for any abnormalities
2. Use an electrocardiogram which helps pick up any cardiac arrhythmias. You may need to use the 12-lead electrocardiogram for in-depth observation if arrhythmias are detected in the initial assessment.
3. Perform a chest X-ray to check for injuries like fractures, major trauma, or pneumothorax. This also helps monitor the placement of intubation tubes. The good news is that X-rays can be conducted quickly during the initial assessment and give the best picture of what is going on in the thoracic cavity.
4. Use computerized tomography after the initial X-ray assessment to assess any further damage to the lungs.

5. Check the blood gases
6. Use an echocardiogram in cases of cardiac damage.

Arterial Blood Gases

These are also known as ABGs and are monitored to assess the effectiveness of ventilation, oxygenation, and acid-base status, helping you to determine the oxygen flow rates. Typical values for arterial blood gases are:

- 7.35 to 7.45 pH – acidity/alkalinity
- 35 to 45 mmHg – partial pressure carbon dioxide (PaCO₂)
- ≥80mmHg - Partial pressure oxygen (PaO₂)
- 22-26 mEq/L – Bicarbonate concentration (HCO₃)
- ≥95% - oxygen saturation

When all these values are looked at together, they indicate the patient's respiratory status, whether the patient is in respiratory failure or they are healthy. Depending on the readings, the patient may need ventilator management with lower PaO₂ to reduce oxygen toxicity and higher PaCO₂ to prevent barotrauma.

Endocrine Assessment

When performing an endocrine assessment, you must look at all the organs that produce hormones that affect the body's growth, sexual development, and metabolism. Any changes to these organs may indicate endocrine disorders. Symptoms may vary from one patient to another, but generalized symptoms point to the presence of an endocrine disorder.

Inquire from your patient about the presence of any family history of endocrine disorders. After getting the familial history, here are mandatory questions to ask:

Ask the patient about the presence of generalized symptoms, including fatigue, weight fluctuation, sleep problems, cold and heat intolerance, fluctuation in sexual libido, decreased capacity to concentrate, and trouble with memory and mood.

Next, do the physical exam, which entails assessing the patient for edema, hair loss, facial hair for females, an enlarged trunk accompanied by thin extremities, exophthalmos, and enlarged feet and hands. Also, assess the patient's vital signs for hyper and hypotension, changes in vision, and skin appearance.

Neurological Assessment:

This assessment is critical, to begin with, a series of questions about family history of neurological disorders. Mental status testing should be done in five parts which are:

- Alertness level
- Cognition
- Focal cortical functioning
- Mood and affect
- Thought content

Here are the questions to ask:

- Ask the patient if they have any health history for any type of trauma. Drug abuse, alcoholism, falls that affect the head, and medications are taken.
- Ask the patient if they are presenting with any neurological symptoms and how they present. Also, ask them if they fluctuate or if they are constant.
- Ask about symptoms like fatigue, seizures, vertigo, visual problems, abnormal sensations, cognition changes, loss of consciousness, motor problems, and pain. Postures, facial expressions, cranial nerves, and movements are also assessed, checking for abnormalities.

Next, do the physical assessment, which includes assessing the patient for physical strength, balance, and coordination. Test all the reflexes from blinking and swallowing to gagging, among others. Also, assess the biceps, triceps, plantar, perianal, patellar, ankles, and the upper and lower abdominal area. Another physical aspect of the assessment is that you need to check for peripheral sensation. Touch the patient with cotton balls.

How to Assess Functional Status:

Functional status is assessed by either self or proxy report. The focus when assessing functional status should be on the cognitive, physical, social ability, and psychological aspects.

Cognitive assessment: This assessment is used to detect any cognitive impairment due to a neurological disorder. The assessment looks at the patient's thought process, knowledge capacity, and judgment, among other things. A few cognitive tests can be administered to help with cognitive assessment. The most common include:

- A. Functional Independence Measure (FIM)
- B. The Barthel Index
- C. The Patient Evaluation Conference System
- D. The PULSES Profile
- E. The MoCA test (Montreal Cognitive Assessment)
- F. The Mini-mental state exam (MMSE)
- G. Mini-Cog

Social Ability Assessment: This assessment looks at the beliefs and attitudes of the patient when it comes to receiving treatment and how they use their support system to promote wellness.

Physical Assessment: This aspect of the assessment looks into the patient's ability to do the physical activities that enable them to function daily. These include baths, eating, walking, dressing, using the bathroom, and preparing meals.

Psychological assessment: This aspect of the assessment looks into the patient's ability to fulfill their usual roles and maintain their well-being. Overall the neurological assessment should encompass the following which should be recorded:

- Degree of independence the patient has shown
- Health of nerve function
- Motion and coordination abilities
- Cardiac and respiratory status
- Patient's ability to complete an activity without needed help or rest
- How much assistance does the patient need to complete an activity

How Do The Cranial Nerves Work

The cranial nerves facilitate several body movements. Here are the functions of the cranial nerves that must be tested during a neurological assessment:

The olfactory nerve – its function is to aid with the smell

The Trigeminal nerve – its function is to aid with sensory or facial motor movements

The Optic nerve - Its function is to aid with visual acuity

The trochlear nerve – its function is to aid with eye movement, specifically moving the eye up and down

The Oculomotor nerve - its function is to aid with pupil and eye movement, specifically pupillary reflexes

The facial nerves – Their function is to aid with facial expressions.

The Abducent nerve: Its function is to aid with eye movement, specifically lateral eye movement.

The vagus nerve – its function is to aid with the visceral sensory and motor function, allowing you to cough, gag, and swallow.

The vestibule-cochlear nerve: Its function is to aid with balance and hearing.

The accessory nerve: Its function is to aid with motor function, specifically to turn the head and shrug shoulders.

The hypoglossal nerve: Its function is to aid with tongue movements allowing one to push out the tongue and move it around.

The administration of the National Institutes of Health Stroke Scale

This scale is administered while strictly paying attention to the direction. The scale features 11 sections, and each is measured from 0 to 4.

Level of consciousness

- Visual
- Best gaze
- Facial palsy
- Arm motor
- Leg motor
- Best language
- Sensory
- Limb ataxia
- Dysarthria
- Distinction and inattention

Cancer Assessment:

Cancer can be life-threatening if it is not caught early and treated. It causes irregular cell reproduction and growth, leading to these cells growing into a tumor that occupies the areas where the normal body cells should be.

Unfortunately, cancer cells can metastasize or extend into other body parts, and the abnormality in the cell's DNA can cause them to become malignant. Typically the body should be able to destroy such a cell, but if the immune system doesn't destroy the cell, the cancer cells continue to grow and reproduce until a tumor is formed.

Terms Used During Cancer Assessment:

Dysplasia – this is the change in normal cells

Hyperplasia – this is the process in which the cells within specific tissues multiply.

Tumor heterogeneity: This term describes the differences between the cancer cells in the tumor. Unfortunately, the more heterogeneous the tumor is, the more challenging it is to treat. It also requires more varied treatment approaches to treat.

Anaplasia: Anaplasia is a condition of poor cell differentiation. This condition gives cancers unpredictability making them harder to treat even with radiation and chemotherapy.

Metaplasia: This is when one cell type is interchanged with another differentiated cell in the same tissue. It is triggered by environmental stimuli.

Invasion – this is the process by which the cancer cells reproduce and take over an area invading healthy cells and tissue.

Metastasis: This is the extension of cancer cells to the rest of the body.

Angiogenesis: This is the process in which the tumor grows and causes the body to produce blood vessels that allow it to grow even more.

Causes Of Cancer:

Cancer can be due to hereditary factors, radiation, compromised immune system, chemical carcinogens, and viruses.

Hereditary factors: The patient may have inherited the oncogenes that are responsible for causing certain cancers.

Radiation: Exposure to radiation can cause the cells in the body to change their DNA so that the body cannot repair the damage. Such a cell can cause cancer. Radiation can be accidental or during diagnostic testing. UV is the most common type of radiation and can cause skin cancer. Asbestos is also considered a form of radiation that causes mesothelioma tumors in the lungs resulting in cancer.

Compromised Immune System: A body with a compromised immune system may have trouble destroying cancerous cells. Some cancers can alter

the immune system so that it is unable to recognize normal, healthy cells versus malignant ones.

Chemical Carcinogens: Chemical carcinogens can alter the cell's DNA to cause cancer. Examples of chemical carcinogens include cigarette smoke and tar from the same cigarettes.

Virus: Some viruses can promote cancer growth by stimulating the alteration of the cell's genetic material. The alteration of genetic materials can increase the production and growth of cancer cells.

Cancer manifests in three stages:

Initiation: This is the entrance of cancer-causing pathogens or substances into the body, where they react with the DNA and cause mutation. Examples of initiation include the entrance of cigarette smoke or radiation exposure. The initiation results are irreversible, resulting in permanent damage and genetic change. So any daughter cells that come from the division of the mutated cells also carry the mutation.

Promotion: This is the second stage where the body is exposed to cancer-causing substances repeatedly. It increases the likelihood of cancer occurring because it promotes cancer cells being reproduced.

Progression: This is the final stage where the cancer cells have begun to reproduce, spread, and increase to form a tumor. At this point, the body cannot repair the damage caused by cancer-causing substances to the cell DNA. In some cases, the cancer cells attack the normal cells and make them start to replicate the cancer cells.

Tumor staging and grading:

During cancer assessment, you will use tumor staging and grading to determine the severity of the tumor. The surgical pathologist assigns these two assessments. During tumor staging, the pathologist will measure the

size and spread extent of the tumor. This assessment focuses on the original local tumor, the regional lymph node involvement, and the distance of metastatic spread. Tumor staging refers to the extent of cancer.

Tumor grading assesses the difference between the tumor and its surrounding tissues. For example, grade one tumors do not differ much from the surrounding tumors, while grade 3 and 4 tumors are more aggressive, so they differ a lot from the surrounding tissues. With tumor grading, you describe the tumor based on the abnormality of the tumor cells and how the affected tissues appear under a microscope.

Gastrointestinal Assessment:

Gastrointestinal assessment should begin with asking questions about the family history, especially related to gastrointestinal issues. Here are the questions you ask during the assessment:

- Ask the patient about their history of alcoholism, smoking, poor dietary habit, and medicine use.
- Ask the patient about the symptoms they are experiencing, including abdominal pain, flatus, gastrointestinal discomfort, nausea, diarrhea, and vomiting.
- Ask the patient whether they have had any weight fluctuations and defecation patterns.

Next, perform the physical assessment, which should start with checking the tongue and teeth and the rest of the oral cavity. Check the patient's parathyroid glands, pharynx, nodules, lesions, skin, and abdominal shape. Also, be on the lookout for inexplicable bruises and scars. Assess the abdomen's four quadrants using a stethoscope. There are three types of sounds associated with the gastrointestinal:

- Normal sounds: These are sounds heard in the stomach every 5 to 20 seconds.

- Hypoactive sounds: This is only one sound in two minutes
- Hyperactive sounds: These are five to six sounds in 30 seconds

There could also be an absence of sound, which is no sound, in three to five minutes.

Assessment of the Gallbladder and Pancreas

Gallbladder and pancreatic assessments are typically hard to perform, so their assessment tends to rely on the presence of symptoms. The symptoms of gallbladder disease include abdominal distension, stomach discomfort after eating fatty food, nausea, vomiting, and right upper quadrant pain. The pain can be intermittent.

Pancreatic disease, known as pancreatitis, is characterized by back pain, severe abdominal pain, too much vomiting, and dyspnea. Pancreatic disease is mainly related to gallstones and alcoholism, which is why you must get the patient's health history with gallstones and alcohol abuse. During the assessment of the gallbladder and pancreas, ensure you check for the following:

- An RUQ mass and tenderness
- Abnormal bowel sounds
- The patient is abdominal guarding
- Hypotension, fever, and tachycardia
- Signs of hypoxia
- Signs of jaundice or bruising near the navel or the flanks
- Blood sample results analyzing lipase and amylase, calcium, bilirubin, and CBC

Assessment of the Liver

The assessment of the liver should look for risk factors that can cause the liver not to function at optimum. Unfortunately, liver assessment is

typically prompted by the appearance of symptoms. But when the symptoms begin to show, it means the liver has around 70% damage before a lab test can detect the damage. However, if you notice the risk factors in the patient, then you can begin to put intervention measures to prevent liver disease.

Risk factors for liver disease include drug abuse, alcoholism, environmental toxins, infection, living in areas with poor sanitation, and risky sexual behavior. If these risk factors are present, question the patient about symptoms related to liver disease like

- Itching
- Fatigue
- Weight gain
- Abdominal pain
- Black stool
- Blood in the stool
- Lack of libido
- Lack of menstruation
- Red palms
- Scratches on the skin
- Petechiae
- Spider angiomas
- Abdominal veins
- Insomnia
- Bruising
- Dryness
- Testicular atrophy

Also, ensure that you check the patient's vital signs and cognitive status, like lack of balance, slurred speech, and tremors.

Assessment of Nutritional Status

When assessing a patient's gastrointestinal status, it is critical also to ensure that you assess their nutritional status. To do this, you need to compare the patient's nutrition intake to the USDA's MyPlate recommendation. Also, measure their weight and height against the BMI table to determine their nutritional status.

Ensure that you measure the patient's waist circumference and assess their muscles for any wasting, hair loss or breakage, loss of subcutaneous tissue, ulcers, and bruising. Also, assess the mucous membrane and the patient's teeth, thyroid gland, abdomen, and extremities. Some of the issues in the nutritional assessment could be related to endocrine issues, chronic and acute diseases, and infections.

Assessing a patient's nutritional status helps you develop the appropriate care plan for them. Patients must be able to eat proper nutrition to help them recover. And also, this is the time to identify any nutritional issues that arise.

Genitourinary Assessment

This is the assessment of the urinary tract and kidneys. It begins with asking the patient about their family history and issues with the genitourinary system. After this question is asked and answered, here is the next phase of questions to ask:

- Ask the patient about any risk factors in their family, including previous urinary disease, immobility, diabetes, hypertension, chronic disease, STD, drug and alcohol use, pregnancy and delivery complications, and chemical exposure.
- Ask the patient about their daily fluid intake.
- Ask the patient about any difficulty with emptying their bladder, urinary incontinence, urgency, straining with voiding, fever, chills, anemia causing exercise intolerance, blood in urine, and abdominal pain.

Next, do the physical examination, which includes looking at the vital signs like hypertension, among others. Also, perform bladder and kidney palpation and percussion over the bladder but only after urination. Do not forget to measure the patient's walking gait heel to toe and palpate for edema and ascites. Finally, examine the patient's genitalia and then check the vagina and urethra for tears, herniation or irritation. You should also take a blood sample, and a urine sample with urine caught midstream.

When performing the genitourinary assessment, focus on the following:

Specific gravity – This compares the patient's urine and distilled water. The comparison is essential in assessing normal urine and susceptibility to kidney disease.

Osmolality: This measures the concentration or dilution of urine. With normal values, the osmolality increases due to dehydration, increasing the concentration. But with kidney disease, the urine is diluted, and its osmolality is fixed.

Antidiuretic hormone: This hormone regulates the excretion of water and urine dilution or concentration. When the antidiuretic hormone is suppressed by increased fluid intake, there is less fluid that is reabsorbed.

Sexual Health and Preference Assessment

This is a very sensitive subject, and it usually has little to do with family history. Nonetheless, ensure that you ask the patient about any family history of conditions related to sexual health.

Here are questions to ask about sexual concerns:

- Ask the patient for permission to ask them about their sexuality and sexual health. And if the patient refuses to answer the questions, proceed with the rest of their health history.

- If the patient agrees, begin by asking whether they prefer sex with men, women, or both. Do not offer your opinion about the patient's sexuality because you may seem judgemental, and the patient will not feel comfortable talking to you if they believe that.
- Ask the patient if they have any problems with sexual intercourse or physical relations.
- Ask the patient if they have ever been forced to have sex with anyone.
- Ask the patient if they are afraid of being close to anyone.
- Ask the patient if they have any questions about their sexual expression, risky behavior, safe sex practices, and contraception.

From these questions, identify any problems and send the patient to the relevant doctor, including the gynecologist, sex therapist, or urologist.

Musculoskeletal Assessment:

When it comes to musculoskeletal assessment, you need to focus on the mechanisms of injury. To carry this out, you must use

Observation: Check the patient for physical injuries or unkemptness, and look out for soiled or torn clothing. Also, check them for any apparent injuries like swelling, bruising, and bleeding, as well as clues about their health and living situation.

Question: Ask the patient several questions and listen to the patient's report or accounts from their family, friends, and colleagues. This will help you establish how the injury occurred and what to do about it. Ensure you ask relevant questions that help you clarify what help the patient needs.

Physical examination: This entails looking for signs of trauma and injury. Look for bruises, fractures, cuts, scratches, broken bones, and others. Hip and wrist fall tend to cause fractures, while burns may cause blistering and peeling of the skin.

Assessing Disabilities

When dealing with a patient with disabilities, you may find it very difficult to perform the assessment as in-depth as you would like to. In this case,

Look for non-verbal cues like watching the patient's face for signs of grimacing or frowning.

Use an interpreter if the patient doesn't speak your language but ensure the interpreter is not a family member.

If the disability interferes with the patient's communication skills, give them enough time to respond to the questions. Do not rush them. Always warn the patient before you touch them in any way.

Assessing Falls

Falls affect the musculoskeletal well-being of the patient. You must determine the risk factors that make your patient susceptible to falls, including taking psychotropic medication, cognitive impairment, mobility problems, chronic illness, and neurological disorders that may cause falling. Evaluate the patient's history before starting the physical exam so you can be aware of the prevalence of the risk factors.

Integumentary Assessment:

The integumentary system comprises the skin and its surrounding tissues. Begin with a general skin assessment, as various skins vary in color. For example, it may be harder to see the vein system of dark-skinned people versus Caucasians.

Poor pallor may indicate poor oxygenation, stress, or vasoconstriction. Jaundice indicates elevated levels of bilirubin, while cyanosis is characterized by oxygenation. Erythema is usually characterized by blushing, local inflammation, and vasodilation.

Understanding the Effects of Aging on the Skin:

Age is a critical consideration when evaluating the state of the patient's skin. Here are a few considerations to be aware of:

Infant skin is thin because the epidermis is not fully developed. The dermis layer is only about 60% developed and continues to develop as the child grows. Be very careful of the skin of premature babies, as it is especially friable. It allows evaporative heat loss and transepidermal water loss.

In adolescence, the thickness of the skin decreases by 20%. The hair follicles are activated at this age, so the timing of the epidermal turnover increase.

In adulthood, the skin becomes more prone to cancer as the Langerhans' cells decrease due to age. Overall, many aspects associated with the skin decrease, including the functionality of the sweat glands and fat glands. Also, vascularity decreases. As a result, thermoregulation is interfered with, resulting in dry skin, which is easily irritated. The skin is also prone to tearing as the epidermal-dermal junction flattens and the skin's elastin degrades with solar exposure and age. Also, the thinning hypodermis can result in pressure ulcers.

Use the clinically validated Braden scale to determine the risk assessment of the patient developing pressure sores. The scale features five different areas, with each section scoring between one to four and one section scoring between one and three.

Postpartum Assessment

This assessment is critical for managing the health of a woman after pregnancy. It includes checking the following:

- Normal blood pressure between 90/60 and 140/90

- Uterine bleeding which is typically indicated by falling blood pressure levels and an increase in pulse rate
- Decreased pulse rate compared to its levels during labor
- Relaxed respiration, which is not labored
- The temperature should return to normal within 24 hours, although it is still elevated immediately after delivery.
- Alertness where the mother is responsive, alert, and able to hold the baby
- The fundus is to be palpated to determine whether it is firm, in the correct position, and midline. The expected position of the fundus is at the umbilicus
- Excessive bleeding can be monitored by checking the lochia every 15 minutes for large clots and copious discharge
- Distention of the bladder because a distended bladder means the fundus has deviated from the midline
- Uterine bleeding, which may indicate uterine bleeding
- The perineal area must be examined to note the amount of bruising and swelling. If the patient had a natural birth, the examination checks the condition of the sutures and episiotomy where necessary.
- If there is extensive or persistent pain in the perineum, a doctor should do a thorough checkup and treat the patient accordingly.
- The rectum is checked for hemorrhoids or tears because this area should have no rectal pain. In case there are engorged hemorrhoids, they must be reported to the physician, especially if they are more than two centimeters in size.
- Urination ability after delivery. The mother should be given a chance to urinate one hour after delivery if she can before considering catheterization. If she urinates, she should be able to do so spontaneously with no distention after urinating clear urine.
- Palpate the bladder to determine if it is extended.
- The levels of anesthesia every 15 minutes if the mother is delivered using an epidural or spinal block.
- Pulses and warmth of the feet and hands of the patient.
- Edema should remain stable or gradually decrease if it is present before delivery.

- Pain levels should be mild, only at three out of ten on the pain scale. If the patient has severe pain, the physician must look at the patient and manage it adequately with drugs like analgesics.

Caring For the Postpartum Wound:

Wound care for a postpartum wound is extremely critical for the patient's continued well-being. But the wound care depends on whether the patient had a cesarean section or normal birth.

Cesarean section (c-section) wound care: -

Patients who have undergone a c-section will either have surgi-strips or staples. So when caring for the wound, it must be covered with a sterile bandage. The initial sterile bandage is removed after 24 hours, leaving the wound open to air. After 24 hours, the patient can shower; in some cases, there may be light sterile gauze over the wound. You should check the wound routinely to ensure it is healing and intact.

Vaginal birth wound care:

If the patient has an episiotomy, you must check it closely. The sutures should be checked for infection, separation, or hematoma. You can apply ice packs for 15 minutes at a time during the first 24 hours to help with the pain and swelling. After the first 24 hours, give the patient warm sitz baths for 20 minutes up to four times daily, but the patient must not tighten their buttock muscles to avoid stressing the sutures.

Most of the pain after delivery, uterine and perineal, can be addressed using analgesics. But always ensure that your hands are clean and warm during any palpation done on a woman postpartum. Ensure that the patient avoids being served gas-causing foods during the postpartum period until their gastrointestinal tract resumes normal function.

Care and Assessment of the C-Section

During care and Assessment of the C-section, check for blood in the patient's urine and administer analgesia to control the pain. Also, administer IV oxytocin to promote the uterine muscles' contraction. In patients who were given general anesthesia, position the patient on their side and turn them every two hours for the 24 hours after delivery.

Inform the patient to expect flatus and abdominal discomfort, which are common with this form of delivery. To avoid them, she should not drink through straws or carbonated beverages. And the patient should use a pillow to support their stomach when they cough or deep breathe.

Geriatic Assessment:

The term geriatric is used in a very general manner, but during Assessment, you must consider the age categories of the elderly. From 65 to 74, the patient is considered young old, 75 to 84-year-olds are middle old, and older than 85 are the old-old. As the patient moves through these stages of elderliness, they evolve in their physical and psychological health. In places with a high population of elderly patients, nurses have to prepare to deal with a higher prevalence of mental and physical illnesses.

Changes Associated with Geriatrics:

Psychological changes:

The psychological changes to expect tend to be cognitive, memory, and learning capacity. As a result, the patient experiences decreased continued development, which can change the timber of your relationships. Unfortunately, many cognitive issues are induced by brain atrophy. It is important to note that aging doesn't necessarily mean that the patient automatically gets impaired consciousness.

But prepare the patient to expect a decrease in their attention span, concentration, reaction time, and memory resulting in poor results on their

Assessment. But remember that older adults may lack the motivation to learn, which doesn't mean that their psychological abilities are diminished. So ensure that you can differentiate the two: Diminished capacity or lack of motivation.

Biological changes:

Physiological changes occur in the bodies of the elderly due to the wear and tear of the body's organs. The most common organs that decline with age are the heart, lungs, kidneys, liver, brain, and GI tract. In women, reproductive organs like the ovaries and the uterus undergo atrophy due to disuse. There may also be a decline in the five senses causing changes in vision and hearing. As the five senses decline, the patient may experience health issues like delirium, anxiety, dementia, and depression.

Sociocultural Changes:

As elderly patients' functionalities decline, they may experience a decline in independence and ability to move around, and they may be unhappy due to losing friends who have passed on or moved away over time. Unfortunately, as patient moves from one elderly category to the next, their ability to do things for themselves continues to diminish, and that can range from bathing themselves to mobility.

As many patients enter this phase of their lives, they tend to be more anxious as they worry about their financial situation since they are entering retirement or in it.

What to Evaluate in the Safety Assessment of Geriatric Patients:

- ❖ Begin with an evaluation of their mobility capability. Can the patient move without any help? If they need help, is it minimal or extensive? A patient with minimal movement is prone to developing bedsores and pressure ulcers.
- ❖ Evaluate the patient's condition to determine whether they are close to becoming critical. The health conditions of elderly people can

change rapidly.

- ❖ Next, evaluate the patient's awareness levels by asking them questions and seeing if they can communicate how they are feeling and if something is wrong with them. If the patient cannot communicate their state, you must take measures to ensure everyone in the patient care team is aware of their condition.
- ❖ Finally, evaluate the patient's mental ability to make safe decisions for themselves.

Be on the lookout for elderly patients who do not accept their diagnosis or have difficulty coming to terms with the changes in their abilities. Suicide in older people is on the rise as many are afraid that they:

- Are not useful anymore
- Are not as smart or intelligent anymore
- No one loves them as their kids have established their own lives
- Their friends are deceased

Unfortunately, depression is commonly ignored in elderly patients. Elderly males are seven times more likely to commit suicide. Those to be watched closely include:

- Elderly Caucasian males
- Unmarried older adults (divorced, single, or separated)
- Out of work or poor elderly people
- Elderly people with a history of mental illness
- Elderly people with addiction and substance abuse problems
- Elderly people grieving the loss of a close loved one
- Elderly people who have lost their jobs or are in their first year of retirement
- Elderly people who have tried suicide before

With older people, suicidal thoughts may be overt or covert. Just as you would be vigilant with patients of another age demographic, do not be less vigilant because the patient is older and you think they "should know"

better." Any hint of self-harm from signs of cutting or bruising or words said must be addressed immediately by the nurse

Sample Next Generation NCLEX-RN question: Cloze Response Thinking Question

You are assigned to provide nursing care to five hospitalized patients, and you are expected to monitor them in their private rooms.

Patient #1: a 68-year-old woman admitted with new-onset fibrillation. She has a history of diabetes Mellitus, severe osteoarthritis, late-stage rheumatoid arthritis, and hypertension.

Patient #2: A 75-year-old man admitted with severe hypokalemia has to receive IV fluids with potassium supplements. His medical history shows that he has late-stage Parkinson's disease, heart failure, and dementia.

Patient #3: A 49-year-old woman was admitted with severe dehydration, renal calculi, metabolic acidosis, chronic kidney disease, and hypernatremia. She has to receive IV fluids.

Patient #4: A 58-year-old man was admitted for lower gastrointestinal bleeding and anemia. He is receiving an infusion of a unit of packed red blood cells but also has a history of a double mastectomy for breast cancer. He also has bipolar disorder.

Patient #5: a 33-year-old female patient was admitted a few days ago for respiratory distress and viral pneumonia. She has a history of extrinsic asthma, anorexia nervosa, migraine headaches, and depression. She is scheduled to be discharged to go home with her parents tomorrow.

Choose the most likely options from the two lists below to fill in the missing information from the statements in the paragraph.

From the after report from the previous shift, you need to assess patient # _____ as the priority because the patient is at risk of _____. The second priority should be patient _____ number because this patient is at risk for _____.

Options for 1	Options for 2
1	Embolic stroke
2	GI bleeding
3	Respiratory failure
4	Septic shock
5	Blood transfusion reaction

Answer

From the after report from the previous shift, you need to assess patient # 4 as the priority because the patient is at risk of a blood transfusion reaction. The second priority should be

Patient number #1 because this patient is at risk for an embolic stroke.

Chapter Six: Understanding Psychosocial Integrity Block

In nursing, psychosocial integrity means providing nursing care that supports and promotes the patient's social, mental, and emotional well-being as they experience stressful events in their life, including chronic illness, grief, or anxiety.

During the psychosocial integrity assessment, the following questions are mandatory:

- Ask the patient about previous hospitalizations regarding their physical well-being. Also, ask the patient about recent life-changing diagnoses.
- Ask the patient if they have any previous psychiatric hospitalization or does their family have a history of violence, self-harm, or psychiatric disorders.
- Ask the patient what the primary reason they are at the hospital is. Listen to the patient's perception of their chief complaint.
- Ask the patient if they have ever used or are currently using meditation, acupuncture, or visualization as complementary therapies for their chief complaint.
- Ask the patient about their educational and professional background, including special skills, employment history, and retirement.
- Ask the patient about their hobbies, what sport they like and how they enjoy spending time with others.
- Ask the patient about their family situation, living situation, if they have friends, and what activities they do together. Also, ask them about their typical daily activities.
- Ask the patient about their sexual life, patterns, orientation, and problems.
- Ask the patient about any past or present substance abuse situations. If there is any substance abuse, ask about the pattern, the preferred substance (alcohol, recreational drugs, or prescription drugs),

frequency of use, and how they used it (intravenously, snorting, or swallowing).

- Ask the patient about any types of abuse they may have endured, including financial, sexual, emotional, or physical, and who the perpetrator was. Unfortunately, older adults tend to be very susceptible to abuse, and they may be ashamed or afraid to report or disclose it has happened.
- Ask the patient about their spiritual and cultural life. The cultural and spiritual aspects of life are crucial for many older people, and they form the basis of their community life. Ask about any religious/cultural restrictions and traditions and their impact on health decisions.

Cognitive Assessment within Psychosocial Assessment

In people with cognitive issues, the psychosocial element of their lives is heavily impacted. Suppose the patient presents with evidence of illnesses like delirium, dementia, or short-term memory loss. In that case, the nurse must assess their cognition using the mini-cog test or the mini-mental state exam. The test will put the patient through a few specified tasks using the results as a baseline to determine the patient's mental status.

The mini-mental state exam has the following tasks:

The patient is required first to remember the names of three everyday objects and then later repeat the same names.

The patient needs to spell the word "WORLD" backward or count backward from 100 by sevens.

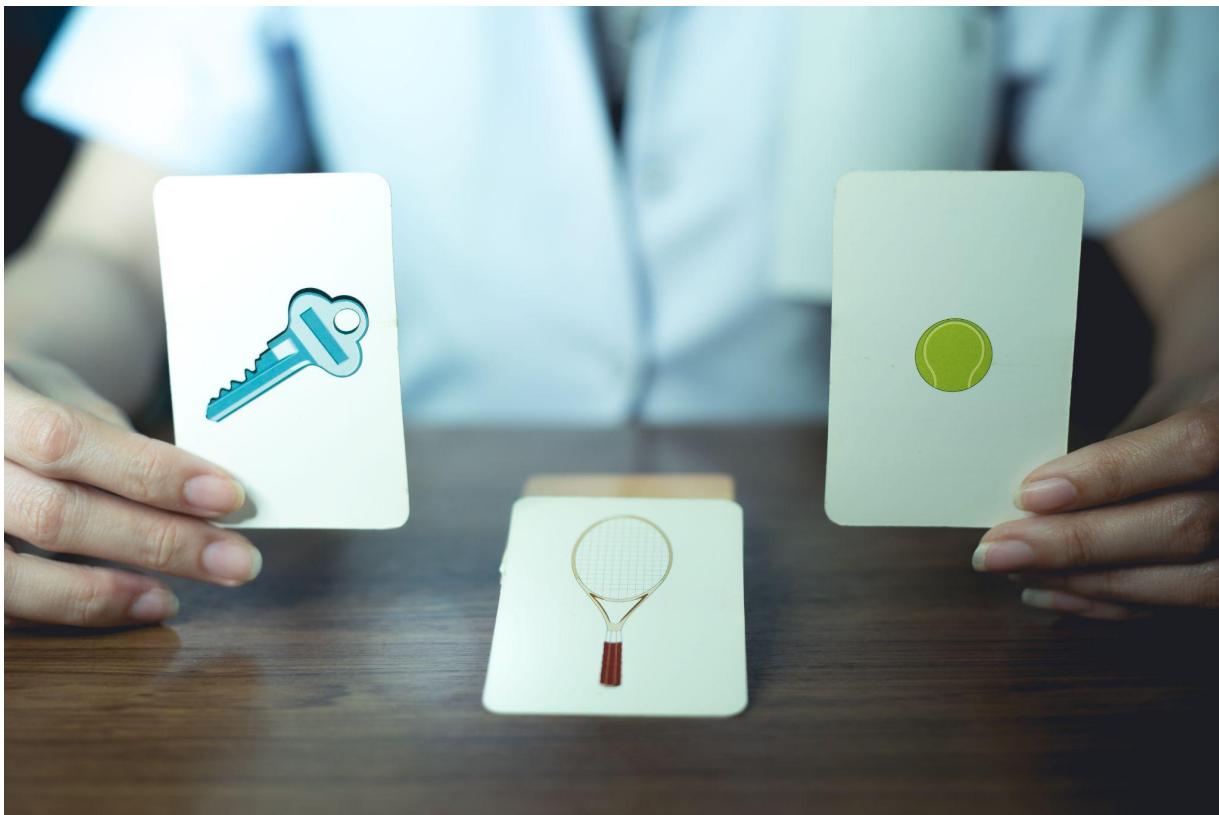
The patient should give the address of the examiner's office from the state, city, and street address.

The patient must name the items in the examiner's office that are pointed out to them.

The patient must copy a picture of interlocking shapes

The patient must repeat a few common phrases after the examiner.

The patient must follow simple three-part instructions from the examiner. For example: Pick up a banana, peel it and eat it. Or take a piece of cloth, fold it and place it on the examiner's table.

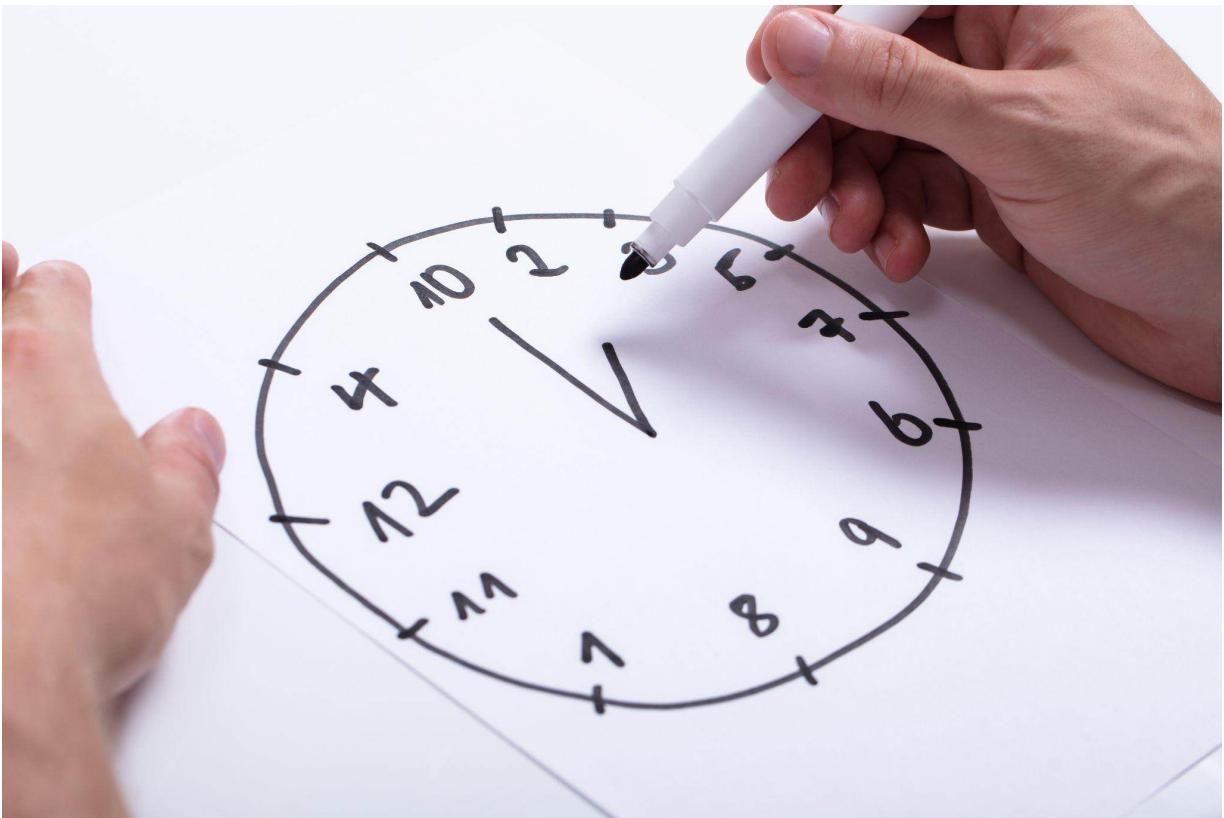


From the Assessment, the patient must score 24 or more out of 30. The test marks that as a normal functioning level.

The mini-cog test has the following tasks:

The patient must remember three everyday objects and later repeat them to the examiner.

The patient is asked to draw the face of the typical clock, including all 12 numbers and clock hands. They should also indicate the time specified by the examiner.



From the Assessment, the patient must score 4 or more out of 5: The test marks that as a normal functioning level. A score of 3 out of 5 indicates there may be a low chance of dementia without ruling it out.

Confusion Assessment within Psychosocial Assessment:

This Assessment is typically used by people who are medical professionals but do not have psychiatric training to assess a patient's progression of delirium. This assessment tool has nine specific parts that explore whether a particular characteristic of the illness is present and whether there are possibilities of developing other characteristics. It is an assessment tool that can be used to describe abnormal behavior.

The nine areas of Assessment:

Attention: Is the patient fluctuating, inattentive or stable

Onset: is there an acute change in the patient's mental status

Thinking: Is the patient's thinking disorganized and illogical, resulting in rambling conversation or switching of topics.

Memory: Is the patient's memory impaired

Orientation is the person's awareness of the time, place, or person next to them.

Sleep-wake cycle: Is the patient experiencing a flip in their sleep patterns with sleepy days and staying awake all night.

Perceptual disturbances: Does the patient have hallucinations or illusions

Level of consciousness: is the patient alert or in a coma

Psychomotor abnormalities: Is the patient experiencing psychomotor retardation where they are not moving and just staring. Or are they agitated and constantly moving, tapping, or picking things up. The results indicate delirium when there is acute onset of fluctuating inattention, altered consciousness levels, or disorganized thinking.

Using the Hamilton Anxiety Scale for Psychosocial Assessment:

The Hamilton Anxiety Scale, also known as HAMA or HAS, is a tool used to evaluate a patient's anxiety level and symptoms in adults and children.

With this tool, you can tell the degree of anxiety and its severity in somatic and psychic anxiety. Somatic anxiety is characterized by physical complaints, while psychic anxiety is mental distress and agitation. The Hamilton Anxiety Scale comprises 14 items that are based on anxiety symptoms.

The HAS can be helpful in helping medical professionals to adjust the medication dosages depending on how the patient is responding to treatment and whether there is an improvement.

Using the Beck Depression Inventory for Psychosocial Assessment:

This assessment tool evaluates depression in patients between 17 and 80. It comprises 21 questions used to measure the degree of depression in patients. With this tool, you can evaluate everything from weight loss,

fatigue, lack of sleep, and attitudinal problems like irritability, hopelessness, and loss of interest in sex. All the questions are ranked from 0 to 3, with the total score determining whether the patient is depressed and to what degree.

Here are the score ranges

0-9 means there are no signs of depression

10 – 18 means there is mild depression

19-29 means there is moderate depression

30-63 means there is severe, debilitating depression

Evaluating Homicidal or Suicidal Thoughts In Psychosocial Assessment

These are primary areas to evaluate when performing the psychosocial Assessment. The nurse must closely monitor the patient's answers to questions about self-harm or harming others.

Listen for any descriptions that could be a red flag, and also be aware of any delusional thoughts. For example, does the patient believe they are being instructed by someone else to harm themselves or others? The safety of the patient and others affected immediately becomes a priority, and it needs to be carefully documented. You may need to place the patient on a psychiatric hold and implement the relevant suicidal and assault protocols.

Every nurse must complete the suicide risk assessment of the patient at admission, at discharge, during shift changes, and at any time the patient verbalizes suicidal ideations. The

Assessment should include answers to questions like:

Ø How real is the self-harm, harm to others threat?

Ø What is the suicide/homicide plan, and how lethal is it?

Ø How frequent are the suicidal/homicidal thoughts?

- Ø Has the patient attempted suicide/homicide before?
- Ø Is the patient able to sign a safety contract?

The higher the score on this Assessment, the more likely the patient is to go through with their thoughts.

Evaluating Alcohol Use in Psychosocial Assessment

This Assessment is carried out using the CIWA (Clinical Instrument for Withdrawal for Alcohol), which determines the severity of alcohol withdrawal. The scoring range is 0-7 for each category except for number ten which has a scoring range of 0-4. An overall score of 5 and below means the patient is experiencing mild withdrawal and doesn't need medication to cope. If the overall score is between 5 and 15, the patient will require benzodiazepines to manage their withdrawal symptoms. That means they are uncomfortable enough to warrant medical intervention. An overall score of above 15 indicates severe withdrawal symptoms, which could even be life-threatening. The patient needs to be admitted to the medical facility, and they present with the following symptoms on a severe level:

- Vomiting
- Tremors
- Anxiety that could be debilitating
- Severe agitation that could result in harming themselves or others
- Tactile and auditory disturbances
- Severe headache
- Paroxysmal sweats
- Disorientation

If, as a nurse, you suspect that a patient may be a problem drinker, use the CAGE tool to evaluate them to ascertain the level of their drinking problem. If the patient has one to two drinks daily, they are moderate drinkers, which is not harmful to people without underlying medical conditions. If the patient drinks more than two drinks daily, it may indicate a problem. One drink is roughly:

- 12 ounces of wine cooler or beer
- 1.5 ounces of liquor
- 5 ounces of wine

If the patient answers yes on any of the below CAGE questions, it indicates the possibility of a drinking problem. If they answer yes to more than one question, it indicates a drinking problem.

C stands for cutting down: Do you think about reducing your drinking?

A stands for annoyed at criticism: Do people criticize your drinking?

G stands for guilty feeling: Do you try to hide your drinking or feel guilty about drinking?

E stands for eye-opener: Do you feel the need to have a drink earlier in the day increasing?

Assessing a patient for psychosocial problems requires patience since some issues make the patient uncomfortable and afraid of being labeled. Most people will act fine despite struggling with depression, anxiety, and suicidal thoughts.

Assessment of Abuse and Neglect

In nursing, you must always be aware and able to identify risk factors and signs of abuse and neglect in your patients. These signs and symptoms can be identified in the patient's history and present. For example, the patient may require medical attention but is vague about how they injured themselves. Or they may say they do not remember but then change their story when pressed. Also, when you examine them, their injuries may be inconsistent with the patient's account of how they sustained them.

Additional signs of abuse include:

- ★ Not seeking treatment soon enough for injuries or illnesses

- ★ Minimizing injuries
- ★ Under-reaction or overreaction of family members/guardians to the injuries
- ★ Family history of abuse or neglect
- ★ History of jail or prison time for one of the family/guardian
- ★ History of previous similar injuries
- ★ Spontaneous abortions have nothing to do with a medical condition

Other ways to spot abuse and neglect include

Check the patient's financial history to see if they have access to money or if a specific family member controls the money. If the guardian is unemployed, they may be living off the patient's finances, leaving them with nothing to take care of themselves. This aspect of abuse and neglect tends to occur mainly in incapacitated adults and the elderly.

Check the patient's family and cultural values to see if any traditions or practices could contribute to abuse or neglect. For example, tiger moms believe in strict discipline, which can be harsh and become an abuse to the child. On the other hand, there are cultures where the female child is not valued, so their well-being is not prioritized. They could become ill, and no one cares because their "value" to their family or community is low. This kind of abuse tends to occur mainly in minors and women.

Check the patient's relationship status and history to see if there is a pattern of domestic abuse. Families can be dysfunctional, which makes minors vulnerable to abuse and neglect. Also, some partners can be abusive towards the other party, male or female.

When evaluating the patient's risk of abuse and neglect, ask questions about their social, sexual, and psychological history. Sexual history may reveal previous or ongoing sexual abuse.

Look for rape, sexually transmitted diseases, or a history of spontaneous abortions. Children look for signs of sexual knowledge that are not age-appropriate or promiscuity in teens.

Social history should entail looking for self-imposed social isolation, unreasonable jealousy, lack of friends, verbal aggression, expecting physical punishment, and problems in school, among others. Finally, in psychological history, look out for feelings of hopelessness and helplessness, self-mutilation, suicide attempts, and low self-esteem.

Signs of Neglect

As a nurse, you must be able to observe signs of neglect. Create a rapport with your patient and glean vital information about potential or actual neglect. In some cases, poverty is the cause of neglect, where the home doesn't have heat because the parents cannot pay the bills. Also, there may be inappropriate sleeping arrangements due to the nature of the household.

Observe the patient's interactions with their family or guardian because this is an excellent way to determine if there is abuse. For example, threatening words, raised voices, and physical intimidation may indicate abuse and neglect. Also, how the patient answers questions about their family/guardian will help identify potential problems.

Indicators of Abuse and Neglect

During the physical assessment of a patient, you need to look out for the following indicators of abuse.

Here are the most common:

- The patient is uncomfortable about the physical examination in the presence of the abuser (or other people in general)
- The patient flinches when you reach out.
- The patient looks to the abuser to answer questions for them
- The patient has bald patches due to hair being pulled out, cigarette burns, black eyes, hearing loss, fractures, or inexplicable scars
- The patient has intracranial bleeding or subconjunctival hemorrhages
- The patient has genital lacerations, poor hygiene in general, rectal bruising, STDs, developmental delays in minors, bleeding, and edema, among other signs.

- The patient has soiled clothing, a lack of appropriate clothing during winter, or torn, dirty clothes.
- The patient is living in a dirty environment.

Patients who are minors will appear unkempt and dirty, have untended wounds, have dental caries, not receive proper immunizations, and be underweight for their specific age.

Unfortunately, neglect can be tricky to diagnose, especially when dealing with people in poverty or under certain living conditions. But if your suspicions are strong that something is going on, you must call the appropriate authorities.

Indicators of Domestic Abuse

It can be pretty challenging to confirm domestic abuse in patients, mainly because the patient tends to hide the signs or protect the abuser. Common indicators mirror the ones mentioned above. If the victim speaks up about the abuse, here are some of the things you can do for them:

- Give them information about safe spaces like shelters for abused women and children or men and community hotlines.
- Encourage them by assuring the victim that it is not their fault that they are abused.
- Encourage them to plan and prepare an escape plan and execute it.
- Encourage them to tell loved ones about the abuse for support.

Injuries that are most consistent with domestic abuse include

- ❖ A ruptured eardrum
- ❖ Bruises and scrapes around the trunk, neck, face, arms, and head.
- ❖ Fractures of the ribs, face, and limbs
- ❖ Head and neck-related injuries (They make up 50% of the injuries)
- ❖ Welt signs meaning a belt was used, cigarette burns, rope marks, and bites, also indicate abusive injuries.

- ❖ Defensive wounds like injuries to the ulnar of the palm or hand may occur as the victim tries to block blows.

Also, the injuries conform to what is known as the bathing suit pattern. These are injuries in areas covered by clothing as the perpetrator inflicts the abuse but wants to hide it. So the extensive abuse shows up around the midriff areas.

Appropriate Disciplinary Practices for Kids

Parents should discuss the best disciplinary practices for their kids, so they are on the same page. Acceptable disciplinary practices for kids include:

- Make the rules in advance and explain the consequences before the child makes a mistake so they know what to expect.
- Ensure the rules are age-appropriate for the child.
- Praise the child when they obey and act appropriately
- Administer the consequence calmly and immediately after the rule has been broken.

Understanding Therapeutic Relationships

When building a therapeutic relationship, begin by introducing yourself and ensuring you use the patient's name when addressing them. A critical aspect of this relationship is listening with empathy. So when you introduce yourself, ensure that the patient feels that you are listening and attempting to understand them and what they want to tell you.

Example of introduction:

Hello Mr. Costner. My name is Michelle, and I am your nurse.

Next, prompt the patient to talk to you by encouraging them to be open. To do this, ask open-ended questions.

Example of open-ended questions:

Is there something specific you would like to discuss with me? Follow this with an acknowledgment of their response but also remain in silence to observe the patient's nonverbal behavior.

Reflect the patient's statement to them.

Example of a reflected statement:

Patient: I hate talking about this.

Nurse: You hate talking about this.

Show empathy to the patient by acknowledging their feelings when they are speaking. Do this by making observational statements:

Example of empathy:

"You seem upset."

"It must be hard to talk about this"

Next, use exploratory questions to verbally express messages that may be implied.

Example of exploration:

Patient: "I find this treatment to be very invasive."

Nurse: "Do you think it is not benefiting you?" "I would like to hear what you would like us to do differently."

Collaborate with patients by offering collaborative solutions to them.

Example of collaboration:

"I would like us to work together to find a solution to this issue. Can you work with me on this so we can achieve the best results for you?"
Get validation from the patient to ensure you are on the right track.

Example of validation:

"Does that feel better?" "Do you feel better now?"

But avoid using non-therapeutic communication, like offering meaningless. Here are some examples of what you need to avoid:

- Cliches like "Everything will be okay. Don't worry."
- Offering the patient advice like "You should...." "The best thing to do is..." don't offer it even if the patient asks you for your advice. Instead, point them towards facts and figures while encouraging them to decide by themselves.
- Encouraging the patient to suppress the expression of true feelings. For example, if a patient says they shouldn't be sad and you encourage them to suppress their feelings by saying,
- "That's right. You are way too old to be showing your emotions in public like that; That is teenage behavior."
- Asking the patient to explain their feelings to you even when it is not related to their therapeutic care.
- Making negative judgments on the patients, like telling them, "You are always arguing with the nurses."
- Belittling the patient's feelings by making statements like, "Everyone gets upset, not just you."
- Disagreeing with the patient directly by saying, "You are wrong about that." Or "I don't believe you."
- Changing the subject to avoid uncomfortable conversations.
- Making inappropriate jokes to the patient about symptoms they may be experiencing.
- Constantly working to establish reality for the patient without being mindful. For example, when you tell the patient, "If you had bugs crawling under your skin, you would not be here."

Dos and Don'ts of Communicating with Patients with Disabilities.

First of all, let us just establish that just because someone has a disability doesn't mean that they are automatically cognitively impaired.

Dos

Always treat disabled people with respect and dignity

Be patient during communication because they may need longer to comprehend and respond

Offer assistance, but the patient is allowed to refuse it

Use first names with the patient if invited to, but it is better to start out formal.

In disabled people with cognitive impairment, keep the sentences simple and rephrase when necessary.

Use objects around the patient to help you communicate. For example, if you want them to drink something, take a cup and show the gesture.

Where necessary, use touch to reassure the patient and show your concern for them. But the touch must be appropriate. For example, a firm hand on the shoulder shows concern and reassurance. Do not slap the patient on the back or caress them.

Use the correct sign language for deaf people and communicate directly to the patient maintaining eye contact.

Communicate with stroke patients with difficulty forming words using a picture board. Those who can articulate single words encourage the patient to practice writing and not complete their sentences for them. Finally, those who have trouble comprehending speech and communicating clearly, use slow speech with pictures and gestures to support it.

Don'ts

Do not stand over a patient in a wheelchair when speaking to them. It is better to sit down so that the patient doesn't strain their neck looking up at you.

Do not only provide directions to a disabled person. Instead, help the patient find their way around obstacles in their way.

If the patient has cognitive impairment, do not discuss abstract ideas with them.

Do not give too many instructions to the patient at the same time if they are cognitively impaired.

Understanding Palliative and Hospice Care

Palliative care does not aim to cure the patient. It is only used to make the patient comfortable in their final days. So the patient that qualifies for palliative care is typically one battling a terminal illness. The hospice team supports the patient's daily activities by providing medical judgment, medications, and equipment needed to offer the comfort required.

A hospice team comprises an attending physician, nurses, social workers, clergy (where necessary), hospice aides, and volunteers. Hospice care can be given at the patient's home if the family is willing to assume their care in coordination with hospice staff. Alternatively, it can be offered in a hospice facility, extended care facility, or a hospital. If the patient survives six months at the hospice, their care is extended to two 90-day periods. If they survive that, then they are provided an unlimited number of 60-day periods per their physician's instructions.

Psychosocial Pathophysiology:

In this area, we look at the developmental delays which occur when the patient doesn't mentally develop at the same rate as their age requires. A patient with an intellectual disability finds it difficult to adapt to the changing environment as they grow, so they require additional guidance in self-care, decision-making, and communication. This type of disability is typically:

- Inherited
- Toxin related
- Acquired from certain illnesses or trauma like brain injury or encephalitis
- Environmental

Diagnosis of intellectual disability involves standardized tests with the following test scores:

55-69 means the disability is mild, and the patient can be educated up to the 6th grade, and they can grasp the concepts at that stage comfortably. 85% of intellectual disability cases fall within these test scores, which is considered a mild disability.

40-54 means the disability is moderate, and they make up 10% of the cases. This patient is trainable and can live in a sheltered environment with some level of independence, even being able to work.

It is not uncommon to see people with this intellectual disability living with loved ones and working in family-run businesses with supervision.

25 -39 means the disability is severe, so the patient's language is delayed, and they can only learn the most basic academic skills. They can perform only simple, basic tasks and need constant supervision. This type of intellectual disability is found in 3-4 percent of the cases.

Less than 25 means the disability is debilitating, so the patient needs round-the-clock care and supervision. These cases make up 1-2 percent of the caseload and are typically associated with neurological disorders.

When caring for a person with an intellectual disability, you must treat the patient according to their developmental level, not their biological age. Remember, the worse the disability, the higher the chances of abuse and injury.

Understanding Personality Disorders

A personality behavior is characterized by an enduring and fixed behavioral pattern that deviates from the normally expected behaviors. Various personality disorders can affect people, inhibiting their ability to build meaningful relationships with others or enjoy the quality of their lives. The disorders are expressed in behaviors, feelings, and thoughts, with the onset for most beginning in adolescence and early adulthood.

The DM5 tool classifies the disorders into three clusters: A, B, and C.

- Cluster A comprises disorders that make the patient eccentric or have odd behaviors. They are characterized by social awkwardness and withdrawal from people.
- Cluster B comprises disorders that make the patient erratic, impulsive, dramatic, and highly emotional.
- Cluster C comprises disorders that make the patient anxious and fearful.

Personality disorders are directed towards oneself and also at the whole world.

Cluster A Diagnosis:

This cluster is diagnosed with signs and symptoms of paranoia and schizotypal behaviors. The paranoid patient is very distrustful and highly suspicious of everyone around them. They may believe others are keeping secrets and have bad intentions towards them, including harming them, even though there is no basis for this belief.

On the other hand, a patient with schizotypal behaviors tends to withdraw from people because they are afraid or inept at social communication. They are typically socially detached, resulting in a minimal emotional response to most situations. They may want relationships, but they are too afraid to pursue them. Also, such patients may report perceptual and cognitive distortions characterized by hearing or seeing things that aren't there or holding odd superstitious beliefs.

The schizoid patient similarly withdraws from people, but also, they may appear cold, indifferent, lack the capacity for intimacy, and have no close personal relationships. They typically choose solitude over company and are not interested in fostering relationships, even with family members or relatives.

Cluster B Diagnosis:

The diagnosis of this cluster focuses on borderline, narcissistic, antisocial, and histrionic personality disorders. A patient with borderline disorder tends to have a volatile view of themselves, making them impulsive and self-destructive. They tend to have intense and highly unstable relationships plagued with inappropriate behavior, mood instability, and intense anger. People with the borderline disorder also tend to have self-mutilating or suicidal thoughts.

Patients with an antisocial disorder tend to completely disregard other people and often lie, manipulate and exploit others. They are also prone to committing illegal acts. On the other hand, patients with histrionic disorder typically want to be the centers of attention, so they indulge in inattention-seeking behaviors that can be pretty destructive. They are prone to short-lived, intense relationships, which they indulge in quite frequently.

Finally, the narcissistic disorder makes the patient arrogant with a highly inflated sense of importance. Their inflated sense of importance makes them exploitative and lacking in empathy for others. They are also highly manipulative and violent towards a perception of disrespect and opposition.

Cluster C Diagnosis:

The diagnosis in this cluster of disorders focuses on obsessive-compulsive disorders and avoidant behaviors.

An avoidant patient avoids interactions with others because they are socially inhibited. These people are very sensitive to criticism and rejection, often feeling like they are inadequate. Dependent patients, on the other hand, rely on others to build up their already very low self-esteem.

They tend to be overly submissive and dependent on relationships and others to validate them, and this makes them susceptible to being taken advantage of and abused. They never want to lose a relationship, and when they do, they quickly jump into another one.

Finally, a patient with an obsessive-compulsive disorder is overly concerned with minute details and perfectionism. They like to exert control over every aspect of their lives and the lives of others and are also very cold and unfeeling towards others. One of the common characteristics of obsessive-compulsive patients is the superiority attitude they adopt when interacting with others.

Bipolar Disorder

This disorder doesn't fall in any of the above clusters. It is diagnosed on its own and characterized by severe mood swings and oscillation between a period of hyperactivity and intense depression. As a result, patients with bipolar disorder tend to have impaired judgment due to distorted thoughts. While in the hypomanic stage, the individual may have exceptional creativity and even enjoy normal functionality in some cases, but if not controlled and monitored, this condition can result in hallucinations, severe manic and bizarre behavior, psychosis, and rapid speech. In the end, the patient experiences periods of profound, even debilitating depression.

Bipolar disorder can be very mild or severe, where the patient oscillates between mania and depression. Treatment involves using medication that is given continually for the rest of the patient's life. Other interventions like cognitive behavioral therapy are also used alongside medication to bring order to disorganized and distorted thought patterns.

Passive Aggressive Disorder

Passive aggressive personality disorders are characterized by the patient being overly argumentative with frequent complaints of being underappreciated for their efforts. The patient will have a negative attitude, and they are consistently unwilling to meet their obligations. On the other hand, there are people with depressive disorder, which makes them very bleak in their outlook on life. They are often a danger to themselves as they live in a state of perpetual self-criticism, gloom, and doom. They are likely to hurt themselves as they don't see anything good in their lives.

Depression

This is a prevalent disorder, although people tend to use the phrase "I am so depressed" to refer to regular responses to the ups and downs of daily life. However, medically speaking, depression is a serious medical condition characterized by feelings of hopelessness, withdrawal, and profound sadness. The cause of depression has been found to involve genetic predisposition to the condition and environmental and biological factors.

Some drugs can bring the onset of depressive symptoms, including diuretics, hormonal drugs like estrogen, drugs treating Parkinson's disease, and corticosteroids, among many others. Experts have found that when depression occurs, there is typically a neurotransmitter dysregulation of serotonin and norepinephrine. Depression can occur in mild, moderate, or severe forms.

Common symptoms of depression include mood swings, profound sadness, loss of interest in activities that the patient previously enjoyed, fatigue, lack of appetite, insomnia, sleep disturbance, and weight fluctuations. The treatment involves tricyclic antidepressants or SSRIs, which are preferred because they are less likely to cause side effects or fatal overdose.

Anxiety

Anxiety is a very insidious mental condition that keeps the patient in a constant state of worry. The worry is present daily and interferes with the functionality of the individual. With anxiety comes the likelihood of substance abuse as they may look to alcohol and barbiturates to take the edge of their anxiety issues.

There are four categories of anxiety to look out for:

Mild anxiety: This is associated with the everyday tensions of life. This type of anxiety can increase awareness and motivate creativity and learning.

Moderate anxiety: This type of anxiety occurs when an individual focuses on a specific problem by narrowing their perspective.

Severe anxiety: This type of anxiety occurs when the patient only focuses on the details of their problem, so all their energy is directed towards the source of their anxiety. They cannot perform other tasks unless forced or otherwise significantly persuaded.

Panic: This type of anxiety is the most extreme, and intense feelings of terror and dread accompany it.

Physical symptoms of anxiety:

Anxiety can produce strong physical symptoms that affect vital body systems, including the cardiovascular system, GI, respiratory system, skin, and urinary tract. Depending on the individual's anxiety level, the symptoms keep increasing.

Respiratory system: The symptoms in the respiratory system include breathlessness, chest pressure, tachypnea, feeling choked, and shallow breaths.

Gastrointestinal system: The symptoms include nausea, vomiting, lack of appetite, abdominal pain and discomfort, and diarrhea.

Cardiovascular system: The symptoms of the cardiovascular system include hypertension, palpitation, tachycardia, hypotension, faintness and dizziness, and bradycardia.

Neuromuscular symptoms include being easily startled, insomnia, tremors, pacing, twitching, fidgeting, shaky, and clumsy. The patient may also experience the increased need for urination when anxious, and their skin is flushed with sweaty palms, pale pallor, itching, and feeling hot and cold.

Panic Attacks

These are short periods of intense anxiety resulting in symptoms like hyperventilation, tremors, fainting, dizziness, nausea, vomiting, heart palpitations, and pain or pressure in the chest. Panic attacks are typically associated with conditions like depression, abuse, and agoraphobia. The affected individual believes they are dying or having a life-threatening attack causing them to seek medical assistance. In an acute episode, the patient may be administered lorazepam or diazepam, while very severe cases require an EKG exam to monitor for cardiac abnormalities.

Some cases of panic attacks require psychiatric intervention and ongoing medication to prevent the episode. If the attacks become recurrent, they are classified as chronic panic disorders.

PTSD

PTSD (Post-traumatic stress disorder) is more prevalent in individuals that have experienced a past traumatic event in their life. The event doesn't have to be recent; even past events can trigger PTSD. The person relives the event in great detail, almost feeling like they are going through it again in real-time. Physical symptoms include:

- Difficulty sleeping
- Shortness of breath
- Pain or pressure in the chest
- Violence in some cases
- Problems with concentration
- Emotional fear
- Flashbacks
- Nightmares
- Anxiety and irritability

These symptoms tend to cause the individual increasing stress and may contribute to other conditions like panic attacks. PTSD is diagnosed using a tool known as the DSM-5 (Diagnostic and Statistical Manual of Mental

Disorders, 5th edition). After it has been properly diagnosed, the patient is put on either medication or non-pharmacologic therapy like CBT, hypnosis, anxiety management, or family and individual therapy.

Violence and Aggression

Some patients present with violent or aggressive behavior due to metabolic disorders, neurological disorders like brain tumors, substance abuse, or psychiatric disorders. Violence is categorized as a physical activity where the patient intends to harm someone else physically.

Aggression is categorized as a threat of intended violence before the actual act occurs. Shouting, threatening gestures, prolonged eye contact, and being in someone else physical space are considered acts of aggression.

When caring for a patient with a history of violent behavior, the nurse must always be alert and aware of physical signs pointing to the likelihood of the patient acting out. Remove the patient from the scene if there are acts of aggression, and de-escalate the situation. Unfortunately, sometimes acts of violence may occur without warning. You may need to use restraints, call the authorities and keep the patient contained until they get better.

Diagnosis for violent and aggressive behavior is carried out by performing physical exams, chemistry panels, CBC, CT scans, lumbar scans, and ECG.

Stress

The disease can cause stress to build up, resulting in certain physiologic changes in the body that exacerbate pre-existing illnesses. Stress causes

- A rise in cortisol levels
- The strain on the heart as the heart rate increases
- Anxiety can result in depression, anorexia, severe insomnia, and even suicidal thoughts
- A decrease in the immune response of the body
- Poor digestion

- An autoimmune response resulting in the development of autoimmune diseases

During stress, the body tries to reach homeostasis, but its mechanisms are overwhelmed, resulting in cell injury. Cell injury interferes with the normal function of the organs of the affected cells. As the organs become dysfunctional, they may fail or become permanently damaged. Cells react to stress by:

Swelling: This is known as hypertrophy which is the swelling of the cells resulting in the affected organ also becoming swollen.

Changing appearance: This is known as dysplasia, where the cells become irritated and, over time, change appearance, even becoming malignant.

Shriveling: This is known as atrophy, where the cells shrink in size resulting in the organ shriveling.

Changing cell type: This is known as metaplasia, where the cell changes to another type of cell due to stress.

Overgrowing: This is known as hyperplasia, which is increased cell division and overgrowth resulting in the thickening of the tissue affected.

As the stress on the cells continues, the organ may begin to die, resulting in systemic organ failure.

Substance Abuse

This is the abuse of drugs, alcohol, and medication which can result in physical and mental problems for the user. As the substance abuse continues, so does the dependency causing the user to neglect all other facets of their lives. The nurse can help the family with intervention and help the affected family members get counseling to help them cope.

Substance abuse can result from social, personality, and even genetic factors. Most abusers cannot resist feeding the central nervous system with the preferred substance of choice. Unfortunately, the more the CNS gets, the more it wants, resulting in addiction. Indicators of substance abuse include:

- Pupils that are abnormally dilated
- Watery, constricted eyes
- Burns on the fingertips and lips
- Weight loss
- Tremors
- Unstable gait
- Slurring of speech or very slow speech
- Odor of substances like marijuana or alcohol. Some substances are odorless, so look for other signs like needle tracks
- Mood swings
- Nasal irritation and persistent cough
- Lying, stealing, manipulation, and impulsive, risky, inappropriate behavior
- Difficulty concentrating
- Excessive sleeping or insomnia
- Poor personal hygiene
- Agitation and anger

Sudden cessation of using any of the mentioned substances can result in withdrawal. Alcohol withdrawal syndrome is associated with a high mortality rate of 5 percent in patients with treatment and 35 percent in patients without treatment. The signs and symptoms of withdrawal include tachycardia, severe agitation, hallucinations, psychotic behavior, headache, and diaphoresis.

Psychosis

Psychosis is considered a severe reaction to the normal stressors of everyday life, resulting in unhealthy, harmful behavior and even impaired psychomotor functions. It may cause hallucinations and delusions.

However, psychosis is not a condition on its own; it is a symptom of an underlying mental disorder, including bipolar disease, schizophrenia, or a physical condition like Alzheimer's disease or brain tumors.

Treatment depends on the underlying cause, which has to be treated first for the psychosis to be addressed. However, if it is a drug-induced psychosis, the drug must be stopped first, and monitoring follows. If the symptoms persist after the removal of the drug, a benzodiazepine or another antipsychotic drug may be recommended to help until the symptoms subside and disappear.

Eating Disorders

Anorexia nervosa and bulimia nervosa are the two eating disorders that present a profound health risk to patients. They are especially prevalent in girls, although boys can also suffer from these disorders. Anorexia is characterized by an intense fear of weight gain to the point of starving oneself due to severe food intake restrictions. This condition is often accompanied by laxatives and diuretic abuse, resulting in electrolyte imbalances. Also, excessive intake of these drugs will cause bowel and kidney problems and delay or cease monthly periods in girls and women. Symptoms of anorexia include:

- ❖ Amenorrhea which is missing three consecutive periods
- ❖ Growth retardation
- ❖ Unexplained weight loss to at least below 15% of average body weight
- ❖ An emaciated appearance and dehydration
- ❖ Carotenemia accompanied by skin yellowing
- ❖ Osteoporosis
- ❖ Obsession with food with rituals surrounding food intake
- ❖ Hypoglycemia

The treatment requires replacement of the electrolytes first and referral to a psychiatric specialist for long-term management of the disorder. They also

need to be placed on a nutritional watch with effective nutritional plans.

Bulimia nervosa, on the other hand, involves binge eating followed by inducing vomiting. If this occurs at least twice a month for three consecutive months, they are diagnosed with the eating disorder. It is often accompanied by abuse of laxatives, enemas, and diuretics. Individuals with bulimia may endure long periods of fasting or over-exercise rather than inducing vomiting to limit the effects of their binge eating.

Bulimics can maintain average body weight, but their electrolyte balance is often affected severely, which can be life-threatening. With this eating disorder, damage to the teeth and throat by the gastric juices due to excessive purging is often present.

As with anorexia, the treatment begins with electrolyte replacement followed by a healthy nutritional plan and monitoring by a psychiatric expert with knowledge of eating disorders.

Psychosocial Interventions and Procedures

Psychosocial interventions are aimed at encouraging behavioral modification. They are systemic therapies that help an individual to replace maladaptive behaviors with positive ones. Behavioral modification can be applied to individuals, groups, and even entire communities. When it comes to behavioral modification, there is a lot of positive reinforcement, and the patient is encouraged to repeat the good behaviors they are learning over time.

The aim of encouraging repetitions is so that the repeated behaviors become a habit that replaces the previous bad habits like smoking, eating disorders, and other addictions.

Cognitive Behavioral Therapy

This is a type of talk therapy, also known as CBT. It focuses on the patient's thought patterns and feelings to help the individual to reframe their thinking to be more positive and healthy. The therapist helps the patient to unlearn

previous unhealthy behaviors and pay close attention to negative thinking that results in bad habits.

The first sessions are about learning the patient's history and background, which explain why they think the way they do. After that, the therapist dives into the learning and unlearning process. CBT requires a lot of learning and unlearning as the patient undergoes a total overhaul of how they think and process information. The patient is assigned homework which is reviewed at the next session.

In CBT, the therapist explains that all problems may not be solvable, but there is a healthier, better way to deal with the problem without self-destructing.

CBT is very goal-oriented, and at the end of the sessions, the patient is expected to learn how to make workable goals and work towards them.

Aaron Beck's Cognitive Therapy

This therapy focuses on the automatic thoughts that pop into the patient's mind disrupting their thought process and introducing negative thinking. These dysfunctional automatic thoughts are referred to as cognitive disorders, and they revolve around the patient's environment, self, and entire world.

In this type of therapy, the therapist and the patient work together to formulate a treatment plan. The patient is highly encouraged to disagree when appropriate. The therapist then explains that perception of reality is not reality. That helps the patient to differentiate between perception and reality. The patient is then taught about maladaptive ideation and how to recognize and distance themselves from it. They can identify maladaptive ideation by observing their behavior, questioning their thoughts and beliefs, and exploring the underlying motivation for their behavior.

Acceptance commitment Therapy (ACT)

This is where the patient is encouraged to explore their thought process during a depression or anxiety episode. They identify the underlying thought and dispel it by analyzing whether it is true or not, why it is not,

and what is true. Soon enough, the process becomes automatic, helping the patient to reframe their thoughts and avoid unhealthy thinking patterns.

ACT relies heavily on mindfulness as a basic tenet, and patients are encouraged to take control of what they can, including their actions and facial expressions.

Solution-focused Therapy

This therapy helps the patient differentiate between helpful and non-helpful problem-solving methods. There are many question and answer sessions as the patient is taught to make comparisons. With this form of therapy, the patient is taught that change is possible, but they have to identify problems and healthily deal with them to effect the change they want to see in their lives.

Finally is the single session therapy, which is common but not really helpful. Nurses come across many patients who have attended one therapy session and believe that a single session is enough, even though more follow-up sessions have been encouraged. Sometimes it is the patient's fear of exposing their fears, but in other cases, it may be financial, cultural, or social constraints.

If the patient is only willing to come for a single session, make the session at least one hour long to enable you to identify the problem and come up with a solution (Where possible). Also, provide homework that the patient can do at home to continue their progress and growth.

Trauma-informed Care

This form of therapy assumes that most individuals have lived through some form of trauma; as such, every patient must be treated with sensitivity and care. It acts on the premise that every trauma is highly individualized, so what may be traumatic to one person is not to another. Care and sensitivity must be used when approaching all forms of trauma, and it withholds what is considered trauma for the psychiatric nurse.

Recovery model

This form of therapy relies on the patient deciding the treatment as opposed to the physician. In this patient-led scenario, the patient is given the independence to make healthy decisions for themselves instead of following the therapist's lead all the time. As the patient becomes more independent, the more confident they become in making healthy decisions for themselves. The therapist increases the patient's decision-making as they become more stable and prove themselves capable.

Non-violent Intervention and De-escalation Tactics

- Stay at the same level as the person, sitting or standing, and maintain more than 12 feet of social distance.
- Speak in a calm voice, in low tones, and limit changes in your facial expression. Also, avoid gestures like pointing or wagging a finger at the individual.
- Show empathy and do not be judgmental
- Do not confront or argue
- Ask the person's name and address them by it
- Ask the person what they would like to do. Getting their opinion helps them to feel that they are important.

Using Physical Restraints

Using physical restraints is not something that should be done on every person. Some patients warrant the use of restraints, while others just need to be calmed down and listened to. Restraints limit movement, and they are used to control the patient's behavior if all other methods have failed.

Violent restraints are common in the psychiatric unit to hold down patients that act out violently or begin to exhibit aggressive behavior. Non-violent restraints, on the other hand, are used to prevent patients from tampering with safe care. For example, they may be used on confused elderly patients or people who are intubated to prevent pulling out IV lines or removing equipment.

There are also chemical restraints that use pharmacologic sedatives to manage a patient with behavior problems. These restraints are only used when the patient is severely agitated or poses the risk of injury to

themselves or others, so they are the last resort. Chemical restraints severely limit the patient's ability to move to make it more manageable to treat them.

There are strict guidelines of the federal government and Joint Commission regarding temporary restraints and others that are not a typical part of standard care, like post-surgical restraints.

Every medical facility must have a written policy on the use of restraints, which can only be used when ordered by a physician.

The use of restraint must be renewed every 24 hours with a signed order and within four hours of the order's implementation.

The medical staff must try all other methods first and record the responses before they settle on the use of restraints.

The least restrictive method should be used.

The nurse must remove the restraints every two hours and assess and document findings every two hours for non-violent restraints. For violent restraints, the nurse must do the above every hour.

Assistive devices

Crutches must be properly fitted to the client's age, body, and needs before they are offered to them. The grips should be adjusted so that the client can support the body weight comfortably. Train the patient not to bear the weight under the axillae to avoid nerve damage. Instead, they can hold the crutches tight against the chest.

A cane must be held on the opposite side of the injury and with the elbow bent at 15 degrees if it is in a neutral position. Otherwise, when the cane is straight down, the top should be in line with the elbow crease. The same rules apply to the walker; the patient should be able to walk ahead with the walker without bending forward.

Occupational therapy

Occupational therapy uses creative activities to treat physical or mental disabilities. This form of therapy aims to provide the patient with the skills

necessary to live a quality life as normally and independently as possible. After occupational therapy, the patient is expected to perform at their maximum potential. The occupational therapist/nurse is supposed to provide the patient with skills that allow them to cope with daily life activities.

Occupational therapy is typically applied in pediatric units/hospitals, outpatient clinics, rehabilitation facilities, and inpatient care facilities. It can also be practiced in mental health care facilities, prisons, halfway houses, gateway houses, schools, shelters, workplaces, and childcare facilities.

Bladder training

In patients learning about bladder training, they must keep a toilet diary for three consecutive days that shows their urination patterns. This can be done using scheduled toilet use which is to be every two to four hours during the day. Another approach is prompted voiding, which is also a communication protocol for some people with cognitive impairment. People with mild to moderate cognitive impairment affirming them and using positive reinforcement.

There is also bladder retraining which teaches the patient to control the urge to urinate. This is a form of bladder rehabilitation where the patient is expected to inhibit the urge to urinate until the scheduled time for urination. It helps restore normal bladder function as much as possible, improving incontinence in about 80% of cases.

The knack is the controlled use of timed muscle contractions to prevent incontinence. It uses the Kegel exercise, where the patient contracts the pelvic floor muscles. The contraction affects the proximal urethra, which reduces the amount of urine displacement. These contractions come in handy when the patient coughs, sneezes, stands, lifts, laughs, or swings. It can reduce incontinence by 70 to 98 percent.

Bowel Movement training

The patient is required to keep a diary of their bowel movements to chart the progress they have made. They are given a hot drink to stimulate bowel

movement, or in some cases, they are rectally stimulated with the insertion of a lubricated finger into the anus and rotating it to touch the rim of the sphincters. Or the patient may be administered suppositories. The patient is encouraged to sit with their knees slightly elevated and lean forward during defecation, and they can also strain.

Exercise is recommended during bowel training so the patient can walk up to two miles a day. Or they can do bending exercises. If the patient is in bed, they can turn from side to side to stimulate the bowels. It is also possible to use Kegel exercises for the anus to control bowel movement.

Wound Assessment:

This is the inspection and categorization of a wound. Wounds are typically described by their location. Wounds at the front are considered anterior wounds, and those behinds are posterior wounds, while those above are superior wounds. Finally, the wounds below are inferior wounds. But when it comes to wound size, you have to take measurements of the length, depth, and width and also take photos of the wound for documentation. Follow the correct photography protocols expected.



The wound tissue bed should be described in complete detail as possible. That includes details like color and appearance, granulated, hyper granulated, or non-granulated tissue, sloughing, epithelization, or the presence of eschar (leathery, black necrotic tissue). Also, you must describe the margins and tissue surrounding the wound in detail. The wound margins can have a definition, or they can be rolled, and the texture could be swollen or normal. The color of the margin should be descriptive, using terms like erythematous (red), ecchymosed (yellow, purple, or green), or blanche (white).

Also, describe lesions, their arrangement, and their number. The arrangement can be linear, diffuse (scattered all around the wound), or satellite (small lesions over a large one).

The odor from a wound can tell you a lot about the wound, including the culprit in an infection. Certain infective agents produce a distinct musty, sweet, or foul-smelling smell. Wound exudate is the clear fluid that comes

from the wound containing white blood cells, blood serum, and cell debris. The exudate may be clear and have no smell, or it can have an odor, depending on what has caused it.

The fluid is typically

- White and yellow indicate purulent pus
- Red indicating sanguineous
- Blood tinged, indicating serosanguineous
- Pale yellow or clear indicating serous

The presence of this fluid indicates the wound was left untreated for a long, and an infection, venous insufficiency, malnutrition, congestive heart failure, or liver disease are present. H

As a nurse, you are expected to document your Assessment of the wound. Here is what is expected.

- At the top of the page, write the words Assessment.
- Next, document the anatomical location of the wound and its age.
- Write down the measurement of the wound, including the width, length, and depth, as well as the age and stage of healing.
- Mention any fistulas, sinus tracts, tunneling, or undermining at the wound's edges.
- Write down the wound margins, how attached it is to the wound be, presence of rolling and maceration.
- Also, write down if there is the presence of eschar or epithelization.
- Mention if there is sepsis present in the wound.
- Document the color of the skin color, presence of edema, necrotic tissue, an odor, or visible blood vessels.
- Finally, write down the amount of granulation presence, any tenderness, temperature, or tension.

Here are definitions of wounds according to the type of wound

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	Arterial	Neuropathic	Venous
Wound perimeter	They tend to be circular and well defined wounds	They are well-defined circular wounds with a callous formation.	They tend to be poorly defined and irregular wounds
Pain	They are very painful wounds.	The wounds are not typically painful because of reduced sensation at the wound site.	These also tend to be very painful wounds.
Exudate	These wounds typically have a slight amount of exudate although infection of the wound is quite common.	Neuropathic wounds have a moderate amount of exudate but the wounds also become infected quite often.	These types of wounds have moderate to large amount of exudate with moderate rates of infection.
Wound bed	The wound's bed is usually pale and can be necrotic.	The wound bed is typically red (ischemic)	The wound bed is deep red with fibrinous slough.
Skin	The skin around arterial wounds is shiny, pale, hairless and friable with an	The skin has ischemic signs which may indicate a co-morbidity.	The wound has a brownish discoloration and edema is common.

	elevational pallor.		
Pulses	These wounds have a weak pulse which may be absent altogether.	The pulse in neuropathic wound is often palpable and present. However, it may sound diminished in neuroischemic ulcers.	The wounds have a present and palpable pulse.
Location	End of toes, traumatic non healing wounds, pressure points	On the plantar surface, sides of the feet, toes and metatarsal heads.	Between the ankles and knees and on the medial malleolus.

Wound complications that a nurse must look out for include chronic inflammation of the wound which can last for months delaying the healing process. This happens when the immune system fails to fight infection and phagocytose the dead tissue and debris in the wound. It also occurs when there is inadequate wound care, repeated injury to the wound, and histamine release from mast cells. Signs of chronic inflammation include:

- Redness
- Swelling
- Warmth at the site of the wound
- Necrotic tissue extending all over the wound bed
- Smelly exudate that is green, yellow or brown in color

Another complication is undermining which occurs at the edges of the wound. In this case, the tissue pulls away from the wound's base leaving a cavity under the intact skin. Undermining is documented using the clock as

a reference point of where the wound is located. And finally there is wound tunneling, a complication that creates a tract leading away from the wound via the subcutaneous tissues found in between muscles. It is caused by infection, foreign objects or pressure that causes necrosis and it can result in an abscess. When tunnels join together they form sinus tracts.

Wound classification according to the cause:

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Wound classification according to the cause:

Vascular wounds: These are wounds that occur mainly in the lower extremities resulting from arterial insufficiency and ischemia. They also

include those related to the lymphatic system or are due to venous insufficiency.

Pressure wounds: These are also known as pressure ulcers, and they are caused by repeated pressure or friction over the affected area. They can be seen on heels and the sacral area due to erosion of tissue caused by friction.

Self-Inflicted wounds: As the name suggests, these are wounds individual causes on themselves, varying from minor cuts and gunshot wounds to piercings or tattoos.

Traumatic wounds: These are wounds caused by trauma and are often contaminated.

Neuropathic wounds: These are wounds caused by chronic diseases like diabetes or chronic alcoholism like ulcers. Some of these conditions, like alcohol abuse, can reduce sensation and circulation.

Surgical wounds: These are wounds caused by surgery and can be contaminated or clean depending on the type of surgery.

Dysfunctional healing wounds: These are any wounds that do not heal adequately because of the formation of keloids or hyper granulation.

Infected wounds: These are wounds that have been inflamed and infected, resulting in fistulas or deterioration of the wound.

According to the Modified Wagner Ulcer Classification System, foot ulcers are divided into six grades:

- Grade zero: no open ulcers but at risk
- Grade one: Superficial ulcers that extend into the subcutaneous tissue. There may be a superficial infection with or without the presence of cellulitis.
- Grade two: These are ulcers with total thickness to the joint or tendon but with no abscess, sepsis, or osteomyelitis.
- Grade three: These are ulcers with a full thickness that may extend to the joint or tendon but with no abscess, sepsis, or osteomyelitis. It

may include fasciitis, abscesses, plantar infections, or infections to the tendon.

- Grade four: These are ulcers in one area of the foot while the rest of the foot is okay.
- Grade five: This is gangrene to the entire foot resulting in amputation.

The standardized staging system for pressure ulcers is determined using the National Pressure Injury Advisory Panel, which has issued standard definitions:

Stage one - Non-blanchable erythema: These are ulcers that are intact but have a reddened area that doesn't blanch.

Stage two – Partial thickness: This ulcer features the destruction of the dermis or epidermis, although it may be an intact or ruptured blister. It could also be an open blister with a pinkish or reddish wound bed.

Stage three – Full-thickness skin loss: This ulcer features an injury that has permeated to the subcutaneous fat tissues due to complete loss of the epidermis and dermis.

Stage four – Full-thickness tissue loss: This ulcer has progressed to the bone, tendons, and muscles.

Unclassified/unstageable: These are ulcers that cannot be staged until the slough is completely removed, even though they involve full thickness and the injury is present.

Suspected deep tissue injury: These ulcers feature a discolored skin area that is still intact but damaged. The injury's depth cannot be visualized; although it is likely deeper than a stage one injury, the epidermis is still intact. The presence of the epidermis makes it hard to determine the extent of the injury.

Assessing Pressure Ulcers:

When assessing any ulcers, it is critical to determine whether you are dealing with pressure or non-pressure ulcers. That is because the treatment protocol differs for venous and arterial insufficiency, neuropathic disorder, and pressure ulcers. So the following must be done in accordance with the assessment protocols:

- The ulcer must be classified according to the characteristics and stage, including the size and dimensions.
- Photographs must be taken in accordance with protocol
- Any pain associated with the ulcer must be described
- The ulcer must be evaluated for any signs of infection
- Ulcers must be monitored for any changes that should be well documented. They have to be checked daily.

Management of Pressure Ulcers

Managing Mobility- Related Pressure Ulcers

Mobility pressure ulcers occur in bedridden patients due to being bedridden. It is critical to promote mobility as much as possible to improve circulation, promote healing and reduce the chances of more pressure ulcers developing.

Here are measures to take when dealing with mobility-related pressure ulcers:

- Reposition bed-bound patients regularly according to a schedule. They should also receive active bed exercises and passive ROM exercises if they can tolerate them daily. Also, elevate the patient's head for short periods to only 30 degrees.
- Create individualized plans by the occupational therapist where the patient is regularly evaluated for improvement or regression.
- Patients may require assistive devices, so make sure that these are available.

- Always consider any comorbidity that could make the treatment of ulcers more challenging.

Managing to Control Fecal Incontinence

Patients with fecal incontinence have an increased likelihood of pressure ulcers as the affected tissue deteriorates. Also, there is a high risk of contamination of existing pressure ulcers.

Here are measures to take when dealing with fecal incontinence pressure ulcers:

- Assess the incontinence to determine whether it is temporary or permanent. Could it be related to an existing health problem?
- Determine the type of incontinence the patient is experiencing. Is it passive where the patient is unaware, the patient is unable to hold their stool, or it is seepage where the stool works its way around a blockage?
- Use medications to control diarrhea and constipation, depending on what the patient is suffering from.
- Put the patient on a bowel training regime with scheduled bowel movements. You can use suppositories and stool softeners according to the cause of the incontinence to help the patient have a regular bowel movement. Sometimes, a patient may need diapers, absorbent pads, or skin moisture barriers.
- Put the patient on a modified diet with foods that help control constipation or diarrhea. Also, ensure the patient takes sufficient amounts of fluids.
- Consider using fecal containment devices and fecal pouches if the incontinence cannot be completely controlled.

Managing to Control Urinary Incontinence

Controlling urinary incontinence is crucial to prevent deterioration of the affected tissue that may result in pressure ulcers.

Here are measures to take when dealing with fecal incontinence pressure ulcers:

- Determine the cause of the incontinence to know whether it is temporary, permanent, or illness related.
- Use the temporary foley catheter to allow the tissue to heal but not for long-term use because it increases the chances of infections.
- Use medications that may be useful in treating urinary infections. Scheduled toilet use may also reduce the incidences of incontinence.
- Use skin barrier moisturizers to protect the skin from urine irritation.
- Wipe around the soiled skin with no-rinse wipes. They are much gentler on the skin compared to water and soap.
- Use adult diapers and absorbent pads that wick the urine away from the skin. In this case, you must establish a schedule for changing the diapers/pads. Try not to position the diaper or pad directly on the ulcers.

Preventing Pressure Ulcers

Every patient is susceptible to pressure ulcers, so they must be assessed for risk factors that could lead to them. Risk factors for pressure ulcers include:

- Inactivity
- Immobility
- Incontinence
- Moisture build-up
- Fragile skin conditions
- Certain medications
- Poor nutrition intake
- Friction and shear
- Decrease in sensation

Tools used in assessing patients for pressure ulcers include the Braden Scale and the Gosnell Scale. These scales offer consistency in patient assessment so that the nurse can improve their intervention strategies. After determining the patient's risk factors, you can work towards alleviating

them. Remember, the interventions must be specific to the patient taking into account the disease, situation, and solutions.

Repositioning and Turning a Patient

These are interventions that need to be taken to prevent pressure ulcers in bed-bound patients. Here are measures to reduce pressure:

- Reposition patients carefully to avoid shear and friction
- Use devices like pillows and foam to properly reposition patients to prevent bony prominences from coming into direct contact.
- Try to use the 30-degree lateral position instead of the side-lying 90-degree position.
- Use assistive devices when necessary to move patients.
- Use chairs to relieve pressure, but they must be of the correct height and size and have pressure-relieving devices. However, limit chair time, especially for acutely ill patients, to no more than two hours.
- Teach and remind patients who can redistribute their weight every 15 minutes. If necessary, use a timer.
- Documentation is required to monitor the goals of turning and repositioning the patient every two hours.

Positioning strategies in bed:

As the patient is in bed, you must reposition them by turning them to a lateral 30-degree inclined position. Avoid the 90-degree side lying position because it places a lot of pressure on the patient's trochanter. The repositioning should ideally be done by two people who use a draw sheet, turn sheet, and pillows to pull up in bed and turn the patient to the required position.

Strategically place the pillows:

- Under the legs to keep the heels off the bed
- Under the head
- Between ankles and knees

- Behind the back

Positioning strategies on the chair:

Reposition patients in chairs every hour as well, and the patient should also be assisted in getting up and sitting down. Change the patient's leg positions regularly from dependent to elevated and vice versa. Also, ensure that the body is in proper alignment, so the use of pillows and cushions is necessary to achieve this. Instruct and remind cognizant patients to reposition themselves every 15 minutes while in seating position.

Using Support Surfaces to Prevent Pressure Ulcers

Support surfaces are used to redistribute pressure on the skin to less than the capillary closing pressure of less than 32 mmHg. Flexible, thin sensors are placed under the support surface to offer computerized readings that inform whether the surface is adequate for the patient's needs.

Some support surfaces come with color-coded computerized images to show different pressure levels.

The surfaces also offer moisture control preventing moisture damage to the patient's skin. They use porous materials like foam which reduce perspiration, instead of plastic and rubber, which promote perspiration and moisture retention. The same surfaces also offer temperature control because of featuring materials with high specific heat that draw heat away from the body, thereby decreasing body temperature. High temperatures can result in the breakdown of the skin.

Finally, some support surfaces also help with friction because they are purposely fitted with click material to decrease friction. Despite all these benefits of using the support surfaces, repositioning, turning, and lifting the patient must all be done correctly and on schedule.

Best Practices When Using Support Surfaces:

- Pressure distribution surfaces must be used on examination tables, operating tables, and beds for high-risk individuals.
- Ensure the surface provides at least one inch of support under areas to be protected to prevent bottoming out when in use.
- All patients with stage two to four ulcers or multiple ulcers require support surfaces.
- Use dynamic support surfaces for patients who need assistance to move. These can also be used when static pressure devices offer less than one inch in support.
- Use static support surfaces for the patient who can change their position without increasing pressure on the ulcer.
- Chairs should feature gel and/or air support surfaces to help redistribute the pressure on the chair.

Alternative, Non-pharmacologic and Complementary Interventions

All the above-mentioned are complementary interventions that help the patient to cope with their illness or condition without using medication. They can be used alone or together with conventional medical interventions. Include these interventions if this is okay with the family and not without their consent.

The National Center for Complementary and Alternative Medicine recognizes the below interventions:

Mind-body medicine: This entails using dance and music therapy, focused relaxation, visualization, artistic creation, biofeedback, and prayer to promote healing.

Whole medical system: This involves using Chinese medicine like acupressure and acupuncture, Ayurveda medicine, and homeopathic and naturopathic medicines.

Manipulation: This is the use of spinal manipulation and massages to promote healing.

Biological medicine: This involves using herbs, aromatherapy, vitamins and minerals, dietary supplements, plants, and trees for healing.

Energy medicine: This is the use of electric currents, magnets, Reiki, laying of hands, pulsed fields, and qi gong to promote healing.

Of course, while using these interventions is acceptable, nurses must take precautions when dealing with patients undergoing the above treatments. The precautions include:

- ❖ Advising patients not to abandon current conventional medical interventions because they are beneficial when used together with complementary medicine
- ❖ Providing the patient with resources like books and pamphlets to read and research on the therapies so they can make an informed decision for themselves
- ❖ Informing the patient of the high cost of alternative therapies that may not work in the end
- ❖ Encouraging patients who use complementary therapies to practice the techniques correctly to give them a chance to prove their value

Understanding Whole Medical Systems:

These are medical systems with entirely different approaches and philosophies when explaining illnesses and treating them.

Chinese medicine: This medical system is centered on the flow of energy and life forces within the body. So it uses herbs, acupuncture, acupressure, and meditation to control and treat diseases.

Naturopathic medicine: This medical system is European-based, and it uses natural means like herbs, acupuncture, and massages to support and promote the body's natural healing processes.

Homeopathic medicine: This is another European-based system that uses supplements and a small number of diluted herbs to aid the body's recovery from illness. The herbs and supplements are meant to stimulate the immune response system to come to the body's aid.

Ayurveda: This medical system is Indian based, and it centers on bringing the spirit, mind, and body into synchronized harmony. They use yoga, massages, and herbs for treatment.

Using Essential Oils

Essential oils are concentrated oils from plants that are either applied to the skin in diluted form or inhaled through aromatherapy. These oils have been found to help with sleep, relaxation, digestion, and alleviating skin conditions like dermatitis. Some of the common essential oil on the market include peppermint, lavender, rose, bergamot, rosemary, lemon, eucalyptus, chamomile, tea tree, and sage. It is best to apply a small diluted amount on the hand before using it all over the body, as some oils may cause skin irritation.

Using Cupping

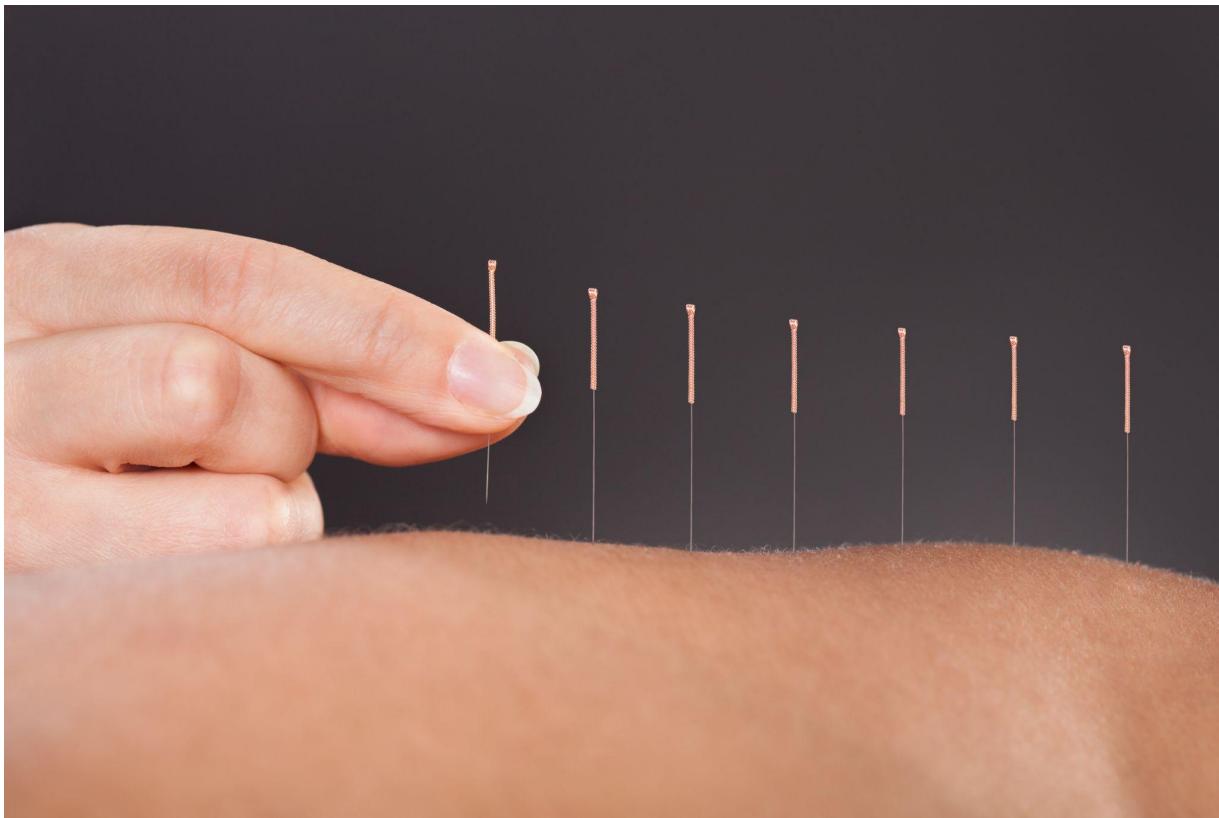
Cupping is synonymous with Middle Eastern and South East Asian cultures, although it is not practiced as much as before. They use heated, dry cups by placing herbs or paper into the cup and setting them on fire. The heated cups are immediately placed along the meridians on the back on both sides of the spine. The cups form a vacuum that draws blood to the skin leaving circular bruises that supposedly heal that part of the body.



Cupping should not be done on children under four years old and only for short periods in older children. There is also wet cupping which involves leaving the heated cup in place for at least three minutes, making minor cuts into the bruised skin, and then cupping again to draw the blood out of the cuts.

Using Acupuncture:

Acupuncture dates back to ancient orient who used this method to restore the balance of the life force, also known as qi. Acupuncture is sometimes applied in conventional medicine to reduce the side effects of certain cancer treatments, like pain, nausea, and vomiting. During acupuncture, stainless steel or copper needles are inserted into superficial layers of skin at the specific points where the Chinese believe the life force flows.



The needles are class II needles which means they come with labeling and manufacturing requirements. An acupuncturist can be certified through apprenticeships or formal coursework, and physicians can also receive board certification in this area.

Using Non-pharmaceuticals:

These include electrical stimulation, heat, and cold, relaxation, distraction, and imagery, among others. These non-pharmaceutical approaches rely on any method the patient feels helps mitigate their pain and discomfort.

Hypnosis, prayer, aromatherapy, and magnets are some popular interventions in this category.

Also, using mind-body medicine can help some patients cope with pain or discomfort. Listening to music can help calm thoughts, visualization can help distract the patient, and artistic creation can be an outlet for the patient.

Relaxation is a common non-pharmaceutical intervention that helps many patients because it helps reduce muscular tension resulting in less muscle pain and tension headaches. It has also been proven to be beneficial post-surgery as most patients control and cope better with their pain, and so they tend to need fewer drugs.

Another popular intervention is visualization, where patient visualizes themselves in a calm and serene environment. They concentrate on an image, engaging their sense completely to notice the details of the image. This is always positive imagery that allows the mind to wander and offers a happy distraction.

Using Skin Stimulation

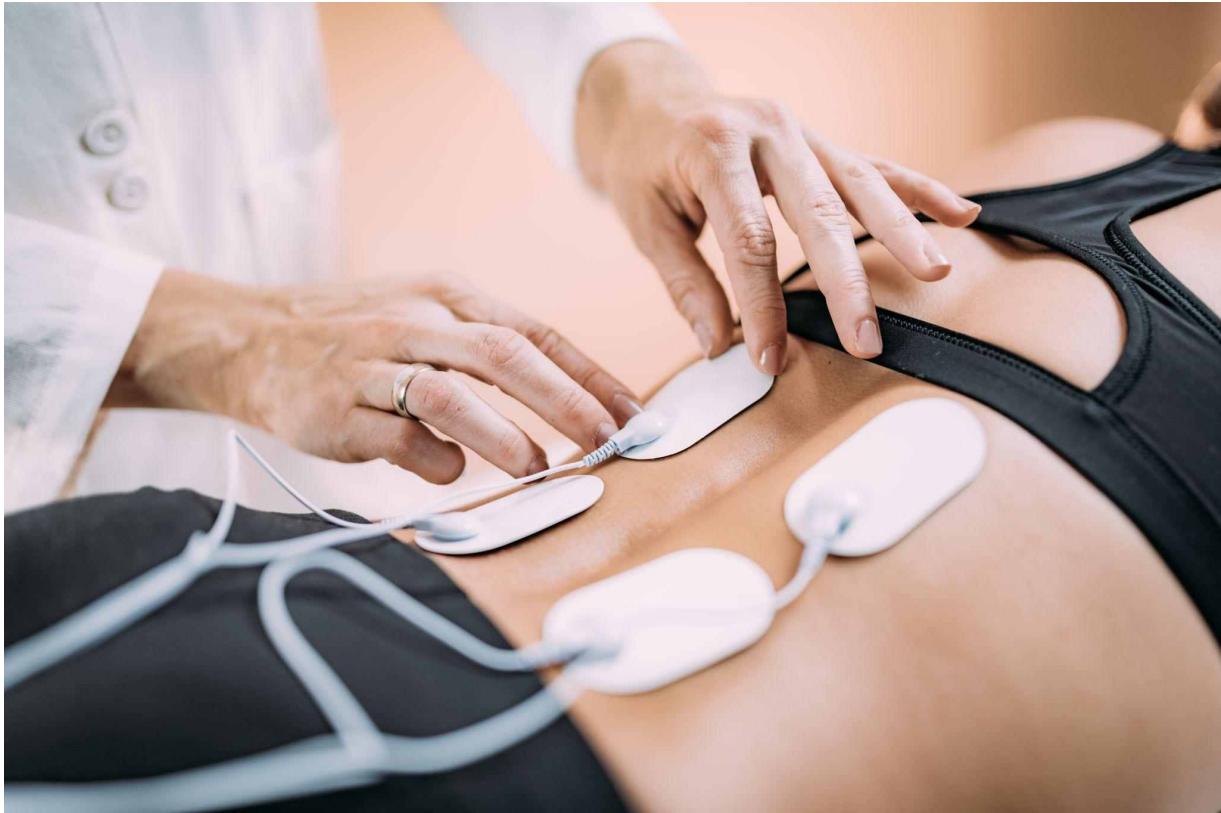
Stimulation to the skin can sometimes reduce pain, which is what the TENS (transcutaneous electrical nerve stimulation) machine help with. They provide stimulation to other nerves, which only transfer sensation blocking impulses from the nociceptor that respond to painful stimuli.

Skin stimulation can be done through:

- Massage – this produces relaxing sensations that decrease muscular tension, thereby reducing pain.
- Heat therapy – heat increases the flow of blood and oxygen, stimulating the neural receptors, thus decreasing pain. Heat also loosens muscles, effectively diminishing tension in them and reducing pain.
- Cold therapy – whereas heat increases blood flow by dilating the blood vessels, cold constricts them, causing less blood flow. The reduced blood flow results in reduced production of inflammation-related chemicals; as a result, there is less pain.

TENS:

The TENS concept works best on incisional and neuromuscular pain because it delivers a gentle electrical pulse that stimulates endorphins and overrides the painful impulses from the affected area.



Using Temperature Controlled Therapies:

These therapies entail using cryotherapy (cold) and thermotherapy (heat) controlled measures to promote healing. They include:

Evaporation: This is a cooling effect caused by allowing liquids that evaporate into gases to be applied to the skin.

Conversion: This is heating from energies like ultrasounds, and the energy is converted into heat on the skin.

Conduction: This is directly conveying cold, heat, or electricity on the skin through therapies like hot baths, electrical stimulation, or ice packs.

Convection: This is the indirect transmission of heat via a gas or liquid by circulating the heated particles. That can be seen in therapies like whirlpool

therapy.

Radiation: This is heating from light waves, and heat transfer is effected via ultraviolet rays and infrared light.

Superficial Heat

Superficial heat only penetrates the superficial layers of the skin. However, it is found to relax deeper muscles by reflex while also increasing metabolism and decreasing pain. The therapeutic range for superficial heat is between 40 and 45 degrees Celsius. Superficial heat can be applied via:

Moist heat packs: These are placed on the skin and secured by towels that provide insulation. They are applied for 15 to 30 minutes at a time.

Fluid therapy: This is the use of warmed cellulose particles. The foot or hand is submerged into the particles for 20 to 30 minutes.

Paraffin baths: This entails the floor, hand, or elbow is dipped into a hot bath seven times with cooling periods between the dips and then wrapping the dipped area with towels and plastic for 20 minutes.

Deep Heat

This is the opposite of superficial heat as the heat is internally generated using an ultrasound microwave and shortwave diathermy. In this case, no heat is applied to the surface, and deep heat can penetrate to a depth of three to five centimeters.

Shortwave Diathermy

This is an increase in temperature in the subcutaneous tissue using radio waves. It is used together with active and passive exercises to improve the patient's range when dealing with painful conditions like tendon, muscle, and bursae inflammation. However, shortwave diathermy must not be used over organs containing fluid like the head, eyes, heart, or over pacemakers because the waves could disrupt the pacemaker's functionality.

Microwave Diathermy

It is similar to shortwave diathermy but uses a lower heat rate to maintain a lower heart rate. It is used for muscles and joints close to the skin surface. The heat is created by electromagnetic radiation, and the treatment is given for 15 to 30 minutes per session, followed by active and passive exercises to help the patient with flexibility. It should also not be used over pacemakers or prostheses and also not be applied to patients with cardiac disease.

Whirlpool Baths

Whirlpool baths increase circulation, which helps to promote healing. These are tubs fitted with turbines that mix the water with air which is then pressurized. The pressurized flow into the tub creates turbulence in the water.



The patient must clean the body with water and soap before entering the tub, and the affected area must be fully submerged. The patient should wear a swimming costume if it is a full-body treatment. Treatments last around 20 minutes, but the patient must be monitored for lightheadedness or loss of consciousness.

Cryotherapy

This therapy can be done using ice packs, refrigerated gel packs/plastic bags filled with ice chips, and water that are applied directly to the skin for 10 to 15 minutes. Another method is using an ice massage that is directly applied to the affected area. The ice massage entails rubbing a piece of ice on the affected area's skin. A friction massage immediately follows the ice massage.

The third cryotherapy method uses a towel dipped in water and ice slurry, wrapped around the limb to impart cold therapy. It is most applicable in situations where ice packs are not available.

Unfortunately, using the towel is not ideal because it tends to warm up after several uses and must be dipped again, which is inconvenient.

And finally, the last method of cryotherapy is using an ice bath typically used for limbs like the lower foot, hand, or leg, where the body part is immersed for 20 minutes.

All cryotherapy should be followed by active and passive range of motion exercises.

Contrast Baths:

These are alternating hot and cold baths which are used in the sub-acute healing phase for sprains and strains. It is applied after the edema subsides because it helps improve circulation and further decrease edema. Two containers are provided, one with cold water maintained at 65 degrees Fahrenheit and the other with hot water maintained at 110 degrees Fahrenheit. The hot water immersions are four minutes long, and the cold

water ones are one minute long. The cycle is repeated, and the immersed part is removed from one container directly into the next.

TENS:

TENS stimulates the periphery sensory nerve fibers reducing both current and recurrent pain. The machine may have two or four lead bits and feature adjustments for the frequency and pulse width. The electrical stimulation by the TENS machine can either be continuous or intermittent, and the placement of the electrodes depends on the type and size of the injury. It should not be used over irritated skin, the neck, or the head.

Postmortem Services and Care

The process of decomposition of the body begins immediately after death. The blood vessels become more permeable, and red blood cells begin to break down. As a result, the blood begins to pool and stain tissue in dependent parts of the body in a process known as lividity. Within four to five hours, the skin may appear splotchy, but by the sixth hour, lividity has really set in. When lividity occurs, the skin on the rest of the body takes on the gray hue synonymous with dead bodies. The face may take on a deep purple-reddish for patients that died due to cardiac issues.

Liver Mortis also occurs as the rest of the body undergoes rigor mortis, stiffening and muscle contraction, and cools to ambient temperature.

Death Vigil

This is an intricate part of nursing for many nurses; I know it has always been for me. The death vigil entails remaining at the side of a dying patient, ensuring they are not alone in their final moments until they draw their last breath. Depending on the condition, a death vigil may take a couple of hours or days. Family members are typically present during the death vigil,

but when they need a break to freshen up or eat, a nurse may need to step in and be there with the patient.

Depending on the patient's culture, a death vigil can feature only one or two people or a whole clan.

Your job as a nurse during this moment is to support the family by ensuring adequate seating arrangements and maintaining a peaceful quiet environment according to the wishes of the patient/family members. Also, you can assist with facilitating appropriate cultural traditions and a visit from the family's preferred spiritual leader.

It is important to mention that cultural traditions during and after death vigil may be out of line with hospital and medical care policy.

For example, I once cared for a gentleman whose culture expected the wife to lay in bed with him after he died for forty-eight hours to keep his spirit company as it left this world to the next. In line with post-mortem services, this was not possible, so I had to explain to his family that she couldn't. But I could allow her to lie next to him in his final moments to give her peace and closure and to comfort him.

Algor Mortis:

When functions cease at death, a process is known as cold death, algor mortis occurs. Algor mortis is the gradual decrease in the body temperature, which begins within one hour of death. The body continues to cool by about one degree every hour until it reaches ambient temperature. The body cools faster outside than inside, and as it cools, it takes on a waxy appearance, and the skin loses its elasticity.

Rigor Mortis:

Rigor mortis is the excessive contraction of muscles two to six hours after death after the stored adenosine phosphate (ATP) that helps muscles relax is depleted. This process is gradual, beginning with the internal organs and

then progressing to the small muscles in the neck and head like the eyelids and finally reaching the large muscles in the extremities and trunk of the body.

Chemical activity in the dead body peaks at 12 hours and continues for 18 hours after this peak. In some people, it persists for 48 hours before the muscles relax. The larger a person is, the more pronounced the rigor mortis. Low ambient temperatures may slow rigor mortis, and high temperatures increase its rate.

Post mortem care

The body should be cleaned and prepared for family viewing. The family must have a peaceful impression of their loved one to prevent traumatizing them with blood and gore in their time of grief. Also, seeing their loved one clean and well-kempt helps them say goodbye and get closure before the body leaves for the funeral home.

Remove any tubes, drains, stained dressings, and other medical devices. Bandaging may be required to contain any fluids that the body may still be expressing. Use an incontinence brief or waterproof pad underneath the body to contain fluids. However, packing the rectum or/and the vagina is unnecessary. Wash and comb their hair and dress them in regular clothes that normalize them to their family. The body may sigh as you roll it over due to the release of compressed air from the lungs.

How To Report A Death

According to HIPPA laws, only the people the deceased authorized to be notified of their death should be present during the notification. As a nurse, you must prepare to notify the family and friends of a patient by asking them who should be notified in the event of their loved one's death. Also, find out how the notification should be done: via telephone, text, or one-on-one. All this information should be posted prominently on the patient's chart.

When it comes to breaking the news, the nurse should use caring, gentle words and be as diplomatic as possible. Do not be abrupt or cold and in a hurry. The typical procedure is to prepare the recipient of the news first by saying, “I am sorry to say this, but I have some bad news.” Then you can proceed to explain the patient died, what time it happened, and who was with them, whether family members or a nurse. Do not use euphemisms like “Your dad kicked the bucket last night.” Also, be available to answer any questions the family members may have and express sympathy for their loss. Again, avoid clichés like, “Your mom is singing with the angels right now” or “He is probably jamming with Elvis.” Or “I have never seen someone so ready to go. He is happy. You are holding him back with your tears.”

The most important thing during the death announcement is to remain sensitive to the needs and emotions of the family. There is no right way to receive such news. Some people are stoic, while others are emotional and cry loudly. Some scream, faint, or begin to call out to their dead loved ones. You have to remain the voice of reason and support system for them and help them stay safe even in their grief.

A death pronouncement must also be done for documentation purposes. Before a death pronouncement, do the following.

- Identify the patient by verifying their ID number.
- Gather all the relevant information about the patient’s medical history
- Describe the location of the body and its appearance
- Perform tactile and verbal stimulation and document lack of response
- Check for pupillary reflex and document the presence of fixed and dilated pupils.
- Note and record the official time of death.
- Note notification of family members and physician
- Perform an assessment of the respiratory status documenting a lack of lung sounds and breathing
- Perform an assessment of the cardiac status documenting missing pulse upon palpation and auscultation of the apical pulse for at least one minute (60 seconds).

- Document and file a report to the CDC for death conditions that require notification.
- Document notification of authorities in cases of a suspicious death or in case the death requires notification of the medical examiner.

Closure Activities at Death:

Once your patient has passed on, utilize closure activities to help the family come to terms with the death instead of abruptly severing communication. During their loved one's hospital stay, many family members form close relationships with the nurse caring for their patient. Some of the closure activities include:

Making a home visit which also allows the nurse to observe how the affected person is dealing with their grief. In some cases, they may need a support group or close monitoring to prevent self-harm.

Call the family members and talk about how they are feeling, what they are doing now that their loved one is gone and if they have any questions the nurse can help with.

Sending a condolence card signed by the treatment and care team can be a comfort. Sometimes a note with sentiments about the deceased can offer comfort.

Chapter Seven: Parenteral and Pharmacological Therapies Block

Understanding Pharmacokinetics

Pharmacokinetics involves the administration route, dosage, absorption, distribution, frequency of administration, and serum levels of pharmaceuticals over time. It considers:

- The drug's clearance rate and elimination from the system while ensuring the patient reaps the therapeutic benefits.
- The volume of distribution applies to the rate at which the drug passes into the tissue.
- Context-sensitive half-life, which is the amount of time it takes for a continuously administered drug to reach 50% concentration.
- Effect-site equilibrium; is the time between the administration of a drug and the time it reaches the appropriate receptors to induce a clinical effect.
- Recovery time which is the time it takes for the plasma levels to come down to the point of effect elimination.
- The bioavailability is determined by the degree of metabolism of a drug before it reaches its intended site.
- Elimination half-life which is the amount of time it takes for the concentration of the drug to reach half its starting dose.

The first metabolism greatly reduces the bioavailability of drugs as they are metabolized to the liver, where they are broken down, and only a small fraction of the active drug circulates throughout the body. But you can avoid the first metabolism by administering the drug intravenously, sublingually, or intramuscularly.

The two main organs responsible for eliminating drugs from the body are the liver and the kidney. The kidney eliminates by filtration and actively excreting the drugs through urine, while the liver eliminates by biotransforming or metabolizing the drug or excreting it through bile.

There are renally excreted drugs that are biotransformed (metabolized) by the liver and then passed to the kidneys for excretion. And in other cases, the drugs can be excreted by the kidneys unchanged. If a patient has renal impairment, the nurse must avoid using drugs that depend on the kidneys for expulsion from the body.

How is Medicine Administered

Orally: This means the drugs are ingested through the mouth, pass through the gastrointestinal tract, and into the bloodstream. A large amount of absorption occurs in the small intestines, where it is affected by the solubility of the drug into the gastrointestinal fluids, food presence, and gastric motility. However, orally administered drugs are more susceptible to the liver's first-pass metabolism.

Intramuscularly: This means the drugs are injected into the muscles, which are highly vascularized. As a result, these drugs are very rapidly absorbed into the body. However, the rate of absorption differs from lipids to aqueous vehicles.

Intravenously: This means the drugs are directly injected into the bloodstream giving them 100% absorption and achievement of peak serum levels. But some drugs cannot be intravenously administered because of their toxicity or propensity to vein irritation. So they must be given as an infusion.

Subcutaneously: This means the drugs are administered beneath the skin surface to allow them to absorb slowly because of the poor vascularization of the dermis.

Side Effects of Medication:

All medications can have side effects. The only difference is that some drugs are more toxic than others, so their side effects are considerably more significant. Some side effects can go away after a while others are life-threatening, causing anaphylaxis. The most common side effects that rectify themselves after a while include:

- Vomiting

- Diarrhea
- Rashes
- Nausea

If a patient comes in complaining of side effects, ensure that you ask about the chances of incorrect dosage, drug interaction, and polypharmacy. Before administering any medication, it is essential to always ask the patient about any unusual drug interactions or allergic reactions to any medications. Also, always educate all patients about the potential side effects of all medications. Do not forget to be careful about the drug combinations a patient receives. It is your responsibility to know how the drugs interact to avoid dangerous combinations and side effects.

Drug Classification:

There are two primary ways to classify drugs. They either fall into the pharmacological or therapeutic classification. All these drugs have a generic name which is simpler, and a chemical name which is more technical. Also, the company manufacturing the drug will give it a brand or trade name. Typically, the generic form of the drug is cheaper than the original, but it may differ in efficacy depending on the amount of the drug absorbed into the body.

The Controlled Substances Act restricts the use of certain drugs and classifies them in schedules that identify them and how they react with the body.

- Schedule I drugs – They include LSD, ecstasy, psilocybin, heroin, mescaline, peyote and marijuana, among others
- Schedule II drugs – Amphetamines, codeine, cocaine, morphine, fentanyl, opium, Demerol, and Dilaudid among others
- Schedule III drugs – Anabolic steroids, codeine, barbiturates, pentothal, and Vicodin
- Schedule IV drugs – Xanax, Valium, Librium, Versed, Sonata, redux, Ambien, Klonopin, Ativan, and Restoril, among others.
- Schedule V – Lomotil among others

During administration of drugs it is critical to remember the five right ways of medication administration. They are:

- Right patient – You must administer the medication to the right patient to treat the correct disease. Before administering the medication, confirm that it is the correct patient by checking their full names and date of birth.
- Right drug – check that it is the correct drug according to the prescriber's order. Scan the medication so that the medicine name is checked against the order.
- Right route - Ensure the medication is given via the correct route, and confirm the route against the prescriber's order.
- Right dose – Check the dosage against the prescriber's order, and in cases where a second nurse is required to confirm the dosage, ensure that it is done. If there are any concerns about the dosage, contact the prescriber before administering the medication.
- Right frequency – check the frequency against the prescriber's order. Some drugs are administered once, and others require recurring administration.

There are 111 routes of drug administration that the FDA acknowledges. However, the most commonly used are three:

1. Topical (applied to the surface of the skin, vagina, eye or nose, or inhaled)
2. Enteral (rectal, oral, or feeding tube)
3. Parenteral (subcutaneous, IV, Intracardiac, intradermal, epidural, intramuscular, transdermal, transmucosal, intraperitoneal, intrathecal, intravitreal, and intraosseous)

When determining the route of administration, the physician should consider:

- ❖ The likelihood of toxicity
- ❖ How effective the drug is by the chosen route
- ❖ How quickly the drug needs to be absorbed into the body
- ❖ The discomfort of the drug
- ❖ Will the route play into the patient's addictive habits

- ❖ How compliant the patient is with the chosen route
- ❖ Herbal drugs and Their Contraindications:

Some of the popular herbal options may have contradictions with conventional drugs. For example:

- ★ Ginger has contraindications with anticoagulants and NSAIDs
- ★ Valerian has contraindications with sedatives, anesthetics, opioids, alcohol, and anti-seizure medication.
- ★ St John's Wort has contraindications with antidepressants, oral contraceptives, anticoagulants, HIV medications, and anesthetics like MAO inhibitors.
- ★ Goldenseal has contraindications with diabetic medications, antihypertensives, and kidney medication. It is also not to be taken by pregnant and lactating women.
- ★ Even garlic has contraindications with oral hypoglycemics, anticoagulants, and NSAIDs.

Understanding Cardiovascular Pharmacology:

There are five classes of hypertensive drugs:

- Diuretics
- Vasodilators
- Sympatholytics
- Calcium channel blockers
- ACE inhibitors (angiotensin-converting enzyme inhibitors)

Diuretics

Diuretics increase renal filtration and perfusion. As a result, there is a decrease in pulmonary and periphery edema, diabetes insipidus, hypertension, osteoporosis, and CHF. There are three types of diuretics: loop, thiazide, and potassium sparing diuretics.

Loop diuretics:

Loop diuretics stop the reabsorption of chloride and sodium in the ascending loop of Henle.

Side effects of loop diuretics

- They promote the secretion of electrolytes like magnesium, calcium, and potassium resulting in dysrhythmias.
- They cause frequent urination
- They can cause postural hypotension
- They may result in increased uric acid levels and elevated blood sugar

Thiazide diuretics:

These diuretics also inhibit the reabsorption of chloride and sodium in the distal tubule resulting in more water and sodium being expelled. These are often the first drugs to be given in the treatment of hypertension because they have long-lasting effects, remaining active for 12 to 72 hours, which means they can maintain more extended control over the blood pressure.

Side effects of thiazide diuretics

- They are often given together with a potassium supplement because they increase the secretion of bicarbonate and potassium.
- They cause dizziness and lightheadedness
- They can cause postural hypertension
- They can result in blurred vision, headaches, and in some cases, continuous itching

Potassium-sparing diuretics

These diuretics also inhibit sodium reabsorption in the distal tubule and collecting duct. But they are much weaker than their loop and thiazide counterparts. The benefit is that they do not reduce the potassium level in the body. But they must be given in combination with a thiazide diuretic to improve efficacy and balance the potassium levels.

Side effects of potassium-sparing diuretics

- If used alone, they could increase potassium in the body resulting in irregular pulse, general weakness, and cardiac arrest.
- They can cause blurred vision, dehydration, nausea, and insomnia
- They can also cause nasal congestion in the first few days of treatment

Antidysrhythmic drugs

These drugs act on the conduction system, atria, and ventricles to control dysrhythmias. They are classified into four classes of drugs:

- Class I: comprises three subtypes of sodium channel blockers
- Class II: β -receptor blockers
- Class III: Slow repolarization drugs
- Class IV: Calcium channel blockers
- Unclassified: Miscellaneous medication which has proven efficacy in arrhythmia control

Smooth Muscle Relaxants?

For rapid action after overload reduction for heart failure

To reduce preload for acute heart failure

To prevent vasospasm

To mitigate an unstable angina

To reduce hypertension by dilating arteries

Vasodilators and Inotropic Agent?

These drugs reduce vascular resistance, which decreases the filling pressure and increases U/O. However, they may cause bradycardia, hypotension, headache, and nausea. On the other hand, inotropic agents are drugs used to improve contractility and cardiac output. Unfortunately, IV inotropic agents increase the likelihood of fatality, but they may be a final option when other drugs fail. Examples of inotropic agents include

- Dopamine which improves blood pressure, cardiac output, and blood flow to mesenteric and renal arteries
- Dobutamine which also improves cardiac output, increases blood pressure and treats cardiac decompensation
- Digoxin which increases cardiac output and contractility while also preventing arrhythmias. Digoxin is a drug derived from the foxglove

plant, and it helps increase myocardial contractility, decreases the heart rate, improves left ventricular output, and promotes diuresis.

- Phosphodiesterase III inhibitors which improve vasodilation and the strength of the contractions

A patient with heart failure is likely to be prescribed for one or more of:

- ACE inhibitors
- ARBs (Angiotensin receptor blockers)
- B-blockers
- Furosemide
- Aldosterone agonist

Symptoms of Medical Toxicity In Cardiac Patients

- Fatigue
- Lethargy
- Nausea
- Diarrhea
- Vision with yellow or green halos around the lights
- Blurred vision
- Depression
- Arrhythmias
- Bradycardia

Treatment includes monitoring serum levels and evaluating symptoms for exacerbation or decrease. The patient may also be administered digoxin immune FAB to inactivate Digoxin where necessary. If treatment using drugs is ineffective, invasive cardiac procedures may be necessary.

Glycoprotein IIA/IIIA Inhibitors

These drugs bind platelets and mitigate clotting before and after invasive cardiac procedures. They are used with anticoagulants, especially in procedures like stent replacement, angioplasty, myocardial infarctions, and unstable angina. These drugs are typically contraindicated for patients with active bleeding or low platelet levels.

Pharmacologic Measures to Take Against Thromboses

The patient should receive the following pharmacologic measures to maximize perfusion:

- Ø Use antiplatelet agents like aspirin to prevent clotting
- Ø Use vasodilators to divert blood from ischemic areas. They are also contraindicated for decreasing clotting, dilating arteries, and controlling intermittent claudication
- Ø Use antilipemic drugs to slow the progression of atherosclerosis
- Ø Use thrombolytics in a blocked artery to dissolve clots
- Ø Use hemorheologic agents to reduce blood viscosity, fibrinogen, and rigidity in the erythrocytes
- Ø Use anticoagulants to prevent the formation of blood clots
- Ø Use analgesics to improve quality of life after surgery

Understanding Respiratory Pharmacology

Several pharmacological agents aid in managing and controlling respiratory distress in respiratory conditions. Asthma is one of the long-lasting respiratory conditions requiring a pharmacologic approach using both long and short-acting options to provide relief. Here are standard care medications for urgent care of asthma:

Anticholinergics: they prevent bronchial constriction and also improve the bronchodilating action of β -adrenergic agonists.

β -adrenergic agonists: They relax the smooth muscles and also cause bronchodilation. As a result, the edema is reduced, and there is better mucus clearance.

Corticosteroids: They offer anti-inflammatory action by preventing the immune system from responding aggressively. They also decrease edema and hyper-responsiveness.

Methylxanthines: They help in pulmonary function, effectively decreasing the need for a mechanical ventilator.

Magnesium Sulfate: It is used to reduce inflammation and relax the smooth muscles.

Leukotriene inhibitors: They help to prevent inflammation and bronchospasm during long-term management.

Heliox: a mixture of oxygen and helium is used to reduce airway resistance helping the patient to breathe with less effort.

Pharmacological Measures Used In Pulmonary Disease:

A wide range of medications is used to treat and manage pulmonary disease. They include

- Opioid analgesics that mitigate pain and also work as sedatives for patients on mechanical ventilators
- Neuromuscular blockers that induce paralysis in patients who have not responded to sedation for intubation or placement on mechanical ventilation
- A surfactant that reduces surface tension preventing the collapse of alveoli
- Human B-type natriuretic peptides that decrease the wedge pressure in pulmonary capillaries
- Pulmonary vasodilators that relax the vascular muscles and improve pulmonary vasodilation
- Diuretics that improve pulmonary edema
- Alkalizers that help to treat metabolic acidosis and also reduce pulmonary vascular resistance
- Antibiotics that treat respiratory infections
- Nitrates help with vasodilation to reduce preload and afterload, resulting in less need for oxygen in myocardial cases.

- Antivirals that prevent viruses from replicating early in cases of a viral infection

Understanding Endocrine Pharmacology

Oral hypoglycemic agents are commonly utilized in endocrine pharmacology. There are five classic categories of these drugs:

- Ø Biguanides
- Ø Sulfonylureas
- Ø Meglitinides
- Ø Thiazolidinediones
- Ø Competitive inhibitors of alpha glucosidases

There are two new drugs on the market that have proven effective when combined with exercise

They are DPP-4 inhibitors and SGLT2 inhibitors.

Examples of Sulfonylureas

- Glimepiride
- Tolazamide
- Tolbutamide
- Acetohexamide

Examples of Biguanides

- Metformin

Examples of alpha glucosidases inhibitors

- Miglitol
- Acarbose

Examples of Meglitinides

- Repaglinide

Example of Thiazolidinediones

- Pioglitazone which is the only current existing thiazolidinediones, oral hypoglycemic agent

Example of DPP-4 inhibitors

- Linagliptin
- Vildagliptin
- Saxagliptin
- Sitagliptin

Examples of SGLT2 inhibitors

- Canagliflozin
- Empagliflozin
- dapagliflozin

Types of Insulin and Their Uses

Regular: This type of insulin is fast-acting, showing efficacy within 30 minutes of administration and peaking two to five hours after onset. Its effects last 5-8 hours.

Humalog: This insulin is also fast acting, but its effects are short lasting only for 3-4 hours. However, it begins to show effects 5-15 minutes after administration, with the effects peaking between 45 to 90 minutes after onset.

NPH: This type of insulin is moderately fast to show efficacy, taking between 1-3 hours before showing efficacy after administration. It peaks around 6-12 hours after onset, but its effects last 16 to 24 hours.

Combined NPH and regular: This insulin combination is fast-acting, showing efficacy within 30 minutes of administration. But it peaks 7-12 hours after onset. The good news is that its effects last between 16 and 24 hours.

Insulin Glargine: This long-acting insulin begins showing efficacy 3-6 hours after administration. It has no peak, but its effects last up to 24 hours.

Understanding Oncologic and Immunologic Pharmacology

During the treatment of cancer and autoimmune diseases, several drugs are administered,

- Immunosuppressant drugs
- Chemotherapy
- Palliative sedation drugs

Immunosupresant drugs:

1. Corticosteroids

These drugs depress humoral immune responses, cell-mediated immune responses, and

inflammation. They also reduce the proliferation of B and T cells.

Corticosteroids are used with

transplants, and they also prevent GVHD disease.

Side effects of Corticosteroids:

- Edema
- Weight gain
- Cushing syndrome
- Osteoporosis
- Hyperglycemia
- Bruising
- They could trigger an Addisonian crisis if stopped abruptly

2. Intravenous Immuno-globulin G (IVIG)

These drugs are used to fight immunosuppression and increase antibodies to treat acute

infections and prevent infections.

Side effects of Intravenous Immuno-globulin G (IVIG)

- Dermatitis
 - Infections
 - Venous thrombosis
 - Renal failure
 - Headaches
3. Ciclosporin

These drugs suppress the activation of T-cells and are also used to prevent the rejection of transplants. IVIG drugs also treat nephrotic syndrome and autoimmune diseases.

Side effects of ciclosporin

- Excessive facial hair
- Tremors
- Gingivitis
- Skin cancer
- Bone marrow suppression with a high risk of infection

Chemotherapy:

Chemotherapy utilizes six primary agents during treatment. They are

1. Alkylating agents

These agents work directly on the DNA of the cancers, attacking the structure of cancers like Hodgkin's disease, chronic leukemias, lung, breast, ovary, and prostate cancers and lymphomas.

2. Antimetabolites

These agents block the cell growth of malignant cells. They are typically used in treating leukemias, gastrointestinal, breast, and ovarian cancers, and

choriocarcinoma.

3. Nitrosoureas

These drugs inhibit cancer-damaged DNA from repairing and curbing the reproduction of cancerous cells. They are often used to treat lymphomas, malignant melanoma, and multiple myeloma. Also, because they can cross the blood-brain barrier, they are used to treat brain tumors.

4. Steroid hormones

These drugs can be used to treat hormone-dependent cancers like ovarian and breast cancers.

5. Antitumor antibiotics

These drugs are used to prevent RNA synthesis by binding to DNA. They are widely used in the treatment of various cancers.

6. Plant alkaloids

These are drugs derived from plants. They block cell division and are useful in treating acute lymphoblastic leukemia, and non-Hodgkin and Hodgkin lymphomas

Cancer treatments can be delivered intravenously, intramuscularly, orally, topically, intra-arterially, intralesionally, intrathecally, or intraperitoneally. The oral route is used in home settings for ease of medication delivery, while intravenous delivery is the most common delivery by the treatment team. However, intramuscular delivery has longer-lasting effects, while intra-arterial delivers the medicine directly into the affected organ or tumor. Topical treatment is common with skin cancers

Side effects of chemotherapy

While the side effects of chemo can be mitigated using certain drugs they can be very distressing. They include:

- ❖ Hair loss
- ❖ Mouth ulcers
- ❖ Sores on the gums
- ❖ Sore throat

- ❖ Nausea, vomiting, and heartburn
- ❖ Anemia
- ❖ Loss of appetite
- ❖ Weight loss
- ❖ Cachexia and anorexia
- ❖ Nerve and muscle issues
- ❖ Infertility
- ❖ Loss of sexual function
- ❖ Bleeding
- ❖ Infection
- ❖ Bladder and kidney irritation
- ❖ Discolored skin

The highest risk from chemotherapy is neutropenia which is the depletion of neutrophils in the body leaving it vulnerable to all types of infections. Neutropenia is silent but life-threatening because it causes sepsis. Another risk is anemia which may require blood transfusion. Some medication can result in heart damage.

Palliative Sedation

This treatment process is aimed to make a terminal cancer patient comfortable in their last moments. It was originally called terminal sedation but to remove the connotation of euthanasia it was renamed palliative sedation. Palliative sedation doesn't hasten death but only mitigates the uncomfortable symptoms to improve the patient's quality of life through different levels of consciousness. This process calms agitation and restlessness in terminal patients while also minimizing pain, shortness of breath, seizures, muscle twitches and other forms of anguish.

Understanding Hematologic Pharmacology

Anticoagulants and thrombolytics are useful in hematologic pharmacology.

- Anticoagulants
- These drugs can be used at home and in hospitals. They include
- Direct thrombin inhibitors
- Antithrombin activators

- Antithrombin (AT)
- Direct Xa Inhibitors

Warfarin

Heparin is one of the most commonly used anticoagulants. It is derived from a pig's intestinal mucosa and lungs. The drug binds to the cell membrane of the endothelial cell membrane causing the antithrombin III inhibitor form to change. Unfortunately, this drug has a major risk factor for hemorrhage, especially in elderly patients and people with renal failure. It is critical to choose patients who get heparin carefully.

Another common drug is warfarin which helps to decrease the risk of embolisms in human beings. It is slow acting taking about 24 hours from onset to begin acting and lasting for two to five days. However, increasing the dosage over a few days can help improve its efficacy as an anticoagulant.

Thrombolytics

These drugs help dissolve blood clots in myocardial infarctions, DVT, ischemic stroke, and pulmonary embolisms. They can be given together with heparin (or low-weight heparin) to improve their anticoagulation effect. These drugs should be given within 90 minutes, but they can also be administered up to six hours after the event. However, thrombolytics can increase the chances of hemorrhage.

Thrombolytics include:

- Reteplase
- Anistreplase
- Alteplase tissue-type plasminogen activator
- Tenecteplase

Contraindications to thrombolytic therapy are

- Uncontrollable seizures and hypertension
- Low platelet count

- Intracranial AVN
- Neoplasm and aneurysm
- Evidence of cerebral, subarachnoid, and other internal bleeding
- Current anticoagulation therapy

Understanding Neurological Pharmacology

In neurological pharmacology, the most commonly used medications are anticonvulsants. Types of anticonvulsants to expect in patient care:

Clonazepam: Used to treat myoclonic, absence, and akinetic seizures

Carbamazepine: Used to treat tonic-clonic, partial, and absence seizures and also used as an analgesic for trigeminal neuralgia

Felbamate: used to treat Lennox-Gastaut Syndrome

Ethosuximide: Used to treat absence seizures

Lamotrigine: Used to treat primary and partial generalized tonic-clonic seizures and Lennox-Gastaut Syndrome

Gabapentin: Used to treat partial seizures and post-herpetic neuralgia

Levetiracetam: Used to treat generalized tonic-clonic, myoclonic and partial onset seizures

Fosphenytoin: Used to status epilepticus prevention and treatment

Primidone: used to treat psychomotor, Grand mal, and focal seizures

Oxcarbazepine: Used to treat partial seizures

Topiramate: used to treat migraines, partial and tonic-clonic seizures

Phenobarbital: Used to treat local cortical seizures, insomnia, and acute convulsive episodes

Side effects of anticonvulsants

- Double vision
- Ataxia

- Headaches
- Impotence
- Lethargy
- Anorexia
- Weight loss
- Confusion
- Alopecia
- Weight gain
- Somnolence
- Kidney stones
- Agitation
- Nausea
- Rash
- Dizziness
- Menstrual disorders
- Severe pancreatitis
- Blood dyscrasias
- Nephritis
- Abdominal pain
- Dysarthria
- Hepatotoxicity
- Aplastic anemia
- Hepatitis
- Bone marrow failure
- Lupus erythematosus
- Hepatic failure
- Cardiovascular collapse
- Depression
- Hypotension
- Leukopenia
- Liver failure

Using Hypertonic Saline Solution

This solution has a high concentration higher than 0.9% (NS) and is used to treat traumatic brain injury and reduce intracranial pressure and cerebral edema. The concentration is used to draw fluid from the tissue through

osmosis, resulting in improved circulation and decreased edema. The concentrations of hypertonic saline solution range from 2% to 23.4%, administered through central and peripheral lines.

Using Mannitol

This is an osmotic diuretic that may be prescribed in neurological treatment. It helps with the excretion of sodium and water, which could contribute to brain mass and intracranial pressure. It is also used to shrink the blood-brain barrier cells helping other medications get through and become more efficient. Mannitol is intravenously administered, and within 15 minutes, the cerebral spinal fluid pressure begins to show signs of decreasing.

Understanding Gastrointestinal Pharmacology

Gastrointestinal pharmacological measures are used to treat conditions that cause GERD and release excessive stomach acids. These drugs block histamine 2 cell receptors in the stomach, effectively decreasing acid production. The most commonly used H2 antagonists include:

Nizatidine: This drug is used to treat GERD and ulcers

Cimetidine: This drug is used less frequently because it inhibits enzymes resulting in drug interaction with contraceptives and estrogen.

Famotidine: This drug is used with an antacid to increase its efficacy speed. It is also used post-operatively to reduce nausea.

Using Antacids:

Antacids are drugs used to raise stomach acid, thereby reducing its acids and neutralizing the present acids. They are used to treat heartburn and indigestion with rare side effects unless they are taken in excess, or the individual has renal impairment.

Common antacids include:

- Calcium carbonate
- Magnesium hydroxide
- Aluminum hydroxide
- Aluminum hydroxide with aluminum hydroxide

- Alka-Seltzer
- Bismuth subsalicylate

Using Proton pump Inhibitors

Also known as PPIs, these are used more often than histamine receptor antagonists because they interfere with the acid-producing enzyme in the stomach wall. As a result, they reduce stomach acid in cases of GERD, H.pylori, and stomach ulcers. All PPIs have similar action with side effects like stomach upsets and other gastrointestinal issues, rash, and headache. In some patients, they may cause severe muscle pain, but overall they are well tolerated.

Examples of proton pump inhibitors include

- Esomeprazole
- Lansoprazole
- Pantoprazole
- Omeprazole
- Rabeprazole
- Sodium bicarbonate and omeprazole combination

Understanding Integumentary Pharmacology

Topical Anesthesia

When treating wounds, the first course of action is usually to assess whether the wound pain will respond to topical anesthetics. The commonly used topical anesthetic is lidocaine 2 to 4 percent, used during treatment processes like dressing changes and debridement. It may take 15 to 30 minutes after onset to feel its efficacy.

Another commonly used anesthetic is the EMLA cream (Eutectic Mixture of Local Anesthetics) which provides adequate pain control. The cream is applied thickly to a clean wound (about $\frac{1}{4}$ inch cream application with the cream extending to the periwound tissue by $\frac{1}{2}$ an inch). Wrap the wound with plastic wrap and leave it in place for 20 to 60 minutes. That is enough time to numb the tissue, which should remain numb one hour after the wrap removal. One hour is ample time to address the issues related to the wound.

Regional Anesthesia

This injectable anesthesia is administered locally as nerve blocks and about the wound.

Examples of regional anesthesia include

- Lidocaine
- Tetracaine
- Bupivacaine
- Epinephrine

Regional anesthetics are administered as field blockades, where they are injected into the periwound tissue or the wound margins. Or regional nerve blocks, which are single injections that work within a limited duration to provide short relief from treatments. The targeted nerve blocks typically have proximal reach to the affected areas, like nerve blocks near the spine or peripheral nerve blocks near major organs. An example of a targeted nerve block type is the percutaneous lumbar sympathetic block.

Understanding Pharmacologic Pain Management

Pain management is delivered using the WHO pain ladder. This tool progressively increases the potency of pain medication, and it is used for adult and pediatric patients. The nurse begins with the least potent medication and progressively adds a stronger version.



Step one: Give the patient a non-opioid drug that can be used alone or combined with other complementary therapies.

Step two: If there is no change in the pain level, offer mild to moderate level pain-relieving opioids together with complementary poems.

Step three: debilitating and uncontrollable pain is eventually treated using opioids for moderate to severe pain. Give the medication regularly around the clock as scheduled to control and prevent pain. Also, ensure any short-acting medications taken on a PRN basis should be taken before anticipated pain, at the onset of pain, or when pain increases, and not wait until the pain is severe. The goal should always be to keep the pain under control.

Using Acetaminophen

This is considered one of the safest analgesics for long-term use. It is used alone in treating mild pain or with other analgesics for severe pain management. It has excellent results in treating osteoarthritis and

nonspecific musculoskeletal pain. It is, however, used cautiously in patients with kidney or liver impairment and people with a history of alcohol abuse.

Using NSAIDs

These inhibit the COX enzyme that controls prostaglandin formation. COX-1 has been found to affect gastric blood flow, platelet clumping, and mucosal integrity. The common COX and 2 inhibitors are Ibuprofen and aspirin, but Ibuprofen has fewer side effects than aspirin. Other COX-2 inhibitors increase the risk of cardiovascular problems when used for prolonged periods.

Using Oral Transmucosal Fentanyl Citrate

This medication is placed on an oral applicator. The patient then applies it to the buccal mucosal between the gum and the cheek. That ensures rapid absorption and pain relief. The patient should wait 15 minutes between doses and remember that swallowing even part of the drug rather than allowing it to get absorbed entirely can result in a difference in the onset of effects.

Using methadone

This is an opioid that is used to treat severe to chronic pain, and it has long-lasting relief. Methadone is commonly used because it is cheaper than other comparable options. Methadone is also used in treating opioid addiction.,

Using Oxycodone

This is a synthetic formulation opioid used to treat moderate to severe pain. It has an extended-release nature with less possibility of nausea and vomiting. It must be used with caution in patients with Addison's disease, hypothyroidism, lung disease, liver disease, and urethral stricture.

Using Morphine

Morphine has no ceiling dose, which makes it a favorite when treating cancer patients. As tolerance to the medication increases or the patient's pain escalates, the dose can be increased accordingly. The side effects of morphine include respiratory depression, nausea, constipation, chronic spasms, and itching and twitching muscles, among others.

Side effects of opioid analgesics

While these types of analgesics are common and available, they pose a great risk to the body's organs, including:

Central nervous system effects: Euphoria, cough suppression, respiratory depression, truncal rigidity, nausea, and vomiting.

Cardiovascular effects: Reduced blood volume, bradycardia, hypotension, and high cerebral blood flow

Genitourinary effects: Decreased renal function and urine retention

Gastrointestinal effects: Constipation, decrease in hydrochloric acid, gastric motility

However, opioids are the go-to drugs to help care for end-of-life patients to make them more comfortable and lessen their pain. While pain doesn't necessarily increase as death nears, medical experts assume that if there is pain while the patient is conscious, it will continue even when they are unconscious.

Understanding Psychosocial Pharmacology

Antipsychotic medication

Treatment of psychotic conditions can be done using antipsychotics like first-generation:

- Chlorpromazine
- Thioridazine hydrochloride
- Pimozide
- Molindone hydrochloride
- Fluphenazine hydrochloride
- Haloperidol

Or second-generation drugs known as atypical antipsychotics, which are used with bipolar disorders, psychosis, and schizophrenia.

Antidepressants

These drugs treat depression which is treated using SSRIs (selective serotonin reuptake inhibitors). SSRIs prevent serotonin uptake in the synapses for neurotransmission and reduce depression and anxiety symptoms. Other antidepressants are tricyclic antidepressants which block the uptake of serotonin and norepinephrine, and MAOIs, which inhibit monoamine oxidase.

Anti-anxiety medication

The most common anti-anxiety medication is a benzodiazepine which enhances the GABA neurotransmitter; GABA inhibits the firing rate of neurons resulting in a decline in anxiety symptoms.

Understanding Geriatric Pharmacology

Unfortunately, elderly patients are more likely to suffer adverse effects due to medications. In fact, a third of medicine-related hospitalizations are of patients at least 60 years old. Also unfortunate is that elderly patients have at least one or more ongoing health conditions requiring multiple drugs for treatment.

Common difficulties of medication use in geriatric population

- Overuse of prescribed medications
- Adherence to medication use
- Misunderstanding how the medication is used
- Forgetting the dosage, reason, or how the medication is taken
- Misreading the label and taking the wrong medication
- Problems taking whole pills or using the inhaler
- Problems affording the medication resulting in taking “something cheaper.”

Common problems arising from geriatric medication

- Low blood pressure
- Loose stool
- Vertigo
- Urinary retention
- Depression

- Gastrointestinal upset
- Low energy
- Lethargy
- Weakness
- Bewilderment

Reduction in Risk Potential

It is the physician's responsibility to run diagnostic tests on patients to figure out what could be ailing them. There are several diagnostics that patients can be subjected to depending on what ailment they present with. They include

- Cardiovascular diagnostics
- Endocrine diagnostics
- Immunologic and oncologic diagnostics
- Hematologic diagnostics
- Neurologic diagnostics
- Gastrointestinal diagnostics
- Genitourinary diagnostics
- Postoperative management
- Cardiovascular diagnostics

This involved evaluating CK-MB and Creatine kinase (CK) levels which should be done every 6 to 8 hours, especially in a suspected myocardial injury. The overall CK and CK-MB levels rise within the first six hours of a myocardial injury, with peak levels reaching 12 to 24 hours after the injury.

Troponin I and T

These are proteins found in the myocardium and skeletal muscles. The presence of Troponin I is used for detecting myocardial injuries. In case of an injury Troponin I appears in two to six hours, peaks by 20 hours, and then returns to normal within seven days. Troponin T increases in two to six hours and remains elevated, but it goes back to normal within seven days as well.

To diagnose cardiovascular issues, an echocardiograph is used to assess anatomic heart abnormalities, valvular lesions, and blood flow. On the

machine, the transesophageal (TEE) probe shows the left atrium and a concise evaluation of the valvular structure. The Doppler imaging measures blood flow in terms of pressure gradient and velocity, and the bubble study shows if right to left blood flow through a patent foramen ovale is present. Overall the Standard “2D echo” offers essential structural imaging showing any valvular lesions and assessing pericardial disorders.

Endocrine diagnostics

The patient must undergo

A glucose laboratory test

The test shows the levels of glucose in the body and how they impact its performance.

- Normal levels: 70 to 99 mg/dL
- Impaired values: 100 to 125 mg/dL
- Diabetic values: more than 126 mg/dL

Conditions that can increase blood sugar levels include stress, pancreatic disorders, Cushing syndrome, hyperthyroidism, and renal failure.

Medications for high blood sugar levels

- Lithium
- Estrogens
- Steroids
- Diuretics
- Phenytoin
- Use of tricyclic antidepressants

Hemoglobin A1C Lab Test:

Hemoglobin A1C has hemoglobin A which is a glucose molecule. This glucose molecule exists in hemoglobin because hemoglobin retains excess blood glucose. This test should show if there is excess glucose in the blood

over a three-month period. It is an efficient test to evaluate long-term diabetic therapy.

- Normal range: below 6%
- Elevated range: above 7%
- Thyroid Function Test and Antibody Test

This test checks the thyroid gland and related hormones in the body to determine if there is thyroid disease. Also, specific antibodies indicate the presence of thyroid disease. For example, thyroglobulin antibodies are present in 50% of the patients with Grave's disease and 90% of those with Hashimoto's thyroiditis. Lab values showing high TSH indicate hypothyroidism, and a decrease shows hyperthyroidism. There are other endocrine function tests:

Parathyroid: This test checks the parathyroid hormone (PTH) levels and serum calcium levels

Pituitary: This test checks the pituitary hormone serum levels and the hormones of organs targeted by the pituitary gland's hormone.

Adrenal: This test checks the urine and serum (catecholamine) levels as well as norepinephrine and epinephrine.

ACTH and serum cortisol levels: The ACTH stimulation test is used to determine whether the patient has Addison's disease.

Immunologic and oncologic diagnostics

Imaging methods used in oncology

- Traditional radiographs that use x-rays, development on film, or digital methods are used to detect bone tumors and lung cancer.
- Mammography that detects breast cancer
- Angiography that takes serial images using a vascular introduced iodinated contrast media
- Computed tomography or CT scan that uses a rotating source of image digitization and x-rays to get multiple views.
- Ultrasound that uses high-frequency sound waves to produce an image.

- Positron-emission tomography (PET), which uses injected positron emitter tracers
- Single photon emission computed tomography, which uses long half-life radioisotopes

Additional Diagnostic Tools

Frozen sections

These are useful in staging a tumor when surgery is impending, and the decision about the best type of surgery is needed. They are also excellent for indicating information about the tumor removal post-surgery. Unfortunately, it is a time-consuming and very costly procedure, not to mention that freezing can damage tissue and induce distortion.

Flow Cytometry

This is a method of examining cell populations in suspension. The cells are analyzed for various properties. The cells are aspirated into the flow cytometry machine's fluid system, where they mix with a fluid that places them in suspension. Within the machine, a unidirectional flow is maintained so that as each cell passes, a laser sensor picks up photons emitted that are then intensified by photomultiplier tubes. Fluorochromes are added into the mixture to help further clarify the various cell populations. Fluorochrome is a fluorescent dye. The data collected is converted electronically into dot plots or histograms that compare the different characteristics of the cells in the population.

Fine needle aspiration (FNA)

In this method, a small gauge needle is used to extract cells from a tissue area, and the cells are examined for malignancy. FNA is a noninvasive and cheaper option which makes it popular. However, using the fine needle only allows the physician to classify and identify the types of cells involved broadly. It will not help determine the architecture of the mass or its classification. And also, FNA cannot be used for all types of masses.

Hematologic diagnostics

Hematologic diagnostics focus on the blood with lab tests to determine the condition of the blood and evaluate blood samples for any existing disease.

Red Blood Cells (RBCs)

RBCs are also known as erythrocytes. They have a biconcave shape, and with the help of the hemoglobin in them, they carry oxygen to all body parts. RBCs have a typical lifespan of 120 days, and then they are destroyed, and their hemoglobin is either excreted from the body or recycled.

These cells have a heme portion that contains iron that binds to oxygen. RBC counts vary by gender, with males having a higher count of 4.7 to 6.1 million per mm³ and females having 4.2 to 5.4 million per mm³. Blood disorders of RBCs interfere with their production resulting in life-threatening conditions like anemia, bone marrow failure, and hemolysis. The type of anemia determines the morphology of the red blood cells according to

- Size: macrocytes, microcytes, and normocytes
- Color: Normochromic or hypochromic (the color is a reflection of the hemoglobin concentration)
- Shape: round (Spherocytes), sickled (drepanocytes), and irregular (poikilocytes)

Hematology lab tests:

Hemoglobin test: This test checks for normal values to rule out anemia and polycythemia. The normal values of hemoglobin should be:

- Adult males: 14.0 to 17.4 g/dL
- Adult females: 12.0 to 16.0 g/dL

Hematocrit test: This test checks the proportion of RBCs in every liter of blood. It should typically be about three times the hemoglobin number. Normal values are:

Adult males: 39-50%

Adult females: 34-40%

Reticulocyte count test: This test measures bone marrow production.

Normal values are 0.5 to 1.5% of present RBCs.

Mean corpuscular volume: This test measures the size of the RBCs to help determine which type of anemia the patient is suffering from. Normal values for adults should be within 75 to 100 μm^3 .

- Adult males: 84-96 μm^3
- Adult females: 76 -96 μm^3

White Blood Cells (WBCs)

The normal count for white blood cells in adults should be within the range of 4800 to 10000 WBCs. But in acute infections, the number balloons to between 10,000 to 30,000 WBCs. On the other hand, viral infections result in a significant dip in WBCs count, reaching as low as 4,000 or less.

Tests should show the following values during infections to help with diagnosis:

- Normal segmented neutrophils for adults should be 50 to 65% - an increase indicates a systemic, acute, or localized bacterial infection.
- Normal immature neutrophils should be 1-3% - More than this indicates an infection.
- Normal lymphocytes should be 25 -40% - an increase indicates a bacterial or viral infection
- Normal basophils should be 0-1% - a decrease indicates acute infection
- Normal eosinophils should be 0-3% - a decrease indicates acute infection and stress
- Normal monocytes should be 3-7% - an increase during recovery indicates an acute infection is forming.

The C-Reactive Protein and Erythrocyte Sedimentation Rate

This test checks the C-reactive protein levels. The liver releases this protein to respond to inflammatory processes that could cause neutrophils, macrophages, and granulocytes to secrete cytokines. An increase in the C-reactive protein indicates inflammation or infection.

- Normal values of C-reactive protein should be 2.6 -7.6 µg/dL

The Erythrocyte Sedimentation Rate

It is also known as the sed rate, a test used to measure the distance that erythrocytes fall within an hour when dropped in a vertical tube of anticoagulated blood. If the erythrocytes have increased levels of fibrinogen, it indicates an infection. The elevated fibrinogen levels cause the RBCs to fall slower, indicating inflammation or infection.

Normal values should be

- Male children and teens: 0-5mm /hr
- Female children and teens: 0-20mm/hr
- Adult males: 0 -20 mm/hr
- Adult females: 0-30 mm/hr

Finally there is the coagulation profile which measures clotting mechanisms, screens preoperative patients, identifies clotting disorders and diagnoses excessive bleeding or bruising. The lab test measures:

- PT -Prothrombin time which should be 10 to 14 seconds
- PTT - Partial thromboplastin time which should be 25 to 35 seconds
- aPTT - Activated partial thromboplastin time which should be 21 to 35 seconds
- TCT- Thrombin clotting time or TT – Thrombin time which should be 7-12 seconds
- Bleeding time which should be 2-9.5 seconds
- Platelet count which should be 150,000 to 400,000 per µL

Neurological Diagnostics

Lumbar puncture:

This test is also known as the spinal tap, carried out between the 3rd and 4th/4th and 5th lumbar vertebrae. The patient lies in a lateral recumbent position with their knees drawn towards their chest and stays still. After local anesthesia is applied to inhibit pain, the needle is inserted into the subarachnoid space to draw CSF and measure CFS pressure. The standard pressure value should be 70 to 200 mmH₂O.

Normal values of the CSF

- The fluid should be clear and colorless
- Protein levels of 15-45 mg/dL
- Lactic acid levels of less than 25.2mg/dL
- Glucose levels of 60-80 mg/dL
- Negative for cultures
- Have no RBCs
- Have only 0.5/mL WBCs

After a lumbar puncture, the patient should remain prone for at least three hours to reduce the chances of CSF leakage. Lumbar punctures should be done with utmost care to avoid herniation of the brain.

The Queckenstedt's test:

This test is performed by compressing the jugular veins on each side of the neck, noting the pressure, then releasing them and noting the pressure in 10-second intervals. The pressure should rise fast with compression and fall just as fast with release. A slower response or lack of response indicates a blockage of the subarachnoid pathways.

Gastrointestinal Diagnostics

Liver Function Tests:

Bilirubin test: this test checks the ability of the liver to conjugate and excretes bilirubin.

Total protein test: This test measures total protein levels which should be 6.0 to 8.0 g/dL

Prothrombin time test: This test checks the clot detection time, which should be 10 to 14 seconds

Serum ammonia test: This test checks the amount of ammonia which should be 150 to 250 mg/dL

Alkaline phosphatase test: this test checks for biliary tract obstruction. 36-93 units/L in adults indicates an obstruction if there is no bone disease.

Cholesterol test: This test checks for bile duct obstruction or parenchymal disease. Elevated cholesterol levels may indicate bile duct obstruction, and reduced levels may indicate parenchymal disease.

Nutritional Lab Monitoring test:

- Total albumin and protein
- Normal protein values should be 6-8 g/dL
- The dietary requirement for healing of wounds should be 1.25 to 1.5 g/kg/day

Albumin is affected by long-term protein deficiency rather than short-term deficiencies. So albumin levels screening is the best way to determine protein levels.

- Normal albumin values: 3.5 to 5.5 g/dL
- Mild deficiency: 3.0 to 3.5 g/dL
- Moderate deficiency: 2.5 to 3.0 g/dL
- Severe deficiency: less than 2.5 g/dL

Prealbumin Studies:

Monitoring prealbumin helps catch acute nutritional status changes because it reduces quickly in cases of nutritional deficiency and rises in response to adequate nutritional intake. Prealbumin is also a protein produced in the liver (like albumin), so low levels indicate liver disease.

- Normal albumin values: 16-40 mg/dL
- Mild deficiency: 10-15 mg/dL

- Moderate deficiency: 5-9 mg/dL
- Severe deficiency: less than 5 mg/dL

Transferrin Studies

This is another protein produced by the liver, and it helps transport about a third of the body's iron to the bone marrow to manufacture hemoglobin. But in the presence of liver disease, protein deficiency, or anemia, its levels are quickly depressed.

- Normal albumin values: 200-400 mg/dL
- Mild deficiency: 150-200 mg/dL
- Moderate deficiency: 100-150 mg/dL
- Severe deficiency: less than 100 mg/dL

EGD Test

This is the esophagogastroduodenoscopy test, done with a flexible fiberscope fitted with a lit fiber optic lens. The scope allows inspection of the esophagus mucosa, duodenum, and stomach during biopsies or to reveal bleeding. The patient is placed on conscious sedation, and a bite guard is placed in the mouth to prevent them from biting down. The procedure takes 30 minutes, and the airways are properly monitored.

Genitourinary Diagnostics

Renal Function Tests:

Urine and serum (Osmolality) test: Normal values for urine should be 350-900 mOsm/kg/day. Normal values for serum 275 -295 mOsm/kg. Checking the serum levels offers the correct picture of solute in the blood.

- Uric acid test: Normal levels should be 3.0-7.2 mg/dL
- Creatinine clearance test: Normal clearance should be within 24 hours.
- Urine creatinine test: Normal levels should be 11-26 mg/kg/day
- Serum creatinine test: Normal levels are 0.6-1.2 mg/dL
- Blood urea nitrogen test: Normal levels are 7-8 mg/dL
- BUN/Creatinine ratio test: Normal levels should be 10:1

Urinalysis test

It tests the urine sample to determine if there is any kidney impairment or disease involved. During the urinalysis test, the following components are tested:

- The color which should be pale yellow or amber
- The appearance which should be clear
- The odor should be slight. If it has a foul smell, it indicates the presence of bacteria. However, some foods change the odor of urine.
- Sediment: if red cell casts are found, the patient has an acute infection. White cell casts form pyelonephritis, while broad casts indicate a kidney disorder. Leukocytes indicate a urinary tract infection.
- PH, which should range between 4.5 to 8, averaging 5-6
- Urobilinogen which should be 0.1 to 1.0 units
- Glucose, proteins, ketones, blood, bilirubin, and nitrate should be negative in the urine sample

IVP (intravenous pyelogram) Test:

This test is done to identify tumors and structural defects and observe urinary structures. The patient is administered a corticosteroid or antihistamine to minimize an allergic response before being given an IV contrast medium. And then radiographs are taken once per minute for five minutes and then repeated after 15 minutes. Finally, a post-voiding radiograph is done to determine how efficient the bladder is in voiding.

The Radio-nucleotide Renal Scan:

This test is done with dimercaptosuccinic acid, which must be administered via IV. A radioactive element is introduced via the IV, and then a series of CT scans are taken over 20 minutes in four hours. The scan helps assess the kidney's perfusion and function while detecting anomalies like lesions, scars, and muscle atrophy.

The Renal Biopsy:

The renal biopsy removes a small segment of the cortisol tissue to help determine the extent of the kidney disease. It helps identify the extent of problems during acute renal failure, glomerulopathies, transplant rejection and persistent proteinuria and hematuria. During biopsies, it is also possible

to determine the risk of internal bleeding. A biopsy is conducted percutaneously, guided by an ultrasound or fluoroscopy, or it can also be done surgically using a small flank incision.

The Renal Ultrasound:

The renal ultrasound is non-invasive and is used to view urinary structures. If a patient presents with kidney disease of unknown origins, an ultrasound is used to rule out possible obstruction. The ultrasound shows fluid accumulation, masses, malformations, movement of blood through the kidney, changes in kidney size, and obstructions like renal calculi. Remind the patient not to urinate before the ultrasound and to remain in a supine position throughout the procedure. When needed, they may be required to turn to the other side.

Postoperative Management (PONV)

Nausea and vomiting are common in postoperative patients depending on the anesthesia used. The sensations can be delayed up to 24 hours and are more common in patients that use inhalation agents than intravenous agents. The longer the surgery, the higher the chances of PONV. Also, if high doses of nitrous oxide, narcotics, or propofol were used, the higher the likelihood of PONV problems.

Patients with comorbidities require extra care as one illness is treated not to complicate or exacerbate the others. This is also a problem experienced by elderly patients.

Risks in Postoperative Management

Risk of Aspiration

Risk of aspiration from feeding tubes: Aspiration pneumonia is common in older patients because of reduced cough reflexes. So there may not be obvious signs of this aspiration which occurs mostly in people with cognitive impairment, elderly patients, patients with a history of GERD, or those with an altered level of consciousness.

Risk of aspiration from sedation: sedation makes it harder for one to swallow, which increases the likelihood of aspiration. It could occur with

gastric secretions even if the patient's stomach was empty before surgery. Any oral fluids should be withheld until the patient is fully alert to consume them.

Risk of aspiration from swallowing difficulties: Some diseases like Parkinson's, dysphagia, muscular dystrophies, and stroke can make it difficult to swallow, increasing the risk of aspiration. Such patients must eat sitting up and with supervision and only consume soft foods and thickened liquids.

Risk of Insufficient Vascular Perfusion

The risk of insufficient vascular perfusion is increased with any surgical repair. The risks include mechanical obstruction of blood flow, hypervolemia, hypovolemia, hyperventilation, and excessive bleeding resulting in decreased hemoglobin, among others. As a result, the patient may exhibit dyspnea, dysrhythmias, altered mental status, skin pallor, cooling of the skin, no pulse or weak pulse, edema, and cyanosis, among others.

What to Expect Post Operation

The NG tube drainage should be light yellow to green, but the volume may vary. Red to coffee brown may indicate bleeding, which can increase drainage volume.

The stool should range between three to four times daily and then go to one every two to three days. The client's history of bowel movements before the surgery should indicate the normal parameters to expect post-surgery.

Emesis should not be present at all. Any indication of emesis should be monitored and recorded for immediate treatment.

Urine should typically be between 800 and 2000 mL, depending on the patient's age. Monitor the urine for any variations according to the normal expected parameters of the patient.

Post-procedure Complications

There are two main complications after a cardiac procedure:

Catheterization: after cardiac catheterization dysrhythmias including bradycardia, atrial fibrillation, ventricular arrhythmias and conduction abnormalities may occur caused by irritation of the cardiac tissue. This complication is more likely in patients with a history of ECG abnormalities or congenital heart disease.

Surgical site complications: excessive bleeding, arterial tearing, arterial occlusion, clot dislodgement, and infections are some of the complications that may occur at the insertion or surgical site. The surgical site must be assessed regularly for any signs of bleeding.

Some procedures require precise post-operative positioning to avoid complications:

- Arteriovenous fistula formation requires elevation of the extremities
- Bronchoscopy requires the patient to be placed in the semi-Fowler's position to avoid aspiration
- Angiography requires placing a restrain on any extremity used to keep it straight for 6-8 hours.
- Liver biopsy requires positioning on the right side with a pillow below the puncture site
- Ear irrigation requires placing the patient on the affected side to increase drainage
- Abdominal aneurysm requires elevating the head of the bed to a 45 degree angle or below
- Appendectomy requires the patient to be placed in Fowler's position
- Myelogram requires the patient to be in Trendelenburg position with air contrast, with head of the bed elevated for eight hours with water-based contrast and placed flat for six to eight hours with oil contrast.
- Kidney transplant requires the patient to be placed in semi-Fowler's position on their back or on the opposite side of the surgery.
- Cataract removal requires the patient to be placed in semi-Fowler's position on their back or on the opposite side of the surgery.
- Insertion of the nasogastric tube requires the patient to keep the head elevated for at least 30 degrees.
- Tonsillectomy requires patient to be side-lying or prone

- Mitral valve replacement requires the patient to be in Semi-Fowler's position
- Thyroidectomy requires the patient to be in either semi-Fowler's or high Fowler's position
- Amputation of leg requires elevating the limb for 24 hours and to be placed in a prone position at least twice daily.

How to Insert or Remove the OG/NG Tube

- Practice hand hygiene and place the required equipment
- Wear the correct PPE and assess the nostrils for patency. Also assess the patient's level of consciousness to follow instructions and their abdomen for bowel sounds
- Place the patient at 45 to 90 degrees
- Measure the NG/OG tube from the tip of the nose to the ear and then from ear to the xiphoid process and mark it.
- With clean sterile gloves flush the tube with water or lubricate 3-4 inches of it with water soluble lubricant.
- Ask the client to drop their chin down and breathe orally. Insert the NG tube down into the nostril and guide downward along the back of the tongue twisting it if you encounter resistance. The clients should continue breathing through the nose.
- The client can dry swallow or sip some water (if allowed) as the tube is advanced downward nasally.
- Secure the tube and aspirate contents for testing. Verify the placement with x-ray.

How to Maintain Patency of Tubes

- NG tube- flush the tube with 30-50 ml of water or NS every 4-6 hours before and after feeds and administration of medication. Also ensure the tube is not kinked.
- Chest tube – ensure the tube's clamp is open and fluid is not collecting in dependent loops. Keep the drainage unit below the patient's chest level and ensure water levels are correct
- Percutaneous endoscopic gastronomy tube – This tube is cared for like the NG tube

Potential Sources of Infections In Transplant Patients

- Infected donor organs from people with HIV, HBC, HBV and other illnesses.
- Health care workers from their clothing or hands or an illness
- Blood and its products from a contaminated source
- Environmental reservoirs sources like the water system, contaminated surfaces or equipment or nearby demolition sites.

Viral Pathogens in Transplant Patients

- Cytomegalovirus
- Herpes simplex virus
- Hepatitis B and C viruses
- Human herpesvirus-6
- BK virus
- Varicella zoster
- Adenoviruses
- They can be prevented by
- Early diagnosis
- Immunization
- Giving immunoglobulin to certain vulnerable patients
- Reducing immunosuppressive medication before transplant
- Serologic matching
- Antiviral prophylaxis
- High dose acyclovir

Bacterial Infections in Transplant patients

These are commonly caused by

- *Staphylococcus aureus* which occurs in liver, kidney, heart and pancreas transplant patients
- Vancomycin-resistant enterococci which causes up to 15% of all liver failures. Transmission is common in patients who have stayed too long in hospital due to ICU stay.
- *Nocardia* which is found in decaying vegetation and soil and transmission is via inhalation. It mostly affects lung, intestinal and heart transplants.

- To avoid these infections there needs to be environmental monitoring, use of antibiotic prophylaxis and handwashing.

Fungal Infection in Transplant patients

Fungal infection in transplant patients is commonly caused by aspergillus which causes pneumonia and sinusitis. Up to 35% of these infections disseminate systemically but Aspergillus Pneumonia has a mortality rate of 85%. Lung transplant patients are particularly vulnerable within nine months of the surgery. Heart transplant patients have a 1-4% likelihood of the disease within one or two months of the surgery. Unfortunately antifungal prophylaxis have not been proven to be effective but other control strategies include:

Monitoring the Environment

- Improving air filtration with laminar air flow rooms or HEPA filtration for at risk patients
- Keeping construction away from patient care rooms
- Using CT scans instead of chest x-rays for early diagnosis and starting treatment with voriconazole.

Sample of Hot Spot Thinking Measured in the Exam (Next Generation NCLEX-RN)

An 85 year old elderly woman was admitted into hospital with a right tibial fracture (nondisplaced) and fractured left hip. She had fallen and according to her medical history, has a history of osteoporosis that is treated using bisphosphonate. She also has comorbidities including hypertension and diabetes Mellitus that are treated using diuretics and oral hypoglycemic medications respectively. The senior lives alone but her daughter checks in on her daily and takes her to her medical appointments.

Following the fall she underwent surgery (open reduction and internal fixation) on her hip and splint placement on her right leg to immobilize the fracture. Your initial nursing assessment findings when on duty show that the patient:

- Is alert but not responding to questions lucidly
- Blood pressure reading is 160/90 mmHG

- Has hypoactive bowel sounds
- Apical pulse is irregular and 92 beats per minutes
- Left hip surgical dressing is intact and dry
- Splint on the right lower leg is in place and intact but there is no palpable pulse on the leg
- Is in pain when the left leg is touched and there is palpable pulse of 1+ on the leg
- The left foot is rotated externally and is shorter than the right one
- The right leg feels cool to the touch compared to the right leg and it is swollen
- The abduction device is on the floor
- Restless
- Glucose reading is 288 mg/dL on the finger stick blood glucose (FSBG) (16 mmol/L)
- Has oxygen saturation of 95%

Using the assessment findings, which information is critical to the nurse as cues to cognitive nursing skills that will help the patient?

These are signs of

- An elderly adult's range of normal vital signs
- Normal psychosocial and physiologic changes that come with aging
- Of adequate perfusion
- Standard ranges if laboratory values
- Environmental cues
- Time pressure cues

Pro tip:

Identify the most concerning cues, examine the data, and note the abnormal cues for the client's clinical situation.

So what are the concerning cues:

- The abduction device is on the floor
- Glucose reading is 288mg/dL on the finger stick blood glucose (16 mmol/L)
- Blood pressure reading is 160/90 mmHg

- Apical pulse is irregular and 92 beats per minute
- Left hip surgical dressing is intact and dry
- Splint on the right lower leg is in place and intact, but there is no palpable pulse on the leg
- Is in pain when the left leg is touched, and there is palpable pulse of 1+ on the leg
- The left foot is rotated externally and is shorter than the right one
- The right leg feels cool to the touch compared to the left leg and is swollen

What do they mean?

These are signs of:

- Post-operative complications due to the hip surgery
- Normal range of post-operative values
- Complications of the tibial injury

Consider all the possibilities of what is happening and all the likely explanations. In this case, there are two likely possible explanations due to the signs they are experiencing. The first is total dislocation of the operated hip, which is evidenced by the severe pain and shortening and rotation of the left leg. The abduction device is not in place to help mitigate the pain. The second explanation is the possibility of a neurovascular compromise of the right leg resulting in a lack of a palpable pulse and the leg feeling cool to the touch. In an older adult, it is normal to have a pulse of 1+, as is evidenced in the leg.

Additional cues like restlessness and alertness but less than lucid answers are indicators of dealing with acute pain. Elevated vital signs also indicate the patient is dealing with pain, while an above normal finger stick glucose blood reading is regular in diabetic patients after stressors like trauma or surgery.

Now you need to generate solutions to deal with the likely explanations.

- Solution #1: Re-visit the positioning of the left surgical hip to ensure it is done properly
- Solution #2: Offer adequate pain control

- Solution #3: Achieve sufficient perfusion in the lower extremities of both legs
- Solution #4: Promote normal FSBG values
- Solution #5: Improve the vital signs readings

Pro Tip: To generate the best solutions, it is critical to determine the outcome you would like to see on the patient. Then tailor your solutions to ensure the outcome.

For example, neurovascular compromise is typically a problem of perfusion. So you need to reduce the perfusion, but elevating the affected leg can reduce perfusion and increase the potential of harm. Your cognitive skills should help you determine the correct nursing actions based on best practices. The actions should include:

- Maintaining the current position of the legs to counter perfusion
- Using a Doppler device to check the pulse on the right leg
- Notify the surgeon of the musculoskeletal changes
- Making sure the right leg splint is not too tight
- Administering regular insulin to counter the elevated sugar levels and also an analgesic for pain management

Pro Tip: When determining the solutions, it is essential to remember that before notifying the surgeon, there are things you can do like not elevate the patient's leg, check the splint and loosen it if too tight, and also check for a palpable pulse on the lower extremities of both legs.

Have your nurse's notes which should indicate the state you found the patient and the actions you took (or not) before informing the surgeon or primary physician.

Sample of nurse's notes:

11/11/2021 14:30 PM: Alert but disoriented. Returned from surgery to the Post Anesthesia Care Unit (PACU), reporting 8/10 pain and nausea post-operation. Wound closures and splint were intact, and the abdomen was soft. The patient vomited once, a small amount of greenish liquid. Their blood pressure was 160/90, and their apical pulse was 92. Acute pain on

touching the left leg and right leg has no palpable pulse also cool to the touch.

Chapter Eight: Physiological Adaptation Block

Neurological pathophysiology

Encephalopathies:

There are four types of encephalopathies:

Metabolic Encephalopathy: This is damage to the brain that results from a metabolic disturbance. The disturbance is typically the failure to remove toxins from blood due to hepatic failure. As a result, there is a problem with cerebral blood flow, increased cranial pressure, and cerebral edema. It can also occur due to the ingestion of drugs that directly affects the neurons. The final cause can be liver disease complicated by co-morbidities like hemorrhaging, renal failure, and electrolyte imbalances.

Symptoms

- Agitation
- Irritability
- Altered states of consciousness
- Poor coordination
- Seizures
- Disorientation
- Comatose

Treatment:

The treatment is dependent on the underlying cause.

Hypoxic Encephalopathy: This occurs when the brain is oxygen deprived. If the hypoxia is mild, the brain can compensate by increased cerebral blood flow. However, this will not help in severe hypoxic conditions. The causes of hypoxia include insufficient oxygen exchange in the lungs, in the environment, or poor oxygen circulation to the brain. These conditions include cardiac arrest, drowning, asphyxiation, carbon monoxide poisoning, disease, and high altitude sickness.

Symptoms

- Neurological defects
- Confusion leading to coma

Treatment:

The treatment requires immediate identification of the cause and increased perfusion to the brain.

Hypertensive encephalopathy: This occurs during a hypertensive crisis when the autoregulation of the blood-brain barrier is overwhelmed, and the capillaries leak fluid into the tissue. Vasodilation occurs, resulting in cerebral edema. While this type of encephalopathy is rare, it is common in middle-aged males with a long history of hypertension.

Symptoms

- Non-specific neurological defects
- Confusion and other alterations to the mental state
- Seizures
- Coma
- Constant headache
- Vomiting and nausea

Treatment:

The treatment requires

- Administering nitroprusside sodium
- Positioning the patient to avoid obstruction of venous return from the head
- Blood pressure monitoring
- Administering seizure control medication
- Controlling metabolic demand
- Monitoring blood gas
- Administering barbiturates, lidocaine, and diuretics as required

Infectious encephalopathy: This occurs when the brain is affected by a wide range of bacteria, viruses, and prions.

Symptoms

- Cognitive impairment
- Seizures
- Consciousness and personality alterations
- Dysphagia
- Neuromuscular impairment featuring muscle atrophy and spasticity/tremors
- Treatment:
 - The treatment depends on the cause
 - Antibiotic treatment may help with bacterial infections
 - Aggressive antiretroviral treatment may reverse the damage in HIV-related encephalopathy if damage has not occurred.
 - Viral infections can be self-limiting, while prion infections are not treatable

Cerebral Aneurysms: This is the dilation and weakening of the cerebral artery due to either congenital reasons or direct trauma and infection. Most aneurysms (90%) are due to congenital causes, and the remaining 10% are from infections and trauma. Cerebral aneurysms are classified into four:

- **Saccular:** This is the most common congenital form of cerebral aneurysm which grows at the Circle of Willis.
- **Fusiform:** This one is large and irregularly shaped increasing cranial pressure but it rarely ruptures.
- **Dissecting:** This one is secondary to trauma or disease and is characterized by walls tearing and blood leaking into layers
- **Mycotic:** This one is rare only occurring secondary to a bacterial infection or aseptic emboli.
- **Pseudoaneurysm:** This is a small lesion resulting from chronic hypertension.

Intracranial/intraventricular hemorrhage

This can occur when bleeding occurs between the skull and the dura, pushing the brain inward and forward. That Intracranial/intraventricular

hemorrhage is known as an epidural hemorrhage. On the other hand, a subdural hemorrhage occurs between the dura and the cerebrum from tears in the subdural space cortical veins. This one develops slower than the epidural hemorrhage, and it is a typical result of the trauma.

There is also subarachnoid bleeding which may occur due to a rupture of a saccular aneurysm or trauma. Symptoms of Intracranial/intraventricular hemorrhage increase as the cranial pressure rises:

Symptoms

- Grade I: No symptoms
- Grade II: moderate to severe headache with cranial nerve palsy and nuchal rigidity
- Grade III: progression to confusion and focal deficits
- Grade IV: Stupor, with moderate to severe hemiparesis and vegetative disturbances
- Grade V: comatose state

Treatment:

Identify the underlying cause and treat it. Monitor for re-bleeds and administer antiseizure and antihypertensive medication. Where necessary, use surgical repair.

Hydrocephalus: This occurs due to an imbalance between the production and absorption of CSF (cerebral spinal fluid) in the ventricles. There are two types of CSF

- Communicating: the CSF flows between ventricles but isn't absorbed into the subarachnoid space
- Noncommunicating: the CSF flow is obstructed between ventricles due to the aqueduct of Sylvius stenosis.

Symptoms

- Headaches relieved by vomiting
- Poor bladder control
- Ataxia
- Lethargy and irritability

- Visual disorders
- Papilledema
- Cognitive impairment

Treatment:

Treatment begins with MRI and CT Scans, and the treatment varies depending on the underlying cause. However, most cases of hydrocephalus are resolved using a third ventriculostomy or a ventriculoperitoneal shunt.

Spinal cord injuries: These result from blunt trauma and mechanical damage that results in hemorrhage, ischemia, and edema. The symptoms of spinal cord injuries depend on the type and degree of injuries. Patients may develop hypoxia due to respiratory dysfunction. Treatment may include rehabilitation therapy, counseling, bowel training, use of analgesics, and assisted mobility.

Bacterial meningitis: It is caused by a wide range of bacteria that enter the central nervous system from secondary infections like invasive devices, surgical wounds, penetrating trauma, or nasal colonization.

Symptoms

- Fever
- Chills
- Seizures
- Severe headaches
- Nuchal rigidity

Treatment:

The treatment uses IV antibiotics and supportive care

Fungal meningitis: it is caused by the introduction of a fungal organism in the CSF, subarachnoid space and meninges. It is the least common form of meningitis that mostly affects patients with compromised immunities like HIV, cancer and other immunodeficient patients.

Symptoms

- Headaches

- Fever
- Stiff neck
- Photophobia
- Mental alertness changes

Treatment:

The treatment uses antifungals over a long course of time.

Multiple sclerosis: This is an autoimmune disorder of the central nervous system that damages the myelin sheath nerves. The scar tissue that comes from the damage prevents the conduction of nerve impulses.

Symptoms

- Cognitive impairment
- Bladder and bowel dysfunction
- Vision impairment
- Pain
- Speech impairment

Treatment:

Treatment is to shorten the episodes and slow the progression of the disease through hormonal treatment, immunosuppressants, glucocorticoids, and immunomodulators.

ALS: this is a degenerative disease progressively resulting in severe muscle weakness, muscle atrophy, respiratory dysfunction, and even paralysis.

Treatment:

The treatment uses nebulizers, antibiotics, and mechanical ventilation.

Parkinson's disease: is a motor system disorder caused by the degeneration of brain cells that produce dopamine.

Symptoms

- Cognitive impairment
- Poor posture
- Akinesia

- Face and limb tremors
- Speech impairment
- Mobility and swallowing problems

Treatment:

Treatment is to provide symptomatic support, dopamine therapy, and anticholinergics. In cases of treatment-induced Parkinson's, terminate the use of the drugs.

Cerebral Palsy: This is a non-progressive motor dysfunction condition caused by CNS damage due to trauma or congenital issues. It manifests in four ways:

- Spastic where there is damage to the pyramidal tract or cerebral cortex
- Ataxic where there is damage to the extrapyramidal cerebellum
- Dyskinetic where there is damage to the extrapyramidal and basal ganglia
- Mixed where all the above occur.

Symptoms

- Hypertonia and hypotonia
- Athetosis
- Ataxia
- Quadriplegia
- Hemiplegia
- Diplegia

Epilepsy: Treatment is individualized for epilepsy from a history of seizure activity. One drug is administered, monitored, adjusted, or changed according to its efficacy. In some cases, anticonvulsants help at the beginning, and antiepileptic medications are added.

Stroke: This is caused by a ruptured cerebral artery (hemorrhagic stroke) or interruption of blood flow to the brain (ischemic stroke). In the former, not only is there a lack of oxygen but also edema, while the latter situation is only a lack of oxygen to the brain. 80% of strokes are ischemic.

Treatment entails reduction of blood pressure and using osmotic diuretics, anticoagulants, and surgical interventions where necessary.

Head Trauma: This is where a blunt force hits the head and causes swelling or bleeding. A severe blow to the head will cause significant neurological damage due to torn vessels, damaged brain stem, bruising, and compression.

Head trauma results in

- Concussions which are diffuse areas of bleeding
- Contusions which are tears and lacerations to the brain tissue
- Fractures which are penetrating wounds that cause cerebral lacerations
- Traumatic brain injury which causes an alteration in the brain's function

Dementia: This is the progressive loss of memory that is irreversible and chronic.

Types of dementia

- Mixed dementia which is a combination of different dementias
- Dementia with Lewy Bodies which is similar to Alzheimer's
- Frontotemporal dementia that causes changes in personality and behavior
- Parkinson's dementia that impairs decision-making and causes difficulty concentrating
- Creutzfeldt-Jacob disease which causes impaired memory, poor coordination, and behavioral changes
- Vascular dementia which causes memory loss
- Normal pressure hydrocephalus that causes urinary incontinence, ataxia, and memory loss.

Neurological Procedures and Interventions

- Hematoma Evacuation –this can be done using needle aspiration, burr holes, endoscopic craniotomy, or direct surgical craniotomy.

- Craniotomies – this procedure is done using micro-endoscopic equipment with a wide surgical opening to allow access to the required instruments.
- Ventricular drains – These are drains inserted into the right brain's lateral ventricle to drain CSF associated with hydrocephalus.
- Lumbar drains - This drain is inserted into the lumbar region to drain CSF reducing intracranial pressure, combat shunt infection, to treat hydrocephalus and dural fistula.

Endocrine Pathophysiology

Diabetes mellitus one and two: This is the common form of diabetes that is more prevalent in adults, and the risk increases with age. As one ages, the body's ability to handle glucose is reduced, and insulin resistance also tends to increase. Diabetic ketoacidosis is a complication of type one diabetes mellitus which arises due to non-compliance with treatment, stress, secondary illnesses, or lack of proper diagnosis.

Symptoms:

- Keto breathe, which is fruity smelling breath
- Fluid imbalance
- Loss of potassium and other electrolytes
- Life-threatening cardiac arrhythmias
- Vomiting and nausea
- Abdominal pain and loss of appetite
- Lethargy, malaise, and even coma

Treatment:

- Fluid resuscitation with isotonic fluids
- Insulin injections
- Potassium drip
- Sodium and magnesium drip if sodium levels are affected by the potassium drip
- Provide electrolytes to improve the fluid imbalance

Diabetes Insipidus: This is caused by low levels of ADH (the antidiuretic hormone). It can develop due to brain tumors, meningitis, head trauma,

surgical ablation, metastatic tumors, irradiation of the pituitary gland, or encephalitis.

Symptoms

- Ingesting too much water (polydipsia)
- Excreting large volumes of very dilute urine (polyuria)
- Quick developing dehydration and hypovolemia

Treatment:

Administration of hormonal drugs and non-hormonal drugs according to the treatment requirement.

Acute Hypoglycemia: This occurs due to hyperplasia or pancreatic islet tumors resulting in a rise in insulin production. It can also come from the use of insulin to manage diabetes mellitus.

Symptoms:

- Elevated blood glucose levels
- Seizures
- Respiratory distress
- Cognitive impairment
- Lethargy
- Tremors
- Tachycardia
- Hypothermia
- Diaphoresis

Treatment:

- Glucose administration to improve blood sugar levels
- Suppression of insulin production
- Continuous monitoring

HHNK: This condition occurs in people with no diabetes or mild type 2 diabetes. It leads to hyperglycemia and osmotic diuresis.

Symptoms

- Dehydration

- Polyuria
- Tachycardia
- Seizures
- Hypotension

Treatment:

- Insulin drip
- Frequent blood sugar monitoring
- Intravenous administration of electrolyte

SIADH: This condition is related to the oversecretion of the posterior pituitary gland. The kidneys are forced to reabsorb fluids resulting in fluid retention and a reduction in sodium levels. It can also cause brain tumors and other CNS disorders.

Symptoms

- Edema
- Stomach cramps
- Anorexia
- Seizures
- Crackles on auscultation

Treatment:

- Correcting fluid volume and electrolytes
- Seizure precautions
- Monitor using output.

Addison's disease: This condition is caused by damage to the adrenal cortex. The adrenal cortex damage can result in autoimmune disorders and genetic disorders. It is a life-threatening condition if left untreated. Exacerbated Addison disease can result in Adrenal crisis. Adrenal crisis is sudden and rapidly fatal if not addressed fast.

Symptoms

- Chronic weakness
- Stomach pain with nausea and vomiting
- Craving salt or licorice

- Hypotension and hypoglycemia
- Seizures

Treatment:

Treatment is by hormone replacement therapy

Hyperthyroidism: This condition results from excess production of thyroid hormones due to immunoglobulins abnormally stimulating the thyroid gland. Excessive thyroid medication can also cause the condition.

Symptoms

- Hyperexcitability
- Tachycardia
- Increased systolic BP
- Hand tremors
- Progressive muscular weakness
- Bulging eyes (Exophthalmos)
- Increased appetite
- Treatment:
 - Radioactive iodine
 - Antithyroid medications
 - Removal of the thyroid by surgery

Thyrotoxic Storm is a severe type of hyperthyroidism caused by stress, injury, or surgery, making it very sudden.

Hypothyroidism: This is a condition that is caused by the thyroid producing inadequate hormone levels. The symptoms may vary from mild to severe.

Symptoms

- Thinning hair or thickening skin
- Low pulse rate
- Subnormal temperature
- Hoarseness
- Menstrual disturbances
- Treatment:

- Involves hormone replacement
- Monitoring of the cardiac status

Cushing Syndrome and Disease: This condition is caused by increased cortisol levels, especially due to steroid treatment.

Symptoms

- Muscle weakness
- Muscular atrophy
- Thin arms and legs with truncal obesity
- Buffalo hump
- Round facies
- Purple striae across the abdomen

Treatment

Treatment involves adrenal adenoma or the pituitary adenoma

PAGET's Disease: This condition causes disorganized osteoid formation and high bone turnover. It may present bone pain and also deformities. Treatment involves managing complications like spinal cord compression, CHF, and nerve entrapment.

Sample Next Generation NCLEX-RN question: Extended Multiple Response Thinking Question

This morning you have to assess a 40-year-old female patient that just had a total thyroidectomy last evening using the chart below:

Vital Signs	
Temperature	36.7 degrees Celsius or 98 degrees Fahrenheit
Oxygen saturation	110/70 mmHg
Blood pressure	100% 2 L/min via nasal cannula
Respirations	22 breaths per minute

Heart rate	84 beats/min
------------	--------------

Laboratory tests from this morning	
Serum sodium	141 mEq/L (141 mmol/L)
Hematocrit	0.35 or 35%
Serum calcium	8.5 mgEq/L (2.12 mmol/L)
Serum potassium	3.9 mEq/L (3.9 mmol/L)

Your physical assessment of the patient this morning at the beginning of the shift reveals:

The patient is experiencing throat pain (7 on a scale of 1-10)

The patient has clear lung sounds in all lung fields and no respiratory distress

The patient has active bowel sounds

The patient's surgical dressing is intact

The patient reports hoarseness sometimes

Following your assessment, what is the best nursing action to take? Select all that apply

- A. Assuage the patient's fear and let them know that hoarseness is normal and temporary
- B. Examine the client's throat for bleeding behind the neck
- C. Examine for muscle twitching and tingling
- D. Perform checks on orthostatic blood pressure
- E. Compare the patient's current and preoperative hematocrit values
- F. Administer an analgesic

- G. Place the patient in a flat position to increase their blood pressure
- H. Request for an oral potassium prescription

Answer: A, B, C, E, F, and G

It makes sense that you give the patient an analgesic since they are reporting pain levels of 7 out of 10. That indicates uncontrolled surgical pain because the desired pain level post-surgery is between 2 and 3. Since hypocalcemia may occur due to thyroid removal that injures one or both parathyroid glands, calcium levels may be affected. So you must check for signs of low calcium which is indicated by tingling or twitching muscles especially around the mouth. Checking the hematocrit levels lets you know if the patient is bleeding (low hematocrit levels indicate bleeding). Fortunately, hoarseness is to be expected with thyroid removal as the laryngeal nerve may be bruised or irritated during the surgery.

Immunologic and Oncologic Pathophysiology

Immune Deficiencies:

These are inherited disorders that cause the body's immune system not to function properly. They may involve low counts of platelets, antibodies, or defective cells. Types of Immune deficiencies:

Congenital agammaglobulinemia: This makes an individual susceptible to recurrent pyogenic infections.

Common variable immunodeficiency: is a deficiency due to lacking plasma cells and absent B-cell differentiation resulting in a high risk of GI malignancy, B-cell neoplasm, or autoimmune diseases.

Wiskott-Aldrich Syndrome: this is a combination of thrombocytopenia, immunodeficiency, and eczema, but it can be treated successfully.

Leukopenia: This condition is characterized by a low white blood cell count. With fewer circulation WBCs the body is more vulnerable to infections. Both Leukopenia and neutropenia occur when WBCs are low in number due to low production or destruction.

Neutropenia: This condition is caused by a low count of neutrophils for three consecutive months. It can be life-threatening because it results in sepsis. In fact, around 70% of patients who have a fever while suffering from neutropenia die within 48 hours if they don't receive aggressive treatment.

Lymphedema: It is caused by untreated edema, and it can become a chronic condition marked by swelling and fluid accumulation. There is usually an increase in adipose tissue, which causes the skin to thicken and change color, texture, and temperature.

HIV/AIDS: This condition is a progression of infection due to immune deficiency caused by the human immunodeficiency virus. There are many symptoms depending on the type of diagnosis but more than half of the patients present with the following typical symptoms:

Symptoms:

- Fever
- Pharyngitis
- Rash
- Lymphadenopathy
- Myalgia

Treatment:

Treatment is to manage infections and cure opportunistic infections. There is no cure for the virus itself. The patients are put on highly active antiretrovirals, which consist of three or more drugs used concurrently.

Leukemia: This is a form of cancer with proliferating cells that affect normal cells by depriving them of nutrition. It depresses the bone marrow processes affecting the formation of all blood elements. Treatment includes using

- ❖ Induction therapy to induce remission so that the bone marrow is clear to resume function and RBC count is normal.
- ❖ Consolidation therapy kills any cells that have escaped the induction process.

- ❖ Maintenance therapy continues for another two to three years with less intense chemotherapy to maintain remission.

Hodgkin's disease: This is a form of cancer originating in the lymphatic system. It causes immune system impairment, eventually spreading outside the lymphatic system and affecting other organs.

Symptoms

- Painless but enlarged lymph nodes
- Night sweats and fever with chills
- Anorexia
- Opportunistic infections

Treatment:

- Patient stabilization
- Treating the opportunistic infections
- Radiation and chemotherapy

Lung Cancer: This is cancer that attacks the lung cells, causing dysfunction in the organ. It can be classified as SCLC (small cell lung cancer), which is an aggressive form of cancer found in smokers, or NCLC (non-small cell lung cancer), which describes the other forms of lung cancer that are not SCLC.

Treatment is generally dependent on the spread of the disease. If it is limited, chemotherapy and irradiation of the chest and brain are performed. Stage four lung cancer patients receive palliative care to improve their quality of life.

Breast Cancer: This cancer affects the breast tissue, which can extend into the chest wall or skin. Once this happens, there is need for multiple treatment strategies, which include surgery, chemotherapy, and irradiation.

Colon cancer: This is cancer that affects the colon, and most of the cases are identified after the patient is 50 years old. The risk of colon cancer can be dietary consumption of high fat and low fiber foods. The symptoms include anemia, fatigue, changes in bowel habits, and weight loss. A

colonoscopy is used as a diagnostic tool, and treatment involves surgical interventions and chemotherapy.

Skin Cancer: Also known as melanoma, the severity of these cancers is dependent on the depth of the lesion. Treatment includes chemotherapy and, in some cases, surgical interventions.

Prostate cancer: This cancer affects men only because it targets the prostate gland. Diet plays a massive role in causing prostate cancer, like the consumption of red meat cooked at high temperatures. This releases highly aromatic compounds that are correlated to cancer development. Some ethnicities are more prone to prostate cancer, like African Americans, but that is primarily due to diet.

Sample Next Generation NCLEX-RN question: Cloze Response Thinking Question

A 55-year-old menopausal patient is concerned about breast cancer because she is at a high risk of developing the disease. Her sister and mother both had breast cancer, and she is afraid she will get it eventually. You need to teach the patient about evidence-based guidelines regarding breast cancer screening and management. Select the most likely options for the missing information in the below paragraph from the two lists below.

The client should practice frequent _____ and have a _____ annually. A clinical breast examination must be performed by a primary health care provider as part of your regular annual health checkup. The options to reduce the risk of breast cancer consider _____, _____ and also _____.

Options for 1	Options for 2
Breast MRI screening	Prophylactic oophorectomy

Mammogram	Prophylactic mastectomy
Genetic testing	Vaginal hysterectomy
Breast self-awareness	Breast reduction
Bone density scan	Antiestrogen drug therapy
Clinical breast examination	Testosterone replacement

The client should practice frequent **breast awareness** and have a **mammogram** annually. A clinical breast examination must be performed by a primary health care provider as part of your regular annual health checkup. The options to reduce the risk of breast cancer consider **prophylactic oophorectomy**, **prophylactic mastectomy** and also **anti-estrogen drug therapy**.

Hematologic Pathophysiology

Anemia: This is a condition that occurs when there is insufficient red blood cells to effectively carry oxygen throughout the body. The body compensates for the deficiency by increasing cardiac output and redistributing blood to the heart and brain. Anemia occurs due to blood loss, destruction of blood cells, or decreased production of RBCs.

Symptoms:

- Fatigue
- Skin pallor
- Hypotension
- Tachycardia
- Shortness of breath
- Chest pain
- Jaundice

Treatment:

Treat anemia focuses on treating the underlying issue. Parenteral iron is given to patients with iron deficiency anemias from chronic blood loss or

poor iron absorption.

Polycythemia Vera: This condition is characterized by abnormal production of blood cells within the bone marrow. It is more prevalent in men over 40 years old and is related to hypoxia-causing conditions. The condition causes increased blood viscosity.

Symptoms:

- Fatigue, dizziness, weakness
- Headache
- Dyspnea
- Vision disturbances
- Blue tinge to the skin and red lesions
- Stroke, hemorrhage

Treatment:

Treatment involves phlebotomy, which removes 500 ml of blood to reduce blood viscosity. This is to be repeated weekly until the patient's hematocrit stabilizes (less than 45% is ideal). Interferon may be used to reduce the need for phlebotomy, and there may also be a need for chemotherapy to suppress bone marrow production.

Sickle cell disease: This condition is caused by a recessive genetic disorder of chromosome 11. It causes defective hemoglobin so that the RBCs become inflexible and sickle-shaped. The RBCs tend to clump in small groups resulting in blockages that cause extreme pain. Sickle cell anemia is the most severe form of sickle cell disease.

Symptoms:

- Infarctions in main organs
- Severe pain
- Damage to organs
- Rapid spleen and liver enlargement
- Seizures
- Retinopathy
- Pulmonary hypertension

Treatment:

- Prophylactic penicillin to prevent pneumonia infection
- Blood transfusion
- Analgesics for pain during crises
- IV fluids to avoid dehydration
- Oxygen for pulmonary disease and heart failure
- Folic Acid for anemia
- Partial chimerism (a mixture of donor and patient bone marrow stem cells)

Von Willebrand Disease: This is a grouping of genetic and congenital bleeding disorders. The lack of or deficiency of the von Willebrand glycoprotein means that the clotting mechanism is impaired, so there is no clotting during a bleed. Types of Von Willebrand Disease:

- Type I: features low levels of vWF
- Type II: features abnormal vWF levels
- Type III: absence of vWF

Symptoms:

- Bruising
- Menorrhagia
- Hemorrhages
- Recurrent epistaxis

Treatment:

The patient is administered desmopressin acetate nasally and parentally to stimulate the production of the clotting factors.

Hemophilia: This is an inherited disorder that affects a person's clotting factors. There are three types of hemophilia:

- Type A: occurs in 90% of the patients – The patient lacks clotting factor VIII
- Type B: The patient lacks clotting factor IX
- Type C: The patient lacks clotting factor XI

- Type B and C are x-linked disorders meaning they affect males only. The first symptoms of hemophilia often occur in infancy as the child becomes active with frequent bruising.

Symptoms:

- Excessive bleeding even with mild cases
- Spontaneous hemorrhaging anywhere in the body but especially in the joints
- Unexplained bleeding, bruising, joint pain, and swelling
- Mucosal bleeding

Treatment:

- Infusion of type C plasma
- Infusion of clotting factors from donor blood or genetically engineered
- Administration of desmopressin acetate to stimulate clotting factor production

DIC (Disseminated Intravascular Coagulation): This condition is a secondary disorder triggered by trauma, sepsis, heart disease, severe viral infections, and necrotizing enterocolitis. DIC causes both hemorrhage and coagulation simultaneously, placing the patient at a high risk of fatality.

Symptoms:

- Excessive bleeding from venous or surgical sites
- Hypotension
- Acute shock
- GI bleeding with distension or bloody stool
- Decreased fibrinogen, platelets count, and fragmented red blood cells

Treatment:

- Treat the underlying problem
- Massive transfusion or replacement of blood products like fresh frozen plasma and platelets
- Increase the fibrinogen levels
- Administration of anticoagulation therapy

Thrombocytopenia: This is a deficiency of circulating platelets in the blood, which is caused by the destruction of platelets or the low production of platelets. The use of medication can cause thrombocytopenia, specifically heparin, 4-14 days post-therapy.

Symptoms:

- Petechiae
- Epistaxis
- Pallor
- Fatigue
- Blood in stool or urine
- Jaundice
- Gum or mouth bleeding

Treatment:

- Treat the underlying problem
- Platelet transfusion

Hematologic Procedures and Interventions

Transfusions: The transfusion of packed red blood cells, fresh frozen plasma, or platelet concentrates

Autotransfusion: collect the patient's blood and re-infuse it into them, especially if another donor's blood is not available.

Leukocyte depletion: This involves the transfusion of RBCs and platelets to introduce leukocytes into the patient's body.

Exchange transfusion: This involves replacing the patient's blood with donor blood to eliminate sickle cell anemia and toxins.

Blood conservation: This minimizes blood loss during surgical procedures, maintains hematocrit at acceptable levels, and minimizes oxygen consumption during surgery.

Sample Next Generation NCLEX-RN Hematology question: Extended multiple responses question

A 20-year-old African American client reports chest discomfort, shortness of breath, fatigue, and three days of fever. She is admitted with sickle cell disease and pneumonia. The physician prescribed hydroxyurea to reduce the sickling and painful points of SCD. What critical information would you give about hydroxyurea? Select all that apply.

- A. The drug can lower your RBCs and platelet count, so follow up on all lab tests
- B. Discontinue the drug after improved blood counts
- C. Use contraception to avoid pregnancy because the drug can cause congenital disabilities in babies
- D. Report any increase in urination because this drug can cause diabetes mellitus
- E. Follow up on your medical appointments because this drug can cause several types of cancers
- F. Hydroxyurea can cure sickle cell disease, but you must live a healthy lifestyle
- G. Avoid people with infections or public places with large crowds

Answer: A, C, E, and G

Sickle cell disease does not have a cure, but hydroxyurea can help manage sickle cell crises. Also, hydroxyurea can result in congenital disabilities, harm the baby in utero, and cause some cancers. Using the drug also suppresses the function of the bone marrow resulting in low RBCs and Platelet counts. So it is vital to discontinue the drug after the crisis is over to enable the RBCs and platelet count to improve. Finally, the use of the drug makes one susceptible to sepsis and infection, so one must avoid crowds, public gatherings, and other people with infection.

Gastrointestinal Pathophysiology

Appendicitis: This is the inflammation of the appendix that is caused by pressure within the lumen or lumen obstruction. The condition can occur at all ages, but diagnosis can be difficult because the exact location of the

appendix varies in different people. In children under two years, the condition may present with peritonitis:

Symptoms:

- Severe abdominal pain
- Anorexia
- Malaise
- Fever developing after 24 hours
- Nausea and vomiting
- Flatulence and bowel irregularity

Treatment:

The treatment of appendicitis is the surgical removal of the appendix.

Gastritis: This is the inflammation of the epithelium and endothelium of the stomach. Erosive gastritis is caused by alcohol, illness, portal hypertension, mechanical ventilation, sepsis, organ failure, burns, and severe illnesses. Non-evasive gastritis is caused by pernicious anemia or H. Pylori infection.

Gastroenteritis: There are three forms of gastroenteritis: Bacterial, viral, and parasitic. Viral gastroenteritis is synonymous with rotavirus and norovirus, which causes diarrhea, nausea, vomiting, lack of appetite, cramping, and fever. Bacterial gastroenteritis features salmonella, Escherichia coli and Shigella spp. Parasitic gastroenteritis features giardia intestinalis, a waterborne disease, and cryptosporidium parvum due to contact with fecal-contaminated water.

Peritonitis: This is inflammation of the peritoneum due to an infection of the GI. It is commonly a result of a ruptured appendix, perforated bowel, abdominal surgery or trauma, chemotherapy, or peritoneal dialysis.

Symptoms:

- Severe abdominal pain
- Abdominal rigidity
- Fever
- Tachycardia

- Paralytic ileus
- Nausea and vomiting

Treatment:

The treatment of appendicitis involves the intravenous infusion of fluids and electrolytes, broad-spectrum antibiotics, and laparoscopy to determine the cause of the peritonitis.

Intestinal Perforation: This is a complete or partial tear in the intestinal wall which leaks intestinal contents into the peritoneum. It can be caused by trauma, appendicitis, NSAIDs, bacterial infections, and procedures like colonoscopy, laparoscopy, endoscopy, and radiotherapy.

Symptoms:

- Severe abdominal pain
- Abdominal distension and rigidity
- Fever
- Lack of bowel sounds
- Paralytic ileus
- Tachycardia
- Abscess and sepsis
- Nausea and vomiting

Treatment:

Treatment is antibiotic therapy, and in some cases, the abdominal wound may be left open to heal to prevent compartment syndrome.

Peptic Ulcer Disease: This is ulcerations of the stomach and duodenum. The ulcers may be caused by H. pylori which results in chronic inflammation of the gastric mucosa.

Symptoms:

- Abdominal pain
- Nausea and vomiting
- Indigestion
- Epigastric
- GI bleeding

Treatment:

Treatment involves using antibiotics for H. pylori, proton pump inhibitors, and histamine receptor antagonists.

Bowel infarctions and bowel obstruction occur due to a mechanical blockage of the intestinal passage preventing its contents from passing through. The blockage could be because of paralytic ileus or occlusion of the lumen, or lumen constriction.

On the other hand, bowel infarction is ischemia of the intestines due to severe blood supply restriction. The restriction can result from strangulated bowel, untreated bowel obstruction, or occlusion of arteries. Symptoms include acute abdominal pain and shock. The mortality rate of bowel infarction is very high. Treatment includes treating the underlying cause, inserting an NG tube, and improving mesenteric blood flow.

Crohn's disease: This condition manifests with inflammation of the GI system. Although it is a chronic condition, patients with the fulminant disease can need emergency intervention for Crohn's disease.

Symptoms:

- Abdominal pain
- Night fevers
- Fever
- Weight loss
- Rectal hemorrhage
- Diarrhea
- Abscess and fistula
- Nausea and vomiting

Treatment:

Treatment involves hospitalization to monitor toxic symptoms and treat oral lesions.

Inflammatory Bowel Disease: This is the superficial inflammation of the mucosa of the rectum and colon. The inflammation causes ulcerations

where it has destroyed cells, and the ulcerations may bleed and produce purulent pus.

Symptoms:

- Abdominal pain
- Diarrhea
- Anorexia
- Anemia
- Fecal surgery
- Weight loss
- Rectal bleeding
- Arthritis
- Eye inflammation
- Liver disease

Treatment:

- Antibiotic therapy
- Use of NSAIDs and antidiarrheals
- Use of aminosalicylates

Hernias: These are protrusions through the abdominal wall, and they can occur in adults and children. Hernias contain tissue, fat, or bowel, and there are five types of hernias:

Femoral hernias: They occur primarily in women and may incarcerate

Direct inguinal hernias: They occur in adults and are rarely incarcerated

Indirect inguinal hernias: They occur in males due to a congenital defect that is common in males. They can also occur in females, and they can incarcerate.

Umbilical hernias: They occur in children of African descent but rarely incarcerate

Incisional hernias: They are caused by wound infections and obesity, and they may incarcerate.

Symptoms:

- Severe pain
- Temperature
- Tachycardia
- Nausea and vomiting
- Soft mass at the site of the hernia

Treatment:

- Surgical removal
- Administration of broad-spectrum antibiotics
- Reduction in cases of very recent incarceration

Acute Pancreatitis: This condition is related to long-standing alcoholism and is also triggered by drugs like oral contraceptives, acetaminophen, tetracycline, and thiazides.

Symptoms:

- Acute pain
- Abdominal distension
- Nausea and vomiting

Treatment involves the administration of antibiotics, antiemetics, IV fluids, and analgesics. There may be need for surgical interventions to remove the gallbladder and biliary duct in case it causes recurrent pancreatitis.

Gastrointestinal procedures and interventions

- Peg tubes: they are used as feeding tubes
- NG tubes: used to drain gastric secretions
- Enteral support: provides nutrition to the patient via a tube
- Parenteral support: Provides nutrition by completely bypassing the digestive system
- Gastrointestinal surgery: a procedure that removes the head of the gallbladder, pancreas, part of the bile duct, duodenum, and distal portion of the stomach.

Sample of Next Generation NCLEX-RN question: Hot Spot Thinking Question

A 45-year-old female patient is admitted to the telemetry unit of the hospital because of a syncopal episode. From her medical history, you can see she has chronic back pain, dyspepsia, atrial fibrillation, and some urinary tract infection, but she denies both cigarette and alcohol use. She does admit to drinking over ten 12-ounce carbonated beverages daily; part of her medication is Warfarin. The latest diagnosis is probably peptic ulcer disease. From her assessment, this is the data you collected:

1. The patient is alert and oriented
2. The heart rate is 104 beats per minute
3. INR= 2.5
4. Hematocrit = 37% or 0.37
5. Oxygen saturation = 94%
6. Atrial fibrillation
7. Blood pressure = 99/46 mmHg
8. Hemoglobin 150g/L or 15 g/dL
9. H.pylori present in stool
10. No dizziness or lightheadedness

Based on the findings of your assessment which are the priority questions you will ask the patient?

- A. How long have you been taking Warfarin?
- B. Do you experience burning when you urinate?
- C. Why do you have chronic back pain?
- D. How many meals do you eat per day?
- E. Have you ever been advised to lose weight?
- F. Does indigestion keep you from sleeping?
- G. When did the abdominal discomfort begin?

Answer: A, B, F, and G

Cardiovascular Pathophysiology

Acute Coronary Syndrome

It is abbreviated as (ACS) Acute coronary syndrome occurs when there is a sudden reduction of blood flow to the heart. ACS is an umbrella term for a range of conditions associated with a sudden reduction of blood flow to the heart.

Common symptoms of acute ACS often begin abruptly, and they include;

- Angina (chest pain and discomfort) that manifests as ache, chest tightness, or burning sensation
- Chest pain radiating from the chest, shoulders, arms, upper abdomen, back, neck, and jaw
- Indigestion
- Dyspnea (shortness of breath)
- Unexplained fatigue
- A feeling of restlessness
- Lightheadedness
- Vomiting and Nausea
- Diaphoresis (Sudden heavy sweating)

Angina is the most common symptom of ACS. However, it is essential to note that symptoms will vary significantly based on age, gender, and other medical conditions present in a patient, such as diabetes. Persons who are older such as adults, women, or have diabetes, are likely to exhibit other ACS symptoms that do not include angina. They may exhibit less severe symptoms such as fatigue/ shortness of breath/ numbness/ weakness, or experience no pain at all. That is also referred silent ischemia.

Types of Acute coronary syndromes

Stable Angina

This occurs when the blood supply to the heart is suddenly blocked for an extensive period. A change in chemical markers in the blood can be detected through an Electrocardiogram (ECG) as a large area of the heart is

affected. Common triggers of stable angina often include; heavy eating, low environmental temperatures, overexertion from exercise or even coitus, and experiencing overwhelming emotions such as fear or anger. This type of ACS is short-lived and can be relieved by rest or nitroglycerine.

Unstable Angina

Unstable Angina occurs when stable angina worsens and does not respond to a single shot of nitroglycerine or rest. The chest pain worsens and persists beyond 5 minutes. The change in chemical blood markers can cause a significant change in the EKG. Unstable Angina should be treated as a medical emergency because it often means an impending myocardial infarction (MI).

Variant Angina

Variant Angina is also called Prinzmetal angina, angina inversa or vasospastic angina. It is a chest pain that occurs typically at night between midnight and morning. The episodes of variant angina last about 15 minutes or more and tend to form a pattern. Variant angina results from spasms of the coronary arteries.

That can be associated with or without atherosclerotic plaques. Prinzmetal angina is often caused by smoking, alcohol, or the use of hard drugs such as marijuana and cocaine. The condition can be detected through an EKG and is treatable through medications such as nitrates, fluvastatin, and calcium channel blockers.

Myocardial Infarctions

NSTEMI and STEMI

ST- segment elevation MI (STEMI)

Electrical signals that form the wave of your heart are divided into sections using letters starting from P to U. A particular section of the wave known as the ST segment depicts activity in the two lower chambers of the heart, the left and right ventricles.

Usually, the ST segment of the wave is almost flat; therefore, a heart attack that affects the ventricles will cause the ST to be taller than usual. This kind

of heart attack is referred to as an ST elevation, and myocardial infarction is known as STEMI.

Heart attacks are generally categorized into STEMI and non-STEMI, with STEMI attacks being more severe. ST elevation on the electrocardiogram (ECG) occurs in response to myocardial damage resulting from an infarction or severe ischemia. Symptoms are those of acute MI, with Q waves often developing, indicating irreversible myocardial damage, which may lead to death. Immediate reperfusion for treatment is necessary before necrosis can occur.

Non- ST- Segment elevation MI (NSTEMI)

The absence of ST on the electrocardiogram ECG may be diagnosed as unstable angina or NSTEMI. However, it is worth noting that cardiac enzyme levels increase with NSTEMI, which indicates partial coronary arteries with some damage. Symptoms of NSTEMI are consistent with those of unstable angina, including pain from the heart, which spreads to the arms, shoulders, neck, and jaw, chest tightness, anxiety, dyspnea, heartburn, weakness, vomiting, dizziness, and nausea.

In the case of NSTEMI, percutaneous coronary intervention is not recommended. Treatment initially may include nitroglycerin, b-blockers, antithrombotic agents, or antiplatelet agents. Ongoing treatment may feature aspirin, statin, clopidogrel, angiotensin receptor blockers, b-blockers, and angiotensin-converting enzyme inhibitors.

Clinical manifestations and diagnosis

Of all the patients suffering from an MI, more than half will present acute MI symptoms even if they have no prior history of cardiovascular disease. Clinical manifestations of myocardial infarction may vary from person to person.

Signs/ symptoms of acute MI include

- Chest pain that may radiate to the neck or arms. The pain often continues for more than 20 minutes and is not relieved by sublingual nitrates. The pain may require intravenous diamorphine for its

resolution. The pain may cause anxiety, restlessness, and fear, increasing the heart rate, blood pressure, and respiratory rate.

- Hypertension or hypotension
- Pulmonary edema
- Dependent edema
- Dyspnea
- Diaphoresis
- Psychological disturbance
- Slurred speech
- Visual abnormalities
- Lightheadedness
- Anxiety
- Decreased urinary output
- Headache
- Cold and clammy skin/ Mottled skin
- Pallor

Diagnosis

Diagnosis of MI is based on the following

A definitive diagnosis depends on electrocardiogram (ECG) changes and is supported by abnormal serum cardiac enzyme levels.

ECG is the most valuable immediate diagnostic tool for the patient's caregiver. ECGs record different views of the heart's electrical activity and provide information by viewing the heart from different angles. In 80 percent of the patients, unequivocal ECG changes of an MI include ST-segment elevation of 1mm or more in two neighboring leads. These changes generally occur within two hours of the onset of symptoms

MIs can be classified based on the layers of the heart involved, for instance;

Q wave infarction - means necrosis occurs throughout the entire thickness of the heart muscle;

Non-Q wave infarction – often means that the area of necrosis is confined to the innermost layer of the heart lining the chambers.

Echocardiogram: although mostly in transmural MI, decreased ventricular function is possible.

Laboratory studies

- CK-MB (Creatinine kinase) Increases within 8 hours and peaks at about 24 hours. That can be earlier in the case of PTCA (thrombolytic therapy)
- Troponin: Is elevated for up to 2 weeks and increases within 6 hours, peaking at 14–20 hours
- Myoglobin: Increases in 30 minutes–4 hours, peaks 6–7 hours. While an increase is not specific to an MI, a failure to increase can be used to rule out an MI.
- IMA (Ischemia Modified Albumin) can be verified with other labs but typically peaks at 6 hours and increases almost immediately or within minutes before returning to baseline

Carotid Artery Stenosis

Stenosis is commonly caused by atherosclerosis and often increased age is a culprit. Ischemia in stenosis often relates to an embolism or thrombus formation. It is common for the carotid artery to branch from the subclavian artery and divides into the internal and carotid and external carotid arteries.

This division point is a common section of the development of plaques that result in the carotid artery stenosis which interrupts cranial blood flow. When stenosis gradually develops, aid circulation may form through collateral vessels. However, sudden occlusion can cause death or permanent brain damage.

Symptoms of occlusions

Occlusion symptoms are often asymptomatic. They can also include common brain attack symptoms such as; confusion, hemiparesis, diplopia and aphasia in addition to other common symptoms like anxiety and pain.

Diagnosis:

To determine blood flow and obstruction a Duplex ultrasound is recommended.

MRA, CT scan or angiogram will indicate the extent of the blockage

Treatment:

- Medications such as thrombolytics and Anticoagulants
- Newer and non-invasive approaches of Angioplasty and Carotid stents
- If stenosis is above 60%; a Carotid endarterectomy is recommended. However, this approach should be weighed carefully as it presents the danger of a postprocedure stroke caused by increased blood flow to narrowed vessels or plaque dislodgement

Papillary Muscle Rupture

Rupture of the papillary muscle is considered a medical emergency, with the rupture being complete or partial. The papillary muscles form part of the cardiac wall structure and are attached to the lower portions of the ventricles. Their function is to open and close the mitral and tricuspid valve and ensure there is no prolapse during systole.

Although the rupture of the papillary muscle is rare, it is often a result of complications in myocardial ischemia and is deadly. Rupture can occur with ischemia or myocardial infarction on the heart area surrounding the papillary muscle. The rupture of the papillary muscle results in an acute mitral valve regurgitation which can then lead to cardiogenic shock and death.

Signs and symptoms

- Weak pulse
- Cardiogenic shock (diaphoresis, pallor, tachycardia, weak pulse, unconsciousness, the urinary output is decreased, pallor)
- Pulmonary edema
- Acute heart failure

Diagnosis:

- TEE (Transesophageal Echocardiography) to visualize the papillary muscles
- Physical assessment
- Echocardiogram

Treatment:

- Repair of the mitral valve surgically

Aortic aneurysms

Types Aortic Aneurysms

- Aortic aneurysms commonly occur more than twice in males than in females; however, the mortality is higher in females, often because of advanced age at diagnosis.
- A dissecting aortic aneurysm occurs when the aorta wall is torn, and blood flows between the wall layers. This action dilates and weakens the wall risking rupture. The rupture of the aorta wall has 90% mortality.
- Atherosclerosis is usually related to AAA (Abdominal aortic aneurysms), but AAA can also result from connective tissue disorders as well as Ehlers-Danlos disease and Marfan syndrome. Identifying and correcting AAA before rupture is crucial because it usually does not allow time for emergent repair. Varied classification systems are used to describe the degree and type of dissection.

DeBakey classification

- I. Type I accounts for 60% and starts in the ascending aorta and may spread to include the descending aorta and the aortic arch. This is also considered a Stanford type A or proximal lesion.
- II. Type II is also considered a proximal lesion or Stanford Type A, and 10-15% is restricted to the ascending aorta.
- III. Type III is considered a distal lesion or Stanford type B and is restricted to the descending aorta and accounts for 25-30% of AAA cases.
- IV. Types III is Abdominal, whereas Types I and II are thoracic.

Diagnosis and treatment

Although Aortic aneurysms are usually asymptomatic, some patients may present as symptomatic. When symptoms are present, they will often include the following

- Substernal pain, dyspnea/ Stridor back pain as a result of pressure on the trachea
- Distension of neck veins
- Cough
- Edema of arms and neck
- Pulsating and palpable abdominal mass

Diagnosis:

- TEE/transthoracic echocardiogram, CT, x-ray, MRI, and cardiac catheterization.

Treatment:

- If a patient is hemodynamically unstable, intubation and ventilation may be required.
- Analgesia to control pain and anxiety
- Reduce systolic BP through Anti-hypertensives, such as esmolol (b-blockers) or labetalol (Alpha-b-blocker) combinations to minimize the force of blood as it leaves the ventricle and reduces pressure against the aortic wall. Sodium nitroprusside (IV vasodilators) may also be required.

Surgical repair: Abdominal (type III) is often treated medically and surgically only if the aneurysm is rapidly expanding beyond 5.5cm. In the case of type I and type II, there is often the danger of cardiac tamponade and rupture, and surgical repair is usually recommended.

There are two types of surgical repair:

- **Open:** The surgery on the damaged portion is done through an abdominal incision when the patient has been placed on cardiopulmonary bypass. The damaged portion is then removed, and a graft is sutured.
- **Endovascular:** this involves a stent graft fed through the arteries to exclude the aneurysm and line the aorta. There is an increased risk of rupture with a stent graft as Endo-leaks can occur, increasing the risk of rupture

Complications: Complications of surgical repair can be felt a year after the procedure and may include; Renal injury, ischemic bowel, Myocardial infarction, and renal injury

Aortic rupture

Aortic rupture commonly occurs in the abdominal aorta; It is the breakage of the aorta as a result of rupture of an aortic aneurysm or trauma. Typically, a patient experiences severe tearing pain as the blood pours out of the aorta and may lose consciousness from hypovolemic shock.

Because of the retroperitoneal pooling of blood, an ecchymotic area may appear in the flank area. The patient may exhibit cyanosis as tachycardia occurs. The tear size, length of time before surgical repair, and amount of blood loss are among the factors determining survival. The mortality rate before surgery is 90%. Diagnostic tests include CT or ultrasound. Treatment often involves surgical repair through an open procedure or endovascular procedure. Some risk factors to consider are patient MI history, old age, male gender, smoking, hypertension, and peripheral arterial disease.

Cardiogenic shock

When a patient experience cardiogenic shock, it results from the heart being unable to provide adequate circulation and oxygen to the body because of a failure to pump. An acute myocardial infarction primarily causes cardiogenic shock, more so, an anterior wall MI. However, it can also be caused by caused hypotensive medication, papillary muscle rupture, prolonged tachyarrhythmia, myocarditis, and hypotensive medications.

Symptoms

- Jugular venous distension Hypotension
- Oliguria
- Tachycardia
- Decreased cerebral circulation
- Possible pulmonary edema
- Cool extremities

Diagnosis:

- **EKG:** AV block and IVCDs, Sinus bradycardia, arrhythmias, specifically SVT/V-tach; it's worth noting that the EKG may be normal
- **ABGs:** lactic acidosis, BNP, BUN and K elevated, metabolic acidosis, hypoxia, hypocapnia
- **Arterial Line Values:** CVP and PAP are increased, CI below 1.8L/Min, PCPW above 18 mmHg, SBP below 90. MAP below 60.

Treatment:

- Papillary rupture is often underlying and should be treated if present
- IABP (Intra-aortic Balloon Pump) Increases cardiac blood flow
- Revascularization if acute to secondary MI
- Increase cardiac contractility with Dobutamine IV
- The use of morphine can control pain; although it brings the potential for hypotension, it does a great job of decreasing HR and MVO₂ as well as decreasing SNS response.
- Norepinephrine IV if SBP

Obstructive shock

Obstructive shock is often categorized as cardiogenic shock due to its many similarities. Obstructive shock happens when the heart's diastolic filling of the RV (preload) is obstructed. This can happen in several ways;

- Decreased cardiac output- as a result of obstructed blood flow out of the heart leading to excessive overload.
- Pulmonary embolism- because of obstruction to the great vessels of the heart.
- Direct compression of the heart –occurs when air or blood fills the pericardial sac with tension pneumothorax or cardiac tamponade.
- Other causes include; vena cava syndrome, aortic dissection, cardiac lesions, and systemic hypertension.

Symptoms

- Depending on underlying causes, the symptoms of obstructive shock may vary but typically include the following;
- Chest pain

- Oxygen saturation decrease
- Dyspnea
- Cyanosis and pallor
- Peripheral circulation is impaired
- Confusion and disorientation
- Hypotension and tachycardia

Treatment;

- The cause of obstructive shock will determine the treatment.

Treatment can include:

- Fluid resuscitation
- Chest tube
- Oxygen
- Needle thoracostomy
- Pericardiocentesis

Cardiac tamponade:

Cardiac tamponade is often a complication of trauma, cardiac surgery, pericarditis, heart failure, or pneumothorax. Cardiac tamponade causes pressure against the heart and comes with pericardial effusion. The normal amount of fluid circulation in the heart's pericardial area is 50 ml. the purpose of the fluid is to reduce friction.

A sudden increase of air volume in the pericardial sac results in the heart being compressed which in turn gives way to several cardiac responses, which can include:

- Venous return reduction
- A reduction in ventricular filling
- End-diastolic pressure in both ventricles can increase

Symptoms

- Hypotension
- Distended neck veins
- Dyspnea

- Increased CVP
- Muffled heart sounds
- Chest pain
- Decreased urinary output
- Above 10 mmHg Pulsus paradoxus

Treatment:

- Surgical repair to relieve cardiac compression and stem the bleeding
- Pericardiocentesis using a large bore needle

Cardiomyopathy

Dilated Cardiomyopathy

The condition is abbreviated as DCM (Dilated cardiomyopathy) and is the common form of cardiomyopathy. It occurs when ischemic cardiac tissue is replaced with scarred tissue. As a result, hypertrophy develops because the healthy cells are forced to over-compensate, which in turn leads those muscle cells to become overstretched beyond compensation.

This leads to a weak and dilated chamber unable to contract properly. The result is an enlarged tricuspid and mitral valve and severe valve regurgitation due to a decrease in cardiac output and stroke volume.

Causes include;

- Poisoning from heavy metals or radiation
- Vascular causes such as hypertension, cardiac ischemia, or atherosclerosis
- Viral infections like HIV and Hepatitis C
- Addiction to alcohol and cocaine
- Genetics

Symptoms

- Edema
- JVD

- Ascites
- Wheezing
- S3/S4 heart sounds
- Dyspnea
- Tachycardia
- SOB
- Holosystolic murmur

Diagnosis

2D Echocardiogram for valve regurgitation/ EF, Cardiomegaly (Chest X-ray), EKG (T wave changes and tachycardia)

Treatment;

- If damage is permanent and the patient is a candidate, a heart transplant is required.
- Supportive care and treatment of underlying causes where possible

Hypertrophic cardiomyopathy

HCM (Hypertrophic cardiomyopathy) is a genetic disorder characterized by an asymmetrical septum, ventricular hypertrophy, myocardial disarray, forceful systole, and cardiac dysrhythmias. Because of abnormal cells development over time, it is not uncommon for HCM to remain undiagnosed until late adulthood or middle ages

Symptoms

- Frequent palpitations
- Exertional chest pain
- Syncope
- dyspnea at rest

Diagnosis

- EKG for dysrhythmias and pathological Q waves
- Cardiomegaly (x-ray)
- Family history of reoccurring dysrhythmias, myocardial hypertrophy, and cardiac death
- 2D echo for structure and EF

Treatment;

- Alcohol-based septal ablation - is done by creating a controlled area of infarction by injecting 100% ethanol into a branch of the LAD, resulting in the septum thinning.
- Surgery – although Septal myectomy has a high mortality rate of 3-10%, it does increase the quality of life and cardiac output.

Restrictive cardiomyopathy

It is abbreviated as RCM (Restrictive cardiomyopathy), and it occurs when the ventricles become non-compliant due to stiffening. The infiltration of tissue causes the stiffening of the ventricles into the cardiac muscle leading to a decreased end-diastolic cardiac refill volume.

Most cases of RCM present atrial enlargement due to the increased effort needed to push blood from the atria into the ventricles. It is common for patients to be in atrial fibrillation before the condition escalates to atrial enlargement. Patients with advanced cases of RCM can also experience ventricular dysrhythmias.

Symptoms

- SOB at rest
- Fatigue
- Elevated CVP
- S3/S4 heart sounds
- Crackles
- Edema

Diagnosis

- Cardiomegaly (X-ray)
- Endomyocardial biopsy
- Hemodynamic monitoring
- EKG – atrial fibrillation
- 2D echo (decreased compliance of ventricle, enlarged atria)

Treatment;

- Surgical – if a patient is a candidate, a heart transplant is required

- Medication –antiarrhythmics or b-blockers for increased ventricular filling

Dysrhythmias

Sinus bradycardia

SB (Sinus bradycardia) is caused by a reduced rate of impulse from the sinus node. A normal pulse characterizes SB except for a slower rate on the ECG at above 50-60 beats per minute, with QRS waves coming after P waves in normal duration and shape.

Several factors can cause SB

- A decrease in oxygen and hypotension
- Medicines like b-blockers and calcium channel blockers
- Sleep and hypothermia are conditions that lower the metabolic needs of the body
- Athletes and older adults are prone to SB. However, unless the condition is symptomatic, it is not treated
- Intracranial pressure increase

Myocardial Infarction

SB can be triggered by certain medical procedures such as carotid stent placement or can occur as a result of vagal stimulation from suction, vomiting, or defecating.

Treatment;

If symptomatic, a change in medication may help eliminate the cause. For instance, giving atropine 0.5-1.0 mg IV may increase the rate or block vagal stimulation.

There are three types of sinus node dysrhythmias, namely;

- Sinus bradycardia
- Sinus tachycardia
- Sinus arrhythmia

Sinus tachycardia

Abbreviated as ST (sinus tachycardia) occurs when there is an increase in frequency on the sinus node. ST has a regular pulse of above 100 bpm P waves coming before QRS and, at times, part of preceding the T wave. Often the QRS is of normal duration and shape but may have consistent irregularity.

Diastolic filling time is decreased by the rapid pulse cardiac output is also reduced, leading to hypotension. As a result of the decreased ventricular filling, acute pulmonary edema may also develop if untreated.

Factors that cause ST:

- Medicines like sympathomimetic drugs
- Anxiety, stress, and exertion
- Hypovolemic heart failure
- Fever and infections
- Acute blood shock

Treatment

Reducing the heart rate by eliminating participating factors such as b-blockers and calcium channel blockers

Supraventricular tachycardia

Abbreviated as SVT (supraventricular Tachycardia) is characterized by a rapid but regular rhythm of above 100 BPM. The heart rate can increase up to 300 beats per minute, resulting in a significant decrease in cardiac output due to decreased filling time.

SVT is controlled by the tissue in the area of the AV node as opposed to the SA node. It starts from the atria rather than the ventricles. QRS appears normal, while the P wave usually appears unclear as the preceding T wave often obscures it.

SVT is also referred PSVT (paroxysmal SVT) because it is episodic in nature, with interludes of normal rhythm and heart rate between episodes.

Treatment

- Verapamil (Verelan, Calan)

- Vagal maneuvers
- Cardioversion
- Adenosine
- Digoxin (Lanoxin)

Sinus Arrhythmia

Irregular impulses from the sinus node characterized by an increase during inspiration and a decrease during expiration due to vagal nerve stimulation are known as sinus arrhythmia (SA). SA is common in children and young adults but often reduces as a patient grows older but can persist into adulthood for some people.

Treatment:

- Usually, treatment is not required unless the AS is linked with bradycardia.

Premature atrial contraction

Abbreviated as PAC (premature atrial contraction) is caused by an electrical impulse to the atrium before the sinus node impulse. Amongst the many things that can precipitate that extra beat to the atrium are nicotine, caffeine, alcohol, hypermetabolic conditions, infarction, atrial ischemia, hypokalemia, and hypervolemia.

PAC is characterized by an irregular pulse due to an extra P wave with a usually normal QRS duration and shape. However, the latter can also be abnormal.

It is worth noting that PAC can occur in a healthy heart and is often not a concern unless it causes severe palpitations and frequently occurs beyond 6 hours.

Atrial Flutter

Atrial flutter (AF) is characterized by normal ventricular rates of between 75-150 and atrial rates of between 250-400 beats per minute. The

conditions that precipitate AF are similar to those that cause A-fib, such as pulmonary disease, cardiac surgery, valvular disease, ingestion of too much alcohol, and coronary artery disease. QRS duration and shape are usually normal, but the P waves are distinctly toothed and are also referred to as F waves.

Symptoms:

- Chest pain
- Hypotension
- Dyspnea

Treatment:

- Non-dihydropyridine, calcium channel blockers, and beta blockers are some medications that can be used to slow ventricular rate and conduction through AV node.
- Medication such as Tikosyn, Covert, and Norpace that converts to sinus rhythm
- If the condition is unstable, use of emergent cardioversion

Atrial fibrillation

This condition is also referred to as AFib and is caused by heavy alcohol ingestion, pulmonary disease, cardiac surgery, and coronary artery disease, to name a few. The condition is characterized by disorganized, rapid atrial heartbeats that are unable to empty into the atria resulting in blood pooling in the chamber, which can lead to the formation of emboli and thrombus

The condition is marked by fatigue and palpitations due to an increase in ventricular rate and stroke volume decrease. It also occurs due to a decrease in cardiac output with an increase in myocardial ischemia. The pulse is highly irregular, with a ventricular rate of 120-200 and an atrial rate of 300-600. QRS shape and duration are usually normal. Instead of P waves, F waves are observed.

Treatment:

- The same treatment for Atrial flutter is applicable

Premature Junctional contractions

Junctional dysrhythmias arise from the area around the AV node junction hence the name. PJC (premature junctional dysrhythmias) happen when an impulse starts at the AV node before the next normal sinus impulse arrives at the AV node. The ECG appears normal, and QRS is normal in duration and shape. No treatment is required; however, it can indicate digoxin toxicity.

Heart failure

HF (heart failure) is a heart disease that includes contraction and filling disorders such as diastolic and/or systolic dysfunction. The condition can also include systemic, peripheral, and pulmonary edema. Heart failure is commonly caused by valvular disorders, cardiomyopathy, pulmonary and systemic hypertension, and coronary artery disease.

While the 2 main types of HF disease are systolic and diastolic, the classification of HF is based on prognosis and symptoms.

- Class I –There is no restriction of the patient's activities because the prognosis is favorable. The patient is asymptomatic during normal activities and experiences no peripheral hypotension or pulmonary congestion.
- Class II – Appearance of symptoms during physical exertion but usually no symptoms when resting. Some limitation of daily activities due to symptoms as a result of exertion is necessary. Although the prognosis is good, slight pulmonary edema may be evident.
- Class III – Presence of significant discomfort during exertion and limitation of normal activities fair prognosis

- Class IV – Symptoms are present even when the patient is resting.
Poor prognosis

Treatment:

- If the atria are distended, ventricles are enlarged or atrial fibrillation, and anticoagulant therapy can help decrease the dangers of thromboembolic.
- A diet of low sodium
- Activity restriction
- Weight and fluid balance monitoring to determine fluid retention changes
- Medication such as digoxin may be given to increase contractility, while ace inhibitors, vasodilators, and diuretics may be included in the treatment to decrease the heart's workload.

Endocarditis

Infective endocarditis is an infection commonly caused by staphylococcal aureus. Bacterial endocarditis can be caused by dental procedures, while prosthetic valvular endocarditis can occur in the wake of valve replacement. Right-sided endocarditis is often a result of catheter use.

In all these causes, organisms access the bloodstream through entry portals from surgery, catheterization, or IV drug use and migrate to the heart and infect the lining of the heart that covers the heart valves.

The infection contains Purkinje fibers, also known as endocardium, which grow on the endothelial tissue and form vegetation, platelet thrombi, and deposit collagen, causing deformation of valves. The most affected valves are the mitral, aortic, and tricuspid valves, with the least affected valve being the pulmonary valve. Endocarditis can lead to serious complications such as emboli, heart failure, and sepsis.

Diagnosis

- ECG

- Blood cultures
- Elevated white cell blood count
- Elevated (CRP) C-reactive protein and ESR (erythrocyte sedimentation rate)
- Anemia (normocytic, normochromic)

Treatment:

- Surgical replacement – in up to 40% of cases where there are symptoms of severe valve damage, replacement of the mitral or aortic valve may be necessary if the patient is not responding to treatment and/or the infection is not under control.
- Antimicrobial - administered IV for 4-6 days specific to pathogenic organisms.

Symptoms

- Anemia
- Anorexia
- Cyanosis
- Congestive heart failure
- Immunological responses
- Embolism
- Petechiae
- Splenomegaly
- Malaise
- Sudden mitral or aortic valve insufficiency
- Intermittent fever
- Dysrhythmias

Myocarditis

Myocarditis occurs when the muscle tissue or cardiac myocardium gets inflamed. Several things can trigger the inflammation;

- Most commonly by HIV, influenza virus, and coxsackie virus

- It can also be caused by parasites, fungi, medical-related allergies, and bacteria
- In some cases, it can occur due to endocarditis complications
- Myocarditis can also be triggered by antibiotics and chemotherapy

Myocarditis can lead to heart dilation and infiltration of blood cells between muscle fibers and around the coronary vessels resulting in further muscle tissue degeneration. As a result, these events can lead to heart failure as the heart's ability to pump blood is impaired as it has become enlarged and weak.

Symptoms:

- Chest pressure and discomfort
- Dyspnea
- Fatigue
- Palpitations
- Fatigue
- Diagnosis:
 - ECG
 - Viral cultures
 - Chest radiograph
 - PCR (polymerase chain reaction)
 - Viral titers
 - Cardiac biopsy and cardiac catheterization
 - Echocardiogram

Treatment:

- Oxygen as required
- Medical treatment and careful monitoring
- Activity restriction
- Gamma globulin IV for acute stage
- Underlying causes such as antibiotic

Cardiovascular Interventions and Procedures

Cardioversion

Cardioversion is used to convert tachydysrhythmia, like atrial fibrillation, to a normal sinus rhythm by sending a timed electrical stimulation to the heart. During the procedure, a patient is anesthetized, sedated, or both. Gel-covered pads or paddles in the form of electrodes are placed in the anteroposterior position.

The pads are then connected to a cardiac monitor with a defibrillator and a computerized ECG. The ECG and the defibrillator are synchronized so that the electrical current is delivered during QRS (ventricular depolarization). To prevent ventricular fibrillation and ventricular tachycardia, the timing must be accurate. Before the procedure, antiarrhythmics drugs therapy with drugs such as Cordarone and Cardizem can be used to slow the heart rate before the cardioversion procedure.

At least 3 weeks to the elective cardioversion therapy, anticoagulation therapy is done to reduce risk, and at least 48 hours before the procedure, digoxin is stopped.

Pericardiocentesis

Pericardiocentesis is done to diagnose pericardial effusion, relieve cardiac tamponade, treat cardiac arrest, and treat increased jugular venous pressure with the presentation of PEA.

Pericardiocentesis can be done with ultrasound or ultrasound and ECG guidance.

60-90% of cases of non-hemorrhagic tamponade are relieved using pericardiocentesis.

However, a thoracotomy is required in the case of hemorrhagic tamponade. That's because until the cause of the hemorrhage is corrected, the blood will continue to accumulate. Resuscitation equipment must be available, and

that includes; Intravenous line in place, cardiac monitoring, and a defibrillator.

Pacemakers

When the heart's normal conduction system is defective, pacemakers are used to stimulate the heart. Pacemakers can be used permanently as an implant or therapeutically or as a prophylactic to treat cardiac abnormalities.

Pacemakers are clinically used for the following;

- For treatment of secondary heart block precipitated by ischemia, drug toxicity, and myocardial infarction
- Increasing heart rate by an increase of cardiac output with bradydysrhythmias
- Cardiac output improvement after cardiac surgery
- Provision of pacing during malfunction of permanent pacemakers
- Decrease supraventricular or ventricular tachycardia by overdrive stimulation of contractions
- Provide evaluation diagnostic information through electrophysiology studies.

Transcutaneous pacing

In an emergency, when the patient is not responding to medications such as atropine and result in hemodynamic instability, transcutaneous pacing can be used temporarily to treat symptomatic bradydysrhythmias.

Epicardial pacing

It can be used on patients with the risk of AV block because medications used to control atrial fibrillation or postoperative pacing support are required. Epicardial pacing wires can be attached directly to the exterior, ventricles, atria, or both after surgery for CPB or valve repair.

Temporary transvenous pacemakers

When other methods have failed, transvenous pacemakers may be used therapeutically or prophylactically to temporarily treat symptomatic heart blocks or bradycardias. Transvenous pacemakers are comprised of a catheter with a lead at the end.

Automatic ICD

AICD (automatic implantable cardioverter-defibrillator) is implanted in the same way as a pacemaker and bears similarities to the pacemaker. However, most AICD has a pulse generator, defibrillation electrodes, and sensing electrodes. The AICD is used to control fibrillation and/or tachycardia. It is implanted on one or more leads of the epicardium or the ventricular myocardium

Closure devices with PCI

PCI (Percutaneous catheter intervention) is usually the choice for patients with symptomatic coronary artery disease. Stent insertion, atherectomy, and Percutaneous transluminal coronary angioplasty (PTCA), are common types of percutaneous catheter intervention procedures.

CABG

CABG (coronary artery bypass graft) is a surgical procedure done through a midsternal incision that exposes the heart. The heart is chilled, and the aorta is clamped to keep the surgical field free of blood. The heart is placed on a cardiopulmonary bypass, and blood goes from the right atrium to the machine and back to the body.

CABG is used for treating angina that is unresponsive to medical treatment and previous unsuccessful PCIs. CBAG can be used to treat the left main coronary artery when blocked beyond 60%, left ventricular dysfunction, and multiple coronary arteries blockage, including proximal left anterior descending artery. Grafts may be obtained from various sites, such as the internal mammary artery, radial artery, and gastroepiploic artery. The

bypass grafts are sutured into place to bypass sections of occluded coronary arteries.

Cardiac Surgical Options for Repair of Cardiac Valves

Cardiac valves can be repaired through several surgical options:

- Aortic valve replacement – repair of the tricuspid valve is often impossible because of its 3 leaflet structure. Defective valves are replaced with biological grafts such as bovine or porcine grafts or mechanical options such as pyrolytic carbon, metal, or plastic through an open heart procedure with cardiopulmonary bypass.
- Ross procedure – in this procedure, the aortic valve and part of the aorta are replaced using the patient's pulmonary artery with the pulmonary valve. And then, a donor graft is used to replace the pulmonary artery.
- Valvuloplasty/ Valvotomy – This procedure involves opening a stenosed valve or releasing valve leaflet adhesions. Usually, the procedure is done through cardiac catheterization.
- Aortic homograft – to replace the faulty aortic valve and part of the ascending aorta of a recipient, this procedure uses a donor's aorta with the aortic valve attached.

Sample Next Generation NCLEX-RN Question: Matrix Thinking Question

An 84-year-old patient is admitted to the telemetry unit due to an exacerbation of heart failure. She also has chronic renal insufficiency, osteoarthritis, myocardial infarction, and a 22-year-old coronary artery bypass surgery. She is alert and lucid. What nursing action indicated in the table below would be appropriate to take in this situation?

Nursing Action	Potential for Heart Failure Complication	Appropriate Nursing Action for the Potential for the Heart

		Failure Complication step by step
Reduce sodium intake to less than one gram daily	May cause acute pulmonary edema	<p>Administer furosemide 20 mg intravenously to help with the edema. acute pulmonary edema occurs suddenly and requires immediate care to prevent rapid respiratory failure.</p> <p>The furosemide administered via intravenous push expels the fluid from the body especially from the alveoli significantly improving oxygenation and perfusion.</p>
Weigh the patient daily on the same scale at the same time	May tire the patient	<p>Consult a cardiac rehabilitation specialist. This is critical to identify the rapid ways to begin rehabilitating the heart before further damage and also to assess current damage.</p>

Monitor the ECG, serum electrolytes and oxygen saturation levels		
Administer potassium supplements		
Administer furosemide 20 mg intravenously	May cause cardiac dysrhythmias	
Reposition the patient every two hours in bed		
Show the patient to breathe through pursed lips		
Encourage the patient to drink at least three liters of fluid daily		
Consult a cardiac rehabilitation specialist		

Answer

Nursing Action	Potential for Heart Failure Complication	Appropriate Nursing Action for the Potential for the Heart Failure Complication step by step
Reduce sodium intake to less than one gram daily	May cause acute pulmonary edema	★ Do it -
Weigh the patient daily on the same scale at the same time	May tire the patient	Not needed - X
Administer furosemide 20 mg intravenously	May cause cardiac dysrhythmias	★ Do it- Administer furosemide 20 mg intravenously to help with the edema. Acute pulmonary edema occurs suddenly and requires immediate care to prevent rapid respiratory failure. The furosemide administered via intravenous push expels the fluid from the body especially

		from the alveoli significantly improving oxygenation and perfusion.
Monitor the ECG, serum electrolytes and oxygen saturation levels		★ Do it – Also monitoring the ECG, Serum electrolytes and saturation levels helps catch dysrhythmias early.
Administer oxygen therapy		★ Do it – Administer oxygen therapy to increase the oxygenated blood available to the organs in the body. Administer the oxygen via a mask to keep the oxygen saturation at 90%
Encourage the patient to drink at least three liters of fluid daily	May cause hypoxemia	Not needed –X and it increases the chances of hypoxemia which is a complication due to inadequate oxygen diffusion.

Reposition the patient every two hours in bed	<p>Not needed – X</p> <p>Repositioning the patient in the bed can help with exchange of gasses but doesn't help with oxygenation needs</p>
Show the patient to breathe through pursed lips	<p>Not needed- X</p>
Administer potassium supplements	<p>★ Do it - Administer potassium supplements to prevent hypokalemia which occurs with low serum electrolytes</p>
Consult a cardiac rehabilitation specialist	<p>★ Do it - Consult a cardiac rehabilitation specialist. This is critical to identify the rapid ways to begin rehabilitating the heart before further damage and also to assess current damage. The specialist can also balance the exertion</p>

levels with the best patient's activities to help begin rehabilitation while in hospital.

Respiratory pathophysiology

Acute pulmonary embolism

Most pulmonary emboli are from thrombus formation, but they can also be caused by fat, air, or septic embolus. When a pulmonary artery or arteriole is blocked, acute pulmonary embolism occurs. The result is impaired blood supply to the pulmonary vessels and subsequent blood oxygenation.

Symptoms:

- Hemodynamic instability
- Cough
- Fever
- Rales
- Anxiety
- Dyspnea
- Cyanosis

Diagnosis:

- ECG
- ABG
- D-dimer and CT scan
- Pulmonary Angiograms
- Echocardiogram

Medical management may include;

- Preventative measures for patients are leg exercises, anticoagulation therapy, and elastic compression stockings.
- Cardiac monitoring
- Analgesics
- IV Dopamine or Dobutamine for hypotension relief
- Anticoagulants
- Oxygen for relieving hypoxemia

Respiratory Distress Syndrome and Acute Lung Injury

ALI (acute lung injury) is often accompanied by a syndrome of respiratory distress which then turns into ARDS (acute respiratory distress syndrome). Lung injuries cause the following abnormalities in the lungs;

- Fluid leakage into spaces between capillaries and alveoli
- The collapse of alveoli as a result of increased pressure on the alveoli
- Impaired ability to move oxygen into the blood due to fluid accumulation in the lungs leads to hypoxemia

Symptoms

Hypotension and tachycardia

- Cyanosis
- Refractory hypoxemia
- Decreased pulmonary compliance, which leads to expiratory grunting or tachypnea
- Respiratory alkalosis is followed by hypercarbia and respiratory acidosis as the disease progresses.
- Wheezing in lungs

Management:

ARDS management entails preventing additional lung damage from forced ventilation and providing adequate gas exchange.

Treatment:

- Maintain ventilation and oxygenation
- Treatment of underlying condition with appropriate antibiotics
- Conservative fluid management may reduce days on the ventilator
- Corticosteroids

Pneumonia

Although pneumonia often occurs as a primary disease, the condition can also manifest as a secondary disease in adults and children. Pneumonia can be caused by fungi, parasites, bacteria, and viruses. Pneumonia is a lung parenchyma inflammation that causes the alveoli to fill with exudate.

CAP (community-acquired pneumonia)

This is caused by;

- Legionella species
- Staphylococcus aureus
- Viruses
- Mycoplasma pneumoniae
- Streptococcus pneumonia
- Haemophilus influenzae

HAP (Hospital-acquired pneumonia)

It is pneumonia that was absent during admission to a hospital but shows up after up at least 48 hours after hospital admission.

HCAP- is pneumonia contracted within 90 days of being hospitalized in LTAC or an acute care hospital for 2 days or more.

VAP (Ventilator-associated pneumonia)

It is characterized by colonized aspiration bacteria infecting patients in the upper respiratory tract. VAP is acquired more after 48 hours of placement of ETT on a patient.

Treatment:

- Changing ventilator circuits as per protocol, providing good oral care for vent patients, and maintaining ventilated patients in a 30-degree upright position
- Using appropriate antibiotic therapy
- Practicing appropriate precautions and isolation with infected patients

Chronic Bronchitis

Chronic bronchitis occurs twice as frequently in females as in males of age 45 years and above. It is a pulmonary airway disease that comes with a severe cough and production of sputum for 3 months a year across at least 2 consecutive years.

Symptoms:

- Dyspnea
- Frequent respiratory infections
- Increased sputum with a persistent cough

Treatment

- Appropriate antibiotics during infection
- Improvement of breathing and exercise through pulmonary rehabilitation
- Corticosteroids in the case of acute episodes
- Bronchodilators
- Supplemental oxygen during exercise or long-term continuous oxygen therapy

Emphysema

Emphysema is characterized by the destruction of alveolar walls with abnormal distension of air spaces at the end of terminal bronchioles. As a result, there is reduced gaseous exchange and an increase in dead space, leading to hypercapnia, respiratory acidosis, and hypoxemia.

Two primary types of emphysema:

1. Panlobular - all the airspaces are enlarged with minimal inflammatory diseases. Enlarged air spaces include the alveolar duct, alveoli, and bronchioles. Symptoms include dyspnea, weight loss, active dyspnea, and hyperextended rigid barrel chest.
2. Centrilobular –this type is the most common, with symptoms such as polycythemia with right-sided heart failure, hypoxemia, hypercapnia, and abnormal-ventilation perfusion ratios. The condition affects the central portion of the respiratory lobule and upper lobes sparing distal alveoli.

Chronic asthma

Asthma affects the bronchi and not the alveoli. Although asthma is no longer considered part of COPD because airway obstruction is responsive to treatment and is not constant. However, fibrotic changes in the airways can result in permanent obstruction over time, especially if asthma goes untreated or is not treated correctly. Chronic asthma is marked by airway obstruction due to inflamed airways and recurrent bronchospasm.

Symptoms

Chest tightness
Exertional dyspnea
Cough
Night time cough
Exacerbations from triggers such as allergies

Treatment:

Identify and avoid triggers
Bronchodilator
Prompt infection treatment
Inhaled glucocorticoids
Long-acting β -agonists
Respiratory Procedures and Interventions
Non-invasive ventilation

Nasal cannula

The patient must be able to breathe independently when using the nasal cannula. That's because it does not allow control of respiratory rate. It is useful for delivering oxygen flow rates below 6 L/min as higher rates result in nasal passages getting dry. Oxygen concentration ranges between 24-44%

Non-rebreather mask

The mask fits over the mouth and nose and is fastened by an elastic strap. The unit has a one-way exhalation valve that prevents exhaled air from being rebreathed. Patients who can breathe independently can use a non-rebreather mask to deliver higher oxygen concentrations of 60-90%.

Non-invasive positive pressure ventilators

There are two types of non-invasive positive pressure ventilators;

Bi-level positive airway pressure (Bi-PAP) – similar to CPAP, it ensures a steady stream of pressurized air. It can sense inspiratory effort and, during inspiration, increases pressure. The machine is programmable to provide a set number of respirations per minute. With Bi-PAP, inspiration and expiration pressure can be set independently.

Continuous positive airway pressure (CPAP) – improves breathing for patients with congestive heart failure because it improves breathing by

decreasing the effort required for breathing by improving gas exchange and increasing residual volume. CPAP ensures a steady stream of pressurized air for both expiration and inspiration.

Airway devices

Tracheostomy tubes: To provide a conduit and keep the airway open, tracheostomy tubes are inserted into the trachea. The tube is secured around the neck with ties. Tracheostomy can be used with mechanical ventilation.

Nasopharyngeal: This device is commonly used for patients who need frequent suction and are conscious. The smaller flexible tube is inserted through one nostril and goes through the nasopharynx.

Oropharyngeal: Oropharyngeal is an airway device in unconscious or anesthetized patients. This device curves over the tongue, creating space between the posterior pharynx and the mouth and, in effect, keeps the epiglottis and tongue from blocking the airway.

Therapeutic gases

Heliox – is a mixture of helium and oxygen. It is used during pulmonary function tests and mechanical ventilation. Heliox has the ability to conduct heat away from the surgical site and is often used to treat respiratory obstruction through laser surgery on the airway. Heliox is also used to reduce carbon dioxide levels and increase ventilation in COPD patients.

Carbon dioxide – Carbon dioxide is administered as part of anesthesia but is often used with insufflation during endoscopic and laparoscopic procedures. Although the gas is a robust respiratory stimulator, rarely is it used therapeutically because it can depress respiration if respiratory acidosis or hypercarbia is present.

Nitric Oxide (NO) – to avoid toxicity that can occur when NO is delivered beyond 50 ppm, the delivery should be between 0.1-50 ppm. NO is sued for

neonatal PPH and as a pulmonary vessel dilator to improve oxygenation by decreasing pulmonary vascular resistance and pulmonary artery pressure.

Thoracentesis

Thoracentesis is done for the following reasons;

- Instill medication
- Make a diagnosis
- Relieve lung pressure caused by pleural effusion

Before the procedure, a chest X-ray or ultrasound is done to determine needle placement. The patient is made to sit upright on a chair and lean on a padded table. A local anesthetic is administered before a needle with a three-way stop-cock, tubing, receptacle, and a 20 ml syringe is intercostally advanced into the pleural space.

The drained fluid is collected, measured, and examined. After the procedure, a chest X-ray is done to ensure there is no pneumothorax. The patient is observed for dyspnea, hypoxemia, and cough.

Bronchoscopy

A flexible fiberoptic bronchoscope is used in bronchoscopy. The patient receives local anesthesia to the nares and oropharynx and assumes the supine position for the procedure. The Bronchoscope is advanced through the nares, into the trachea, and down to the bronchi. During the procedure, respiratory rate, oxygen saturation, and airway patency must be monitored constantly.

The procedure is used for the following purposes;

- Inspection of the trachea, larynx, and bronchi for diagnosis
- Remove foreign bodies and secretions
- Excise lesions

Treatment of atelectasis

- Obtain biopsies

Chest tubes

Chest tubes and their closed drainage systems often comprise three primary parts: water seal, suction control, and collection chamber. Interventions by the nurse during insertion should ensure; attending to sterile technique, delivery of adequate pain control, assisting with suturing as required, attaching the chest tube to the drainage device, and correct placing of an occlusive dressing.

After the chest tube is in place, interventions by the nurse may include; maintaining sterile dressing, and tubing assessment after position changes for occlusion, and the nurse should be familiar with handling clots, collecting the specimen, and replacing the system.

Sample of Next Generation NCLEX-RN question

Matrix response question

Respiratory

A five year old asthmatic male patient is presented to the ER with shortness of breath that occurred during a soccer game. The patient is admitted to the pediatric unit. The minor is breathing predominantly through the mouth and there is wheezing throughout all the lung fields. The patient also exhibiting slightly diminished breath sounds in their lower lung lobes. Using an X mark whether the following nursing actions are emergent or not emergent. Remember emergent means immediately necessary/appropriate and not emergent is not immediately necessary/appropriate.

	Emergent	Non-Emergent
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Nursing Action		
Administer methylprednisolone according to the primary health care provider's prescription	X	
Place nasal cannula to ensure the child has humidified oxygen in response to the rescue treatment		X
Train the child to use the pursed lip breathing technique when in distress		X
Titrate the oxygen to keep the oxygen saturation at 90% above	X	
Let the child sit in the most comfortable position but it must be an upright position	X	
Encourage the guardian/family members to dress the child in comfortable clothes		X
Administer albuterol according to hospital's policy	X	

Insert an intravenous line (peripheral)	X	
Enter the NPO order from the primary health care provider into the child's electronic health record		X

Cloze thinking response question

Respiratory

A 5'8" patient who is 260 pounds is admitted with pneumonia. The 44-year-old male patient is a father to three kids he shares with his wife in their family home and works as a long-distance truck driver. He was a smoker for 16 years before quitting six years ago. From his medical history, you can see he has had bouts of gastrointestinal esophageal reflux disease and also suffers from metabolic syndrome, hyperlipidemia, sleep apnea, and chronic obstructive pulmonary disease. During the initial assessment, he complains of discomfort in his chest and overall fatigue, but he refuses to lie down, preferring to sit up instead. He also asks for a BiPAP machine to help him take a nap.

Choose the most likely answer for the missing information below, which you will select from the two lists provided below.

Chronic obstructive pulmonary disease is one of the respiratory diseases that makes it difficult for airflow and gas exchange to take place, resulting in increased 1. _____, 2. _____, and 3. _____. These physiologic changes increase the patient's risk for 4. _____, 5. _____ and 6. _____.

Options for 1, 2 and 3	Options for 4, 5, and 6
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Blood pressure Bicarbonate levels Bronchodilation Pulmonary pressure Carbon dioxide levels Respiratory rate Oxygen levels Sputum production	Hypertension Coronary artery disease Hypoxemia Pulmonary infection Metabolic acidosis Left sided heart failure Right sided heart failure Respiratory alkalosis

Answer:

1. Carbon dioxide levels
2. Sputum production
3. Pulmonary pressure
4. Pulmonary infections
5. Hypoxemia
6. Right sided heart failure

NCLEX-RN and Next Generation NCLEX (NGN) Questions and Answers Section



1. A client gets mastitis postpartum. What is the physician likely to instruct the nursing team in the patient's care? Select all that apply.

- A. Give patient opioid analgesics

- B. Discontinue breastfeeding
- C. Use antibiotics for a week
- D. Continue breastfeeding despite the mastitis
- E. Use hot and cold compresses for pain relief
- F. All of the above

Answer: C, D, and E

Mastitis is a bacterial infection caused by staphylococcus aureus directly from the infant. That means the mother can continue breastfeeding without any harm to the baby. Treatment is through antibiotics, and analgesics can provide pain relief. Also, using hot and cold compresses helps with pain.

2. You are required to insert a nasogastric tube into a patient. Which is the correct position to place the patient for placement?

- A. Semi-Fowler's position with the head in a neutral position
- B. High Fowler's position with the head in a neutral position
- C. Semi-Fowler's position with the head tilted back
- D. High Fowler's position with the head tilted forward
- E. High Fowler's position with the head tilted back

Answer: D

For proper placement of the nasogastric tube, tilt the patient's head forward while they are in high Fowler's position to open the esophagus and close the trachea. That way, the tube will go in correctly. Observe the nasal passages for the one with the best airflow and use it to insert the length of the tube. Lubricate the end of the tube for ease of insertion.

3. An Alzheimer's patient is admitted to the hospital, looking disheveled, underweight, and dirty. The patient lives with her daughter but appears afraid of the daughter. What would you suspect as a nurse in this case? Select all that apply

- A. Caregiver neglect
- B. Physical abuse
- C. Psychological abuse
- D. Self-neglect
- E. All of the above

Answer: A, B, and C

The patient is not receiving sufficient attention from the caregiver (daughter), hence the weight loss. Either she is not being fed enough, or there is no supervision to ensure she eats. The patient's fear indicates threats may have been used by the daughter to coerce the patient, or she has been physically abused.

4. A patient has been inserted with a three-chamber drainage system chest tube, but there is noticeable continuous water bubbling in the water seal chamber. What could be the likely problem?

- A. The chamber has inadequate suction
- B. There is an air leak in the drainage system
- C. Pneumothorax
- D. The chest tube has been positioned incorrectly

Answer: B

The constant bubbling signifies air is entering the system, indicating an air leak. With pneumothorax, the bubbling would have been intermittent. The water in the water seal chamber should fluctuate; if it doesn't, it indicates inadequate suction. You should see only gentle bubbling in the suction control chamber.

5. A patient exhibits difficulty breathing, very thick secretions, and increasingly noisy respiration. This is a patient with a tracheostomy. What should you do first?

- A. Inform the physician and wait for their arrival for a physical check-up
- B. Position the patient upright and ask them to breathe deeply, then cough
- C. Irrigate and suction the tracheostomy tube
- D. Increase humidification and suction of the tracheostomy tube

Answer: D

The patient is experiencing obstruction from the thick secretions. So increasing humidification and suctioning of the tracheostomy tube is the best course of action to remove the obstruction. However, do not suction for long because it may result in hypoxia.

6. A nurse is teaching a new mother how to use the infant car seat. What information would you advise the nurse to include for the new parent? Select all that apply.

- A. The car seat should be rear-facing
- B. The mother should place padding underneath the seat to cushion the baby and offer stability in positioning
- C. Position the car seat to avoid the infant's head falling forward.
- D. The shoulder straps should go through the shoulder slots below or at the infant's shoulders
- E. There should be a harness clip that is fastened at the abdomen

Answer: A, C and D

First and foremost, the car seat comes with the manufacturer's instructions. But infants should always be placed in rear-facing seats without any additional padding beneath them. The seat should also be positioned to prevent the head from falling forward, and the shoulder straps should be fed through the provided slots below and at shoulder level. But the harness clip should be fastened at the chest, not the abdomen. If the baby is tiny, like a neonate, roll the infant blanket and place it beside the infant's head to maintain a neutral position.

7. You are caring for a diabetic patient with diabetes mellitus, type-one diabetes. Which symptoms indicate diabetic ketoacidosis. Select all that apply.

- A. Dehydration
- B. Hyperventilation
- C. Polyuria
- D. Polydipsia
- E. Abdominal pain
- F. Blurred vision

Answer: all the above apply

Diabetic ketoacidosis (DKA) occurs when insulin levels are insufficient, resulting in the patient becoming hyperglycemic. DKA is caused when one misses their insulin shot, an infection occurs or has untreated diabetes mellitus. Other symptoms include an altered mental state, orthostatic hypotension, and electrolyte imbalance.

8. In which of the following treatment plans is whole blood indicated?

- A. To treat excessive bleeding that has led to extreme blood loss
- B. To manage acute bleeding
- C. To improve an anemic patient's oxygen carrying capacity
- D. To improve clotting

Answer: A

Extreme blood loss is the only situation where whole blood is given as a treatment. In this case, the patient needs to replenish wholesome blood with all its components intact. However, medically speaking, it is not common for whole blood to be used in other treatment plans as one can get the specific component they need, like plasma, platelets, and packed red blood cells.

9. A minor is involved in a motor accident while on the school bus and requires emergency surgery due to excessive bleeding. The parents are out of town and unavailable to sign consent forms for the surgery to proceed. What is the best course of action?
- A. Get the consent forms signed by the school administration
 - B. Get consent from the parents via telephone with two witnesses listening.
Witnesses must notify the parents that they are present and there to act as witnesses
 - C. Get the parents' consent by email
 - D. The physician operates without consent due to the emergency

Answer: B

It is not legally acceptable for a minor to sign for a surgical procedure. Getting the parent's consent via email may be a long wait in an emergency. It is unethical for the physician to operate without consent if the parents can be found. All efforts must be made to get the parents before alternative measures are taken. It is okay for verbal consent to be given by the parents as long as there are witnesses. The witnesses need to listen to the conversation and document that consent was given.

10. Regarding fluid balance, 60% of an adult's body is made of water. What percentage of this fluid is intracellular fluid?
- A. 25%
 - B. 67%
 - C. 80%
 - D. 30%
 - E. 5%

Answer: B

67% of the body's water is intracellular fluid, while 25% is intestinal. 8% is found in the plasma. Without fluid balance, organs begin to shut

down, and death follows when 20% to 25% of water is lost.

11. Why do new mothers develop taut, swollen, and painful breasts two days postpartum?

- A. They are engorged with milk
- B. The milk ducts are engorged
- C. Because of mastitis
- D. Due to insufficient milk production

Answers: A

Engorgement occurs two to three days postpartum due to the milk coming in. As the infant nurses, more milk is produced, and sometimes the infant's intake is still small, and the milk is quite a lot leading to engorgement. Mothers should continue breastfeeding and apply cold compresses in between feeds to provide relief. Engorgement typically lasts 24 to 48 hours.

12. A patient develops anaphylaxis syndrome, losing consciousness due to eating peanuts. The individual is allergic to nuts and ate peanuts in baked goods. What is the initial concern to take of?

- A. Clear the patient's airways to facilitate breathing
- B. Administer epinephrine
- C. Give intravenous fluids
- D. Give oxygen

Answer: A

Clearing the patient's airway to facilitate breathing is the most important thing to do first, although all the above actions help with anaphylaxis syndrome. Establishing clear airways may mean intubating the patient and then administering epinephrine as soon as possible. Next, provide oxygen at 100% high flow and then finally administer intravenous fluids to combat hypotension.

13. Which of the following tasks can a nurse delegate to the unlicensed assistive personnel in a medical setting? Select all that apply.

- A. Temperature and vital signs checks a patient with sepsis
- B. Routine temperature and vital signs check for all clients in the waiting room
- C. Monitoring a blood transfusion process
- D. Monitoring and evaluating catheter bags
- E. Measuring urinary output from Foley catheters
- F. Assisting an amputee patient to the bathroom and back

Answer: B, D, E, and F

Even as they perform these tasks, they must be supervised by the nurse who assigned them the duties in the first place. They can perform routine temperature checks and empty catheter bags as they measure urinary output. But they must not be left to deal with an acutely ill patient or monitor complex life-threatening situations like blood transfusions.

14. As a nurse, you must teach your patient how to perform wound care at home, including dressing changes, before discharging them. Which of the following could be a hindrance? Select all that apply.

- A. The patient's cultural belief
- B. The patient is illiterate
- C. The patient's fear
- D. The patient's physical frailty and weakness
- E. The patient's endless inquisitiveness
- F. The patient's hearing and vision disability
- G. The patient is old

Answer: A, B, D, and F

Frail patients may not be able to perform wound care, and those who can't see or hear may have difficulty following the instructions. Do not shy away from curious patients because asking questions may be a good sign, and fear can be overcome with encouragement and motivation.

15. A client has returned from surgery which involved the removal of a tumor in the colon. They refuse to follow instructions to cough, breathe in or turn. What is the first reason to look for?

- A. Delirium
- B. Pain
- C. Oxygen saturation

Answer: B

Pain is the first place to look because it may make it difficult for the patient to perform even the most basic instructions. Within the first 24-48 hours post-surgery, even the most basic functions can be painful, including breathing, turning, and coughing.

16. A nurse has documented an incorrect treatment on a patient's chart. Which way do they indicate the error?

- A. Use correction fluid
- B. Draw a straight line through the incorrect entry, write "error" above it and initial the correction
- C. Draw multiple straight lines through the incorrect entry making it unreadable, write "error" above it and initial the correction
- D. Leave the incorrect entry in place, write "error" on the margin, date, and initial the annotation

Answer: B

The correct way to indicate the issue is to draw a (one) straight line through the incorrect entry, write an error above it and initial the

correction. Do not obliterate the entry with correction fluid, and do not draw multiple straight lines. Leaving the incorrect entry in place risks it being implemented by another nurse who may miss your annotation on the margins.

17. A disoriented patient tries to pull out the intravenous line in their arm that delivers morphine. What is the best first course of action?

- A. Camouflage the IV
- B. Tie a bit of tubing to the bedrail
- C. Apply wrist restraints
- D. Reinsert the IV line in another site
- E. Use vest and wrist restraints

Answer: C

The first course of action should be to try and camouflage the IV using clothing or dressings. Sometimes tying a piece of tubing to the bedrail will distract the patient. If it is completely impossible to distract the patient, use wrist restraints but only for a short while and while being monitored. Vest restraints are not allowed anymore because they have resulted in deaths.

18. You are required to draw a serum trough level for medication when it is the right time to do it?

- A. At the midpoint between two scheduled drug doses
- B. Immediately after administration of a scheduled dose
- C. Right before the administration of a scheduled dose
- D. When the drug peaks after the onset

Answer: C

The serum trough level should always be drawn right before administering the next scheduled dose because the trough time is when

blood levels are at their lowest. But when drawing blood for trough testing, medication doses must be administered on time.

19. A homeless patient with a history of substance abuse and mental illness is about to be discharged. Which of the following support systems would you recommend for social support? Select all that apply

- A. Community agencies
- B. Self-help programs
- C. Online programs
- D. Family and friends
- E. Government agencies

Answer: A, B, and D

The patient likely doesn't have access to a computer or friends and family. Their best options are self-help programs and community and government agencies.

20. A nurse finds a patient has snuck alcohol into the room and is consuming it. The nurse explains that no alcohol or drugs are allowed into the facility, and the patient becomes belligerent. What words should the nurse use to correct the patient?

- A. I am your nurse, and you do as I say
- B. I will call security and have you thrown out
- C. I am sorry, but I have to ask you again not to consume alcohol, or there will be consequences
- D. You are under citizen's arrest for drinking at a hospital facility

Answer: C

It is best to stay calm and repeat your request in a calm tone so that you don't further exacerbate the situation. Belligerent patients can be unpredictable. Be aware of the patient's body language to be aware of physical harm and de-escalate the situation by talking with the patient.

21. A 40-year-old father of three has progressive frontotemporal dementia, which has impaired his judgment and caused language difficulty and compulsive disorders. His wife is his official next of kin and designated caregiver. What statement indicates that she is having a hard time accepting her new role in her husband's life?

- A. My husband needs to organize his finances for the benefit of our family
- B. My husband is finding it difficult to remember things, so I put sticky notes for him
- C. I think it is a good idea to add some of the things my husband loves and enjoys to his new routine
- D. I have limited friends and family visiting because it agitates my husband when he doesn't remember them

Answer: A

The wife hasn't accepted her husband's limitations and still expects him to pick up from where he stopped. The husband will continue to deteriorate, which will impede his ability to manage their finances. She is in denial about assuming her husband's responsibilities which is understandable because role changes can be pretty overwhelming, especially as the husband deteriorates further.

22. You are at a swimming pool, and someone collapses due to cardiac arrest next to the pool. You need to use the defibrillator, and the individual is still wet. After CPR, what should you do next?

- A. Deliver shock immediately after placing the AED pads even though the patient is still wet
- B. Only continue with CPR because a wet patient can't receive a shock
- C. Wipe the chest until dry with a cloth and then use the defibrillator

Answer C:

The AED must be placed on a dry surface because it must be dry to work effectively. So wipe the chest dry with a towel or cloth and then deliver the shock. You can also ask someone else to wipe the patient dry as you continue to apply CPR. Do not use alcohol to wipe the chest because the electricity and alcohol could ignite.

23. An army veteran has been checked into a psychiatric facility due to PTSD. What symptoms would you expect to see? Select all that apply

- A. Anger and irritability
- B. Recurring flashbacks
- C. Nightmares
- D. Detailed memory of the events associated with the traumatic events
- E. Fear of others
- F. Self-medication

Answer: A, B, C, D, and F

Diagnosis of PTSD is mainly behavioral, and the behaviors result from near-death experiences, threats of death, serious injury, or harm from others. The condition causes significant distress and disturbance causing the patient to be impaired in their approach to daily events and activities. Symptoms typically present within three months of the traumatic event, but in some cases, they can be delayed for months or even years.

24. A patient complains of sleeping poorly, fatigue, waking up with a headache, and being irritable throughout the day. Which of the following tests should they be scheduled for?

- A. A brain MRI (magnetic resonance imaging)
- B. An ECG
- C. An nocturnal polysomnogram
- D. An electroencephalogram

Answer: C

The patient is demonstrating signs of having sleep issues with symptoms indicative of sleep apnea. So, the client should be tested in a sleep center where this test can be carried out in a controlled environment. During the test, they will evaluate respiratory effort, airflow, oxygen saturation, and snoring.

25 Which of the following group of neonates are at risk of hearing loss?

- A. All neonates
- B. Neonates with anomalies in their Apgar Scores
- C. Premature neonates
- D. Neonate with high-risk factors for hearing loss

Answer: A

All neonates are at risk of hearing loss, so they should all be screened for this disability. This is according to the U.S. Preventive Services Task Force, and parents are required to indicate risk factors like family history. Admission to the NICU and craniofacial abnormalities can also be used to identify at-risk neonates. But nearly half the infants with hearing loss do not have any indicators of the potential for this disability.

26. An elderly patient doesn't seem to understand what you are saying, and they speak too loud when answering the few questions they understand. They also tend to look at your mouth when you speak rather than make eye contact. What disability could they be suffering from?

- A. Hearing loss
- B. Vision loss
- C. Hearing and vision loss
- D. Cognitive impairment

Answer: A

When a person cannot hear properly, they try to compensate by looking at the mouth of the speaker to catch their word formation. Hearing impaired patients tend to do this, but unfortunately, they may not catch the words. Reading lips is a skill that one learns, and it takes time.

27. During a skin assessment, the nurse noticed a red, scattered rash on the patient's trunk. The lesions have a 0.5 cm diameter and look flat, circumscribed, and non-palpable. What is the classification of this type of lesion?

- A. Nodule
- B. Patch
- C. Macule
- D. Papule

Answer: C

A macular lesion is flat and non-palpable but not as big as a patch which can be over 1 cm. Papules, on the other hand, are solid and elevated, although they are also less than 1 cm. Nodules are larger than 1 cm and similar to papules in appearance.

28. A patient with fecal and urine incontinence is admitted to a long-term care facility. How many times should the nurse check the patient for dryness?

- A. Every two hours
- B. Hourly
- C. Never
- D. After meals

Answer: A

The nurse should check on the patient every two hours. Consuming food and drink triggers incontinence, so schedule the checks after

meals and every two hours after that. Sometimes the patient may appear restless or pull at their clothes to indicate they need help. Check them then as well.

29. A patient with recurring constipation and fecal impaction needs what interventions to assist with bowel training? Select all that apply

- A. Enemas
- B. Stool softeners
- C. Daily laxatives
- D. High fiber diet
- E. Exercise and water

Answer: A, D, and E

Daily laxatives may increase constipation, making it worse in time. But exercising and drinking water and high-fiber foods allow the body to resolve the constipation issues naturally, and stool softeners make it easier to pass the stool.

30. During an examination, a patient is found to have swollen and enlarged proximal interphalangeal joints. Which disorder could they be suffering from?

- A. Rheumatoid arthritis
- B. Psoriatic arthritis
- C. Osteoarthritis
- D. Gouty arthritis

Answer: A

These are signs of rheumatoid arthritis, an autoimmune disorder that may also affect other parts of the body. It causes bilateral pain and swan-neck deformity, not to mention ulnar deviation. There is a lot of inflammation and joint damage with rheumatoid arthritis, and the symptoms tend to flare up and settle down.

31. A patient with a terminal illness is at his death vigil and shares with the nurse that he hasn't always done the right thing by those who love him. What would you advise the nurse to tell him?

- A. "This is Karma coming for you."
- B. "There is nothing you can do now but make peace with your mistakes."
- C. "It is not too late to ask for forgiveness."
- D. "Don't worry, that won't matter where you are going"

Answer: C

Encourage the patient to find peace if they are so inclined but pose the suggestion in a way that doesn't pressure the patient. In some cases, all the patient wants is to express regret, so acknowledge their sentiments by saying, "We all have things we regret" This is a non-judgmental statement, and the patient feels it is okay to express regret.

32. A patient with GERD, Diabetes Mellitus, and hypertension rings the bell for the night shift nurse to attend to him. He complains of heartburn and indigestion and is unable to sleep. What interventions would you take?

- A. Assess the patient's respiratory and cardiac condition
- B. Administer an antacid according to the prn order
- C. Administer Ibruprofen or acetaminophen according to the prn order
- D. Administer a laxative to help the patient go to the toilet

Answer: A

All the other interventions mentioned above are based on the assumption of what you may think is wrong with the patient based on their illnesses like GERD and hypertension. However, you are not sure, and the only way to be sure is to conduct a thorough assessment of the patient's vital signs, especially respiratory and cardiac.

33. If you have to consider a patient for restraints, what is the appropriate reason?

- A. They have a history of clumsiness
- B. They are currently exhibiting dangerous behavior
- C. They have refused to take their medication
- D. They have previously attacked a member of staff

Answer: B

You cannot base intervention on past actions because there may have been extenuating circumstances that led to the patient's previous behavior. However, their current behavior should inform the best course of action, restraints or not.

34. If a patient needs an NG tube inserted, what is the best task related to the procedure to delegate to unlicensed assistive personnel?

- A. Inserting the tube
- B. Repositioning the tube when displaced
- C. Administering the feeds
- D. Verifying the tube positioning

Answer: C

This is the only delegatable task, but the person must be supervised and at least trained to do this task. The rest of the tasks require the medical expertise of a knowledgeable medic.

35. A client just had surgery on their left fractured hip. An overhead trapeze is in place to help them with their movement. Which of these instructions would you give the patient regarding the use of the device? Select all that apply

- A. They must place both hands on the trapeze for assistance before moving

- B. They should grasp the trapeze with their right hand and use the left hand on the bed to move off the bed.
- C. They should grasp the trapeze with their left hand and use the right hand on the bed to move off the bed.
- D. They should avoid the trapeze altogether to heal faster
- E. They should flex their right knee and hip and then place their right foot flat on the bed to facilitate moving.

Answer: A and E

The patient should grasp the trapeze bar with both hands for balance and assistance with smooth movement. Smooth movement is critical to prevent injury and strain of other muscles. Next, they should flex their right knee and hip and then place their right foot flat on the bed to facilitate moving. Finally, they can pull on the trapeze as they push down on their right foot and move the body.

36. What is the correct procedure for administering a combined dose of two different insulins to a patient? Write in the correct order.

Change needles
Clean the top of the vials
Draw medication from vial 2
Inject air into vial 1
Draw medication from vial 1
Inject air into vial 2

Answer:

**Clean the top of the vials
Inject air into vial 1
Inject air into vial 2
Draw medication from vial 1
Change needles
Draw medication from vial 2**

37. A patient takes phenytoin as part of their long-term care treatment. What long-term side effects would you inform the patient about? Select all that apply.

- A. Hypertrophy of subcutaneous tissue of the face
- B. Anemia
- C. Gingival hypertrophy
- D. Dementia
- E. Hirsutism

Answer: A, C, and E

These are side effects known as Dilantin facies that are associated with prolonged use of phenytoin. You should advise the patient to practice good dental hygiene and to take additional vitamin D because the medication also increases the likelihood of developing osteoporosis.

38. A patient's son brought him for a checkup because the dad has begun to drop word endings and slur his words, is irritable, and seems to be hearing whispers. Also, he has given up his social life altogether. As a nurse, what would your initial evaluation be for?

- A. PTSD
- B. Stroke
- C. Anxiety
- D. Depression
- E. Alzheimer's disease
- F. Hearing loss

Answer: F

Hearing loss can be more insidious than people think. Because the person cannot hear properly, they tend to believe people are whispering about them or talking behind their backs. The slurring of words and dropping word endings is because they cannot hear themselves speak.

Hearing loss can be frustrating, making patients irritable and withdrawn.

39. What is the best way to retrieve an immobile patient from a room on fire?

- A. Use a gurney to carry the patient out
- B. Put the patient in a wheelchair
- C. Move the bed with the patient in it
- D. Get two people to enter the room and carry the patient out

Answer: C

Transferring the patient to a gurney will take too long, and the patient may not be able to sit in a wheelchair. Since the patient must be evacuated as soon as possible, it is best to move their bed while they are still on it. Manually carrying the patient out may exacerbate their existing medical condition.

40. The nutritionist has advised a gout patient to limit their purine intake. Which of the following foods should they avoid? Select all that apply.

- A. Beef broth
- B. Wine
- C. Potatoes
- D. Yogurt
- E. Liver
- F. Scallops
- G. Turkey bacon

Answer: A, B, E, and F

All meats contain purines, so they should be avoided along with their broths. Organ meat like liver and seafood like scallops and mackerel should also be avoided because they are typically very high in purine.

Alcohol like wine inhibits the elimination of uric acid, so they should keep it to a minimum; Less than 10 ounces a day is ideal.

41. A patient with a long arm cast is finally having it taken off after eight weeks. You have to clean their arm after the cast removal. Which of the following way would you clean the area?

- A. Ask the patient to clean the area themselves with a brush and soap
- B. Use a cold water enzyme to wash the patient's skin, leaving it in place for twenty minutes, and then use warm water to rinse it off.
- C. Direct the patient to bathe as normal
- D. Scrub the patient's arm with a washcloth and warm soapy water

Answer: B

The skin is usually covered with a lot of dead skin and fatty deposits. To slough them off, you need to use the cold-water enzyme to dissolve them. After the initial rinse to remove the dead skin and fatty deposits, you can gently scrub the skin with a soft wash cloth and warm soapy water to remove the remainder. Do not be vigorous, and apply an emollient after the wash to protect the skin.

42. In which of the below situations are you allowed to use the Braden Scale to assess a patient?

- A. If the patient is showing signs of delirium
- B. If the patient is at risk of abuse
- C. If the patient is at risk of falls
- D. If the patient is at risk of developing sores

Answer: D

This tool is used to determine if the patient is at a higher risk of developing pressure sores. The scale has six assessment areas between 1-4 and 1-3. They include activity, moisture, friction and shear, sensory

perception, mobility, and nutrition pattern. The lower the overall score, the higher the patient's risk.

43. Which of the below statements indicates the need for further education in a diabetic patient who self-injects insulin.

- A. I flush the used needles in a public toilet
- B. I have cut out desserts and fizzy drinks from my diet
- C. I exercise and follow the nutritionist's diet plan
- D. I wear closed shoes and avoid sandals

Answer: A

There are local and state regulations regarding the disposal of these needles, which patients should adhere to. They should store and dispose of the needles appropriately, and with a little education, they can know how to do it. A needle should not be flushed down a toilet, public or private. The patient can contact their local refuse disposal service for the correct information on how to dispose of the needles.

44. A four-year-old child is brought to the hospital with a terrible wound, and you must acquire wound cultures to check for aerobic and anaerobic bacteria. The wound is excruciating even after an analgesic is administered. What approach would you use to obtain the wound cultures?

- A. Perform the procedure in the child's hospital room with the mom present and the child in bed alone
- B. Perform the procedure in the child's hospital room with you handling the wound cultures and the mom actively comforting the child on the bed
- C. Perform the procedure in another hospital room with another nurse present to assist as mom actively holds the child in bed.
- D. Perform the procedure in the child's hospital room with the mom comforting the child and the other nurse observing.

Answers: C

You should have another nurse present to help keep the child's leg still because they will automatically kick when they feel pain. Mom can hold the child in a comforting position facing her while you obtain the culture. However, the procedure should be done in a separate hospital room, preferably a more sterile room. If you do the procedure in the child's hospital room, the child associates the room with pain, and they may not feel safe or settled in there.

45. You are educating a patient about managing hypertension through lifestyle modification. Which of the following do you recommend? Select all that apply.

- A. Do aerobic exercise regularly (at least 30 minutes daily)
- B. Stop smoking and excessive alcohol consumption
- C. Lose weight
- D. Adopt a diet that features healthy, nutritious meals
- E. Limit the amount of fluid intake to only 2000 ml daily

Answer: A, B, C, and D

Regular aerobic exercise could be as simple as walking or jogging or as tasking as a HIIT workout session. Dietary planning is also critical to induce weight loss, and it should be low in saturated fat and high in vegetables and fruits. While the patient can enjoy a drink or two (not more than that), they must stop smoking immediately.

46. Multiple sclerosis can quickly tire one person. So which of the following steps would you advise a multiple sclerosis patient to take to conserve their energy. Select all that apply.

- A. Keep the most frequently used items close by
- B. Have regularly scheduled rest periods
- C. Avoid extra movements by planning ahead
- D. Pull rather than push objects
- E. Perform activities sitting rather than standing
- F. Be self-aware to catch fatigue and stress signals

Answer: All apply

The patient should limit movement and keep frequently used items close by. Pulling instead of pushing items helps, and being aware of feelings of fatigue helps them to slow down. It also helps to perform tasks while sitting because standing can be tiresome.

47. A patient has to wear a Holter monitor to monitor cardiac activity for 48 hours continuously. What activities should you advise the patient to avoid during the monitoring period? Select all that apply.

- A. Using the remote control
- B. Showering and bathing
- C. Exercise
- D. Bird watching
- E. Using an iPad and other wireless devices
- F. Consuming caffeinated beverages

Answer: A, B, and E

Avoid using all wireless electronic devices, and do not shower or bathe until the Holter monitor is taken off.

48. You are reviewing the medication of a patient scheduled for outpatient rotator cuff repair. So which of the following medications should you anticipate the patient will be asked to avoid the morning of the surgery.

- A. Levothyroxine
- B. Fluoxetine
- C. Aspirin
- D. Metoprolol

Answer: C

Aspirin has antithrombotic properties because it will interfere with the blood's ability to clot after surgery.

49. An unvaccinated child has developed complications after contracting German measles (Rubella). Which of these infection control protocols is appropriate to handle this situation?

- A. Standard and contact
- B. Standard and airborne
- C. Standard only
- D. Standard and droplet

Answer: D

The nurse must maintain all standard precaution protocols and droplet precautions. Use PPE for all contact with the patient, including gloves, masks, and an isolation room to mitigate airborne infection.

50. A patient has knee replacement surgery for tomorrow, and you are reviewing preoperative lab results. Which of the following abnormal laboratory results should you notify the physician about before the surgery?

- A. Glucose 84
- B. Platelets 118,000
- C. Hemoglobin 13.9
- D. Sodium 141

Answer: B

118,000 is low for the platelet count, which should typically be around 150,000 to 450,000. The low count indicates thrombocytopenia which increases the risk of bruising and excessive bleeding.

51. You are aware that African Americans are at a higher risk of certain conditions than Caucasians? Select all that apply in the list below.

- A. Diabetes Mellitus
- B. Cancer
- C. Asthma
- D. Hypertension
- E. osteoporosis

Answer: A, C, and D

African Americans are less likely to suffer from skin cancer and osteoporosis but more at risk for Diabetes mellitus, asthma, and hypertension.

52. An 80-year-old patient is admitted to the hospital with urinary incontinence, generalized fatigue, anorexia, low-grade fever, and hyperventilation. Which of the following conditions should you evaluate the patient for?

- A. Bladder cancer
- B. Diabetes mellitus
- C. Influenza
- D. Urinary tract infection

Answer: D

Apart from difficulty with urination and frequency, urinary tract infections also cause fatigue, anorexia, low-grade fever, and hyperventilation, especially in elderly patients.

53. You have to care for a patient that has had their eye removed to insert a prosthetic eye eventually. Place the instructions in the correct sequence for the prosthetic eye insertion from the first to the last.

- i) Pull the lower lid down
- ii) Raise the concerned eyelid
- iii) Check the positioning
- iv) Slide the prosthesis behind the eyelid

- v) Cleanse the prosthetic eye following the manufacturer's directions
- vi) Identify the landmarks on the prosthetic eye for outer and inner areas and the inferior and superior aspects

Answer:

- i) Cleanse the prosthetic eye following the manufacturer's directions
- ii) Identify the landmarks on the prosthetic eye for outer and inner areas and the inferior and superior aspects
- iii) Raise the concerned eyelid
- iv) Slide the prosthesis behind the eyelid
- v) Pull the lower lid down
- vi) Check the positioning

54. You are assisting a patient with range of motion exercises. So which of the following movements should be carried out on the patient's elbows?
Select all that apply.

- A. Flexion
- B. Circumduction
- C. Rotation
- D. Supination
- E. Pronation
- F. hyperextension

Answer: A

The hinge joint at the elbow allows the forearm to pronate and supinate only because the only movements a hinge joint can perform are extension and flexion. So the joint cannot rotate or hyper-extend.

55. There has been a disaster with multiple victims, and there is a danger to those present. Which group should you give priority to protect from injury?

- A. The firefighters and police officers
- B. The victims

- C. Healthcare providers
- D. News reporters and bystanders

Answer: C

It is critical to ensure health care providers are protected from injury because if they are injured or harmed, there is no one else to offer the essential services they do.

56. A patient is going through withdrawal symptoms from years of substance abuse and is at risk of life-threatening complications. Which of the following substances is she withdrawing from?

- A. Heroin
- B. Alcohol
- C. Cocaine
- D. Marijuana

Answer: B

Alcohol, barbiturates, and benzodiazepines have the most dangerous and life-threatening side effects of cold-turkey withdrawal. They can cause heart failure, severe seizures, and even stroke.

57. A patient's IV is gauze wrapped around the IV catheter at the insertion site. Also, a transparent dressing is laced over the gauze dressing. How long should it take before you change the dressing?

- A. After the transparent dressing loosens
- B. After 48 hours
- C. After 24 hours
- D. After the regular rotation for the IV

Answer: B

Best nursing practice requires the dressing to be changed after 48 hours and loosened or changed sooner if it comes loose or there are signs of infection.

58. What is the first step in the five A's of smoking cessation?

- A. Ask the patient about their tobacco use at every visit
- B. Advise all smokers to stop smoking
- C. Assist the patient with their smoking
- D. Assess the patient's willingness to stop smoking

Answer: A

Ask the patient about their tobacco use and include their answers in the patient's medical history and assessment

59. A patient who has experienced resuscitation and cardiac arrest is exhibiting signs and symptoms of mild anoxic brain injury. What signs do you expect with this type of brain injury?

- A. Decreased concentration
- B. Semi-comatose state
- C. Seizures
- D. Decreased balance
- E. Restlessness
- F. Memory impairment

Answer: A, D, E, and F

Because it is still a mild injury, the symptoms may be mild to moderate, but they can advance to severe, bringing on a semi-comatose state but able to open the eyes and seizures due to lack of oxygen to the brain.

60. You have a patient with rheumatoid arthritis who is experiencing challenges with cooking, driving, cleaning, and other daily activities. Which of the following referrals will help her the most?

- A. Physical therapist
- B. Occupational therapist
- C. Assisted living facility
- D. Home health agency

Answer: B

The patient requires occupational therapy to help her identify her abilities and deficits and find friendly solutions like modifications to her environment or assistive devices that will make things easier.

61. During the second stage of labor, you see the baby's head become compressed as it passes through the mother's bony, narrow pelvis. What is the most likely result of this kind of compression on the infant?

- A. Intracranial hemorrhage
- B. Cerebral Palsy
- C. Epilepsy
- D. Cranial molding

Answer: D

Such compression typically results in cranial molding, a benign condition that will resolve itself in a few days without medical intervention. The skull bones on the baby's head are soft and flexible so that they will bounce back to normal after the compression.

62. As a nurse, what risk factors would you teach a patient at risk of diabetes mellitus to be aware of regarding the disease?

- A. Heart disease or hypertension
- B. Obesity
- C. 45 years and above
- D. Family history of diabetes mellitus
- E. Caucasian race

Answer: A, B, C, and D

The truth is that Caucasians are less likely to get diabetes mellitus than African-Americans, Pacific Islanders, Hispanics, and Asians.

63. A new mother is discharged from the hospital after a normal vaginal birth without an episiotomy or laceration. What danger signs will you advise your patient to be on the lookout for and report to her physician?

- A. Difficulty urinating
- B. Smelly vaginal discharge
- C. Redness, swelling, or pain in the legs (one or both)
- D. A temperature that is higher than 38 degrees Celsius (100 degrees Fahrenheit)
- E. Excessive fatigue
- F. Masses
- G. blurred vision

Answer: A, B, C, D, F, and G

Difficulty urinating

Smelly vaginal discharge

Redness, swelling, or pain in the legs (one or both)

A temperature that is higher than 38 degrees Celsius (100 degrees Fahrenheit)

Blurred vision

64. You are teaching one of your patients to use a metered-dose inhaler without a spacer. How far should the inhaler be positioned from the mouth of the patient when administering the dose?

- A. It should be one to two inches from the mouth
- B. It should be three to four inches from the mouth
- C. It should be completely outside the patient's mouth
- D. It should be enclosed around the patient's lips

Answer: A

This distance is adequate to administer the medication without wasting it, and the medication goes in the correct measure. Use a spacer if the patient has trouble holding the inhaler at the proper distance.

65. You need to check on a patient that has been recently amputated. When you remove the plastic wrap, you notice an unusual swelling. What is the likely reason for your observation?

- A. Wound infection
- B. Incorrect wrap technique
- C. Poor circulation to the stump
- D. Bleeding into the surrounding tissue

Answer: B

In this case, the wrapping technique is the culprit; since the patient is doing the wrapping for themselves, it is best to retrain them to do it right. Observe the patient rewrap the area themselves to ensure they have the right technique.

66. A patient is on an opioid per patient-controlled analgesia pump (PCA) to help control their postoperative pain. However, when you assess the patient, you find her hypotensive and pale, and her respiratory rate is six breaths per minute. The PCA record shows that the maximum limit dosage for the patient was set too high resulting in an overdose. Because of that, the patient is barely responsive. Which of the interventions below should you focus on? Select all that apply.

- A. Stop the infusion immediately
- B. File an incident report
- C. Administer naloxone according to the physician's orders
- D. Discontinue the use of the PCA pump
- E. Administer supplemental oxygen

Answer: A, B, C, and E

The problem is not with the physical pump but with the patient's response to the analgesic dosage she has received.

67. A 65-year-old patient has just had a nerve-sparing prostatectomy. But his physician has advised him that he may not recover his usual sexual function. Very concerned about this information, the patient asks you for clarification. Which of the following would you share with the patient? Select all that apply.

- A. Recovery rates vary from one patient to another
- B. The recovery can take up to one or more years
- C. If the patient is to resume sexual function, it should happen within a month
- D. Retrograde ejaculation is likely
- E. Anxiety affects sexual function
- F. The patient should avoid sexual intercourse for one-month post-surgery
- G. Other sexual intimacies are more vital to healing than sexual intercourse

Answer: A, D, E, and F

While sexual intercourse is not available to the patient, they should not rush the process and can indulge in other intimate acts to feel connected to their partner.

68. A patient was infused with a unit of packed red blood cells. But three hours after the transfusion was initiated, they developed a two-degree Celsius elevation in their temperature and severe chills. What is the likely reason for these symptoms?

- A. Acute hemolytic reaction
- B. Allergic reaction

- C. Circulatory overload
- D. Febrile nonhemolytic reaction

Answer D:

The febrile nonhemolytic reaction occurs when antibodies clash with the leukocytes that remain from the PRBCs, which is a common transfusion reaction. It is typically treated with aspirin or acetaminophen.

69. You have a patient suffering from Parkinson's disease that has been prescribed levodopa. Select the contraindications expected for levodopa.

- A. Pregnancy
- B. Cataracts
- C. Narrow-angle glaucoma
- D. Melanoma
- E. Macular degeneration

Answer: A, C, and D

Also, this drug should not be given to patients with a history of cardiac problems or psychosis. And before administering the drug, go over the patient's medication list to identify any drugs that may negatively interact with levodopa.

70. If you are caring for a patient with an MRSA-infected open draining wound and there are contact precautions instructions. When you enter the room to perform the nursing actions, at what point do you glove and gown.

- A. When you have direct contact with the patient's wound, body, or drainage
- B. Only when you have direct contact with wound or drainage
- C. If the wound is not covered with a dressing
- D. Anytime you enter the room for any environmental contact or contact with any part of the patient's body

Answer: D

MRSA can be transmitted via surfaces, including bed rails, tables, and other items in the room. So, gloving and gowning should be done whenever you enter the room for any reason.

71. A 54-year-old woman going through menopause will present which physical signs and symptoms as a direct result of decreased estrogen?

- A. Excessive sleeping
- B. Weight loss
- C. Increased metabolic rate
- D. Increased fat deposits that accumulate around the hips and abdomen

Answer: D

This is the typical symptom of decreased estrogen associated with decreased metabolism.

72. The primary physician of one of your patients prescribed increasing baclofen dosages to relieve his muscle spasms. However, the patient mistakenly took 80mg four times a day instead of 80 mg, which should be divided into four doses making it 20 mg four times a day. As a result, he overdosed and exhibited central nervous system depression. What is the next course of treatment you can anticipate to counter the effects of the drug?

- A. Supportive care alone
- B. Administering atropine
- C. Administering naloxone
- D. Administering flumazenil

Answer: A

Since there is no anecdote for an overdose of baclofen, you can only offer supportive care. If respirations are severely depressed, they may have to be put on a mechanical ventilator. Also, administer plenty of fluids intravenously to prevent crystalluria.

73. Your patient comes in for an evaluation after applying a left BK prosthetic limb on her amputated right limb. You notice that the patient has an unstable gait, and both the left knee and hip show signs of flexion contractures. When you ask the patient if they use the prosthesis, she admits she doesn't use it frequently. Which is the best intervention from those indicated below? Select all that apply.

- A. Listen sympathetically and nod to everything they say
- B. Arrange for retraining the patient about how to care for their amputated limb
- C. Encourage the patient to meet with a counselor
- D. Give the patient a good talking to about using prosthetic

Answer: B

The patient may be doing it wrong, resulting in pain, so they avoid using the prosthetic. Retraining will help them gain confidence and expose what they may be struggling with when it comes to putting on the prosthetic. Listen and empathize and encourage the patient to meet the counselor to see if there is more than meets the eye. Flexion contractures and abnormal gait mean the patient is not routinely using the prosthetic.

74. How long after procurement of organs from a standard criteria donor should the organs (lungs and heart) be transplanted? A standard criteria donor should be younger than 50 years old and have suffered brain death.

- A. 8-12 hours
- B. 4-6 hours
- C. 24 hours
- D. 48 hours

Answer: B

The lungs and heart are very delicate and have a shorter shelf life of 4-6 hours after coming from the donor to be transplanted. The liver and kidney may stay longer, with 12 and 24 hours, respectively, before they stop becoming viable.

75. A patient presents with psoriasis and must begin NB-UVB phototherapy. How long should the treatments be?

- A. 30 seconds
- B. One to two minutes
- C. Five to ten minutes
- D. 15 to 25 minutes

Answer: B

The initial treatment should last only 1-2 minutes and then be gradually increased by up to 15%. The treatments should occur three times a week and only up to 20 or 30 treatments.

76. Your patient is working on his weight and now weighs 132 lb. He has a 28 calories caloric requirement per kg of body weight daily. What number of calories does the client need daily to maintain his body weight.

Answer: 1680 calories

Convert the pounds into kgs by dividing the pounds by 2.2, which is 60 kgs, and then multiply the caloric requirement of 28 by the number of kgs.

$$28 \times 60 = 1680 \text{ calories}$$

77. A patient wants stronger medication for their pain, and when the physician doesn't prescribe it, she shouts and insults the nurse. Eventually,

the physician prescribes it, and the patient still berates the nurse. Which defense mechanism is the patient exhibiting?

- A. Reaction formation
- B. Compensation
- C. Regression
- D. Displacement

Answer: D

You are the closest person with authority over their medication that they can lash out at because the physician is unavailable. Try not to take it personally because they are not angry at you.

78. A patient taking anticholinergic drugs to relieve Parkinson-related muscle rigidity and tremors should avoid which of the following?

- A. Overeating
- B. Skipping meals
- C. Consume excess fluids
- D. Overheating

Answer: D

High environmental temperatures or activities that induce overheating can increase internal temperature, and anticholinergic drugs make it hard for the body to sweat normally, so the body doesn't cool off.

79. During pregnancy, a woman should take adequate amounts of protein. How much more protein should she consume daily during the second half of the pregnancy to keep the protein levels healthy?

Answer: 25 grams more.

Protein intake is essential to keep up with the mother and baby's blood volume increase and support fetal growth and nutrition. Vegan or

vegetarian mothers should consult about appropriate and adequate sources for their protein intake.

80. The nursing workstation where you document client care and treatment should have which of the following workplace considerations as the most important?

- A. There should be a good ratio of computers to the staff
- B. The computers should feature an appropriate height
- C. The brand of the devices used at the station
- D. Correct positioning that prevents unauthorized persons from seeing the information

Answer: D

Patient information should be kept away from unauthorized personnel and kept confidential. Turning the computer away from human traffic allows only the nurses to see the information.

81. A patient had developed osteomyelitis of their left foot bones due to an infection of a diabetic ulcer. Which of the following treatments do you anticipate to be of primary focus?

- A. Administration of analgesia
- B. Applying warm wet soaks
- C. Administration of intravenous antibiotic therapy
- D. Surgical debridement

Answer: C

Intravenous antibiotic therapy is faster in disseminating the medication, and oral antibiotics can accompany it. If the antibiotics don't work, then you can consider surgical debridement.

82. You have an elderly patient who is superstitious about being placed in room 413 because he believes the number 13 means bad luck. He is not

making a fuss about it, but a family member mentions that the patient is very anxious about this. As a nurse, what is the best thing to do?

- A. Reassure the patient about the room but do not change them to another one
- B. Request for medication to help relax the patient
- C. Ask the resident psychiatrist to consult with the patient
- D. Speak with the admissions department and ensure the patient is assigned to another room.

Answer: D

The patient will be more comfortable in another room and more receptive to treatment.

83. One of the following sentences indicates that the patient is not ready to give informed consent for a craniotomy. Which one is it?

- A. I have a few more questions about the procedure before I sign the consent form
- B. I am scared because I know that the surgery is going to take a long time
- C. I know this is a complicated procedure with so many things that could go wrong
- D. I told the doctor that I didn't want any details about the surgery, and he agreed to leave out the details.

Answer: D

It is the physician's responsibility to ensure that the patient knows everything they need about the procedure and understands it even if the patient doesn't want to. Without this knowledge, the patient cannot claim to have informed consent.

84. A patient is supposed to take five tablets of aspirin daily because she doesn't know how to measure in milligrams. At the hospital, she was

prescribed aspirin in milligrams. So how many milligrams are the same as five tablets of aspirin?

- A. 120 mg
- B. 80 mg
- C. 500 mg
- D. 325 mg

Answer: D

One grain of aspirin has between 60 and 65 mg, so five of them are equal to approximately 325 mg.

85. A patient on opioids and chemotherapy for renal cancer hasn't had bowel movements for the past five days. And even with laxatives, she still hasn't seen any results. She is complaining of nausea and abdominal pain, and no flatus. Which of the following steps do you anticipate in her treatment plan?

- A. Oil retention enema and soapsuds enema
- B. Abdominal examination and X-ray
- C. A follow-up dose of laxative with a subsequent administration of a soapsuds enema
- D. Oil retention enema and impaction removal

Answer: B

The first thing to do is to have an abdominal examination and X-ray to determine the obstruction location and type. This will help inform the treatment plan.

86. You have inserted an NG tube, and now you need to aspirate the gastric contents and check them to determine their pH, so you know if the tube is placed correctly. What is the correct pH?

- A. 8

- B. 9
- C. 4
- D. 6

Answer: C

Normal pH values of gastric secretions are 5.5 or less, so the best value, in this case, should be below 5.5. Medication and even the tube itself can alter the pH. A pH of more than 7 may indicate that the tube is not correctly placed in the GI tract but is in the respiratory system. The good news is that some NG tubes have sensors.

87. You have accidentally administered a dose of acetaminophen to the wrong patient. What should you do after notifying the primary physician of your mistake?

- A. Request the physician to order acetaminophen for the patient and cover your mistake
- B. Document your mistake in the patient's record so that everyone concerned is aware and can look out for any issues that arise
- C. After notifying the primary physician, complete an incident report
- D. Do not do anything else because the patient hasn't said they are allergic to acetaminophen

Answer: C

This is the standard best practice for most medical facilities.

88. Write the below metric capacity measures in the correct order

- i) Deciliter
- ii) Milliliter
- iii) Kiloliter
- iv) Dekaliter
- v) Hectoliter

Answer:

Milliliter
Deciliter
Dekaliter
Hectoliter
kiloliter

89. A pregnant woman is undergoing a nonstress test to evaluate her baby's heart rate. What is the normal reading that you should expect from the 40-minute evaluation?

- A. One acceleration of the FHR at 10 beats per minute for 10 seconds, above the baseline
- B. No accelerations of the FHR expected
- C. Two accelerations of the FHR at 10 beats per minute for 15 seconds, above the baseline
- D. Three accelerations of the FHR at 15 beats per minute for 20 seconds, above the baseline

Answer: D

These are normal parameters where the fetal heart rate has 2 or more accelerations of 5 bpm for over 15 seconds.

90. Please arrange the five A's of smoking cessation in the correct order

- i) Arrange
- ii) Advise
- iii) Ask
- iv) Assist
- v) Assess

Answer: Ask, Advise, Assess, Assist, and Arrange

Next Generation NCLEX (NGN) Questions

91. A 36-year-old pregnant woman has an assessment at about nine weeks. What prenatal activities should the patient expect from their checkup today?

- i) Nutrition education
- ii) Midstream urinalysis
- iii) Testing blood samples for blood count
- iv) Testing blood sample for alpha-fetoprotein (ATP)
- v) Advise the patient to get DNA testing
- vi) Obtain the patient's blood type
- vii) Collect vaginal culture specimens
- viii) Perform an obstetric ultrasound

Answer:

- i) Nutrition education**
- ii) Midstream urinalysis**
- iii) Testing blood samples for blood count**
- iv) Collect vaginal culture specimens**

92. A 32-year-old woman expecting her first child has come in for her 8th-week prenatal checkup. There are two columns, one showing the week and the other the specific fetal checkup. Here is a paragraph to fill out:

During the first trimester, the routine prenatal visit should be every _____ where the primary caregiver uses an ultrasound to check for fetal _____ to identify any fetal anomalies. In the second trimester, the patient can expect to hear the heartbeat, and they should feel _____ at 16 weeks and beyond. The nurse should also monitor _____ of the fetus by measuring the _____ Height. This is to be done during every visit after _____ weeks.

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Options 1, 6 and 7	Options 2, 3, 4 and 5
1	Respirations
2	Growth
4	Movements
6	Circumference
12	viability
16	Fundal
20	Heart rate
	Anatomy
	Gender

Answer

During the first trimester, the routine prenatal visit should be every 4 where the primary caregiver uses an ultrasound to check for fetal anatomy to identify any fetal anomalies. In the second trimester, the patient can expect to hear the heartbeat, and they should feel movements at 16 weeks and beyond. The nurse should also monitor growth status of the fetus by measuring the fundal Height. This is to be done during every visit after 20 weeks.

93. Based on ECG and laboratory results, a diabetic 56-year-old female patient appears to have a myocardial infarction. She has had a successful percutaneous coronary intervention for a coronary artery blockage, and her medication list shows a list of her medications. For each medication, select its purpose and side effects.

Medication	Purpose	Side effect
Atorvastain		
Aspirin		
Lisinopril		
Clopidogrel		
Cardevilol		

Options for purpose	Options for side effect
Preventing platelet aggregation Reduce the cardiac contractions force Prevent the advancement of heart failure Reduce the risk of recurring MI	Bleeding gums/ black tarry stool Swollen tongue and throat Shortness of breath Pulmonary embolus Unexplained cramping, muscle pain and tenderness

Answer:

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Medication	Purpose	Side effect
Atorvastatin	Reduce the risk of recurring MI	Unexplained cramping, muscle pain and tenderness
Aspirin	Preventing platelet aggregation	Bleeding gums/ black tarry stool
Lisinopril	Prevent the advancement of heart failure	Swollen tongue and throat
Clopidogrel	Preventing platelet aggregation	Bleeding gums/ black tarry stool
Cardevilol	Reduce the cardiac contractions force	Shortness of breath

94. A 55-year-old woman with MI has come to the hospital with her two adult children. As she is getting admitted, she asks you to make sure you talk to her kids about MI and what they can do to avoid it, as she doesn't want them to end up like her. Please select all that apply from the below statements that you need to let them know.

- A. Reduce smoking, using tobacco, or vaping (eliminate them eventually)
- B. Reduce consumption of fatty and high sodium foods

- C. Control your hemoglobin levels
- D. Start taking a low-carbohydrate, high-protein diet
- E. Monitor your blood pressure
- F. Increase your exercise times to three to four times a week
- G. Start a weight reduction program

Answer:

Reduce smoking, using tobacco, or vaping (eliminate them eventually)

Reduce consumption of fatty and high sodium foods

Monitor your blood pressure

Increase your exercise times to three to four times a week

Start a weight reduction program

95. A patient with a complete thoracic spinal cord injury is scared of how she will manage without using her legs. She has expressed her fear while simultaneously showing gratitude to her family and friends for being there for her. What therapeutic responses do you give to her?

- A. Assess her support system by talking with friends and family and let them know that she needs them more than ever now
- B. Encourage her support system to participate in physiotherapy with her
- C. Encourage her to speak about her guilt
- D. Reiterate the concerns to the patient for clarification
- E. Refer her and her family to support groups for spinal cord injuries
- F. Tell the patient to stop being negative and make lemonades out of the lemons

Answer: A, B, D, and E

A. Assess her support system by talking with friends and family and let them know that she needs them more than ever now

B. Encourage her support system to participate in physiotherapy with her

D. Reiterate the concerns to the patient for clarification

E. Refer her and her family to support groups for spinal cord injuries

96. An elderly patient has been admitted with signs of disoriented and changes in alertness levels. You record the following vital signs:

Vital signs	
Temperature	36.5 degrees Celsius/98.5 degrees Fahrenheit
Respirations	22 breaths per minute
Heart rate	57 bpm
Oxygen saturation	90%
Blood pressure	170/100 mmHg

After you have started oxygen therapy, what other intervention is needed at this time? Select all that apply.

- A. CT scan of the head
- B. Draw blood for a complete RBC count
- C. Administer normal saline
- D. Check the patient's blood glucose level
- E. Prepare to intubate the patient
- F. Check responsiveness and pupil size
- G. Administer alteplase

Answer: A, C, D, and F

These interventions check for cranial bleeding, control blood pressure, and monitor the patient's blood sugar level.

97. A patient has suffered a traumatic brain injury from an opioid overdose. As a result, he becomes easily agitated and nonverbal, doesn't follow commands, and can't perform basic everyday life activities. What do you inform the family about the expected rehabilitation process?

- A. The patient will be hungry and irritable all the time
- B. The patient will require supervision round the clock
- C. The client needs a structured environment
- D. The family will need to take turns in caring for him
- E. The family should join a local support group

Answer: B, C, D, and E

- B. The patient will require supervision round the clock**
- C. The client needs a structured environment**
- D. The family will need to take turns in caring for him**
- E. The family should join a local support group**

98. A male patient fell immediately after getting off his bed. He had weakness in his extremities and was unable to get back up after the fall. His medical history indicates the patient has high cholesterol and aortic valve stenosis. He also had polio when he was two and has recently received vaccines for pneumonia and influenza. According to the echocardiogram, the patient is experiencing moderate heart failure with an ejection fraction. Your initial assessment of the patient finds him

- A. Alert and oriented
- B. With a cardiac murmur
- C. With bilateral basilar crackles

D. Dyspnea upon exerting himself

E. With blurred vision

F. Lower extremities stiffness

Which of these findings requires a follow-up?

Answer B, C, E, and F

99. A patient with sickle cell anemia is experiencing shortness of breath, fever for the past three days, chest discomfort, and fatigue. When admitted, she was found to be suffering from a sickle cell crisis and pneumonia.

Choose the corresponding conditions from the choices below to fill in the paragraph Options:

Seizures

Leukemia

Hypertension

Peptic ulcer disease

Pancreatitis

Acute chest syndrome

Sepsis

Acute kidney injury

Stroke

Cholelithiasis

Acute vaso-occlusive episodes

Answer:

Following the patient's sickle cell diagnosis, you are aware that they can develop several complications, including acute vaso-occlusive episodes. You should also monitor for other significant complications like acute kidney injury, stroke, and sepsis.

100. You are about to discharge a patient who developed deep vein thrombosis on her right lower extremity after surgery. She discontinued heparin infusion and got well enough to go home. What health training will you offer the patient about their aftercare upon discharge? Select all that apply

- A. Elevate your legs on one or two pillows when in bed
- B. Apply pressure on cuts and bruises
- C. Take pain medication to manage the pain
- D. Keep scheduled appointments at the Warfarin clinic
- E. Do not eat foods that are high in fat and sodium content
- F. Increase activity gradually with intervals of rest when needed
- G. Wear compression stockings
- H. Weigh yourself every morning.

Answer: A and G

Elevating her legs when in bed and even when seated and wearing knee or thigh graduated or sequenced compression stockings will prevent a recurrence of the deep vein thrombosis. Also, train the patient on how to wear the stocking to avoid skin breakdown.

Final Words

Becoming a registered nurse is no small feat, and there is so much you have to offer the worldwide nursing community, as has been evidenced over centuries by others before you. The journey may be challenging, and you may feel like giving up, but trust me, sticking with this course is worth it.

This manual will help you and other resources to prepare and ace the exam. But it will also help you stay on the course reminding you about clinical judgment in the course of your work.

I look forward to running into you as we work together in this health space to bring wellness and dignity to millions worldwide.

Good luck to you!